**Catalyzing Community Growth: Assessing the Transformative Impact of a Holistic Extension Program in a Seaweed Farming Community**

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**Abstract**

Conducting an impact study on the university-led livelihood training programs is crucial to ensure the proper implementation of the project. This impact study assesses the effectiveness of the program in achieving intended outcomes such as improved skills, increased income, and enhanced economic resilience among members. It helps determine whether the program benefits participants and identifies areas for improvement. This mixed-method sequential explanatory study, anchored in the Theory of Change, assessed the impact of a university extension program on a seaweed farming community. Using surveys, interviews, focus groups, and document analysis, findings revealed significant economic and social benefits. The program empowered beneficiaries with technical skills, improved sustainable income generation, and fostered community solidarity. Tailored training in preventive maintenance, product development, and market-oriented packaging enhanced both economic opportunities and social cohesion, demonstrating the program’s effectiveness and highlighting areas for further improvement.

*Keywords: impact assessment, theory of change, university extension program, holistic livelihood training, seaweed farming community*

**INTRODUCTION**

The Industrial Technology Extension for Community through Holistic Program (ITECH) is a community extension service program conducted by the College of Industrial Technology (CIT) of Iloilo Science and Technology University (ISAT U). Its target beneficiaries are the men and women members of the Magagmay nga Kritianong Katilingban (MKK) Association located at Brgy. Tiabas, San Dionisio, Iloilo. The project started at April 27, 2023 and commenced in December 7, 2023.

The program had a total allocated proposed budget of eighty thousand nine hundred seventy pesos and twenty-three cents (PhP 80,970.23) with seventy thousand nine hundred seventy and twenty-three cents (PhP 70, 970.23) funded by the university and ten thousand pesos (PhP 10,000.00) as counterpart by the MKK cooperative.

The program’s main objective was to empower the Magagmay Kristianong Katilingban (MKK) Association through livelihood training projects such as foods safety handling, food packaging and labeling of seaweed products, and maintenance of equipment. Prior, MMK had been chosen as beneficiary to avail the Multi Powered Dehydrator Machine, a research output of the university in collaboration with Department of Science and Technology (DOST) and Department of Trade and Industry (DTI).

Specifically, the program aimed to:

1. train beneficiaries in the maintenance of the Multi-Powered Drying System and other specific machines to increase seaweed production
2. introduce awareness on food safety for good quality, safe and clean food.
3. capacitate the beneficiaries in developing the food product and preserve in good condition for anticipated packaging and labeling to ensure the safety of the product and preserve in good condition for anticipated shelf life.

The main goal of the said project was to strengthen the employment and income- generating capacity of the low-income and marginalized sector. Its specific goals were:

1. To produce maintenance personnel that can repair the minor defects of the machines
2. To provide an extension activity for the improvement of the quality of life in the community
3. To provide effective and efficient delivery of services through sustainable resources of seaweeds product

This activity also served to assist the extension implementers in the technology transfer of the multi-powered dehydrator to ensure that the technology was utilized and maintained accordingly by the MKK members.

**Program Partner**

Magagmay nga Kristiyanong Katilingban (MKK) is a small Christian community within the Catholic Church that gather regularly at the grassroots level, typically in neighborhoods, barangays, or sitios. These communities are composed mostly of families who come together for prayer, reflection on the Word of God, and mutual support. Aside from this, MKKs are characterized by their active concern for both spiritual and material needs, including programs for livelihood, justice, peace, and environmental stewardship. They are also caring and serving groups that respond to the needs of the poor and vulnerable.

In practice, MKKs have been known to initiate or partner with other groups for livelihood projects, skills training, and social action programs. These initiatives are meant to empower members, especially the poor, by providing opportunities for sustainable income and improved quality of life. Such activities include skills training in food processing, small-scale farming, handicrafts, and other income-generating projects, often facilitated through parish social action ministries or in collaboration with development organizations.

This approach is consistent with the broader vision of the Catholic Church in the Philippines for BECs—to be not only centers of faith but also agents of social transformation, addressing both spiritual and material well-being. While specific examples of MKK-led livelihood training may vary by parish or diocese, the integration of social and economic upliftment programs is a recognized and encouraged practice within many communities.

Due to this shared vision, the MKK was chosen to be partner agency in the implementation of the ITECH project knowing that they could collaborate to help uplift and empower the marginalized sector. MKK Tiabas was selected as beneficiary of this extension output due to their seaweed farming produce which could be ideally processed with the multi-powered dehydrator.

MKK Tiabas seaweed farmers is a community based in Barangay Tiabas, San Dionisio, Iloilo, in the northern part of Iloilo Province. Seaweed farming is the primary source of livelihood for most residents in this coastal barangay, and the majority of families are considered low-income, working diligently to meet their basic needs. Additionally, studies showed that they exhibit strong parental involvement and eagerness to improve their socio-economic status demonstrated by their commitment to uplifting their households despite financial constraints (Alvior, 2021).

The community has shown resilience and adaptability in diversifying livelihoods and adopting sustainable practices, making them ideal candidates to benefit from skills training that can enhance productivity, product development, and market access. The favorable local conditions in San Dionisio, including relatively enabling governance and community cohesion, further support the potential for successful implementation and sustainable impact of the project. Thus, targeting this community aligns with both their needs and their demonstrated capacity to utilize new skills for improved economic and social outcomes (Andriesse, 2022).

