Social, Economic and Environmental Contributions of Agribusiness Extension Activities on Rural Communities

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ABSTRACT

Agribusiness extension activities play a vital role in strengthening rural communities by enhancing livelihoods, building capacities, and promoting sustainable practices. Higher education institutions, particularly State Universities and Colleges, are mandated to implement extension programs that contribute to socio-economic development and environmental sustainability. Despite the growing implementation of agribusiness extension initiatives, limited studies have comprehensively assessed their social, economic, and environmental contributions at the community level. This study was conducted to address this gap by evaluating the contributions of agribusiness extension activities implemented by the Department of Agribusiness of the University of Southern Mindanao in selected rural communities in Kabacan and Midsayap, Cotabato.

The primary purpose of the study was to determine the social, economic, and environmental contributions of agribusiness extension activities to their beneficiaries. Specifically, it aimed to describe the socio-economic profile of the respondents, assess the knowledge, skills, and practices acquired from the extension activities, and evaluate the perceived social, economic, and environmental contributions of these initiatives. The study employed a descriptive research design and utilized complete enumeration involving 120 beneficiaries from four extension programs, namely I-CARES, CBDEM 3Ps, CBDEM Delicacies, and CBDEM Promotion of Halal Kagikit. Data were collected using a modified survey questionnaire and supported by pre-test and post-test results. Descriptive statistics such as frequency, percentage, mean, and mode were used, while the Shapiro–Wilk and Wilcoxon signed-rank tests were applied to determine significant changes in knowledge levels.

Results revealed that most beneficiaries were female, married, and belonged to low-income households, indicating the relevance of agribusiness extension activities in supporting economically vulnerable groups. Findings showed that three extension programs significantly improved beneficiaries' knowledge, while one program exhibited no significant change due to prior exposure. Beneficiaries demonstrated advanced to expert levels of technical and business-related skills, with most practices applied on a daily basis. Socially, the extension activities enhanced community participation, self-confidence, and social inclusion. Economically, they contributed to income augmentation, improved self-employment opportunities, and strengthened livelihood sustainability. Environmentally, the programs promoted responsible production practices and increased environmental awareness, although waste management practices require further enhancement.

In conclusion, agribusiness extension activities significantly contributed to the social empowerment, economic improvement, and environmental awareness of rural beneficiaries. These findings highlight the effectiveness of university-led extension initiatives in promoting sustainable agribusiness development and underscore the need for continuous program enhancement and monitoring.

Keywords: Agribusiness Extension, Rural Development, Livelihood Improvement, Environmental Sustainability, Community Empowerment.

INTRODUCTION

In alignment with the University of Southern Mindanao's mission "To help accelerate socio-economic development, foster harmony among the diverse cultures in the Southern Philippines, and enhance the quality of life through instruction, research, extension, and production," the Department of Agribusiness has initiated extension activities designed to help rural communities in improving their quality of life. Under Republic Act 7722 (1994), the Commission on Higher Education (CHED) mandates that higher education institutions address the necessity for social reform. Educational institutions play a significant role in providing knowledge, skills, best practices, and material resources to community members in order to elevate their quality of life.

Agricultural extension services are essential for connecting research with practical farming, enabling the transfer of knowledge, technologies, and best practices to farmers. Nevertheless, several research gaps have been recognized within the agricultural extension domain. There has yet to be a study specifically examining the extension services provided by the Agribusiness Department. Existing research has primarily concentrated on the overall College-based extension program. Moreover, traditional criteria for measuring the effectiveness of extension services often focus solely on yield increases or adoption rates of technology. Furthermore, these one-dimensional evaluations may overlook the intricate, interrelated challenges present in modern agriculture. An all-encompassing evaluation framework that includes environmental, social, and economic indicators is required to thoroughly assess the impact of extension services (Abhijeet et al., 2023). Additionally, a research gap regarding unified agricultural extension systems has been noted, which impacts service delivery and coordination. The research highlighted the necessity for improved monitoring and integration of extension activities to enhance their effectiveness.

The results of this study can guide the LGU in designing stronger collaborations with the university. Insights from the beneficiaries' experiences can help the LGU identify priority areas where support, training, and resources are most needed. Through informed partnership and joint programs, the LGU can enhance economic opportunities, improve service delivery, and support community-based enterprises that contribute to local development.

This study serves as a useful reference for future researchers who wish to explore university-based extension work, agribusiness development, or community engagement. It provides baseline data, methodological insights, and contextual understanding that future researchers can build on, replicate, or expand. It also highlights gaps and emerging needs that can be addressed by subsequent studies.

Individuals who wish to venture into extension work can benefit from the practical insights generated by this study. It offers an overview of how extension programs operate, what challenges are encountered, and what types of interventions are most effective. This knowledge can help aspiring extension workers develop a deeper appreciation of the field and prepare them for meaningful participation in community-based initiatives.

Objectives

This study aimed to comprehensively evaluate the contributions of agribusiness extension activities to rural communities. Specifically, it sought to:

1. To describe the socio-economic profile of the beneficiaries in terms of age, sex, civil status, household income, educational attainment, and employment status.
2. To determine the level of knowledge gained by the beneficiaries before and after participation in agribusiness extension activities.
3. To assess the level of technical and business-related skills acquired by the beneficiaries.
4. To examine the extent to which beneficiaries apply the acquired skills in their daily livelihood practices.
5. To evaluate the perceived social contributions of agribusiness extension activities in terms of community participation, empowerment, and social inclusion.
6. To evaluate the perceived economic contributions of agribusiness extension activities in terms of income, employment, and livelihood improvement.
7. To evaluate the perceived environmental contributions of agribusiness extension activities in terms of sustainable practices and environmental awareness.

Study Limitations

This study is subject to several limitations that should be considered when interpreting the findings. First, the study utilized a descriptive research design, which limits the ability to establish causal relationships between agribusiness extension activities and observed outcomes. Second, the data were primarily based on self-reported responses from beneficiaries, which may be influenced by response bias or social desirability bias.

Third, the study focused only on beneficiaries from selected rural communities in Kabacan and Midsayap, Cotabato, which may limit the generalizability of the findings to other regions or populations. Fourth, although complete enumeration was employed, the sample size was relatively small (N=120), and confined to participants of specific extension programs.

Additionally, the assessment of knowledge relied partly on pre-test and post-test results, which may not fully capture long-term knowledge retention. The study also did not include a control group, making it difficult to isolate the effects of the extension programs from other external factors.

Lastly, environmental contributions were assessed based on perception rather than direct measurement of environmental outcomes, which may not fully reflect actual environmental impact. Future studies may incorporate longitudinal designs, larger sample sizes, and objective environmental indicators to provide a more comprehensive evaluation.

LITERATURE REVIEW

University-Led Extension Activities

According to Agrawal and Gupta (2023), extension activities termed as engagement, learning activities that involve as higher education institutions in wider communities. Community engagement activities is very important to the beneficiaries and individuals engaging this kind of event. However, Gusmao (2020), highlighted that community engagement activities gives as essential bridge between formal education. This activity gives an understanding and overcoming obstacles as contributing to the students and communities. As of it, community engagement programs give a strategy in overcoming challenges between individual that includes community specific needs (Chavez, 2023).

