

Leadership, Agricultural Innovation, Peace and Order Among the Residents of the Agricultural Development of a Province

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Abstract. This study investigates the impact of leadership, agricultural innovation, and peace and order on agricultural development in Lanao del Sur. Focusing on four municipalities—Taraka, Marantao, Ganassi, and Malabang—each with unique agricultural characteristics, the study aims to understand how these factors contribute to the region's agricultural progress. A total of 399 participants were surveyed using adapted and researcher-made instruments. Descriptive-correlational and causal research designs were employed to analyze the data through mean, standard deviation, Pearson correlation, and multiple regression. The results reveal that strong leadership in political, economic, and collective agricultural actions significantly enhances development. High levels of agricultural innovation, particularly in farming methods and infrastructure, were also observed. However, the persistence of "rido" (clan feuding) and lawlessness, despite ongoing police and military efforts, continues to challenge peace and order in the province. The study concludes that while leadership and innovation drive agricultural progress, sustained efforts to maintain peace are crucial for further development.

Keywords: Leadership; Agricultural innovation; Peace and order; Agricultural development, Farm production.

1.0 Introduction

Agriculture is a cornerstone of economic stability and growth across the globe, particularly in developing countries where a significant portion of the population relies on farming for sustenance and income. Despite the sector's critical importance, farmers in these regions are often the most vulnerable to poverty and food insecurity, highlighting a paradox in which those who produce food are frequently unable to meet their own nutritional needs. This reality underscores the urgent need to explore pathways for agricultural development that can alleviate poverty and enhance the well-being of farming communities, especially in regions characterized by high levels of socio-economic deprivation.

The literature has extensively discussed the relationship between agricultural development and economic growth. Dane (2022) emphasizes that agriculture is the backbone of national economies by providing essential food supplies, raw materials, and employment opportunities. A robust agricultural sector is, therefore, integral to food security and broader economic development. Vespia (2021) further supports this by arguing that agricultural development is vital for reducing poverty, particularly in rural areas where most people depend on farming for

their livelihood. These studies highlight the multifaceted role of agriculture in driving economic progress. However, they also reveal significant disparities in how the benefits of agricultural development are distributed, particularly in developing regions.

As described by Udemezue and Osegbue (2018), sustainable agricultural development involves creating the conditions necessary for ongoing agricultural productivity while safeguarding environmental resources for future generations. This includes the enhancement of agricultural practices, the introduction of innovative technologies, and the equitable distribution of resources. The authors argue that sustainable agricultural development is about increasing output and improving the quality of life in rural areas, ensuring food security, and providing a stable income for farmers. However, the challenge lies in achieving these goals without compromising environmental sustainability, which requires a careful balance between economic growth and ecological preservation.

These challenges are particularly pronounced in the context of the Bangsamoro Autonomous Region in Muslim Mindanao (BARMM), specifically in Lanao del Sur. Lanao del Sur, recognized for its favorable climate and fertile land, holds significant agricultural potential. The province produces a variety of crops, including corn, coconut, sugarcane, banana, and cassava, and has a growing livestock sector. Despite these assets, Lanao del Sur remains one of the poorest provinces in the Philippines, with a high poverty incidence and a population that continues to struggle with food insecurity and economic instability.

Previous studies have identified several factors that influence agricultural productivity in the region, including the availability of agricultural inputs, access to markets, and the role of local governance in supporting agricultural initiatives. However, there is a gap in the literature concerning the specific influence of leadership, agricultural innovation, and peace and order on agricultural growth in Lanao del Sur. Understanding these dynamics is crucial, particularly in a region that has experienced both socio-political instability and underdevelopment.

This study seeks to fill this gap by examining how leadership, agricultural innovation, and the maintenance of peace and order impact agricultural growth in Lanao del Sur. The research aims to provide insights that could inform more effective regional agricultural policies and interventions by focusing on these factors. The significance of this study lies in its potential to contribute to the socio-economic upliftment of one of the most impoverished areas in the Philippines, offering a model for similar regions in the BARMM and beyond. Through this work, we hope to advance the understanding of how targeted agricultural development strategies can foster sustainable economic growth and improve the quality of life for farmers in Lanao del Sur.

2.0 Methodology

2.1 Research Design

This study employed a descriptive correlational and causal-comparative research design. The primary aim is to gather and analyze data to compare and evaluate the levels of awareness, knowledge, and agricultural practices among participants in the selected municipalities of Lanao del Sur. The descriptive correlational design facilitates examining naturally occurring relationships between independent and dependent variables without manipulation. In contrast, the causal-comparative design identifies potential cause-and-effect relationships by comparing groups based on certain variables. According to Allen (2017), quantitative research methods, including surveys and statistical analysis, are well-suited to quantify and measure phenomena. The primary data collection method for this study was a structured questionnaire survey.

2.2 Research Participants

The study population consisted of residents, including farmers and local officials, from four municipalities representing diverse topographies in Lanao del Sur: Marantao (n=107), Malabang (n=142), Ganassi (n=74), and Taraka (n=76). Participants were selected through a cluster random sampling technique to ensure representative sampling across the different geographical areas.

2.3 Research Instruments

Data was collected using a questionnaire designed in consultation with an expert panel, including a major professor. The questionnaire comprised four sections addressing independent variables: leadership, agricultural innovations, peace and order, and farm production. A pilot study was conducted to assess the validity and

reliability of the instrument, involving at least 30 participants from the target population. The instrument's content validity was evaluated and enhanced by three experts in agriculture, all holding doctoral degrees. These experts provided critical feedback to refine the questionnaire. Reliability was measured using Cronbach's alpha, with a threshold of 0.7 or higher, as recommended for social science research (Goforth, 2015). The pilot test results indicated that all items met this reliability criterion, and the final version of the questionnaire was deemed valid and reliable for the study.

2.4 Data Collection Procedure

Upon receiving approval to conduct the research, and with the assistance of Municipal Agriculture Officers, the questionnaires were distributed to randomly selected respondents in each municipality. The researcher facilitated the process by translating the questionnaire into the Meranao dialect when necessary to ensure clarity and comprehension. Completed questionnaires were then collected, and the data was systematically tabulated, analyzed, and interpreted.

2.5 Ethical Considerations

Ethical standards were strictly adhered to throughout the study. Participation was entirely voluntary, with no penalties or loss of benefits for those who chose not to participate. Confidentiality and anonymity were maintained by excluding personal identifiers from the data collection process. The data was accessible only to the researcher, the research adviser, the statistician, and authorized personnel involved in data analysis. Informed consent was obtained from all participants, ensuring they were fully aware of their rights and the study's objectives.

2.6 Data Analysis

The data analysis was conducted using appropriate statistical methods. Descriptive statistics were employed to address research questions 1 through 4, providing summaries of the participants' levels of awareness, knowledge, and agricultural practices. For research question 5, the Pearson product-moment correlation was used to assess the relationship between the variables. Lastly, multiple regression analysis was applied to address research question 6, enabling the exploration of the predictive relationships between the independent variables and the dependent outcomes.

3.0 Results and Discussion

3.1 Leadership of the Governing Authority

In terms of the Political Aspect

Table 1 presents the level of leadership of the political governing authority. The overall mean is 3.76, which is interpreted as very good. This data implies that the governing authority's leadership level in politics was excellent.