**Rationale of the Evaluation**

The need for impact studies in university extension activities arises from several critical factors. Impact studies serve multiple purposes, including demonstrating accountability and justifying resource allocation to stakeholders, funders, and policymakers (Franz & Townson, 2008). They also facilitate continuous improvement by identifying areas for refinement in extension approaches (Diem, 2003).

Impact study provides an in-depth evaluation of how extension activities affect beneficiaries in terms of knowledge, skills, economic, social, and environmental outcomes. Impact analysis measures client satisfaction, effectiveness, relevance, and sustainability of the programs, offering evidence of their contribution to community development and empowerment (Esteban, 2025). These studies also identify challenges such as resource limitations and sustainability concerns, providing valuable insights for improving program design and implementation.

Ultimately, impact assessment promotes accountability and transparency, ensuring that university extension programs remain responsive to community needs and aligned with institutional mandates for societal transformation (Quijano-Pagutayao et al., 2024).

Conducting an impact study on the holistic livelihood training programs for MKK is crucial to ensure the proper implementation of the project. This impact study assesses the effectiveness of the program in achieving intended outcomes such as improved skills, increased income, and enhanced economic resilience among members. It helps determine whether the program benefits participants and identifies areas for improvement (Lunar et al., 2023).

Impact study also justifies the use of resources by providing evidence to stakeholders that the program is a worthwhile investment with tangible benefits. It also informs program improvement by identifying strengths and weaknesses in training design and delivery, helping tailor future sessions to participants’ needs (Lunar et al., 2023).

By addressing these diverse needs, impact study plays a crucial role in ensuring the relevance, effectiveness, and sustainability of university extension activities. It could also strengthen the partnership between the university and its community partner for meaningful and mutually beneficial outcomes.

With this premise, this study was conducted to evaluate and assess the impact of the extension program entitled “Industrial Technology Extension for Community through Holistic Program (ITECH)” by the ISAT U Extension Services Division, and Master in Industrial Technology (MIT) and Doctor in Industrial Technology (DIT) programs under the College of Industrial Technology, with its partner organization, the Magagmay nga Kristiyanong Katilingban (MKK) association.

**Scientific Basis/ Theoretical Framework**

This study adopted the Theory of Change (ToC) by Peter Drucker (1954) as its primary theoretical framework to systematically understand how the “Industrial Technology Extension for Community through Holistic Program (ITECH)” led to sustainable social and economic impacts. ToC provided a comprehensive roadmap that links the program’s inputs, activities, outputs, outcomes, and long-term impacts while making explicit the assumptions and contextual factors influencing change (UNDP, 2022). In this framework, inputs such as resources, facilities, skilled trainers, and materials were analyzed if they were enabling activities including livelihood skills training, equipment maintenance and food safety. Ultimately, this study attempted to find out if the outcomes contributed to broader impacts aligned with Sustainable Development Goals (SDGs), including poverty reduction, gender equality, and community resilience (World Vision, 2020).

In addition, measures of efficiency, effectivity and overall impact were included based on the Regional Association of State Colleges and Universities in Region 6 (RASUC 6) guidelines for assessing the impact of the extension projects. Efficiency, effectivity, and overall impact are considered essential in the impact assessments of extension projects because they collectively provide a comprehensive evaluation of a project's performance, value, and long-term contribution (DOST-PCAARRD, 2025).

Satisfaction survey was also included to determine the assessment of the participants’ perception in the implemented projects. Further risks and risk mitigation management were identified so as to ensure that the project also put into priority the safety and wellness of both participants and beneficiary.

**Objectives of the Evaluation**

This study aimed to assess the impact of the university extension program “Industrial Technology Extension for Community through Holistic Program (ITECH)” on MKK community and stakeholders, evaluating its effectiveness in achieving intended outcomes through beneficiary feedback and identifying areas for improvement.

Specifically, this study aimed to:

1. identify the satisfaction level of beneficiaries and partners on the extension program and their suggestions
2. assess the social and economic impact gained by the beneficiaries from the program
3. analyze the project impact based on the Theory of Change Framework
4. determine the risks encountered and risks management mitigation employed by the program
5. evaluate the extension program based on its effectiveness, efficiency and overall impact

**METHODOLOGY**

**Research Design**

This studyemployed mixed method research approach using sequential explanatory design as its methodology. Mixed methods research is an approach that combines both quantitative and qualitative data collection and analysis in a single study to provide a more complete understanding of a research problem than either approach alone (Creswell & Plano Clark, 2017). In conducting sequential explanatory design, a quantitative survey to measure the outcomes of extension program was conducted. It was then followed with qualitative interviews to explore the reasons behind these outcomes in depth (Ivankova et al., 2006).

Using mixed method for this study allowed for triangulation of findings from different data sources, enhancing the validity of the results (Johnson et al., 2007). It also led inhibit complementarity where qualitative data can explain and elaborate on quantitative findings, and vice versa (Greene et al., 1989).