Dantas and Guenther (2021) stated that Higher Education Institutions gives a vital role in the local community. Align with this, community activities linked together that has a connection of societies along with educational training. In Laguna State Polytechnic University's extension established 66% individuals such learning abilities. As Niegas (2024), highlight that community activities gives several contributions that amplify role of community activities vest their skills and build a self-sufficiency. However, Quijano Pagutayao et al. (2024) says that participant engage in activities has many learning after the community activities, and with the skills, individuals agree that it can be improved during in the activities.

Li et al. (2024), stated that community engagement activities give many contributions in terms in community through learning, sustainability, and skills development. As of this, farm outreach programs have shown of increasing a 30% adopting a thing that needed in farm and foster in having an agricultural practice. However, community activities strengthen individuals by increasing their skills in engaging these activities and to have a quality of life (Corpuz et al., 2022).

Agribusiness Extension Activities

In 2022, the college have initiated a project titled "Community Based Development and Economic Mainstreaming (CBDEM) on the Promotion of Halal Kagikit for Certification". The goal of the project was to promote the halal chicken Kagikit, a traditional dish from Maguindanao consisting of seasoned chicken flakes (Kagikit). The Agribusiness Department led component 2 of this project titled "Method Demonstration for Halal Kagikit Production". This activity occurred on Barangay Kayaga, Kabacan, Cotabato on November 3, 2022, where the beneficiaries are the Kayaga Women's Organization. The Processing technology for Kagikit was derived from the research titled "Maguindanaon Food Products and Delicacies: Standardization and Promotion

for Commercialization". It was noted that the same beneficiaries had received training on Kagikit Processing as part of their activities in 2021.

In the meantime, the Agribusiness Department, together with the Agribusiness Society Officers, carried out a product testing to assess the acceptability of Kagikit using sensory evaluation criteria. A total of 115 respondents were easily chosen to assess the acceptability of the product (Kagikit). The finding indicated that the taste and aroma of the product received an "Like Extremely" rating from the respondents, while the appearance and texture were rated as "Like Very Much". Overall, the general acceptability of the product was rated as "Like Extremely" by the respondents. One major suggestion from the respondents was to create a spicy version of "Kagikit". Additionally, there was a recommendation to enhance the product's texture (Gonzales et al., 2021).

Moreover, Islamic Relief-Worldwide Philippines (IRW-Ph), a faith-based international humanitarian and development organization, focused on addressing the needs of the marginalized populations and communities partnered with the College of Business Development Economics and Management (CBDEM) for the implementation of the project titled "Islamic Relief's Covid-19 Adaptation and Recovery through Economic and Social Protection and Support Project (I-CARES)". The goal of the I-CARES project is to enhance the socio-economic conditions and protection measures in five (5) barangays in the Municipality of Midsaysap, Cotabato located in the Bangsamoro Autonomous Region in Muslim Mindanao (BARMM), specifically the Damatulan, Kadigasan, Nabalawag, Kadingilan, and Kapinpilan. The Agribusiness Department conducted training on Social Enterprise Development last November 9,10 and 16, 2022 at Kidapawan City which was participated by by fifty (50) women beneficiaries.

The topics discussed include Business Concepts, Identifying and Selecting Business Opportunities, Business Ideation using the COSTAR Model, and Business Plan preparation. Output of the training was the development of business plan for the five (5) women organizations which was presented in the last day of the training. Moreover, series of consultations were held as part of the mentoring and coaching activity for the final draft of their business plan, intended for submission to Islamic Relief-Worldwide Philippines for funding. Each organization was granted Php 200,000 as initial capital for the implantation of their respective proposed businesses.

With this funding, they were able to implement their business plans: the Nabalawag Women Organization engaged in goat production; the Kadingilan Moro Women Association offered chair and table rentals along with food catering services; the Damatulan Moro Women Organizations focused on tables and chairs rentals; the Kadigasan Moro Women Organization provided rental services and event decorations; the Kapinpilan Moro Women ventured into tables and chairs rentals, as well as tailoring services. Moreover, March 13-14, 2023, the Social Enterprise Evaluation and Validation, along with consultations, took place with beneficiaries in Midsayap, Cotabato (Fajarito et Al., 2022).

In 2023, the college initiated a project named "Production, Processing and Positioning of Coco-based Products for Collaborative Barangay-Based Development and Economic Mainstreaming (3Ps-CBDEM)," which runs from January to December 2023. The objective of this project was to promote cooperative barangay-based development and economic inclusion in Barangay Dagupan, Kabacan, Cotabato. The Agribusiness Department led component 2, titled "Skills Enhancement and Production of Coco-based Products," where the Dagupan Agrarian Reform Beneficiaries Multi-Purpose Cooperative (DARB-MPC) was trained in product development, coco-based product processing, good manufacturing practices, food safety protocols, and conducting cooking demonstrations of virgin coconut oil (Vildac et al., 2023).

In 2024, the College launched the project "Delicacies Capacity Building Demonstrations and Enterprise Development of Maguindanaon Delicacies (CBDEM)" from January to December of the same year. This initiative aimed to enhance skills, demonstrate techniques, and foster enterprise development among beneficiaries through the production of Maguindanaon Delicacies in Kabacan, Cotabato. The Agribusiness Department faculty led two key components of the project, with Dr. Esmaira G. Gunsayan as the advocate for the "Capacity Building Activities" component, while Dr, Irving T. Fajarito Jr. took charge of the Business Plan Enterprise Development" component. The Kabacan Moro Women's Organization, Inc. (KMWOI) served as the project's beneficiaries. As part of the project, the Agribusiness Department organized a seminar focused on

business planning, featuring two resource speakers from the department. During this training sessions, Agribusiness students assisted in facilitating the training, enabling the participants to identify their needs for establishing businesses centered around the sale of Maguindanaon delicacies (Gacus et al., 2024).

Social Contributions of Agribusiness Extension

Department of Science and Technology (2017), highlighted that the Higher Education Institution (HEIs) serves an essential function by associative in government activities into the provincial communities. In this situation, they only not provided but also obtain in community activities. This community activities are very important in every individual to enhance their skills and improving their economy. This finding will be turn to expensive goods and services that move forward to living and financial conditions of individuals in communities. Evidently, this model shows the better way to fulfill their duty for tax payers (Sermona et al., 2020).

Additionally, Dai et al. (2024), stated that University agricultural extension is an important structure that vest the farmers by giving a straight passage to the earliest agricultural technologies and techniques that made by higher educations. These new methods will rise up to common governmental precedency. Community engages activities in Philippines expose that those precedencies greatly increase their learnings and competence in their communities, spreading health awareness and assist to prevent youth and engaging community activities. The respondents recognize the benefits take from activities but it gives emphasis to the need of extension activities for proceeding the betterment for having a better impact in the community stated by (Dugyon, 2016). Additionally, the Lyceum of the Philippines University Batangas, community engagement activities increase in influencing on society through practices and wellness education and activities. These activities cooperate to vest persons, volunteerism, and increasing strong community. (Malibiran, 2023).

In the study of Paulican and Garcia (2023), says that higher education in the Philippines establish that communities plan clearly increases the learnings and practices of the respondents in the communities. Respondents stated that strong personnel organizations between the engagement of this activities. Community engagement activities plays a significant role in bridging a financial source, refine the significance, behaviors, and relevance within people. Community engagement activities includes literary, wellness promotion and better living that transmit for good quality of activities. These activities establish to refine beneficiaries' life (Cristobal, 2023). Participant has high self-reliance, has better community connections in engaging community programs (Gabutin et al. 2024). These activities help dwelling community problems including financial difficulties, inoccupation that exchanging to proper and balanced community (Batoon, 2023).