Table 1. Descriptive statistics of the level of leadership of the governing authority in terms of political aspect

Indicators	Mean	SD	Description	Interpretation
1. Establish the goals of agriculture initiatives aimed at reducing farmer poverty.	3.93	0.935	Agree	Very Good
2. Delegate power and responsibility to farmers.	3.99	0.774	Agree	Very Good
3. The Municipal Agricultural Officer routinely helps the farmers.	3.77	0.810	Agree	Very Good
4. Budget Set Aside by LGUs for Agricultural Development.	4.00	1.044	Agree	Very Good
5. LGUs have a long-term Area Development Plan.	3.69	0.903	Agree	Very Good
6. The LGUs invite both domestic and foreign investors.	3.31	0.969	Neutral	Good
7. The LGUs work together on agricultural projects with the neighboring municipalities.	3.63	0.820	Agree	Very Good
Over-all Mean	3.76	0.672	Agree	Very Good

Note: 4.50-5.00 (Strongly Agree, Excellent), 3.50-4.49 (Agree, Very Good), 2.50-3.49 (Neutral, Good), 1.50-2.49 (Disagree, Fair), 1.00-1.49 (Strongly Disagree, Poor)

The study by Kolaj et al. (2017) in Albania concluded that the growth and strengthening of the role of leadership in farming communities would also help promote and develop agriculture. It would also have positive effects, such as raising awareness of the degree of competence and quality of decision-making concerning the use of resources and rural development. Previous research shows that several countries have developed leadership programs for agricultural entrepreneurs. For example, Australia, Canada, the United States, and New Zealand have developed strategies for leadership development in the agricultural sector (Brosnan, 2014).

A study by Ulvenblad et al. (2019) mentioned that a greater focus is needed on leadership development for agricultural entrepreneurs to manage larger units better and identify and implement innovative ways to create, deliver, and capture value in this rapidly changing agricultural environment. Their study also addresses the deficiency in leadership education for practicing agricultural entrepreneurs, focusing on self-leadership practices in a leadership development program designed specifically for agricultural entrepreneurs. The actions of governments around the world have always influenced agriculture. However, many developing countries have had food deficits, with little in the way of exportable goods to pay for food imports. Several national and international organizations have been established to deal with the problems of developing countries, and direct assistance has also been provided by the governments of developed countries (Britannica, 2022).

The Sustainable Development Goals (SDGs) and targets are integrated and indivisible, worldwide in nature, and commonly applicable, and consider different national realities, capacities, and levels of development and respect national policies and priorities. Furthermore, each government was expected to take possession, establish national frameworks, and set nationally owned targets guided by the global level of ambition while considering country-level circumstances to achieve the 17 goals. Countries will also decide how these aspirational and global targets should be incorporated into national planning processes, policies, and strategies. In line with the Philippines' commitment to achieving the SDGs, the PSA Board issued PSA Resolution No. 04 Series of 2016, Enjoining Government Agencies to Provide Data Support to the Sustainable Development Goals (SDGs). *"The government is fully prepared to continue investing in Mindanao's future, but the government alone cannot finance Mindanao's long-term progress. The island region's private sector – its entrepreneurs and business leaders – must continue to make significant investments in its development, especially in those places where investments are most needed,"* Sec. Dar further said. This is the kind of leadership needed by agricultural entrepreneurs. Ulvendblad et al. (2019) posited that high levels of leadership can manage larger units and identify and implement innovative ways to create, deliver, and capture value in a rapidly changing agricultural environment.

In terms of the Economic Aspects

Table 2 presents the level of leadership of the governing authority of economics. The overall mean is 3.77, which is interpreted as very good. This data implied that the governing authority's economic leadership level was excellent.

Table 2. Descriptive statistics of the level of leadership of the governing authority in terms of economic aspect

Indicators	Mean	SD	Description	Interpretation
1. Set attainable objectives for the agriculture program.	3.90	0.795	Agree	Very Good
2. Manage work consistent with resources.	3.99	0.841	Agree	Very Good
3. Manage time effectively by monitoring the production of farmers' crops, livestock, or fisheries up to harvest.	4.14	0.824	Agree	Very Good
4. Ascertain the equipment and gear requirements for farmers.	3.86	1.070	Agree	Very Good
5. Farmers receive loans from local governments.	3.71	0.803	Agree	Very Good
6. Farmers Receive Regular Financial Training from LGUs.	3.47	0.874	Neutral	Good
7. Agri-tourism is slowly developing in the Area.	3.64	0.855	Agree	Very Good
8. Collaboration with NGOs is a common practice.	3.57	0.914	Agree	Very Good
9. Local governments help farmers market their products.	3.71	0.964	Agree	Very Good
Over-all Mean	3.77	0.692	Agree	Very Good

The 2012 Family Income and Expenditure Survey (FIES) showed that 68% of Philippine households earn some agriculture income. (R.A. 8435) prescribing urgent related measures to modernize the agricultural and fisheries sectors of the country to enhance their profitability and prepare said sectors for the challenges of globalization through an adequate, focused, and rationale delivery of necessary support services, appropriating funds and other purposes, otherwise known as the "Agriculture and Fisheries Modernization of 1997" (AFMA) was created by the Third Congress on the Third Regular Session. This agrees with the Organic Agricultural Act of 2010 (RA 10068) and its IRR.

In terms of Collective Action

Table 3 presents the leadership level of the governing authority of collective action. The overall mean is 3.76, which is interpreted as very good. This data implied that the governing authority's leadership level regarding collective action was excellent. A study by Rolaj et al. (2017) suggests that cooperation among farmers based on collective action is an essential alternative for overcoming structural problems. Banaszak explained that the same forms of

cooperation in collective action in a similar environment can bring different results (Banaszak, 2008). The question is why certain cooperation agreements on agricultural markets are successful while others are not. Some of the groups of producers are effective, while others are not. Banaszak states that variables such as the strength of leadership, previous knowledge in the field of business, the initial selection of members, and the number of members significantly impact the chances of success.

Table 3. Descriptive statistics of the level of leadership of the governing authority in terms of collective action

Indicators	Mean	SD	Description	Interpretation
1. Prioritize agricultural programs for farmers.	3.64	0.988	Agree	Very Good
2. Create an annual work schedule for the area of responsibility farmers require.	3.67	0.805	Agree	Very Good
3. It is possible to monitor the application of inventions that have received government support or funding on farms.	3.68	0.798	Agree	Very Good
4. Monthly monitoring by the Municipal Agriculture Officer of the Farmers.	3.72	0.876	Agree	Very Good
5. There is an Extensionist in the Area.	3.94	0.778	Agree	Very Good
6. There is a Product Development Project.	4.11	0.731	Agree	Very Good
7. NGOs, LGUs, and government organizations regularly evaluate the project delivered to the farmers.	3.80	0.844	Agree	Very Good
8. Universities are welcome to assist.	3.59	1.070	Agree	Very Good
Over-all Mean	3.76	0.657	Agree	Very Good

Furthermore, the study of Rolaj et al. (2017) concluded that the growth and strengthening of the role of leadership in the farming communities would also be helpful for the promotion and development of agriculture; it would bring positive effects, such as raising awareness for the degree of competence and quality of decision-making concerning the use of resources and rural development. The scale and intensity of the use of resources, such as land, forests, and rivers for economic development and growth, implicates costs and requires quality agricultural products. This finding agrees with the study of Rolaj et al. (2017). It suggests overcoming structural problems among farmers, which are resolved by collective action supported by the findings of (Skreli et al., 2011).

In terms of Cooperative Agriculture

Table 4 presents the level of leadership of the governing authority of cooperative agriculture. The overall mean is 3.77, interpreted as very good. This data implied that the governing authority's leadership level in cooperative agriculture was outstanding.