For its quantitative data stream, descriptive survey method was utilized. It was used to describe and analyze the existing situation about the satisfaction of the beneficiaries and partners in the implemented extension programs of the university. In order to collect pertinent data for the study, the researcher made use of a standardized questionnaire developed by the ESD.

A basic qualitative research design was used in analyzing the qualitative stream of data for this study. The basic qualitative design is commonly used in education research to examine recurring patterns and themes emerging from participant data. The primary goal is to describe and interpret participants’ experiences with a phenomenon (Merriam & Tisdell, 2016). The researcher utilized key informant interview and documentary analysis to gather qualitative data.

**Data Collection**

The first phase of the study is the collection of quantitative data through survey. Questionnaire used was developed by the ESD to evaluate all extension programs of the university. It was made up of items where respondents could express their perceptions and views on several areas of the programs. Items used a 5-point Likert Scale Response Anchor to assess the level of satisfaction.

The second phase was the collection of the qualitative data where experts were tapped to share information regarding their knowledge, experiences and views on the implementation of the project. Focus group discussion was employed to substantiate and elaborate the impact of the program among the beneficiaries and other stakeholders. A total of ten (10) beneficiaries were invited to join.

FGDs are particularly useful for collecting rich, detailed data that might not emerge through individual interviews or surveys. The interactive nature allows participants to build on each other’s responses, revealing deeper insights and social contexts. This makes FGDs an effective tool for exploring complex issues, and evaluating programs (Guest, et al., 2020). For this study, FGD enabled researchers to capture the nuanced experiences and perceptions of program beneficiaries, identify strengths and challenges, and gather suggestions for improvement in a participatory manner. This qualitative approach complements quantitative data by providing context and depth, essential for a comprehensive impact assessment.

Another approach used was Key informant interview (KII) as it can help gather detailed insights about the impacts, processes, and contextual factors of extension programs that may not be captured through quantitative methods alone. They could be extension program leaders and partner organization representatives (Kumar, 1989). For this study, the program leader of the extension project, partner organization point person and 2 beneficiaries were tapped for the KII.

**Participants**

For the survey, eleven (11) participants were chosen to answer the questionnaire. They were composed of the 10 training beneficiaries and 1community partner or stakeholder. Non-probability convenience sampling was employed due to the limited number and availability of some participants. For the FGD, ten (10) beneficiaries were chosen to participate. For the key informant interview, four participants were selected including two (2) beneficiaries, one (1) extension program leader from the university, and one (1) partner organization point person were chosen for the interview.

**Data Analysis**

For the analysis of quantitative data, ranking and mean were used to assess the satisfaction level of the participants perception regarding the outcome of the project. For the qualitative data, thematic analysis was used to analyze the recurring patterns from the responses of the experts interviewed. Theory of Change Framework was used for a comprehensive analysis of the project’s impact. RASUC 6 guidelines in impact assessment of extension projects by analyzing the parameters in the categories of efficiency, effectiveness and overall impact was also incorporated. Multiple approach of analysis was used to ensure the systematic and empirical method of impact assessment.

**Ethical Consideration**

Ethical considerations are paramount in conducting this impact study of extension program. The study prioritized the well-being, rights, and dignity of all participants and stakeholders involved. Informed consent was obtained from all the participants, ensuring they understand the study's purpose, potential risks and benefits, and their right to withdraw at any time without consequences. Confidentiality and anonymity of participants were also strictly maintained, with data anonymized and securely stored to protect individual privacy. Since vulnerable participants were involved, the questionnaire was carefully crafted to center only on the evaluation of their training program and that sensitive topics or words were carefully excluded. Extra care was taken to avoid any potential harm or distress to participants. The study process including the crafting of the questionnaire was carefully studied and monitored by the Research Ethics Committee of the University.

**RESULT AND DISCUSSION**

**Participant’s Satisfaction on the Implementation of the Extension Project**

Table 1 presents the participant’s evaluation regarding their satisfaction on the training conducted particularly on food safety, food packaging and equipment maintenance. Result showed that out the ten parameters, the venue, interactive participation of participants and the on-time training achieved the perfect mean score (x̄=5.0). This indicates that the logistics of the organizers were delivered efficiently as they were able to choose an accessible and conducive venue for the participants to engage and learn. They were also able to start right on schedule and delivered most of the activities as planned. Participants also appreciated the interaction among their colleagues as they believe they could learn better if they collaborate and share with each other. It could also be noted that all parameters were rated highly by the participants with the overall mean of 4.86 verbally interpreted as very satisfied. This indicates that the project has been widely accepted and highly appraised by its participants.