According to Dela Cruz et al. (2025), individuals discursive in community engagement activities stating a better person and learning improvements. These activities cooperate to the participants sociable organizations to turn into prolific participants which highlighting financial problems. The study reported that increasing of sharing information's, allocating resources, and engagement of participants. This program will increase learning progress, developing practices between participants and beneficiaries, giving the better and understandable information's in engaging community activities.

Economic Contributions of Agribusiness Extension

According to Danso-Abbeam et al. (2018), they emphasized that in agricultural livelihood, community activities are the important procedure for spreading an information about farming practices, patronizing community learning programs, and providing farmers with essential capability. These community engagement activities are not just as good in beneficials, but they are expecting to clearly and support in producing farm output., high farm profit, relieve difficulties, and decreasing food supplies. However, Kumar and Shaijumon (2023) declare that community engagement program extremely increases the difficulties of rice farmers, beyond that farmer is not satisfied on what they have. It indicates that, when there is excellent betterment, community services make a definite failure in farm competences.

Community farming services is valuable for decreasing of being poor and increasing agricultural productiveness around the world. They successfully fight the difficulties of not enough food by mitigating of sharing new tools, supporting adult learnings, and fascinating farmers in having new learnings in extension activities. These

activities support the competences in farming programs, providing farmers a new learning to tackle with their defiance, and helping researchers to build a workable tools and innovations (Maulu et al., 2021). Community engagement activities frequently focus to build skills, and business training. However, community activities beneficiaries choose to pursue business that exposed those entrepreneurial practices, money management skills, and access to loan that greatly cooperate in successing businesses and decreasing difficulties among participants (Valle et al., 2022). Additionally, Terano and Tomenio (2025), established a practices, protections, and community activities that strongly connected with specific communication and having a strong effect in the participants. In terms of practices, protections, and community activities signify a connection with both in improving quality of life and financial conditions.

In the study of Marcos (2021), he has emphasized the best training amidst SUCs in applying IGPs, give emphasis to the significance in controlling, evaluating, engaging, and good leadership. His research reported that effective IGPs not only generating profit but serving also a maintained community activities emphasis to students through early learning. However, it investigating that IGPs at Philippine state University in Davao Region manage from 2016 to 2020 stating that growing crops is first sources and giving a better profit of the farmers.

Extension services support agricultural productivity by increasing farmers' knowledge, and accepting an advanced technologies and practices and processes called as the Awareness-Knowledge-Adoption-Productivity (AKAP) sequence. The studies revealed that good relationships between the strength extension services and amplify in productivity, leads to have a greatly farm incomes. Internal rates of return on investments in extension can vary from 5% to over 50%, with approximately 58% (Evenson, 2016). Poole (2023) emphasized also that extension activities gives both direct and indirect economic benefits. Direct effects encompass job creation, rising wages, and local economic stimulation through spending on goods, services, and event organization. Indirect effects arise from enhanced productivity, reduced risks, and better human capital through education and training. However, Setsoafia et al. (2022), indicated that economic contributions such as farm income, crop sales, and access to technology play an essential role in shaping farmers needed for extension services. These are influencing the effectiveness and adoption of extension programs, implying that customized strategies tailored to local socio-economic conditions can improve better results.

Environmental Contributions of Agribusiness Extension

Environmental extension refers to the integration of environmental education and practices within our traditional extension frameworks. While the classic extension programs have prioritized technology transfer, education and human resources management, there is an increasing recognition of the need to obtain the environmental objectives such as conservation, pollution reducing methods, and sustainable resource use into the extension activities (Chaithrashree et al., 2019). State Universities and Colleges (SUCs) had been significant in promoting environmental sustainability through extension programs aligned with the Sustainable Development Goals (SDGs). For instance, the kolehiyo ng lungsud ng Dasmariñas (KLD) had developed a sustainability-informed research and extension framework that helps integrates the localized SDGs into its idea (Sayson, 2024).

The Higher Education Institutions (HEIs) in the country has been instrumental in conducting the GMP trainings sessions that aimed to enhancing food safety and environmental sustainability. For instance, the HEIs in Region XI, in collaboration with Davao food safety ThinkTank Inc., organized a three-part webinar series on the GMP, covering topics such as personal hygiene, sanitation practices, and food safety hazards. These activities aimed to assist the micro, small, and medium enterprises (MSMEs) in complying with the food safety systems, thereby promoting environmentally responsible manufacturing practices. Similarly, the DOST Region VII has conducted trainings and seminars in Cebu City, focusing on enhancing the understanding and implementation of GMP among food manufacturing firms and supervisors, and business owners. These initiatives underscore the role of extension activities in fostering a positive environmental consciousness within the manufacturing sector (DOST, 2024).

Institutional extension services played an important role in conserving environmental in the Philippines. Sepe (2025), highlight the significance of participatory approaches in developing policies ghat are productive and culturally fit. The study emphasizes productive case studies where extension services led to effective environmental results, such as developed land management and resource preservation, by successful information

dissemination and focus on application of the said knowledge. Research by Esparza et al. (2024) examined the important role of Small and Medium-sized Enterprises (SMEs) in conservation of environmental by green business techniques, eco-innovation, a corporate social responsibility (CSR). The study found that that initiating green business techniques positively affect and influenced eco-innovation practices and performance of the environment. Moreover, CSR acted as a moderating determinant, improving the similarities between environmental outcomes and green techniques or strategies.

According to Ferdousi et al. (2024), studied that agricultural extension and advisory services (EAS) have been acknowledged as important in helping the farmers especially smallholders, adapt to climate change-smart agricultural practices that developed resilience and decline the emissions. These comprised promoting enhanced water management, and important use of inputs to reduce environmental footprints. Extension systems also manage capacity building and policy creation to support farming practices. They act as intermediaries linking farmers with researchers and policymakers, enabled the testing and spared out of locally appropriate technologies and management technologies that focus on environmental challenges (Odeleye, 2018).

Knowledge Acquired from Extension Activities

Extension activities have contributed to the acquisition of practical knowledge by students and faculty through the community participation, mentorship, workshops, and applied research projects. For example, teacher education activities incorporate research skills, mentorship, workshops, and symposiums to enhance students in their research capabilities and confidence in presenting their findings, which are part of the extension related knowledge gains (Hucalinas, 2025). Technology-based extension programs also can contribute to the transfer of knowledge, and in enabling beneficiaries to apply new technologies and business related-skills to improve local business and community welfare (Luciano & Olipas, 2022).

Extension and Community Services (2025), study reveals that extension activities play as a vital role in providing the beneficiaries with the practical knowledge in business management and livelihood development. Through the initiatives the beneficiaries gain skills in profit analysis, feasibility study preparation, and the application of basic business principles to help improve small businesses and livelihood projects. These programs help beneficiaries make informed economic decisions and enhance the viability of the income-generating initiatives. In addition, extension activities highlight community organizing and social development, enabling the beneficiaries to collaboratively help and address local needs, empowerment, sustainable development, and fostering self-reliance. However, the beneficiaries also acquire the applied knowledge through the appropriate transfer of technologies and practices derived from research and through technical studies. This knowledge is delivered through a structured methods such as hands-on application, making extension activities a valuable alternative to the educational process.

