

BUSINESS ENTERPRISE LIVELIHOOD IN NATO (BELEN) HOMEMADE CANNED SARDINES: A COMMUNITY EXTENSION SERVICES

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ABSTRACT

The Training cum Production on Homemade Canned Sardines (Business Economic and Livelihood Enterprise in Nato [Nanay BELEN]) generally focused on the upliftment of living conditions of marginal fishermen in Nato. Specifically, it aimed to: a) train the fishers' wives in making homemade canned sardines; b) produce quality homemade sardines; and c) increased the income of fishers' wives. Sixty (60) fishers' wives from Nato, Sagnay, Camarines Sur were successfully trained to the following Knowledge & skills: a) basic principles on proper handling and bottling fishery products b) proper method of bottling fish sardines c) good manufacturing Practices d) Packaging and Labeling and e) Costing and Pricing of bottling sardines' in Spanish Style. The trainees were able to produce two hundred fifty (250) bottled Sardines in Spanish Style and were sold at Ninety (90) pesos per bottle. Each trainee was required to sell the 3 bottles and the income generated was given to them. After the training, there were ten (10) participants who were already producing the bottled sardines as their small business enterprise and a source of additional income. As a new venture, this project seeks to pursue this project since barangay Nato, Sagnay, Camarines Sur has potential for tourist market. Success of the business enterprise was attained through effective and efficient production of bottled sardines by applying the standard process and methodology, and an aggressive promotion with the essential focus at quality, customer (internal and external) satisfaction and the establishment of women associations.

KEYWORDS: Business Enterprise Livelihood, Homemade, Canned Sardines

1. INTRODUCTION

Conducting community service is about relationships and building communities. It is designed for personal and social development (Rubio, Jo-Anne May A et.al., 2016)^[1]. It is the avenue where higher educational institutions extend their expertise in line with its programs. Salazar, Teresita B., 2020^[2] stated that extension and community involvement shares the transfer of technology and other extension programs which would assist to alleviate the economic status of its beneficiaries. This extension and linkages is not only intended for the community outside the campus, but it is done also within the campus of the institution itself. Extension programs and projects must be responsive to the needs of the target clientele and must be supportive of the ten-point agenda of the government and the medium-term regional development plan of the Bicol Region specifically on poverty alleviation Small-scale fish processing enterprise are important to the livelihoods of many of the rural poor in Bicol Region, Philippines.

The educational system as mandated by Philippine Constitution, shall reach out to educationally deprived communities in order to give meaningful reality to their membership in national society and finally enrich their civic participation in program undertaking (De Leon 2008)^[3]. Partido State University Sagnay Campus is mandated through the Coastal WetLand Center (CWC) of Partido State University (PSU) to lead the conservation and management of aquatic fishery resources in the Partido Area. This mandate harmonizes the need to continually strengthen the technical capability of its personnel in delivering services to its clientele, the Local Government Units (LGU's), Non- Government Organizations, fisherfolks, Fishery Faculty and Students and other stakeholders. In line with this the CWC caters the request of the LGU's and other stakeholders

soliciting technical assistance in the livelihood program which is the framework of improving the lives of the Partidonians.

As explained by David Corten (1986)^[4], "Community Development (AsianExperience)", it is explained that: Community Based Development, able to develop socio-culturally compatible, where the social process of society will be developed more productively and economically able to develop itself into a social fabric efficient, "effective and economical for the development of community prosperity." (Budi Rianto, 2013)^[5] The economic activities carried out by small fishermen occur in fishery and fishing port areas, where derived economic activities as a linkage of the capture fisheries growing and developing in fishing and fishing ports.

Type of fishery business is divided into three, among others: Enterprises through fishing, business through cultivation and fish processing business. Fish Processing is a fishery business carried out in a fishery business system which is included in the fish processing group^[6]. As stated by Budi Rianto (2008)^[5] as follows: "The government regulates, encourages, and / or conducts fisheries research and development to produce the knowledge and technology needed in the development of fishery business to be more effective, efficient, economical, competitive, and friendly environment, and appreciate the wisdom of local traditions / cultures".

Nato, Sagñay, Camarines, Philippines where PSU Sagnay Campus is one of the coastal barangay of which is dependent on seasonal fishing and as their main source of income. Considering that Partido State University Sagñay Campus is located in this barangay, it is the concern of the university to help and improve the lives of the Nato residents. Likewise, Nato has a fish port where fish caught in Sagñay are being landed. Hence, this project will be conducted by PSU in coordination with LGU Sagñay to provide knowledge and skills in canning as one of the opportunities to the community.

Canning or bottling Smoked sardines was standardized the process where the smoked sardines can be packed in oil in an 8oz glass jar process for at 60, 75 & 90 minutes at 121°C (Pressure 15 psi) with a process lethality (F_0) of 5 minutes (Bigueja, M., et.al., 2020)^[7].