Table 1. Evaluation of the beneficiaries/trainees on the livelihood skills trainings (n=11)

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Items** | **Mean** | **Verbal Interpretation** |
| 1. | Training is relevant to the needs of the clients | 4.83 | Very satisfied |
| 2. | Participants are properly informed of the mechanics of the training | 4.67 | Very satisfied |
| 3. | Delivery of the topic contents by the resource persons | 4.58 | Very satisfied |
| 4. | Systematic skills demonstration | 4.92 | Very satisfied |
| 5. | Properly guided workshop | 4.92 | Very satisfied |
| 6. | Venue is suitable for the training | 5.00 | Very satisfied |
| 7. | Food served is within the budget | 4.83 | Very satisfied |
| 8. | Adequate training materials | 4.83 | Very satisfied |
| 9. | Active interaction of the participants | 5.00 | Very satisfied |
| 10. | The training/service is delivered on time. | 5.00 | Very satisfied |
|  | **Average Mean** | **4.86** | **Very satisfied** |

*Legend: 1.00-1.80=very dissatisfied; 1.81-2.60=dissatisfied; 2.61-3.40=unsure;*

*3.41-4.20=satisfied; 4.21-5.00=very satisfied*

**Theory of Change Analysis**

**Input**. Faculty members from the College of Industrial Technology spearheaded the trainings. They have varied specialization and capable of delivering the training topics. Along with them were selected DIT, MIT, ELT, HBM and Drafting students to assist in the training. The program was allocated with a budget of eighty thousand nine hundred seventy pesos and twenty-three cents (PhP 80,970.23) with seventy thousand nine hundred seventy and twenty-three cents (PhP 70, 970.23) funded by the university and ten thousand pesos (PhP 10,000.00) as counterpart by the MKK cooperative. Training materials, foods, venue, transportation were the incurred expenses charged against the budget. Expert trainers from the university as well as student participants engaged in voluntary basis and were not given any compensation. The training was conducted in Brgy. Tiabas, San Dioniso, Iloilo where most participants reside making the venue accessible to the willing beneficiaries.

At the end of the program, only thirty-three thousand one hundred ninety-two pesos and four cents (PhP 33, 192.04) were utilized as Personnel Services budget was not used due to the volunteerism of most experts and organizers who forego their honorarium and incentives.

**Process**. The activities conducted were trainings on preventive equipment maintenance, food safety and food packaging and labelling. Seventeen (17) beneficiaries from the MKK participated in the three-day training. Subsequent monitoring, communication and informal visitation ensued up to 8 months to constantly monitor the progress of the beneficiaries. These beneficiaries were known seaweed farmers who cultivated plots for seaweed farming in the nearby shores. Trainings were delivered by expert faculty members from ISAT U and organized by the Office of the Extension Services. Selected graduate and undergraduate students also volunteered to help facilitate the event. Training materials were provided by the university as well as foods and venue. No funds or monetary means were solicited from the participants.

**Output**. Several beneficial outputs were achieved out of the activities. Seventeen beneficiaries from MKK were able to demonstrate valuable skills in preventive equipment maintenance, food safety and food packaging and labelling. They also learned how to process seaweeds and develop product using the multi-powered dehydrating machine. They also acquired skills on how to promote and commercialize their products through product packaging and labelling. One participant with the identified technical skills in machine maintenance was trained further by the inventor of the dehydrator machine and served as point person for the operation, trouble shooting and minor maintenance of the machine.

**Outcome**. Given the outputs, several outcomes were identified which could prove valuable to the beneficiaries and their community in general.

1. Immediate Outcomes (Short-Term)

* Increased knowledge and skills of the beneficiary. The beneficiaries demonstrated practical skills in equipment maintenance, food safety, seaweed processing, and product packaging/labeling.
* Improved Confidence. Beneficiaries narrated that they are now more confident in handling machinery and producing market-ready products.
* Designated Technical Support. Having a trained point person ensured immediate technical support and smoother machine operations.

2. Intermediate Outcomes (Medium-Term)

* Enhanced Productivity and Product Quality. With better maintenance and processing skills, the group was able to produce higher-quality, safer, and more appealing products.
* Market Readiness. The beneficiaries improved their packaging and labeling to make their products more attractive to buyers, increasing their competitiveness in the market.
* Reduced Downtime. The trained point person can now quickly address technical issues, minimizing production interruptions. They are now self-sufficient because they do not have to rely on the availability of inventors to fix the machine.
* Increased Income Opportunities. With new skills and improved products, beneficiaries have potential to access new markets, potentially increasing their income.

**Impact.** Based on the Theory of Change framework, the long-term impacts of the described outputs would be manifested in sustainable socioeconomic transformation for the community.Specifically, they are as follows:

* Sustainable Livelihoods. The community becomes more self-reliant, with sustainable income streams from seaweed products. Although the income might be seasonal depending on the demands and orders of customers, it is already a big help in augmenting and supplementing the existing income of the household.
* Community Empowerment. Skills transfer and capacity-building fostered a culture of community cohesion and innovation within the group. In a remote community where learning from experts is a rarity, this is a welcome activity and a chance to learn new skill among the community. Learning new skill could give confidence, boost self-esteem and empower the beneficiaries particularly among women, the majority number of those involved in food production. This redounds to community empowerment where sharing of knowledge and resources often thrives.
* Economic Development. Mastery of seaweed processing and product development creates new revenue channels beyond traditional livelihoods. Successful commercialization can lead to supplemental income, and broader economic benefits for the family and community.
* Replication and Scaling. This project can be replicated in other communities, amplifying the impact and gaining wider beneficiaries.
* Environmental Sustainability. Proper dehydration and packaging techniques minimized waste in seaweed production. This alternative means of livelihood also minimizes the tendency of overfishing in the area. Reduced reliance on fishing helps restore and protect marine ecosystems by reducing destructive fishing practices, allowing fish populations and coral reefs to recover, which in turn supports biodiversity and habitat stability.