Llenares and Deocaris (2018), have assessed the evaluation of a community extension activities in the Philippines, it has highlighted that the beneficiaries have a perceived significant gain in their knowledge, attitude, and lifestyle improvements after participating in training programs. The study has underlined the importance of community partnerships, assessment of needs, and practical education to empower the beneficiaries more effectively. Beneficiaries often develop a leadership skill, social responsibility, and skill to be collaborative through the participation in the extension activities, which will contribute to the sustainable community development and empowerment. These activities have combined beneficiaries and students to improved communication skills, social issues, and enhanced community health, and environmental awareness. The beneficiaries have gained the practical knowledge in health, hygiene, environmental conservation, and social responsibility through theses engagements in extension activities (Extension activities & achievements, 2020).

Extension activities involve packaging, demonstration, and application of appropriate technologies, tools, and materials and process created through technical studies and research. These also includes community organizing, and work development which serve as alternatives to educational processes that create true to life teaching learning experiences for both beneficiaries to improve production, community institutions, and the overall quality of life. It also has enhanced the academic and research programs of HEIs by helping the provide a real-world context and the feedback loops (Extension Services Operations Manual, 2025).

Skills Acquired from Extension Activities

Research published by De Castro et al. (2025), shows the effectiveness of extension-related activities in increasing the capability of the beneficiaries. The finding indicated an improvement in instructional competence, job attitude, and technical skills as outcomes of the participation in these programs. These results underscore the importance of continuous skills development through extension programs to empower the beneficiaries and support their professional growth.

According to Salazar (2020), states that community extension activities of Camarines Sur Polytechnic Colleges, found that the beneficiaries gained a valuable skill across several key areas. The programs have offered trainings in livelihood programs such as crafts, sewing, and food processing which enabled the participants to improve their income-generating capability. Health education activities helps in enhancing their knowledge of basic health care and hygiene practices, helping to better contribute to their community well-being. Computer literacy training provided beneficiaries with essential digital skills, improving their efficiency in employment readiness and communication. Furthermore, advocacy-related activities promoted social awareness and encourage the community to become participative. The study concluded that extension activities had a positive satisfactory contribution on both the social and economic aspects of the beneficiary's life, showing that the skills and knowledge gained through these programs can contribute meaningfully to the community empowerment and development. Beneficiaries develop quality of a leader, including management skills, problem solving, critical thinking, and decision making, through active involvement in planning and implementing extension projects (Bhambu, 2022).

Natividad-Sancho et al. (2024), reviewed that extension activities involve direct engagement with communities, which helps improve communication and interpersonal skills. Beneficiaries learn to adopt information effectively, collaborative with the different groups, and develop social awareness and empathy. This connects with the results from the findings from educational interventions that highlight the extending learning time and community interaction as means to improve educational attainment and social skills. Research shows that extension programs significantly help increase the beneficiary's capacity and knowledge. For example, technology-based extension activities have been found to help improve the beneficiary's confidence, knowledge, and ability to generate income or start a new business. Training combined with demonstrations and literature have been proven to be highly effective in increasing the knowledge and skills among the beneficiaries, with knowledge increases up to 319.71% reported in some cases (Singh et al., 2018). The active participation in extension activities cultivates critical thinking and leadership abilities. Students and the beneficiaries are often tasked with planning, managing resources, and decision making, which enhances their problem-solving ability. A systematic review of skill acquisition in various contexts notes that experiential environments for learning, such as extension programs, are effective in developing higher-order leadership and thinking competencies (Di Pietro, 2022)

Practice Acquired from Extension Activities

According to Aloroy and Dueñas (2024), the beneficiaries of extension activities develop a practical technical skill, such as budgeting and enterprise planning in agribusiness, which help them to manage small and improve their income. These study states that many beneficiaries who went in agribusiness training successfully applied the skills to their business. This was reflected in their income and improved financial stability, and self-sufficiency in some communities. Additionally, Eastern Samar State University (2019), highlight the importance of livelihood skills training, which allows the beneficiaries to directly improve their income and living conditions. The study found that beneficiaries in agribusiness extension and vocational training programs reported an increased access to entrepreneurial opportunities, leading to economic growth in their households.

Beneficiaries often practice leadership skills, including critical thinking, decision-making, and problem-solving, as they enter in the program implementation and community activities. Extension programs employ social management skills, enabling the beneficiaries to better organize and manage community resources and initiatives. However, beneficiaries report a gain in personal qualities such as self-confidence, responsibility, and to a positive attitude towards community involvement. Extension programs often helps to increase a sense of social responsibility and civic engagement, empowering beneficiaries to participate actively in community

development. Many beneficiaries' express fulfillment with the extension activities and improvements in their overall well-being and empowerment (Papagiannis & Pallaris, 2024).

METHODS

Study Design

This study utilized a descriptive research design to systematically gather, quantify, and examine data that outlined the social, economic, and environmental contributions of agribusiness extension initiatives in the selected rural communities. The design was deemed appropriate for the study as it allowed for the systematic evaluation and analysis of the perceived social, economic, and environmental contributions of agribusiness extension activities in the rural communities without manipulating the variables.

The Respondents

The study is focused on agripreneurs who served as the primary beneficiaries of the agribusiness extension activities implemented in selected rural communities in Kabacan and Midsayap, Cotabato. A total of 120 beneficiaries participated in the assessment, representing four extension programs: I-CARES (75 beneficiaries), CBDEM Halal Kagikit Promotion (15), CBDEM 3Ps (15), and CBDEM Delicacies (15). These agripreneurs were engaged in various training, mentoring, and capacity-building interventions designed to enhance their agribusiness knowledge and skills, making them key stakeholders in evaluating the effectiveness and impact of the extension initiatives.

Sampling Procedure

This study did not employ any sampling technique because the entire population of the beneficiaries of the extension activities conducted by the department was included as respondents. Therefore, the study employed complete enumeration, wherein all identified beneficiaries of Agribusiness extension activities were surveyed. A master list of participants was obtained from the Agribusiness Department, which had facilitated and documented the extension activities in the area, to ensure that every qualified respondent was included in the study.

Research Instrument

In this study, the researcher used a modified survey questionnaire as the primary tool. The questionnaire was structured into three (3) parts. Part I focused on the socio-economic profile of the respondents. Part II addressed the skills and practices gained from the extension activities. Part III explored the social, economic, and environmental contributions of these extension activities. The secondary source are the pre-test and post-test answered by the beneficiaries and was used as determinant for the knowledge acquired by the beneficiaries.

Data Gathering Procedures

The University of Southern Mindanao's ethical guidelines for research were followed in conducting this study. It was carried out to ensure that everyone who participated in the study was protected in their rights and safety. Additionally, the study was conducted to guarantee the accuracy and integrity of data collection and processing. Prior to conducting the study, the researcher sought clearance from the ethics committee through the College Research Coordinators (CRC) office. After the issuance of the Exempt for Review Certificate by the CRC, the researcher began collecting the data needed for the study. In engaging with the respondents, the researcher upheld impartiality, objectivity, and all applicable codes of conduct. This involved obtaining the respondents' consent and ensuring that they were informed about the study's objectives and the reasons for their participation, particularly during data collection.

The researcher gathered both primary and secondary data. The survey questionnaire served as the primary source of quantitative data for the study. Secondary data sources included journals, articles, the internet, books and the pre-test and post-test. The researcher first submitted a letter to the adviser for review and approval. The researcher personally coordinated with the Department Chairperson to request a list of extension activities

conducted and the names of the beneficiaries. Furthermore, the researcher coordinated with the Barangay Captain and Presidents of each organization to conduct the research thoroughly and introduced himself while explaining the purpose of the study. Prior to distributing the survey questionnaires, the researcher provided a clear explanation to the Presidents regarding the purpose of the instrument and the proper way to answer each section to ensure accurate and consistent responses. Lastly, the researcher compiled the data and tabulated the results.