Table 4. Descriptive statistics of the level of leadership of the governing authority in terms of cooperative agriculture

Indicators	Mean	SD	Description	Interpretation
1. There is active cooperative agriculture in the area.	3.72	0.986	Agree	Very Good
2. Supplies required for farm production are affordably priced in cooperative agriculture.	3.71	0.762	Agree	Very Good
3. Members clearly understood the benefits or goals of cooperative agriculture.	4.04	0.643	Agree	Very Good
4. Banks permit agricultural cooperatives to borrow money.	3.74	0.955	Agree	Very Good
5. The Agricultural Cooperative is Financially Stable.	3.76	0.871	Agree	Very Good
6. The Agricultural Cooperative is Expanding.	3.74	0.849	Agree	Very Good
7. Farmers can borrow Money from the Cooperative.	3.77	0.899	Agree	Very Good
8. NGOs and other Organizations Provide Assistance to the Cooperative.	3.67	0.815	Agree	Very Good
Over-all Mean	3.77	0.619	Agree	Very Good

A study made by DeSalva (2012) stated that forming local and organic agricultural cooperatives is one way to eliminate the barriers currently preventing local and organic farmers from doing business with midlevel institutions and, therefore, to help realize the health, economic, and environmental benefits that come from local and organic farming. It also mentioned the following reasons: First, by pooling the supply of produce, agricultural cooperatives can supply the amount of food demanded by mid-level institutions (USDA, 1990). Second, cooperatives give farmers more control over the price of their products and can, therefore, bargain for a price that satisfies both the farmer and the institution (Diamond & Barham, 2012). Third, cooperatives can allow members to invest in group insurance coverage to meet the insurance requirements of mid-level institutions. Fourth, cooperatives make it more feasible for farmers to pool resources and work together to purchase processing and distribution equipment (Hardesty, 2008; Markley, 2010).

In the Philippine setting of ARMM, a report from the Regional Agriculture and Fishery Information Division of DA-ARMM has indicated that thirty-three batches have already completed the short course from January to February. Nasroddin A. Saripada, the municipal agricultural officer of Piagapo, said the training sprang out of the

success of the UN World Food and DA tie-up program on the Establishment of Participatory Vegetable Techno Demo Farms in Piagapo. The activity involved establishing a 1,000 sq. meter communal vegetable garden per site and the required 120 sq. meter individual home gardens (Government of the Philippines, 2016). This finding is positively headed towards eliminating barriers preventing local and organic farmers from doing business with midlevel institutions, as Desalva (2012) posited. The study of Diamond and Barham, 2012 also supports this.

3.2 Agricultural Innovation

In terms of Farming Methods

Table 5 shows the level of agricultural innovation in farming methods among the participants. The overall mean is 3.86, interpreted as high, implying that agricultural innovation in farming methods was high.

Table 5. Descriptive statistics of the level of agricultural innovation of the participants in the aspects of farming methods

Indicators	Mean	SD	Description	Interpretation
1. A traditional method of farming is practiced.	4.23	0.756	Agree	High
2. Modern Farming methods are practiced.	4.00	0.808	Agree	High
3. Farmers use cattle, carabao, or horses in farming.	4.05	0.891	Agree	High
4. New farming techniques are being implemented thanks to seminars and training provided by LGUs.	3.77	0.868	Agree	High
5. Farmers Practice Aquaponics.	3.52	0.888	Agree	High
6. Farmers Use Different Farming Systems.	3.92	0.804	Agree	High
7. Rice duck farming is being practiced.	3.65	0.940	Agree	High
8. Farmers plant typhoon-resistant crops.	3.53	0.932	Agree	High
9. Organic Farming is Being Practiced.	4.09	0.684	Agree	High
Over-all Mean	3.86	0.611	Agree	High

Agriculture Secretary Dr. William Dollente Dar was the Agro-Industrial Development Program (AIDP) launching keynote speaker who represented President Rodrigo Roa Duterte last November 16, 2021, in Wao and Amai Manabilang. Dar discussed the current condition of Philippine agriculture before the Bangsamoro Autonomous Region in Muslim Mindanao (BARMM) Ministers, local officials, SPDA's private business partners, and local farmers, "The use of modern technology can spur or accelerate the development of agriculture in the country," Secretary Dar was quoted as saying during his speech.

The revised development concept for the 26,000-hectare-proclaimed property in the Municipalities of Wao and Amai Manabilang upon the reactivation of SPDA has been focused on establishing a special economic zone dubbed MinSEZ, or Mindanao Special Economic Zone. Another explanation on the subject was that agricultural modernization is the process whereby people or organizations bring new or existing products, methods, or ways of organization into use for the first time in a specific setting to increase effectiveness, competitiveness, resilience to shocks or environmental sustainability and thereby contribute to food security and nutrition, economic development or sustainable natural resource management (FAO, 2018). Farmers have always looked to new technologies to reduce costs. In addition, higher incomes, more excellent knowledge, and improved communication channels are leading consumers to demand low-cost food of higher quality, increasingly produced through organic methods in many countries, with more variety, consistency, and year-round availability. At the same time, consumers are increasingly demanding that their food be produced using techniques that conserve natural resources, limit environmental pressures, and pay greater attention to rural viability and animal welfare (OECD, 2001).

Indeed, agricultural innovations frequently concern not so much the adoption of newly introduced technologies but the adaptation of existing ones. The term 'agricultural revolution' tends to be used when several improvements in separate areas of the farming system co-occur as a complex. Although these may be introduced gradually, once they reach a critical mass, their impact on society may be of a magnitude deserving of the term 'revolution.' Moreover, an article by Praxis (2018) stated that worldwide, agricultural innovations across different agricultural ranges, from urban farms to aquaponics to food hubs, have been developed. Innovative agriculture ensures that new farming and agricultural production models evolve and bring fresh approaches to growing and distributing food. Praxis supports this by emphasizing that farming methods bring fresh methods to how these are grown and distributed in correspondence with FAO (2018) and OECD (2018) goals.

In terms of Farming Practices

Table 6 shows the participants' agricultural innovation level in farming practices. The overall mean is 3.92, interpreted as high, implying that the level of agricultural innovation in farming practices was high.

Table 6. Descriptive statistics of the level of agricultural innovation of the participants in the aspects of farming practices

Indicators	Mean	SD	Description	Interpretation
1. The soil where the crop will be grown is well prepared.	3.99	0.917	Agree	High
2. Sealing seeds for good-quality crops is a standard action before planting.	4.13	0.699	Agree	High
3. Fertilizers on the land used are naturally sourced (organic).	3.92	0.907	Agree	High
4. Crop irrigations are carefully managed, particularly the frequency of water dispersion.	4.00	0.917	Agree	High
5. The harvesting is done manually.	3.89	0.982	Agree	High
6. Harvest storage is done after cleaning, drying, fumigation, etc.	3.94	0.827	Agree	High
7. Pest Control is being Practiced.	3.95	0.843	Agree	High
8. Weed removal is Traditionally done.	4.07	0.847	Agree	High
9. Conservation Agriculture is being Practiced.	3.80	0.835	Agree	High
10. Soil testing is done before planting.	3.57	0.925	Agree	High
Over-all Mean	3.92	0.678	Agree	High

Note: 4.50-5.00 (Strongly Agree, Excellent), 3.50-4.49 (Agree, Very Good), 2.50-3.49 (Neutral, Good), 1.50-2.49 (Disagree, Fair), 1.00-1.49 (Strongly Disagree, Poor)

Farming methods are undergoing significant technological changes. New government regulations and the demand for more advanced, labor-saving technological solutions drive the change (OECD, 2001). Technologies and practices for small agricultural producers (TECA) – TECA is a global, web-based platform for knowledge exchange, documenting, and sharing practical information on agricultural technologies and practices to help smallholder farmers. It combines this knowledge base with a forum of exchange groups for interactions, identification of needs, and joint learning between various actors of the agricultural innovation systems. Aimed at making demand-driven information available on the production and protection of plants and animals (including fish) and managing natural resources better while adapting to climate change and reducing risks of natural disasters, TECA is also designed to improve nutrition from agriculture and to allow smallholders and other users to access markets better. Apart from small agricultural producers, users include professionals from rural extension and advisory services, producer organizations, NGOs, research organizations, universities, and the private sector.