**Social and Economic Impact of the Project**

As of present, MKK already ceased its operation in San Dionisio. However, the remaining members formed and joined cooperatives where seaweed farmers could still communicate and avail activities and benefits offered by sponsors, LGUs and other agencies. Their established cooperative was named Bura-ay Seaweeds and Fisherfolks Association (BSFA), named after their sitio in Barangay Tiabas.

In the social aspect, beneficiaries felt empowered and confident as they had acquired new skills that they could use to gain additional income particularly the women who comprised the most numbers engaged in food production. This gave them a sense of pride knowing that they could also be relied on in earning income. In addition, a culture of sharing permeated in the community as beneficiaries shared their learned knowledge and skills to other community members. This resulted to a widened impact of the project in the community.

This impact highlights women empowerment since they comprised the majority of beneficiaries of the food production. Some women beneficiary during the FGD reported being “happy” because they are able to earn income which they use to buy “some needs inside their home.” Some reported that they were able to sell some of their products to “sa mga maestra kag bisita kun may program sa school” (KII 1 - “teachers and other guests during a school program”). They feel accomplished and gained new sense of purpose when “damo gaorder” (KII 2- “many are ordering”). This success is communally shared thereby cultivating community cohesion. One beneficiary shared that she would also refer other customers to her peers in the community if she could not produce large quantities of orders. One KII noted that “nahatag ko sa iban ang order kay kadamo order” (KII 2 – I refer the order to others because it is too many). One KII also shared happily that “damo naman subong gusto magluto kag magbaligya” (KII 1- “many are now encouraged to cook and sell”) because they saw how productive the seaweed food production has become. This cooperation and shared resources redound to strengthened social ties.

Moreover, the beneficiaries developed initiative and innovativeness out of the project. KII 1 divulged that they are experimenting to develop new food products using the dehydrator machine and one of them is the seaweed noodles though they are also candid in stating that they need further training about it. Nonetheless, they exhibited initiative in coming up with new product so as to augment their food products.

In terms of economic aspect, beneficiaries were able to give added value to the otherwise low value and easily perishable fresh seaweeds that they used to sell. Before the project, beneficiaries reported that they have no other means of selling the seaweeds. They just sold it fresh. Now that they have the dehydrator machine and knowledge in food processing, they were able to develop products using seaweeds as main ingredients such as chips, pickles and noodles. These products gave bigger profits and income to the farmers. In comparison, fresh seaweeds were sold 10 pesos per kilo. Through food processing, they were able to make pickles amounting to 50 pesos per bottle just using approximately 100 mg of seaweeds and with other added ingredients. Seaweeds chips are also priced as 20 pesos per pack. The minimal amount of seaweeds used in the product ensures that there is no overharvesting and wastage of raw materials.

In the operation of the dehydrating machine, four people were also employed on a parttime or as needed basis depending on the bulk of order. Regular daily production of the machine could yield 50 to 100 packs of chips. These part time employees were living in nearby residents and trained to operate the machine. This way, they will be readily available in case some cooperative members have orders for production.

The success demonstrated by the initial group of 17 to 20 trained seaweed farmers significantly motivated greater community participation, leading to an expansion of membership to over 200 individuals. To effectively manage this increased membership and enhance operational focus, the original association was subdivided into smaller units based on geographic sitios. Consequently, the Gamot, Proper, Santikan, and Buraay (GPSB) Seaweed Farmers Association was established, concentrating specifically on seaweed farming and production activities within these areas. This organizational restructuring reflects the project’s substantial impact and sustainability, evidencing strong community ownership and the scalability of the livelihood interventions.

**Risks and Risk Mitigation Management**

Extension programs designed to provide livelihood skills to remote coastal communities offer significant benefits but also face various risks and challenges. Recognizing and addressing these potential issues is essential to minimize negative impacts and ensure the program’s overall success.

This program has faced its own share of risks and challenges. Recurring risks or challenges and mitigation management are iterated below.

* 1. *Lack of participants for the training*. Most beneficiaries rely on daily wages, and attending the training sessions could result in a temporary loss of income. To encourage their participation, coordination was established with local officials. The potential benefits of the training—including new skills that could lead to alternative sources of income—were clearly communicated to the beneficiaries to motivate their involvement.
  2. *Lack of formal education or illiteracy among participants*. The training on preventive maintenance involves complex technical and mechanical concepts, which typically require prior knowledge among operators or technicians. However, some trainees lacked foundational skills in machine operation and maintenance. To address this gap, the trainers delivered the instruction in the local dialect to enhance comprehension and engagement. Additionally, they began the sessions by covering the fundamental components and functions of the machine, ensuring that all participants developed a solid understanding before progressing to more advanced topics.
  3. *Lack of funds in the food production operation*. The multi-powered dehydration machine was an existing grant to the community prior to the conduct of the training. The training aimed to equip beneficiaries with its functions and operations. However, in order to launch its full operation, the beneficiaries need funds to purchase raw materials and other ingredients to develop food products. In order to start the production, several faculty members and inventors of the machine donated an amount to fund the initial capital. This was done in a spirit of volunteerism and goodwill by the extension implementers to help the community as they start their production.