Data Analysis

The researcher analyzed the data using descriptive statistics. Specifically, frequency, percentage and mean were used to determine the socio-economic profile of the respondent-beneficiaries, determine the skills, and practices acquired from the Agribusiness Extension, as well as to assess the social, economic, and environmental contributions of agribusiness extension activities. For the knowledge acquired the researcher used Wilcoxon signed-rank test and Shapiro-wilk test to determine if the extension had a significant contribution to the knowledge of the beneficiaries.

The skills acquired from the Agribusiness Extension were rated using a 4-point Likert scale. The mean responses were interpreted as follows: 3.26 – 4.00-Expert; 2.51 – 3.25-Advanced;1.76 – 2.50-Intermediate; 1.00 – 1.75-Beginner.

The frequency of practice acquired from the Agribusiness Extension was analyzed using mode and interpreted using the daily, weekly, monthly, and as needed as the qualitative description.

The social, economic, and environmental contributions of the Agribusiness Extension were also rated using a 4-point Likert scale. The mean responses were interpreted as follows: 3.26 – 4.00-Strongly Agree; 2.51 – 3.25-Agree; 1.76 – 2.50-Disagree; 1.00 – 1.75-Strongly Disagree

RESULTS AND DISCUSSIONS

Socio-Economic Profile of the Respondents

The socio-economic profile of the respondents was presented in Table 1. It included variables such as sex, age, civil status, language spoken, household income, household size, educational attainment, and employment status. These characteristics provided essential background information that helped in understanding the personal and economic conditions of the respondents who participated in the study.

Table 1. Socio-economic profile of the respondents.

Variables	Frequency (N=120)	Percentage (%)
Sex		
Female	113	92.2
Male	7	7.8
Age		
36-50	57	47.6
21-35	33	27.4
51-65	24	20.0
66-80	6	4.9
Civil Status		
Married	96	80.0
Widower	11	9.2
Single	9	7.5
Separated	4	3.3

Language Spoken		
Maguindanaon	108	90.0
Illongo	7	5.8
Tagalog	3	2.5
Bisaya	1	0.8
Ilocano	1	0.8
Household Income		
5,000 - Below	68	56.6
5,001-10,000	43	35.8
10,001-15-000	8	6.6
15,001-Above	1	0.8
Household Size		
4-6	70	58.3
7 and above	30	25.0
1-3	20	17.7
Educational Attainment		
High School	51	42.5
Elementary	34	28.3
College Graduate	23	19.2
Vocational/Technical	8	6.7
No Formal Education	4	3.3
Employment Status		
Self-Employed	73	60.8
Unemployed	39	32.5
Employed	4	3.3
Others	4	3.3
Part-time	3	
Retired	1	

Almost all of the respondents were female, while only a few were male. This indicated that women played a more active role in the agribusiness extension activities, reflecting their growing participation in community-based livelihood programs. In terms of age, the greater number of respondents belonged to the 36–50 years old group, followed by those aged 21–35 years old. Only a few were within the older age brackets. This showed that most beneficiaries were middle-aged adults, who are generally in their productive years and capable of engaging in livelihood activities that contribute to their household income and community development.

As for civil status, the most of the respondents were married, indicating that family responsibilities and household needs may have encouraged their participation in agribusiness extension activities. Only a small portion were single, widowed, or separated. In terms of language spoken, Maguindanaon was the most common, followed by Ilonggo, while Tagalog, Bisaya, and Ilocano were spoken by very few. This reflected that the participants primarily came from the Maguindanaon-speaking community.

Regarding household income, the majority of respondents earned between ₱1,000 to ₱5,000, while a smaller portion earned up to ₱10,000. Only a few respondents had higher income levels. This suggested that most respondents belonged to low-income households and relied on agribusiness extension activities to improve their economic conditions. When it came to household size, the greater number of respondents had four to six household members, while some had larger families consisting of seven or more members. This implied that most respondents came from moderately sized households, which may also influence their need to engage in livelihood projects.

With respect to educational attainment, the majority of the respondents completed high school, while others finished elementary or graduated from college. Only a few had vocational or technical training, and very few had no formal education. This indicated that most respondents possessed adequate literacy and learning capacity to understand and apply the knowledge shared in agribusiness extension activities.

In terms of employment status, the greater majority of the respondents were self-employed (73)**,** while others were unemployed (39) or employed in various sectors, including a small number who were employed (4)**,** part-time workers (3)**,** and retired individuals (1)**.** This distribution indicates that most of the women agripreneurs were engaged in small-scale livelihood activities and relied on agribusiness programs to help sustain their household income and enhance their entrepreneurial skills. Many of the unemployed respondents were housewives or farmers who managed their households or assisted in farm-related tasks, whereas those who were self-employed were primarily vendors or individuals involved in small local enterprises and informal economic activities. A few respondents were also employed in government and other sectors, illustrating a diverse employment background within the community. This variety of work experiences highlights the relevance of agribusiness extension programs in supporting women with different economic roles and capacities.

Knowledge, Skills and Practice Level of Beneficiaries

Table 2a shows the knowledge level of the beneficiaries. Three out of four extension programs I-CARES, CBDEM 3Ps, and CBDEM Delicacies produced statistically significant improvements in the knowledge levels of their beneficiaries. Only CBDEM Promotion of Halal Kagikit exhibited no significant difference between pretest and posttest scores. These findings support the general claim that extension activities are effective in improving participants' knowledge, practical skills, and capacity for community engagement. The results of the Wilcoxon Signed-Rank Test reveal that the I-CARES, CBDEM 3Ps, and CBDEM Delicacies programs significantly improved the knowledge level of their beneficiaries, whereas CBDEM Promotion of Halal Kagikit did not show a statistically significant change.

The I-CARES project which involved multi-day trainings on business concepts, opportunity identification, COSTAR-based ideation, business plan development, and a series of mentoring and validation sessions produced the greatest knowledge gains, as reflected in the 74 positive ranks and a p-value of 0.001. This outcome supports the assertions of Hucalinas (2025) and Extension and Community Services (2025) that structured workshops, guided mentorship, and hands-on learning activities enhance research skills, practical competencies, and participants' confidence.

Similarly, the CBDEM 3Ps program yielded significant improvement ($p = 0.002$) due to its focus on coco-based product processing, product development, food safety protocols, and hands-on demonstrations, which align with Luciano and Olipas (2022), who emphasized that technology-based extension programs facilitate effective knowledge transfer and skill application.

The CBDEM Delicacies project also showed a significant effect ($p = 0.019$) as beneficiaries underwent capacity-building sessions, technical demonstrations on Maguindanaon delicacies, and business planning activities, consistent with the literature stating that experiential learning, community participation, and integrated technical entrepreneurial training foster knowledge acquisition and livelihood readiness (Extension Activities & Achievements, 2020).

In contrast, the CBDEM Promotion of Halal Kagikit project did not yield a significant change ($p = 0.159$), likely because the beneficiaries had previously undergone similar training in 2021 and therefore possessed prior knowledge that limited the effect of the 2022 method demonstration. The presence of prior exposure may have resulted in learning saturation, with the new training offering minimal additional content. This finding aligns with Llenares and Deocaris (2018), who emphasized that extension programs must be adapted to beneficiaries' existing knowledge levels and must introduce sufficiently new or advanced content to produce measurable improvement. Moreover, the Kagikit project lacked the extended mentoring, business development components, and implementation activities present in the more successful programs.