Mechanization Sustainable agricultural mechanization covers all levels of farming and processing technologies, from simple and essential hand tools to more sophisticated and motorized equipment. Cultivating a hectare of land using a hand hoe takes 60 days, compared to about three days with draught animal power or less than a day if using a powered direct seeder. E-Agriculture A FAO-led global Community of Practice e-Agriculture comprises over 12,000 members from 170 countries and territories. It is a platform where members exchange information, ideas, and resources related to information and communication technologies (ICT). It aims to improve decision-making on the vital role of ICTs in empowering rural communities, improving rural livelihoods, and building sustainable agriculture and sustenance security.

Tropical Agriculture Platform: Agricultural Innovation Systems To bring capacity development up to speed with the challenges facing agriculture in the 21st century, the collaborators of the Tropical Agriculture Platform (TAP) have employed a new approach, the so-called Agricultural Innovation Systems (AIS) standpoint, which recognizes that agricultural revolution is a process involving many different participants and that it can only take off if it meets the demands of its principal users. This finding suggests that using more innovative sustainability raised the profile of family farming (FAO, 2018).

In terms of Machinery and Equipment

Table 7 reflects the participants' level of agricultural innovation in machinery and equipment. The overall mean is 3.59, interpreted as high, implying that agricultural innovation in machinery and equipment was high. Digital Agriculture: Encourage more, if not all, farmers and fishers to register in the Registry System for the Basic Sectors in Agriculture (RSBSA); promote e-commerce/digital platforms linking farmers and fishers with direct and institutional buyers. Implementing the Province-led Agriculture and Fisheries Extension Systems (PAFES) established a strong collaboration among the DA, LGUs, academe, and the private sector to bring extension services to the grassroots level. (Bejarin, DA-AFID 2022).

Table 7. Descriptive statistics of the level of agricultural innovation of the participants in the aspects of machinery and equipment

Indicators	Mean	SD	Description	Interpretation
1. Power is sourced from solar panels.	3.54	0.980	Agree	High
2. From the beginning of the process until the food storage, digital equipment technology helps farmers.	3.51	0.914	Agree	High
3. The Availability of innovative machinery and equipment is within the farmers' reach in the area.	3.55	0.804	Agree	High
4. Rental of machinery and equipment is at a reasonable cost.	3.58	0.946	Agree	High
5. Hydroelectric power is being used.	3.40	0.900	Neutral	Moderate
6. A Greenhouse is Available.	3.74	0.832	Agree	High
7. Machine Sprayers or water sprinklers are being used.	3.93	0.935	Agree	High
8. A Nipple Drink for animals is Installed.	3.59	0.810	Agree	High
9. There is an Internet connection available.	3.52	1.080	Agree	High
Over-all Mean	3.59	0.676	Agree	High

For a country frequently visited by typhoons, Filipino farmers could be better off by adopting greenhouse technologies enabling them to protect and raise crops all year round, like other countries and progressive farmer-entrepreneurs have been doing. We want to encourage more farmers through their cooperatives and associations to create greenhouse facilities (William Dar, 2022). Digital technologies can support trade in agriculture and food products by connecting private sector suppliers to new markets, enabling new ways for governments to monitor and ensure compliance with standards, and providing faster and more efficient border procedures that are essential for perishable products (USAID's DDI LFT Bureau, 2022).

In terms of Farm-to-Market Roads

Table 8 presents the participants' agricultural innovation level in farm-to-market roads. The overall mean is 3.74, which is interpreted as high. Thus, they were implying that agricultural innovation in farm-to-market roads was high.

Table 8. Descriptive statistics of the level of agricultural innovation of the participants in the aspects of farm-to-market roads

Indicators	Mean	SD	Description	Interpretation
1. Farm-to-market roads are constructed to aid accessibility in farm areas.	4.06	0.791	Agree	High
2. The local authorities give farm-to-market roads a top priority.	3.72	0.925	Agree	High
3. The roads are not paved in the farm area.	3.92	0.818	Agree	High
4. Transportation of produce from farm to market takes little time.	3.76	0.888	Agree	High
5. The Freshness of the harvest is maintained after transportation due to easy travel.	3.80	0.732	Agree	High
6. The LGU or DPWH always maintains the Road.	3.68	0.870	Agree	High
7. Local governments or the Department of Public Works immediately repair the damaged road.	3.73	1.040	Agree	High
8. The Road is Accessible and Secure.	3.51	0.883	Agree	High
9. Roads constructed with excellence and quality.	3.68	0.873	Agree	High
10. Farmers are utilizing farm to Market Roads.	3.63	0.835	Agree	High
Over-all Mean	3.74	0.649	Agree	High

When only limited resources are available to build and maintain road networks, one should use them most optimally. Regarding pavement design and construction, pavements should be designed and constructed to sustain large numbers of heavy traffic loads for a long time without showing significant damage. Overloading, for example, is a severe problem in almost all developing countries (Molenaar, 2013). It is necessary to disseminate the culture of transforming the way the roads are designed, constructed, maintained, and managed, including through raising awareness of all those involved in the process of construction of roads on the impact that they have on the quality of life of citizens to achieve road sustainability (Corriere, et al., 2012).

Favorable transportation infrastructure permits producers to obtain inputs, move their commodities over large distances, and access the international market more efficiently (Agricultural Infrastructures, n.d.). Numerous studies have illustrated the importance of paved roads on agricultural labor productivity. For example, Llanto has exhibited that a one percentage point increase in the length of paved roads as a ratio to the total distance of roads is associated with an increase in agricultural labor productivity of PHP 285 000 per laborer, which is different from irrigation expansion results, illustrating a positive but insignificant relationship with agricultural labor productivity (Llanto, 2013).

A study by Faiz et al. (2012) on Sustainable rural roads for livelihoods and livability had a conclusion. A review of sustainability and livability suggests that a rural road must fulfill two conditions to be sustainable: first, it must contribute to and enhance rural livelihoods and livability, and secondly, its planning and design (as well as construction and maintenance) must be context sensitive to ensure a balance among economic, social and environmental objectives, that is reflective of community values, aspirations, and needs. Rodriguez (2014) reported in an article that FMRs can increase local trade and productivity, reduce transportation costs of farm input and output, and minimize post-harvest losses. They connect farms and coastal areas to main roads, hence promoting agrotourism, in accordance with Corriere et al. (2012) 's idea that market roads impact citizens' quality of life.

In terms of Agricultural Infrastructure

Table 9 presents the level of agricultural innovation of the participants in agricultural infrastructure. The overall mean is 3.58, which is interpreted as high. Thus, they were implying that agricultural innovation in agricultural infrastructure was high.