Fish and fish products play a highly important role in the food and nutritional security of rural, urban and coastal populations throughout Asia and the Pacific. Moreover, sardines are one of the most abundant species inhabiting coastal regions in the Philippines. Sardines occur in high abundance across and beyond productive coastal areas of upwelling regions in the Philippines. It has been observed that in areas in the Philippines where there is high landing of sardines, there is also a high rate of primary productivity suggesting that there are numerous suitable sardine-supporting habitats in the country (Willette, D. A., et. al., 2011)^[8]. Indian oil sardines or "tunsoy" in local names are abundantly caught not only in Bicol Region but all over the Philippines. This fish is not commonly used for direct consumption because of its being delicate, spiny and oily in appearance. Some villagers in Bicol Region say that if the fish is in season these fishes are abundantly caught every day. When fishes were not sold during these days, these were salted or dried. During the rainy season when drying cannot be done sometimes they are just thrown or buried in the sand (Bigueja, M. and Lanciso, L., 2013)^[9].

The food industry has been making great efforts to offer products that meet the highest quality and safety standards to protect the health of consumers, as well as to provide foods that are easy to consume and that are available worldwide and all year long. Furthermore, health organizations are unanimous in advising the regular consumption of fish as a vital part of the human diet^[10,11]. According to the World Health Organization regular fish consumption (i.e., 1–2 servings per week) protects against coronary heart disease and ischaemic stroke^[12]. Moreover, each serving should provide an equivalent of 200–500 mg of eicosapentaenoic (EPA) and docosahexaenoic acids (DHA) to achieve clinical significance^[13]. In addition to these macronutrients, fish is also a source of high-quality protein, lipid-soluble vitamins, microelements and other fatty acids with recognized health benefits^[14]. Therefore, appropriate manufacture, handling and storage conditions are required to preserve the quality of the fish until it reaches consumers (Cruz R, et.al. 2022)^[15].

Home canning is a way to save food. Currently, canned fish products have been widely circulated in the free market, including those found in supermarkets and traditional markets. Not only home industries have produced canned fish, but also large industries. The existence of canned fish began to be known to the public, although not widely. Therefore, a literature review is needed regarding the potential and advantages of canned packaging in fishery products. The results of this literature review are expected to present further experimental research

related to the use of canned packaging in fishery products that have a better impact on fishery products and consumers (Maulana Asyrofi Najib and Juniato, 2021)^[16]. Home-canned goods, however, have the advantage of being on hand, ready for use at short notice. Homemade canned products are: (1) safe for use; (2) free from spoilage; and (3) palatable and attractive. A well-balanced selection for good nutrition for the family is important thus, the amount and choice of food should carefully plan to assure enough food for a year-round supply. Hence, this project was conceptualized to serve the community of Nato.

2. PROJECT DESCRIPTION AND OBJECTIVES

This community extension services aimed to uplift the living condition of marginal fishermen in Nato by providing a 7 days training to the clientele particularly to fisher wives in processing homemade canned or bottled sardines. The clientele are expected to engage in the production of bottled sardines, properly labelled and sold it in the market. This undertaking the fisher wives are expected to be able to create their owned business enterprise as the source of additional income.

Implementation of this guide with work plan as shown in Table 1.

Table 1. Work Plan of the Community Extension Services

Implementation Phase	Activities	Expected Results	Time Table by days							
			1	2	3	4	5	6	7	
1. Capacitate fisher wives on hygienic Business enterprise livelihood in Nato (BELEN) Homemade Canned Sardines	Capacitation of fishers on hygienic handling of fish Capacitation of fisher wives on bottled sardines processing in Spanish style.	60 from selected barangay participants trained on hygienic smoked processing enterprise management.								
2. Capacitate fisher wives on costing and pricing fish products	conduct training on proper costing and pricing of the finish product to be sold	60 from selected barangay participants trained proper costing and pricing of the finish product to be sold								
4. train the fisher wives on Good Manufacturing Processes	conduct training on good manufacturing Practices	60 from selected barangay participants trained on good manufacturing Practices								
5. Capacitate fisher wives on product labeling	Capacitation fisher wives on product labeling	60 from selected barangay participants trained on Packaging Design Development								
6. Produce bottled products and sold at reasonable price	Allow the participants to use the equipment and materials to produce bottled products. Encouraged the participants to sold the finished product.	250 bottles produced by the participants and sold at a reasonable price. The accrued from the sold were used as the starting capital of the recipients of the projects								

PROJECT PROCESS

The proponents coordinated with the LGU and Nato Barangay Council in the selection of trainees. Sixty (60) fishers’ wives were selected. The training for making bottled sardines in Spanish style was done for 7 days, one day for lecture on proper handling and sanitation of the fish and four (4) days for days for skills training and two (2) Days for Training on Costing and Pricing, on good manufacturing Practices Packaging and Labeling. All products were sold and the net income to be generated from their production shall become their revolving capital.