The overall findings show that most of the extension programs successfully enhanced the knowledge level of their beneficiaries, with the exception of the CBDEM Promotion of Halal Kagikit project. The I-CARES, CBDEM 3Ps, and CBDEM Delicacies programs all produced statistically significant improvements as evidenced by their Wilcoxon Signed-Rank Test results, confirming that structured capacity-building activities such as multi-day trainings, hands-on demonstrations, mentoring sessions, and business development workshops are effective in strengthening practical competencies and technical understanding. These outcomes support existing literature highlighting the importance of experiential learning, guided mentorship, and technology-based interventions in promoting meaningful knowledge gains among community beneficiaries.

Table 2a. Knowledge level of the beneficiaries

Variables	Positive Ranks	Negative Ranks	Ties	Test Statistic (z)	P-value
I-CARES					
Shapiro-Wilk Test				-3.177	0.237
Wilcoxon Signed-Rank Test	74		1	-7,475***	0.001
CBDEM 3Ps					
Shapiro-Wilk Test				1.828***	0.003
Wilcoxon Signed-Rank Test	11		1	-2,934***	0.002
CBDEM Kagikit					
Shapiro-Wilk Test				-0.091	0.82
Wilcoxon Signed-Rank Test	9	2	6	-1,423	0.159
CBDEM Delicacies					
Shapiro-Wilk Test				1.028	0.27
Wilcoxon Signed-Rank Test	7		1	-2,366**	0.019

***, ** significant at 1% and 5% level

Table 2b determined the level of technical and business-related skills of the respondents. Data were gathered through a structured questionnaire and summarized using weighted mean and descriptive interpretation. The skills level of the beneficiaries based on technical and business-related skill areas. Results showed that the beneficiaries demonstrated generally advanced competencies across most categories. In terms of technical skills, product development and innovation showed advanced proficiency across all program components: Virgin Coconut Oil (M = 3.14), Kagikit (M = 3.25), and Maguindanaon Delicacies (M = 2.79). Business plan drafting also obtained an advanced rating (M = 2.70), while quality control/safety procedures (M = 3.24) and processing techniques (M = 3.44) reflected expert and advanced levels of competence. The technical skills sub-total mean was 3.09, indicating an overall advanced category.

For business-related skills, beneficiaries also showed advanced competence. Budgeting and cost estimation (M = 3.14), pricing and costing (M = 3.09), record keeping (M = 3.23), customer service (M = 3.31), and business planning and development (M = 3.17) were all interpreted as advanced to expert. Marketing and promotion, however, obtained the lowest mean (M = 2.68), although still within the advanced range. The business-related skills sub-total (M = 3.10) and the grand total mean (M = 3.10) both indicated an overall advanced skills level among the beneficiaries.

The results indicated that the beneficiaries had developed a strong foundation in both technical and business-related competencies, with marketing emerging as the area requiring the most improvement.

The advanced skills demonstrated by the beneficiaries supported previous findings on the effectiveness of extension-related activities. De Castro et al. (2025) emphasized that continuous participation in extension programs enhanced technical capabilities, job attitude, and instructional competence aligning with the strong technical ratings observed in this study. Similarly, Salazar (2020) noted that community extension activities significantly improved livelihood capabilities, particularly in areas such as food processing and craft-based skills, which mirrored the beneficiaries' high competence in product development, quality control, and processing techniques.

The development of leadership qualities, decision-making, and problem-solving skills reported by Bhambu (2022) was also reflected in the beneficiaries' high rating in business planning and customer service. Moreover, Natividad-Sancho et al. (2024) highlighted that extension activities enhanced communication, social awareness, and collaborative skills supporting the advanced business-related skill ratings in budgeting, costing, and record keeping. Training approaches that combine demonstrations, hands-on activities, and knowledge materials have been shown to yield significant improvements in skill acquisition, with Singh et al. (2018) reporting increases of up to 319.71%. This corresponds with the strong technical outcomes found in this study.

However, the relatively lower rating in marketing and promotion aligned with the literature noting that market-oriented skills are often the most challenging for beneficiaries to develop without targeted training. This pointed to the need for extension programs to strengthen modules on branding, customer targeting, digital marketing, and product promotion to ensure holistic entrepreneurial competence. Experiential learning literature also suggested that more practice-oriented marketing activities could help reinforce higher-order skills and confidence (Di Pietro, 2022).

Table 2b. Level of technical and business-related skills

Variables	Frequency (N=120)	Mean	Qualitative Description
Technical skills			
Product development and innovation			
Virgin Coconut oil	14	3.14	Advanced
Kagikit	12	3.25	Advanced
Maguindanaon Delicacies	19	2.79	Advanced
Business plan drafting	88	2.70	Advanced
Quality control or safety procedures	46	3.24	Advanced
Processing techniques	39	3.44	Expert
Sub-mean		**3.09**	**Advanced**
Business related skills			
Budgeting and cost estimation	112	3.14	Advanced
Pricing and costing of products	101	3.09	Advanced
Record keeping or bookkeeping	99	3.23	Advanced
Marketing and promotion	97	2.68	Advanced
Customer service	95	3.31	Expert
Business planning and development	102	3.17	Advanced
Sub- mean		**3.10**	**Advanced**
Grand Mean		**3.10**	**Advanced**

Legend: 3.26 – 4.00 (Expert); 2.51 – 3.25 (Advanced); 1.76 – 2.50 (Intermediate); 1.00 – 1.75 (Beginner)

Table 2c presented the frequency with which beneficiaries practiced various technical and business-related skills after participating in the extension programs. Results showed that most business-related skills were practiced daily, indicating consistent application in entrepreneurial or livelihood activities. Budgeting and cost estimation recorded the highest daily practice (Mode = 106), followed by business planning and development (Mode = 96), record keeping or bookkeeping (Mode = 94), pricing and costing of products (Mode = 94), marketing and promotion (Mode = 93), and customer service (Mode = 91). Business plan drafting, however, was practiced only as needed (Mode = 74), the last time they had drafted a business plan was in 2024. They drafted a business plan for rice retailing store and Agri supply, suggesting that beneficiaries performed this task primarily when preparing proposals or product innovations.

For technical skills, quality control or safety procedures (Mode = 41), processing techniques (Mode = 35), Kagikit (Mode = 9), and Virgin Coconut Oil (Mode = 8) were all practiced daily, although with varying frequency. Maguindanaon Delicacies was practiced once a week (Mode = 7), indicating that its production may have been dependent on demand or availability of raw materials.

Overall, the results indicated that most beneficiaries consistently applied the skills gained from the programs in their daily livelihood activities, particularly in financial management, customer relations, and technical processing procedures.

The frequent application of these skills was consistent with Aloroy and Dueñas (2024), who reported that beneficiaries of agribusiness extension programs developed practical competencies such as budgeting, enterprise planning, and financial management. Their findings indicated that these skills were not only learned but actively applied in small-scale enterprises, contributing to improved income and greater financial stability. Similarly, a study by Eastern Samar State University (2019) emphasized that livelihood and agribusiness training enabled beneficiaries to directly enhance their income-generating capacity, which resulted in better economic conditions and expanded entrepreneurial opportunities.