Table 9. Descriptive statistics of the level of agricultural innovation of the participants in the aspects of agricultural infrastructure

Indicators	Mean	SD	Description	Interpretation
1. Irrigation designs are based on outdated engineering techniques.	3.45	1.050	Neutral	Moderate
2. The infrastructure plans for warehousing are substantial and lasting.	3.46	0.888	Neutral	Moderate
3. A well-ventilated storage facility for harvested produce has been built.	3.44	0.923	Neutral	Moderate
4. Relevant authorities do not properly maintain agriculture infrastructure.	3.61	0.792	Agree	High
5. There needs to be infrastructure for processing harvested produce in agriculture.	3.52	0.916	Agree	High
6. The construction of the buildings is done using concrete.	3.53	0.902	Agree	High
7. Buildings for the Farmers Association are available.	3.53	0.792	Agree	High
8. Animal Barn is Constructed.	3.77	0.917	Agree	High
9. Electricity is available in all infrastructures.	3.90	0.904	Agree	High
10. Water system is readily Available.	3.65	0.807	Agree	High
Over-all Mean	3.58	0.621	Agree	High

Like other public investments, rural infrastructure boosts agricultural productivity, leading to rural regions' growth, more significant agricultural salaries, and better prospects for nonfarm workers. Urban and rural residents who are net food purchasers benefit from increased agricultural output, which lowers food prices (Llanto, 2012). Consequently, agricultural production has considerable implications for reducing poverty and its benefits for growth. Roads and electricity both play a crucial role in determining agricultural productivity. They were aligned with a related result regarding the growth restrictions imposed by insufficient infrastructure. Rural roads help connect rural areas to increasing markets nearby and lower the input and transaction costs for producers and consumers in rural areas. For rural households, having access to electricity opens up various income-generating opportunities. It is aligned with the idea posited by Corriere et al. (2012) on the impact of agricultural infrastructure.

3.2 Peace and Order

In terms of "Rido" or Clan Feuding

Table 10 presents the level of peace and order of Rido or Clan Feuding. The overall mean is 3.67, which is interpreted as high, which implies that the level of Rido was high.

Table 10. Descriptive statistics of the level of peace and order in the aspects of "Rido" or clan feuding

Indicators	Mean	SD	Description	Interpretation
1. The RIDO of powerful clans in the municipality harms land farming.	3.95	0.869	Agree	High
2. The armed clans negatively affect the current farming of lands.	3.81	0.794	Agree	High
3. The transition of lands from farming to commercial entities creates conflict among the farming community.	3.58	0.811	Agree	High
4. Farmers are stealing land because of RIDO in the area.	3.43	1.120	Neutral	Moderate
5. Agri-tourism is not Practicable due to RIDO.	3.56	0.917	Agree	High
6. Aid from International Organizations or other Agencies may not be delivered to some areas due to conflict.	3.62	0.855	Agree	High
7. Migration of farmers to other places due to rido.	3.65	1.020	Agree	High
8. Education is being abandoned due to RIDO.	3.80	0.863	Agree	High
Over-all Mean	3.67	0.728	Agree	High

It is one of the primary drivers of conflict in the region. Moreover, it is interlinked with many other drivers of conflict discussed in this report, as conflict actors in the ARMM often belong to multiple groups and frequently shift alliances (Strachan, 2015). Rido is a constant source of vulnerability for the province's citizens. The triggers of a Rido can be anything from slander, misdemeanor, debt fault, damage to property, and theft to more severe cases such as murder, land disputes, political rivalry, election-related conflicts, sex crimes, and accidents (Province of Lanao del Sur, 2020).

Most ridos start from simple disputes that can be settled locally using conventional conflict resolution mechanisms and religious approaches. However, a delayed justice system fused with poor governance at the local level usually escalates a simple conflict into a complex one, resulting in heightened armed conflicts between and permanent displacement of the families involved (BARMM, 2020). Pablico (2007) supports this, stressing that peace and order can trigger or hamper productivity.

In terms of Lawlessness

Table 11 presents the level of peace and order of lawlessness. The overall mean is 3.65, interpreted as high, implying that the lawlessness level was high.

Table 11. Descriptive statistics of the level of peace and order in the aspects of lawlessness

Indicators	Mean	SD	Description	Interpretation
1. Lawlessness, such as drug syndicates, impedes agricultural development in the municipality.	3.64	1.040	Agree	High
2. Some farmers are leaving for syndicates and other shadow businesses.	3.47	0.859	Neutral	Moderate
3. Some thieves steal the harvest from the farmers.	3.69	0.991	Agree	High
4. Armed group recruitment is widespread in mountainous areas.	3.74	0.893	Agree	High
5. Exploitation of some local armed groups.	3.50	0.930	Agree	High
6. Farmers face issues such as mistaken identity.	3.64	0.901	Agree	High
7. Help from the Government is minimal because of the presence of lawlessness in the area.	3.87	1.050	Agree	High
Over-all Mean	3.65	0.796	Agree	High

Lawlessness in Mindanao is responsible for thriving shadow economies, such as the trade in illegal drugs and weapons. While the shadow economies in the ARMM are linked to violence and conflict, some of them, such as cross-border trade in the Sulu Sea, also have the potential to contribute to peace because they provide livelihoods for fragile island communities (Strachan, 2015). Concepcion et al. (2003) report in the International Alert Organization stated that large areas of southwest Mindanao have been abandoned to lawlessness, so local communities and businesses are insecure. Pablico (2007) supports this, stressing that peace and order can trigger or hamper productivity.

In terms of Disagreements

Table 12 presents the level of peace and order of disagreements. The overall mean is 3.67, interpreted as high, implying that the level of peace and order regarding disagreement was high.

Table 12. Descriptive statistics of the level of peace and order in the aspects of disagreements

Indicators	Mean	SD	Description	Interpretation
1. International and local organizations are safe to aid farmers, even in remote farming areas.	3.82	0.801	Agree	High
2. Farmers of both genders feel safe to till their farms daily.	3.76	0.860	Agree	High
3. The LGUs send security enforcement to protect farmers during the conflict.	3.64	0.787	Agree	High
4. There are programs by LGUs that integrate peace and order into farming.	3.48	0.740	Neutral	Moderate
5. Locals do not welcome government intervention in land development in some areas.	3.52	0.783	Agree	High
6. Peace Education is being integrated into the school curriculum.	3.75	0.782	Agree	High
7. Religious scholars assist in mediating disagreements in the field.	3.74	0.862	Agree	High
8. An Estate Tax Amnesty is Imposed.	3.72	0.874	Agree	High
9. LGUs Provide housing for farmers.	3.54	0.776	Agree	High
10. Government agencies give aid to the Farmers.	3.81	0.716	Agree	High
Over-all Mean	3.67	0.550	Agree	High

The disagreement between the government and Moros showed that the narrative of the Mindanao people's ongoing fight for their right to self-determination contains the fundamental causes of armed conflict in that region.

The southern Philippines are engaged in a conflict in which they solidify their identity and call for meaningful governance in answer to the national government's failure to provide genuine socioeconomic progress, peace, and prosperity (Batac et al., 2019).