**Program Evaluation**

This program evaluation is the accumulated result of all assessment and evaluation conducted to the extension program ranging from the satisfaction feedback of the beneficiaries and partners, interview with selected participants and analysis of documentary report of the project. It covers four areas: effectiveness, efficiency, best practices and overall impact assessment.

**Effectiveness**

Measuring the effectiveness of an impact study for an extension program requires a multifaceted approach that combines quantitative and qualitative methods. Parameters for effectiveness are attainment of objectives, baseline and endline indicators, and beneficiary feedback.

**Attainment of Objectives.** One parameter of the effectiveness of the program is its ability to attain its objective set at the planning stage of the project. The main objective of the extension project was to empower the Magagmay Kristianong Katilingban (MKK) group through livelihood training projects such as foods safety handling, food packaging and labeling of seaweed products, and maintenance of equipment. Based on the interview and studies, these training were successfully implemented with high or very satisfactory ratings from the beneficiary. The livelihood skills training empowered the beneficiaries to be socially and economically empowered as their acquired skills uplifted their self-esteem and confidence. This result was narrated and ascertained by the beneficiary.

**Baseline and endline indicators (zero project scenario).** FGDdiscussants shared that prior to the project implementation, their main income is centered only in selling fresh seaweeds and fishing. They have no other extra income as they do not have any knowledge in food production. They also do not have the necessary equipment for food production. Their daily income would be affected with inclement weather and strong typhoon as they could not risk sailing to the sea with the heavy waves and wind. Now, they have acquired a multi-power dehydrator machine and equipped with the necessary skill in producing food products and maintenance of their equipment. Operation of the food production is ongoing and though seasonal, beneficiaries were able to gain supplemental income. They also displayed innovativeness by inventing new products out of seaweeds but admitted that they need more training in their new venture.

**Beneficiary feedback.** The introduction of the multi-powered dehydrator machine to dry seaweeds opened up many opportunities and growth to the remote coastal areas of Tiabas. Despite many setbacks, the beneficiaries exhibited resiliency in overcoming challenges and fostering a shared culture of communality and innovation. Despite the ceasing of the MKK organization, the beneficiaries were able to establish a cooperative (Bura ay Seaweeds and Fisherfolks Association) amongst themselves so that they could work under one goal and aim. Their success is marked by their growing numbers as more and more members joined. To better serve the members, they agreed to divide the cooperative and establish a new one based on their specific livelihood in seaweeds and sitio of residence (Gamot Proper Santikan Buraay Seaweeds Farmers Association). This way, each cooperative could have a manageable number of members who could function effectively and benefit equitably from the shared resources. They continually innovate their products. They identified their needs for innovation and they share their knowledge to new members so that they too could have a chance to learn and earn.

**Efficiency**

**Assess the relationship between input (resources) and outputs**. Looking at the project cost, it is easier to deduce that the resources have short term and long-term benefits to the beneficiary in both social and economic impact. The attainment of all the objectives is one solid proof of social return of investment of the expended resources. The resources allocated are well justified because of the well-designed and effectively implemented programs which provided substantial returns on investment, both in the indirect economic terms and in broader social development outcomes. Economic returns are marked with the supplemental income gained by the beneficiary. Social returns are determined with the scalability and diffusion of knowledge among the community and growth of the seaweed farmers marked by establishment of new cooperative that would cater specifically to seaweed farmers. The programs are tailored to local needs, efficiently managed, and rigorously implemented to maximize the impact of invested resources.

**Timely delivery of trainings.** The livelihood skills trainings were done on time and right on schedule. The topics were also very timely and relevant as beneficiaries were more eager to learn new skills to augment their income. They were committed to the training as it was their means to earn alternative income so they will not have to rely solely on fishing which is now often hindered by inclement weather.

**Sustainability of the program (steps taken to ensure sustainability).** To achieve sustainability and self-reliance, this project focused on capacity-building that equips beneficiaries with practical skills directly applicable to their local context, thereby enabling them to generate income independently. Programs were tailored to address specific community needs, incorporating hands-on learning, and fostering a mindset of empowerment to help participants transition from dependency to self-sufficiency. Establishing and strengthening local support structures such as a cooperative and forging partnership with LGU, private agencies and other linkages further reinforced collective ownership and continuity beyond the project timeline. In addition, constant monitoring even through informal talks with inventors of the machine ensured that the machine is fully operational. This informal relationship transcended the formality required in the academe but it built a stronger relationship that extends beyond the border of the project. This is the essence of community service.

**Overall Impact Assessment**

The overall impact assessment of this livelihood training extension project demonstrated significant positive outcomes in both economic and social dimensions. Beneficiaries were expected to gain additional source of income through enhanced skills in production, processing, and equipment maintenance, which aligned with key livelihood indicators such as additional household income and self-reliance in maintaining the functionality of their equipment. The project’s effectiveness was further reflected in shared communal knowledge, more livelihood diversification, and empowerment, contributing to sustainable development and poverty reduction in this remote coastal area. These impacts aligned with the Sustainable Development Goal 1- Zero Poverty and Goal 11 Sustainable Communities. Overall, the project fostered economic diversity and social well-being, confirming a strong correlation between program effectiveness and positive livelihood impacts over time. In addition, the impact could be discerned also in the embodied volunteerism and selflessness of the implementors. Conducting extension projects could entail unforeseen risks but through willingness and volunteerism, challenges could be overcome.