The daily practice of customer service, marketing, and business planning reflected the development of leadership and management skills often cultivated through community-based extension activities. According to Papagiannis and Pallaris (2024), beneficiaries acquire critical thinking, decision-making, and problem-solving abilities as they engage in program implementation and community initiatives. These competencies contribute to a heightened sense of social responsibility, confidence, and empowerment. The results of the present study aligned with this pattern, as regular practice of business and technical skills suggested improved competence and a stronger capacity for community engagement and livelihood development.

Table 2c. Technical and business-related skills after participating in the extension programs

Variables	Mode	Qualitative Description
Budgeting and Cost Estimation	106	Daily
Business Planning and Development	96	Daily
Record Keeping or Bookkeeping	94	Daily
Pricing and Costing of Products	94	Daily
Marketing and Promotion	93	Daily
Customer Service	91	Daily
Business Plan Drafting	74	As Needed
Quality Control or Safety Procedures	41	Daily
Processing Techniques	35	Daily
Kagikit	9	Daily
Virgin Coconut Oil	8	Daily
Maguindanaon Delicacies	7	Once A Week

Social, Economic and Environmental Contributions of Agribusiness Extension

The results presented in Table 3a indicate that the beneficiaries strongly agreed that agribusiness extension programs significantly contributed to their social development and community participation. The highest mean scores (3.52) were obtained in statements indicating that the respondents became more productive community members, improved their social connections, and fostered social inclusion. This suggests that the agribusiness extension initiatives not only enhanced technical and entrepreneurial capabilities but also promoted active community involvement and cooperation among beneficiaries. The respondents also agreed (mean = 3.20) that these programs helped them become more confident and empowered, implying that extension activities played a vital role in strengthening their self-esteem and leadership potential.

These findings are consistent with State U's Help Create Enterprises in Calabarzon (2017), which highlighted that Higher Education Institutions (HEIs) serve a vital role in extending government programs to provincial communities, resulting in improved skills and enhanced economic activities among individuals. Sermona et al. (2020) also emphasized that community participation in such programs often leads to better living standards and financial growth among participants. Similarly, Dai et al. (2024) found that university-led agricultural extensions empower individuals by providing access to new technologies and fostering social responsibility through community engagement.

The results also align with Malibiran (2023), who asserted that community engagement activities implemented by universities, such as wellness and livelihood programs, strengthen volunteerism and build cohesive communities. Likewise, Paulican and Garcia (2023) and Cristobal (2023) confirmed that higher education–based community initiatives foster behavioral improvement, social awareness, and the development of positive values among beneficiaries. Participants in these programs reportedly developed stronger relationships within their communities, resulting in higher self-reliance and collective problem-solving abilities, as observed by Gabutin et al. (2024).

Furthermore, Batoon (2023) noted that extension programs help address pressing community concerns such as unemployment and financial instability, which in turn improve the overall quality of life among members. Similarly, Dela Cruz et al. (2025) stated that participants in community engagement activities developed interpersonal, leadership, and communication skills that enhanced their productivity and participation in communal undertakings. This observation supports the present findings that agribusiness extension programs are instrumental in empowering individuals socially and economically, enabling them to contribute meaningfully to community development and sustainability.

Overall, the social contributions of agribusiness extension programs were found to be highly positive, demonstrating their effectiveness in nurturing empowerment, cooperation, and inclusiveness among beneficiaries. These programs not only uplift individual livelihoods but also strengthen community bonds and promote collective progress.

Table 3a. Social Contributions of Agribusiness Extension

Variables	Mean	Descriptive Interpretation
Become a productive community member.	3.52	Strongly Agree
Foster social inclusion in our community.	3.52	Strongly Agree
Improve social connections in the community.	3.52	Strongly Agree
Establish camaraderie along with other beneficiaries.	3.45	Strongly Agree
Become more confident and empowered.	3.20	Agree
Grand Mean	3.44	Strongly Agree

Legend: 3.26 – 4.00 (Strongly Agree); 2.51 – 3.25 (Agree); 1.76 – 2.50 (Disagree); 1.00 – 1.75 (Strongly Disagree)

The results in Table 3b reveal that the beneficiaries strongly agreed that agribusiness extension programs enabled them to increase their income with mean score 3.33. These findings suggest that the extension initiatives successfully equipped participants with practical and marketable skills that enhanced their employability and income-generating capacity. Respondents also agreed that the income gained from employment helped them improve their living conditions such as upgrading their homes (mean = 2.56), purchasing appliances (mean = 2.50), and acquiring personal assets (mean = 2.51). In addition, beneficiaries agreed (mean = 3.15) that their economic status improved through self-employment opportunities, implying that agribusiness extension programs contributed to both wage and entrepreneurial growth.

These findings are consistent with the study of Danso-Abbeam et al. (2018), who emphasized that community-based livelihood and agricultural programs play a crucial role in disseminating farming knowledge, promoting local learning, and enhancing participants' production and income. Their study noted that community engagement programs not only generate economic benefits but also improve farm profitability and reduce poverty. However, Kumar and Shaijumon (2023) highlighted that while these programs can significantly raise productivity, they may also reveal the challenges faced by farmers, particularly in adapting to new technologies and sustaining farm performance an issue that underscores the need for continuous extension support.

Similarly, Maulu et al. (2021) reported that extension and community training services substantially contribute to poverty reduction and agricultural productivity by introducing innovative tools, encouraging adult learning, and supporting farmers in adapting to modern agricultural practices. These activities develop technical competence and resilience among farmers, enabling them to overcome productivity barriers and financial

constraints. In line with this, Valle et al. (2022) found that beneficiaries of community business training often gained entrepreneurial skills, improved money management practices, and accessed credit opportunities that contributed to increased household income and business sustainability.

Furthermore, Terano and Tomenio (2025) established that training, protective practices, and community engagements are closely linked to improved quality of life and financial stability among participants. This supports the current findings, which show that respondents' economic well-being improved due to their involvement in agribusiness extension programs. Likewise, Marcos (2021) emphasized the role of State Universities and Colleges (SUCs) in implementing income-generating projects (IGPs) that not only serve as learning platforms but also provide livelihood opportunities for farmers and local residents. His findings highlighted that such projects can generate substantial profit while strengthening agricultural entrepreneurship and sustainability.

In addition, Evenson (2016) explained that agricultural extension services boost productivity through the Awareness Knowledge Adoption Productivity (AKAP) model, showing that higher exposure to technical guidance leads to greater income and farm efficiency. He noted that the internal rates of return on investments in extension services can range from 5% to 50%, indicating their high economic value. Similarly, Poole (2023) underscored that extension programs yield both direct and indirect economic benefits creating jobs, stimulating local markets, and enhancing human capital through education and skills development. Complementing these insights, Setsoafia et al. (2022) pointed out that farm income, crop sales, and access to new technologies directly influence the effectiveness and sustainability of extension services, emphasizing the importance of tailoring programs to local economic contexts.

Overall, the results affirm that agribusiness extension programs contribute significantly to the economic empowerment of beneficiaries. Through job creation, income augmentation, and livelihood development, these programs enhance the financial stability and self-sufficiency of participants. The integration of agricultural, entrepreneurial, and business management skills under these initiatives strengthens beneficiaries' economic resilience and fosters community-based economic growth.