The conflict also stems from "historical injustices" and severe breaches of the Mindanao people's human rights. The Bangsamoro people and their non-Moro friends have fought to have their petitions for these historical injustices regulated and their inherent right to determine their own political and cultural path heard by the central government (Batac et al., 2019). The Philippine government initiated peace talks and obtained a peace agreement with the then-leading Muslim armed opposition group (MNLF) to stop the conflict and address the problems. However, armed confrontations broke out now and then between the Philippine military and the MNLF and with another Muslim armed opposition group (Moro Islamic Liberation Front or MILF). For every breakout of armed hostilities, thousands of non-combatants are caught in the crossfire and suffer displacement and other human rights violations (Mindanao Conflict: in Search for Peace and Human Rights, 2008).

Consequently, the security forces and the LGU in Lanao del Sur monitor three insurgent groups: the Maute Group, the BIFF, and the NPA. The ISIS-affiliated Dawlah Islamiyah also called the Maute Group, is seen as the most immediate security threat in the province after they staged the bloody attacks in a few towns in Lanao del Sur, including Marawi City, in 2017. Their followers still operate in the municipalities to the south of Lake Lanao, such as Butig, Pagayawan, and Sultan Dumalundong, and areas to the north of the lake, like Balindong, Marantao, and Piagapo (Lanao del Sur, 2021). The BIFF is a breakaway group of the MILF led by Ameril Umbra Kato; the group operates in Maguindanao Province with a few fellows from Lanao del Sur. Some BIFF members fought during the Marawi City in 2017 (Lanao del Sur, 2021), which implied that the level of peace and order regarding disagreement was higher, as indicated by the intensity of the mediating support provided.

3.4 Agricultural Development of Farm Production

Table 13 presents the agricultural development level of farm production. The overall mean is 3.75, which is interpreted as high. This data revealed that the participants have a high level of agricultural development regarding farm production. The high level of agricultural production has met Sustainable Development's goals, which entail sustainable resource utilization.

Table 13. Descriptive statistics of the level of agricultural development of farm production

Indicators	Mean	SD	Description	Interpretation
1. There is a rise in market demand for agricultural goods.	3.88	0.709	Agree	High
2. The harvest brings in enough money to meet production costs.	3.68	0.750	Agree	High
3. Considerable profit is not gained from farming in the area.	3.76	0.809	Agree	High
4. The return on investment in farming is high.	3.71	0.818	Neutral	Moderate
5. Oversupply of harvest is rare in the area.	3.70	0.664	Agree	High
6. Using new technology effectively helps farmers produce more.	3.89	0.727	Agree	High
7. A cargo vehicle is available from farm to market.	3.52	0.908	Agree	High
8. There are Contract Buyers in the Area.	3.99	0.894	Agree	High
9. LGUs assist Farmers in marketing their goods.	3.70	0.990	Agree	High
Over-all Mean	3.75	0.599	Agree	High

Agriculture in the Philippines is a vital sector of the economy, with crops like bananas, coconuts, pineapples, rice, and sugarcane being mass-produced for exportation. However, the challenge remains as it steadily runs into deficit amid a growing population. As of 2022, the sector employs 24% of the Filipino workforce, accounting for 8.9% of the total GDP (Statista Research Department, 2022). The agricultural sector generated a gross value added (GVA) of about 1.76 trillion Philippine pesos, equivalent to a 9.6 percent share of the country's gross domestic product (GDP). However, because of the prolonged lockdown imposed due to the coronavirus (COVID-19) pandemic and the natural calamities that occurred in the country, the sector's gross output contracted by 1.7 percent that year (Statista Research Department, 2022).

Middlemen play a crucial role in the supply chain of the Philippine agribusiness sector, linking farmers who produce agricultural products to consumers who purchase them. They provide various services such as transportation, storage, packaging, and distribution, which are necessary to get the products from farms to

markets. Middlemen act as intermediaries between farmers and consumers, enabling both parties to access each other and exchange goods and services (Nito, 2023).

3.5 Relationship Between Agricultural Development, Leadership, Agricultural Innovation, and Peace and Order

Table 14 presents the relationship between agricultural development, leadership, agricultural innovation, and peace and order.

Table 14. Analysis of the relationship between agricultural development, leadership, agricultural innovation, and peace and order

Variables	R	p-value	Interpretation
Farm Production	0.581	.000	Significant
Political	0.700	.000	Significant
Economic	0.652	.000	Significant
Collective Action	0.761	.000	Significant
Cooperative Agriculture	0.526	.000	Significant
Farming Methods	0.686	.000	Significant
Farming Practices	0.743	.000	Significant
Machineries and Equipment	0.878	.000	Significant
Farm to Market Roads	0.819	.000	Significant
Agricultural Infrastructures	0.819	.000	Significant
RIDO or Clan Feuding	0.697	.000	Significant
Lawlessness	0.697	.000	Significant
Disagreement	0.743	.000	Significant

*Correlation is significant at the 0.05 level (2-tailed).

As shown in the table, the variables farm production ($p < .000 < .05$), political ($p < .000 < .05$), economic ($p < .000 < .05$), collective action ($p < .000 < .05$), cooperative agriculture ($p < .000 < .05$), farming methods ($p < .000 < .05$), farming practices ($p < .000 < .05$), machinery and equipment ($p < .000 < .05$), farm to market roads ($p < .000 < .05$), agricultural infrastructures ($p < .000 < .05$), RIDO or Clan Feuding ($p < .000 < .05$), Lawlessness ($p < .000 < .05$), disagreement ($p < .000 < .05$) have probability values of lesser than the alpha value of 0.05 which implied that the said variables have a positive significant relationship with the participants' agricultural development.

The increase in the participants' agricultural development was significantly associated with the increased variables. The government is fully prepared to continue investing in Mindanao's future, but more than the government can finance Mindanao's long-term progress. The island region's private sector – its entrepreneurs and business leaders – must continue to make significant investments in its development, especially in those places where investments are most needed (DA Communications Group, 2021). The Organic Agriculture Act of 2010 (R.A. 10068) and its Implementing Rules and Regulations (IRR) Section 2 declared that organic agriculture in the Philippines should be promoted, spread, developed further, and implemented will reduce pollution and environmental destruction, prevent the depletion of natural resources, and further safeguard public health. Jointly with a nationwide educational and promotional campaign for their use and processing, as well as the adoption of organic agricultural systems as a practical alternative, a program for the promotion of community-based organic agriculture systems that include, among others, farmer-produced entirely organic fertilizers like compost, pesticides, and other farm inputs, shall be launched (Philippine Congress).

There is no better alternative than cooperation among farmers (Skreli et al., 2011). Banaszak explained that the same forms of cooperation in collective action in a similar environment can bring different results (Banaszak, 2008). A study made by DeSalva (2012) stated that forming local and organic agricultural cooperatives is one way to eliminate the barriers currently preventing local and organic farmers from doing business with midlevel institutions and, therefore, to help realize the health, economic, and environmental benefits that come from local and organic farming. Agriculture Secretary Dar (2021) was the Agro-Industrial Development Program (AIDP) launching keynote speaker who represented President Rodrigo Roa Duterte last November 16, 2021, in Wao and Amai Manabilang. Dar discussed the current condition of Philippine agriculture before the Bangsamoro Autonomous Region in Muslim Mindanao (BARMM) Ministers, local officials, SPDA's private business partners, and local farmers, "The use of modern technology can spur or accelerate the development of agriculture in the country," Secretary Dar was quoted as saying during his speech. The revised concept of development of the 26,000-

hectare-proclaimed property in the Municipalities of Wao and Amai Manabilang upon the reactivation of SPDA has been focused on establishing a special economic zone dubbed MinSEZ or Mindanao Special Economic Zone.