**Suggestions for the improvement and future endeavors of the extension program**

Several suggestions were solicited from the beneficiary for the improvement and future direction of the project. Their responses are valuable to improve future programs and work upon their needs for future extension activities. The following are their suggestions.

**More future trainings**. Beneficiaries expressed their eagerness to undergo more trainings on topics related to food production and marketing so they could gain more skills in entrepreneurship and business management. In particular, they requested for trainings to better improve the quality of their seaweed noodle production including its packaging and labelling.

**Market opportunity for food products such as chips, pickles, noodles and other seaweed products**. Most of the beneficiaries’ products are currently sold only within the local area and neighboring towns. To expand their market reach, the beneficiaries were actively seeking assistance in accessing broader markets and establishing partnerships with retail stores and supermarkets where they can promote and sell their products more effectively.

**Continuous programs and monitoring of beneficiaries**. KII 2 advocated for the regular monitoring of the beneficiaries to observe more social and economic impact of the training programs in their lives. Regular follow-up allowed project implementers to track the social and economic progress of participants, identify challenges they face in applying new skills, and provide timely support or refresher training as needed.

**Limited number of days for training**. This resulted in insufficient time for participants to fully grasp complex skills and concepts. This led to gaps in knowledge and reduced confidence in applying the new skills independently. It is suggested to conduct a refresher training including the actual hands-on training of the beneficiary to ensure mastery and competency.

**Areas for Improvement / Underlying Issues for Consideration**

Several underlying issues arise during the implementation of the project. These could serve as issues to be considered in any future endeavors of the extension project.

* *Aging population of seaweed farmers*. FGD discussants revealed that majority of seaweed farmers were senior citizens with ages 60 years old and above. Younger generations do not have the same desire or inclination to pursue this kind of livelihood. It could be a point to ponder for future programs on how to encourage younger generation to consider farming as part of their livelihood.
* *Unregulated pricing of dried seaweeds due to limited bulk buyer*. Beneficiaries dry seaweeds to sell them to “comprador” or buyer who would buy by bulk. These seaweeds are then transported to Cebu and other manufacturing plants to be made into other seaweed-based products. Due to lack of competition, the only bulk buyer could set and regulate the price of the seaweeds and this often leave the farmers at a disadvantaged low price. They have no choice to but to sell their products despite such a low price since there are no other buyers in the area. The beneficiaries air these sentiments hoping that they could gain more market access and get a reasonable and competitive price for their dried seaweed products.
* *Low power supply in the area*. The low power supply in the area is not suitable for high powered equipment that could be purchased to augment the food production process of the cooperative. As a result, equipment such as freezer, oven and other equipment could not be purchased or granted to the cooperative. This issue requires inter agency partnership and collaboration with power distributor and LGU in the area for an adequate energy supply in the area.
* *Political climate*. Political climate can significantly impede the smooth implementation and progress of projects. Project implementers should proactively develop adaptive strategies to navigate political instability, such as engaging key political stakeholders early and maintaining flexible project plans that can adjust to changing circumstances. Building strong relationships with local authorities and fostering multi-stakeholder collaboration can help mitigate political risks and secure necessary support throughout the project lifecycle.

**Strength of the Project/ Best Practices**

**Volunteerism.** Most extension activities would just cease to exist due to the common challenges of lack of funds and continual support. However, the true essence of community service is when the implementors would look beyond their duty and see the project not just as a compliance but a service for the greater good of the public. This is what sets this project apart. This is not just mere regulatory requirement of the College. This is a mission taken to heart by the implementors. Narratives from the beneficiary would tell that implementer involved in the project had unselfishly shelled out cash donations just to provide for the initial capital to fund the operation of the food production. Despite the training and provided equipment, the poor community still need money to launch their initiative. The donation was given without condition but with a clear mission, and that is to support the community.

**Relationship built on trust and open communication.** Aside from the monetary donation, the inventors of the machine would frequently visit and monitor the status of the machine ensuring that it is functioning well. These visits were often done in personal capacity so as to build rapport and trust with the community. Their frequent appearance and communication with the community build up trust and make the beneficiaries feel confident in the intentions and reliability of the program, which increased their willingness to participate and engage actively. Moreover, these frequent communications helped address concerns promptly enhancing the program’s effectiveness and sustainability.

**Initiative and innovativeness of the community.** The adapted skills of the beneficiaries gave them newfound skills and confidence. They have the initiative to innovate by experimenting ways to develop new products. They also learned to identify their weakness and asked for more trainings to help them overcome them. This can lead to the development of innovative products, increased community confidence, and self-motivated ongoing skill enhancement.

**CONCLUSION AND RECOMMENDATION**

In conclusion, this livelihood training extension project has demonstrated significant success in empowering remote coastal communities by equipping beneficiaries with essential technical skills, enhancing their capacity for sustainable income generation, and fostering community resilience. The tailored approach, which includes preventive maintenance training, product development, and market-oriented packaging, has not only improved economic opportunities but also strengthened social cohesion and self-reliance among participants.