Table 3b. Economic Contributions of Agribusiness Extension

Variables	Mean	Descriptive Interpretation
Able to augment income.	3.33	Strongly Agree
Improve economic status being a self-employed individual.	3.15	Agree
Able to improve housing condition as a result of the income generated from such employment.	2.56	Agree
Able to gain properties/ownerships.	2.51	Agree
Able to buy appliances.	2.50	Agree
Grand Mean	2.90	Agree

Legend: 3.26 – 4.00 (Strongly Agree); 2.51 – 3.25 (Agree); 1.76 – 2.50 (Disagree); 1.00 – 1.75 (Strongly Disagree)

The results presented in Table 3c indicated that agribusiness extension programs significantly contributed to raising environmental awareness and promoting sustainable practices among the beneficiaries. Respondents strongly agreed that the programs encouraged environmentally responsible manufacturing (mean = 3.35) and fostered environmental consciousness within their communities (mean = 3.33). These findings demonstrate that the extension initiatives not only strengthened participants' technical skills but also guided them toward adopting environmentally sustainable approaches in their operations.

Respondents also agreed that they used sustainable packaging materials (mean = 2.56) and practiced efficient use of inputs and resources (mean = 2.51). However, they disagreed about their full awareness and implementation of proper waste disposal methods (mean = 2.50), suggesting a need for continued environmental education and waste management training within agribusiness extension programs.

Environmental extension refers to the integration of environmental education and sustainable practices within traditional extension frameworks. While conventional programs have focused on technology transfer and human resource development, modern approaches now emphasize environmental objectives such as conservation, pollution reduction, and efficient resource utilization (Chaithrashree et al., 2019). This evolution highlights the growing recognition that true agricultural and economic progress must be balanced with ecological preservation.

State Universities and Colleges (SUCs) have played a vital role in embedding environmental sustainability into their extension programs, aligning their initiatives with the Sustainable Development Goals (SDGs). For instance, the Kolehiyo ng Lungsod ng Dasmariñas (KLD) developed a sustainability-informed research and extension framework that localizes the SDGs within community-based projects (Sayson, 2024). Such institutional efforts ensure that environmental awareness becomes an integral part of community and business development.

Similarly, Higher Education Institutions (HEIs) across the country have been instrumental in conducting Good Manufacturing Practices (GMP) training sessions that enhance both food safety and environmental sustainability. In Region XI, HEIs collaborated with the Davao Food Safety ThinkTank Inc. to organize a webinar series focusing on sanitation, hygiene, and hazard management. These sessions aimed to help micro, small, and medium enterprises (MSMEs) comply with food safety systems, thereby promoting environmentally responsible production. Likewise, DOST Region VII conducted similar seminars in Cebu City, educating food manufacturers and supervisors about sustainable production practices (Training on Good Manufacturing Practices Empowers Food Manufacturing Supervisors and Business Owners, 2024). These collaborative activities reflected the vital role of extension programs in developing environmental consciousness and responsible business behavior.

Institutional extension services also contributed to environmental conservation efforts through participatory and context-specific approaches. Sepe (2025) emphasized that inclusive policy development, when integrated with community-based extension programs, leads to effective land management and resource preservation. The success of such initiatives lies in the dissemination of practical knowledge and its application in the local setting. In addition, Esparza et al. (2024) examined the role of small and medium-sized enterprises (SMEs) in environmental protection through green business techniques, eco-innovation, and corporate social responsibility (CSR). Their study found that adopting eco-innovation and CSR practices improved environmental performance and strengthened sustainable business operations.

Furthermore, Ferdousi et al. (2024) underscored the significance of Agricultural Extension and Advisory Services (EAS) in enabling farmers especially smallholders to adapt to climate-smart agricultural practices. These programs promoted efficient water management and reduced resource wastage, thereby mitigating environmental impacts. Extension systems also facilitated capacity-building initiatives and policy development to support sustainable agriculture, linking farmers, researchers, and policymakers to encourage locally appropriate environmental technologies (Odeleye, 2018).

Overall, the findings of this study aligned with previous literature emphasizing the expanding role of agribusiness and institutional extension programs in environmental protection. The respondents' strong agreement with environmentally responsible practices reflected the success of such initiatives in instilling sustainability values. However, the area of waste management remains a challenge that requires enhanced training and monitoring. Strengthening environmental components within agribusiness extension programs will ensure long-term ecological balance, responsible enterprise growth, and greater alignment with national and global sustainability goals.

Table 3c. Environmental Contributions of Agribusiness Extension

Variables	Mean	Descriptive Interpretation
Promoting environmentally responsible manufacturing practices.	3.35	Strongly Agree
Environmental consciousness within the community.	3.33	Strongly Agree
Use sustainable packaging materials (biodegradable, recyclable).	2.56	Agree

Efficient use of inputs/resources.	2.51	Agree
Preserving the environment through proper disposal of waste materials	2.50	Disagree
Grand Mean	2.85	Agree

Legend: 3.26 – 4.00 (Strongly Agree); 2.51 – 3.25 (Agree); 1.76 – 2.50 (Disagree); 1.00 – 1.75 (Strongly Disagree)

CONCLUSION

Based on the major findings, the study concludes that agribusiness extension programs play a critical role in enhancing the knowledge, technical capacity, and livelihood competencies of community beneficiaries. Structured, experiential, and mentorship-driven training activities were found to be most effective in producing measurable knowledge gains. Beneficiaries not only developed strong technical and business skills but also applied these competencies consistently in their daily livelihood operations, demonstrating the sustainability of learning outcomes.

The extension programs also contributed meaningfully to social empowerment by strengthening community involvement, cooperation, and self-confidence. Economically, they improved employability, income generation, and household well-being, indicating that agribusiness extension serves as a viable pathway to poverty reduction and livelihood resilience. Environmentally, the initiatives fostered awareness and adoption of sustainable practices; however, certain areas particularly waste disposal and comprehensive environmental compliance require further enhancement.

Overall, the findings underscore the importance of continuous, well-designed, and context-responsive extension programs that address the evolving needs of rural communities. When properly implemented, these programs promote holistic development that integrates skills enhancement, economic upliftment, community solidarity, and environmental responsibility.

RECOMMENDATIONS

The study recommends strengthening and sustaining structured capacity-building programs by continuing and expanding multi-day trainings, mentoring sessions, business development workshops, and hands-on demonstrations, as these approaches produced the highest improvements in beneficiaries' knowledge.

Moreover, greater emphasis should be placed on marketing and promotion skills, particularly through training in digital marketing, branding, product presentation, and market-linkage development, since marketing received the lowest mean among business-related competencies. Environmental training must likewise be integrated more comprehensively by strengthening modules on proper waste management, sustainable packaging, and eco-friendly production practices to address gaps in environmental compliance. Monitoring and evaluation mechanisms should be institutionalized through regular skills assessments, feedback systems, and annual program reviews to ensure continuous improvement and long-term sustainability of the extension initiatives.

In addition, the organizations should build strong linkages with LGUs, SUCs, NGOs, and private institutions to provide beneficiaries with advanced training, funding support, marketing assistance, and continuous technical guidance. Supporting livelihood sustainability through access to credit, equipment, start-up kits, and market opportunities is also essential for enabling beneficiaries to maintain and expand their microenterprises.

The Kabacan Moro Women Organization, Inc. (KMWOI) should undergo reorganization to strengthen its leadership structure, internal governance, and operational systems. Establishing clear committees that are dedicated to improve coordination and enterprise performance. Stronger partnerships should be forged with LGUs, NGOs, SUCs, and national agencies such as DTI, DOST, and DA to support training, product development, certification, environmental initiatives, and market access. These partnerships will enable beneficiaries to access funding, technology, and broader opportunities for commercialization.

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