Farming methods are undergoing significant technological changes. New government regulations and the demand for more advanced, labor-saving technical solutions drive the change (OECD, 2001). The Sustainable Development Goals of the Food and Agriculture Organization of the United Nations were given in the "Innovation and the 2030 Agenda" (2018), emphasizing that family farmers are crucial to feeding a growing world population. Realizing the success of its International Year, which raised awareness of the importance of household farming, pastoralism, and smallholder farming in supporting smallholders, including pastoralists and household farmers, in particular women and youth in rural areas, The U.N. General Assembly recently declared 2019–2028 the United Nations Decade of household Farming. The U.N. General Assembly specifically addressed innovation in its ruling, noting "the important role of science, technology, innovation, and entrepreneurship in supporting smallholders, including pastoralists and household farmers, particularly women and youth in rural areas."

A new technology introduced in the province is the system; the pilot area for halal rice cultivation is the first to be covered by the solar-powered irrigation systems in Taraka, which will be fully operational before the end of August with the commissioning of four more solar-powered systems. Decent transportation infrastructure enables producers to obtain inputs, move their products over large distances, and increase the global market (Agricultural et al.). Numerous studies have illustrated the importance of paved highways on agricultural labor productivity. For example, Llanto has expressed that a one percentage point increase in the distance of paved roads as a ratio to the total length of roads is associated with an increase in agricultural labor productivity of PHP 285 000 per laborer differentiates from results for irrigation expansion, which has exhibited a positive but insignificant relationship with agricultural labor productivity (Llanto, 2013).

Rodriguez (2014) reported in an article that FMRs can increase local trade and productivity, reduce transportation costs of farm input and output, and minimize post-harvest losses. They connect farms and coastal areas to main roads, hence promoting agro-tourism. Like other public investments, rural infrastructure boosts agricultural productivity, spurs growth in rural regions, and results in more significant agricultural salaries and better nonfarm employment prospects. It is one of the primary drivers of conflict in the region. Moreover, it is interlinked with many other drivers of conflict discussed in this report, as conflict actors in the ARMM often belong to multiple groups and frequently shift alliances (Strachan, 2015).

Lawlessness in Mindanao is responsible for thriving shadow economies, such as the trade in illegal drugs and weapons. While the shadow economies in the ARMM are linked to violence and conflict, some of them, such as cross-border trade in the Sulu Sea, also have the potential to contribute to peace because they are essential in providing livelihoods for fragile island communities (Strachan, 2015). The disagreement between the government and Moros showed that the root cause of armed fighting in Mindanao could be found in the history of Mindanao peoples' ongoing struggle for their right to self-determination. A fight includes a claim of their identity and a request for meaningful governance in the face of the national government's negligence in realizing genuine social growth, peace, and development in the southern Philippines (Batac et al., 2019).

3.6 Predictor of Agricultural Development

Table 15 presents the results of multiple regression analysis for the variables that best predict agricultural development. As depicted in the table, the R-value is .994, which implies a solid positive relationship between the predictor variables and the participants' agrarian development. The R² value of .891 revealed that the predictor variables explained a sizable 89.1% variability of the participants' agricultural development. In addition, the P-value for the computed value of F is 0.00, signifying a significant relationship between the predictor variables and the participants' rural development. The best predictor of the participants' agricultural development was farm-to-market roads with the highest beta coefficient value of .371, followed by lawlessness (beta=.207), disagreement (beta=.199), agricultural infrastructures (beta=.126), economic (beta=.119), cooperative agriculture (beta=.097), and machinery and equipment

(beta=.077). At the same time, other variables failed to predict or did not directly affect the participants' agricultural development.

Table 15. Multiple regression analysis for the variables that best predict agricultural development

Variable	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Interpretation
	B	Std. Error	Beta			
(Constant)	0.107	0.081		-1.315	0.189	Not Significant
Political	0.011	0.029	0.013	0.387	0.699	Not Significant
Economic	0.103	0.031	0.119	3.307	0.001	Significant
Collective action	-0.055	0.031	-0.060	-1.786	0.075	Not Significant
Cooperative agriculture	0.094	0.033	0.097	2.829	0.005	Significant
Farming methods	-0.004	0.032	-0.004	-0.111	0.911	Not Significant
Farming practices	0.031	0.028	0.035	1.100	0.272	Not Significant
Machineries and equipment	0.069	0.028	0.077	2.475	0.014	Significant
Farm-to-market roads	0.342	0.035	0.371	9.880	0.000	Significant
Agricultural infrastructures	0.122	0.038	0.126	3.248	0.001	Significant
Rido or clan feuding	-0.041	0.029	-0.050	-1.422	0.156	Not Significant
Lawlessness	0.156	0.027	0.207	5.807	0.000	Significant
Disagreement	0.216	0.027	0.199	8.003	.000	Significant
R=.994 R ² =.891 F=261.18 P=.000						

The regression equation is $Y' = B_0 + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + B_5X_5 + B_6X_6 + B_7X_7$ or $Y = B_0 + B_1(\text{FMR}) + B_2(\text{L}) + B_3(\text{D}) + B_4(\text{AI}) + B_5(\text{E}) + B_6(\text{CA}) + B_7(\text{ME})$. Substituting the values, the regression equation was $Y' = .107 + .342X_1 + .156X_2 + .216X_3 + .122X_4 + .103X_5 + .094X_6 + .069X_7$

where;

Y' = Agricultural Development

X_1 = Farm to Market Roads

X_2 = Lawlessness

X_3 = Disagreement

X_4 = Agricultural Infrastructures

X_5 = Economic

X_6 = Cooperative Agriculture

X_7 = Machineries and Equipment

The equation implied that one point increased for farm-to-market roads, the participants' agricultural development increased was .342; one point increased for the improvement of lawlessness, the increase of agrarian development was .156; one unit increased for the advancement of disagreements the increased to agricultural development was .216; one point increased of agricultural infrastructure the agricultural development increased was .122; one point increased of economic the increased to agricultural development was .103; one point increased of collective action the increased to agricultural development was .094; and one point increased of machinery and equipment the agricultural development increased was .069.

Agriculture in the Philippines is an essential sector of the economy, with crops like bananas, coconuts, pineapples, rice, and sugarcane being mass-produced for exportation. However, the challenge remains as the sector steadily runs into deficit amid a growing population. As of 2022, the sector employs 24% of the Filipino workforce, accounting for 8.9% of the total GDP (Statista Research Department, 2022). The study by Kolaj et al. (2017) in Albania concluded that the growth and strengthening of the role of leadership in farming communities would also help promote and develop agriculture. It would also have positive effects, such as raising awareness of the degree of competence and quality of decision-making concerning the use of resources and rural development.

The government is doing what it must to shape programs for the farmers in the Philippines. These programs are continuously being honed and improved to adapt to the changes of time and to provide for the needs of our local farmers. Concrete solutions and consistent programs are how the government helps the farmers in the Philippines. (Secretary William Dar, 2021). The policy of liberating the importation of agricultural products must be studied or reconsidered to protect our farmers' welfare. The government must also investigate establishing local processing

industries (government-owned) that will absorb raw materials and provide a sure market for agricultural products so as not to leave prices in the hands of private buyers. Reducing the cost of production of various commodities is also a significant task that can be done by providing subsidies for agricultural inputs. The establishment of local industries producing production inputs should be studied to release farmers from their dependence on high-cost imported inputs (Cruz et al., 2020).