To further enhance the project’s impact, the following are recommended

1. extend the training duration to allow deeper mastery of complex skills
2. conduct further trainings in food production of other seaweed-based products as suggested by the beneficiary
3. incorporate ongoing mentorship and refresher sessions to reinforce learning
4. establish stronger linkages with local markets, LGU and financial institutions to facilitate access to capital and market expansion and respond to other concerns of the barangay
5. integrate environmental sustainability practices and monitoring mechanisms to ensure that economic gains do not compromise ecological health

These suggestions could promote long-term viability of both livelihoods and natural resources.

**References**

Alvior, M. G. (2021). Seaweed farmers' parental involvement towards the education and recreational activities of their children in Brgy. Tiabas, San Dionisio, Iloilo. *Psychology and Education Journal, 58*(2), 4928–4933. <http://psychologyandeducation.net/pae/index.php/pae/article/view/4928>

Andriesse, E. (2022, June 16). Sowing the seaweeds of change: Success and failure in the Philippines. *Devpolicy Blog*. <https://devpolicy.org/sowing-the-seaweeds-of-change-success-and-failure-in-the-philippines-20220608/>

Creswell, J. W., & Plano Clark, V. L. (2017). Designing and conducting mixed methods research (3rd ed.). SAGE Publications.

Diem, K. G. (2003). Program development in a political world—It's all about impact! Journal of Extension, 41(1), 1FEA6.

Esteban, A. P. (2025). Assessing the impact of community extension program in a Philippines state university: A comprehensive framework and analysis. *Edelweiss Applied Science and Technology, 9*(2), 1659–1675. <https://doi.org/10.55214/25768484.v9i2.4853>

Franz, N. K., & Townson, L. (2008). The nature of complex organizations: The case of Cooperative Extension. New Directions for Evaluation, 2008(120), 5-14.

Gabutin, D. R., Aloroy, M. E., & Dueñas, R. S. (2024). Impact assessment on the extension and community services of the College of Industrial Technology (2019-2021). *EPRA International Journal of Research & Development, 9*(6). <https://eprajournals.com/IJSR/article/13222>

Greene, J. C., Caracelli, V. J., & Graham, W. F. (1989). Toward a conceptual framework for mixed-method evaluation designs. Educational Evaluation and Policy Analysis, 11(3), 255-274.

Guest G, Namey E, O'Regan A, et al. (2020) Comparing Interview and Focus Group Data Collected in Person and Online [Internet]. Washington (DC): Patient-Centered Outcomes Research Institute (PCORI); 2020 May. Available from: https://www.ncbi.nlm.nih.gov/books/NBK588708/ doi: 10.25302/05.2020.ME.1403117064

Franz, N. K., & Townson, L. (2008). The nature of complex organizations: The case of Cooperative Extension. New Directions for Evaluation, 2008(120), 5-14.

Ivankova, N. V., Creswell, J. W., & Stick, S. L. (2006). Using mixed-methods sequential explanatory design: From theory to practice. Field Methods, 18(1), 3-20.

Kumar, K. (1989). Conducting key informant interviews in developing countries. A.I.D. Program Design and Evaluation Methodology Report No. 13. Agency for International Development.

Lunar, B. C., Gesmundo, J. C. P., Alvero, J. C. M., Roño, K. A. D., & Allic, C. M. (2023). Empowerment and socio-economic impact of livelihood trainings: A case of a private educational institution in Southern Luzon, Philippines. *INTI Journal*, 2023(49). [https://intijournal.intimal.edu.my](https://intijournal.intimal.edu.my/)

Merriam, S. B., & Tisdell, E. J. (2016). Qualitative research: A guide to design and implementation (4th ed.). San Francisco, CA: John Wiley & Sons, Inc.

Quijano-Pagutayao, A. S., Ucang, J. T., Bacus, M. S., Soliven, H. E., Beronio, A. B., Cosrojas, K. D. J., & San Pascual, J. L. (2024). Impact assessment of the extension activities conducted by the College of Education, Central Mindanao University, Maramag, Bukidnon, Philippines. *Central Mindanao University*. <https://seyboldpublications.com/wp-content/uploads/2024/05/Pagutayao.pdf>

Philippine Council for Agriculture, Aquatic, and Natural Resources Research and Development (DOST-PCAARRD). (2025). Strengthening Extension Project Management: Communicating Results, Demonstrating Impact, and Ensuring Financial Sustainability. Retrieved from [https://www.pcaarrd.dost.gov.ph](https://www.pcaarrd.dost.gov.ph/)

UNDP Evaluation Resource Centre. (2022). *Theory of change - narrative*. <https://erc.undp.org/api/download?filePath=%2Fdocuments%2F9385%2Fmgmtresponse%2Fkeyaction%2Fdoc_2202126923917374628Attachement1_ERRYIITheoryofChangeFinal1.pdf>

World Vision. (2020). *Youth livelihood and empowerment theory of change*. <https://www.worldvision.com.au/docs/default-source/seed-docs/youth-livelihoods/world-visions-youth-livelihood-and-empowerment-theory-of-change.pdf>