With products like bananas, coconuts, pineapples, rice, and sugarcane being mass-produced for export, agriculture is a significant economic sector in the Philippines. However, the difficulty persists as it constantly runs into a deficit due to the country's expanding population. In 2022, the industry employed 24% of the labor force in the Philippines and contributed 8.9% of the nation's GDP. (Department of Statista Research, 2022). Thirty-three (33) founding cooperators formed the Pamilyang Filipino Farmers Agricultural Cooperative (PFFAC). It comprises small-scale farmers, their families, and farm workers. Most of these small-scale family farmers are found in CALABARZON regions and come from the south and the north of the Philippines. These family farmers, who had previously been part of a social network, decided to create an agriculture cooperative to meet the requirements of family farmers, their families, and their agricultural workers and support the rural development of their respective farming communities. A family farm in the twenty-first century is the Pamilyang Filipino Farmers' community. They believe that family farming is a sustainable way to contribute to rural development (FAO, 2023).

Many approaches and indigenous farming knowledge worldwide remain undocumented and must be integrated into modern agricultural practices. Some indigenous knowledge stems from religious beliefs and superstitions, but much was derived from experiences and observations of farmers that were acquired through time and actual involvement in farming. These indigenous practices might have scientific bases and explanations. However, sadly, they are slowly being forgotten and partially abandoned due to socio-economic factors, such as the loss of inter-generational transfer of knowledge to the younger generation. Scientifically documenting and validating indigenous knowledge is essential because modern agriculture could learn much from it (Narciso, 2021).

What about government-supported food production programs? It is logical for any government to have a centerpiece program directed toward achieving food self-sufficiency or an adequate supply of food and other basic staples for the people. Food is a political issue in the Third World since it often determines whether a government succeeds or fails (Perlas, 1989). Conservation goals in nature farming are politically unwise. Program planning and implementation emphasize immediate impact as the overriding criterion. Activities that yield results in the long term get less priority (Mendoza, 1989). Chemicals (fertilizer and pesticides) and genetically uniform high-yielding cultivars provide immediate increases in production. Incentives and support services are designed and packaged for extension and delivery to the farmers. Soft loans, crop insurance, marketing, and technical assistance are generously provided as an incentive to farmers who will join the government in this massive food production program (Department of Agriculture, 1989).

Digital Agriculture encourages more if not all, farmers and fishers to register in the Registry System for the Basic Sectors in Agriculture (RSBSA) to promote e-commerce/digital platforms linking farmers and fishers with direct and institutional buyers. Implementing the Province-led Agriculture and Fisheries Extension Systems (PAFES) established a strong collaboration among the DA, LGUs, academe, and the private sector to bring extension services to the grassroots level. (Bejarin, DA-AFID 2022). When only limited resources are available to build and maintain road networks, one should use them most optimally. Pavements should be designed and constructed to sustain large numbers of heavy traffic loads for a long time without showing a significant amount of damage. Overloading, for example, is a severe problem in almost all developing countries (Molenaar, 2013).

Farm structures are the buildings used in farming operations, which may include facilities to house households and livestock, machinery, and crops. The basic unit of commercial agricultural operation, throughout history and worldwide, is the farm. Because farming systems differ widely, there are essential variations in the nature and arrangements of farm facilities. The buildings on a farm generally consist of the farmhouse, the dwellings of any boarders hired workers, and the various structures and facilities for agricultural operations (Martinot, 2022). According to one study, riding may seem like a custom deeply embedded in religious and moral beliefs. However, current literature suggests it has a strong social dimension and is a social norm. Based on literature, it can be

inferred that people see that families or clans retaliate in the form of violence when they get offended and that the members support the family or clan in its pursuit of justice (Limba, 2020).

Despite having abundant natural resources and a promising agricultural sector, the 24 million people who make up the Mindanao Island group have long experienced the highest poverty rates in the Philippines. Mindanao is susceptible to natural catastrophes that cause relocation like the rest of the country. Conflicts between the military and armed groups that reject or withdraw from government-led peace talks also contribute to displacement in Mindanao. In addition to violence, displacement, and poverty, Mindanao's livelihoods and economic potential are disrupted by clan politics, a shadow criminal economy, and inter-communal tensions, necessitating a nexus strategy to respond. Because of the turmoil and bloodshed, over 100,000 people have been forced to relocate permanently to Mindanao. Moro resistance against outside forces has been in Mindanao for four centuries, and since the late 1960s, there has been a war between the Philippine Government and armed groups. In Mindanao and other parts of the nation, the communist New People's Army is active. Since 2014, Mindanao has been under the control of the Islamic State. Pro-Islamic State terrorists and the Philippine military engaged in a five-month siege of Marawi City in Lanao Del Sur province in 2017. The violence displaced Four hundred thousand people, leaving homes and infrastructure in ruins or damaged in adjacent communities. Even while the reconstruction is ongoing, some 16,000 IDPs still have not been allowed to go home four years later due to the damage.

The creation of the Bangsamoro Autonomous Region in Muslim Mindanao (BARMM) in March 2019 was a significant development in the process of resolving the disagreement between the Philippine Government and several groups that sought autonomy, primarily the Moro Islamic Liberation Front (MILF). The country's poorest region is called BARMM. In BARMM's most impoverished provinces, Lanao Del Sur, Maguindanao, and Sulu, wars between the military and armed organizations like the BIFF and the Abu Sayyaf Group, which has ties to the Islamic State, nevertheless happen often. (2022, San Juan).

The story of the Mindanao people's ongoing fight for their right to self-determination reveals the origin of armed disputes in that region. In response to the national government's failure to achieve genuine social progress, peace, and development in the southern Philippines, a fight that asserts their identity and demand for significant governance has arisen. The conflict also stems from "historical injustices" and severe breaches of the human rights of the Mindanao people. Other conflicts affect the entire region besides the one between the Government of the Philippines and the armed organizations in Mindanao, primarily the Moro Islamic Liberation Front. Clans, criminal gangs, political elites, and multiple armed groups are all involved in the complex struggle in Mindanao. Although previous governments undertook to end these disputes, the main issue is the denial to address the Mindanao people's justifiable fight for their "right to self-determination, dignity, and governance," which is a significant obstacle to long-term stability (Maarten et al., 2019).

4.0 Conclusion

This study underscores the pivotal role of leadership in advancing agricultural development in Lanao del Sur, particularly through the strong support of Local Government Units (LGUs) in monitoring production, providing training, and fostering cooperative initiatives among farmers. While most LGUs in the province demonstrate substantial support, a few exhibit lower engagement, which can be mitigated through education on the importance of agriculture and alignment with national policies. The province's high level of agricultural innovation, characterized by the adoption of advanced farming methods, machinery, and resilient infrastructure, reflects the farmers' willingness to embrace new technologies while preserving traditional practices. This adaptability is critical in enhancing their livelihoods and sustaining agricultural productivity.

However, the province continues to face challenges related to clan feuding (Rido), lawlessness, and security concerns, which are being addressed through the concerted efforts of police, military, local leaders, and religious groups. The study recommends the creation of a dedicated task force comprising the PNP, the Army, and LGUs to mitigate these issues further. Additionally, integrating Peace Education across all educational institutions is proposed as a long-term solution to foster a culture of peace and reduce conflict.

The study also identifies farm-to-market roads as the most significant predictor of agricultural development, highlighting their importance in connecting farmers to markets and enhancing overall quality of life. Proper road maintenance, supported by local and national authorities, is essential for sustaining this critical infrastructure.

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