The training was conducted by the expert from Coastal Wetland Center of Partido State University and was supervised by the proponents and the LGU Sagnay people. The venue was at PSU Sagnay Campus where the fish processing area and tools and equipment are available. The training was financed by the LGU of Sagnay Camarines Sur, Philippines. Before the start of the training Memorandum of agreement was initiated between PSU and LGU Sagnay Camarines Sur. Pre- test as given before the start of the training, this to determine whether the trainees had basic knowledge on canning fish and the trainees were given. According to Shivaraju,

P. T., 2017^[17] pre- and post-tests are used to measure knowledge gained from participating in a training course. Pre-tests can also be used as a way to judge the depth of understanding of prerequisite material (Berry, Thomas, 2008)^[18]. There 60 fisher wives attended the 7 days training on Processing smoked bottled sardines. The components were: a) Production of Bottled Sardines; b) Training on Costing and Pricing representative; c) Conduct training on good manufacturing Practices; and d) Training on Packaging and Labeling. After the training Post was given to assess the effectiveness of the training conducted.

3. OUTPUTS AND OUTCOMES

3.1 Number of Fishers’ Wives Trained of Home- Made Canned Sardines

Sixty (60) fishers’ wives from Nato Sagnay Camarines Sur, Philippines were successfully trained to the following Knowledge & skills: a) basic principles on proper handling and bottling fishery products, proper methodology b) proper of bottling of fish sardines c) on good manufacturing Practices d) Packaging and Labeling and e) Costing and Pricing of bottling sardines’ in Spanish Style. Before the start of the training Pre-test was conducted. They are trained not only knowledge regarding canning of Smoked sardines but they were gained the skill of production of the Homemade canned sardines. Based from the result of the posttest there were significant difference between the pre-test and post-test (Table 2.). Another indication that goal of this training was successfully attained due to the fact that trainees where able to produce bottled sardines during the practical assessment. The trainees were group into six groups and them to perform the canning of sardines applying the knowledge gain from the 7 days’ trainings.

3.2 Results of the Pre and Post Test.

A total of multiple choice question were prepared and asked the participants to answer before the start of the training (Pre-test) and after the training (post-test). Table 2 result of the t-test analysis if there is a significance difference between the pre-test and post-test.

Table 2. Results of t-Test: Paired Two Sample for Mean

	<i>Pre-Test</i>	<i>Post-Test</i>
Mean	10.30508475	22.86440678
Variance	40.5949737	64.42957335
Observations	59	59
Pearson		
Correlation	0.407734836	
Hypothesized		
Mean Difference	0	
df	58	
t Stat	-12.12335413	
P(T<=t) one-tail	7.70517E-18	
t Critical one-tail	1.671552762	
P(T<=t) two-tail	1.54103E-17	
t Critical two-tail	2.001717484	

As shown in table $P > .05$ therefore there is a significant difference. Results indicate there were effective learning outcomes Malik, Tayyaba Gul and Alam, Rabail 2019^[19] compared the results of pretest and post-test model to post-test model then they concluded that Pre-test/post-test model was significantly more effective in students in achieving the learning outcomes in a lecture as compared to post-test only model ($p < 0.01$). Many studies are available which have shown that pretest/posttest model helps to monitor student progression and learning throughout a course or program^[20]. This technique is not only used at many educational setups to test the success of a teaching session but is also found to be a tool of research in medical education^[18].

3.3 Generated Income by participants

Although During the training the trainees were able to produce two hundred fifty (250) bottled Sardines in Spanish Style, properly labeled and sold in nearby barangays. However, after the training on only 10 participants pursued on canning sardines and marketed to the nearby barangays while most the trainees found difficultied to engaged in enterprise for bottled sardines due to some reasons: a) no available facilities where the

product can be processed in compliance to food safety, lack equipment and tools and no capital to pursue the operation of the business. Furthermore, trainees need also a managerial skills and marketing skills. Asogwa, VC and Asogwa, JN., 2018) ^[21] stated that Successful marketing requires learning new skills, new techniques and new ways of obtaining and using the information appropriately. Marketing is the point in which the farmer's products such as fish leave him with a return called income. Marketing of fish involves all the activities in the flow of fish or fish products from the farmer to the consumers. It includes various operations required to move the fish or fish products from the producer to the consumer. Marketing of fish also entails the buying and selling of fish by an individual who may not be a fish farmer. A lack of sustainable management in fisheries and fish farms affects the accessibility and affordability of raw material. Specifically, through new evidence commissioned by WWF, the financial impacts of resource degradation due to weak management are beginning to materialize for seafood companies in the form of supply and price volatility (WWF-US, 2019) ^[22].

3.4 Training Evaluation Results

3.4.1. Timeliness of Activity

Table 3. Frequency Distribution on the Evaluation of Timeliness of Activity on Date, Time & Venue of the Activity Conducted

Criteria	Average Mean	Interpretation
1. Were you properly informed of the following:		
a. training date	4.70	Best
b. venue	4.60	Best
2. Were you able to locate the venue easily?	4.90	Best
3. We're training started and ended at scheduled time?	4.67	Best
<i>Over Weighted Mean</i>	4.72	Best

Table 1 showed that almost all of the participants were informed about the activity specifically on its dates having an average mean of 4.60, while the venue is 4.90, and the location with 4.90. As to the information if the training were started and ended at scheduled time, majority of them answered with 4.67 rating. Generally, timeliness were rated 4.72 or Best. The results indicate that the activity was well prepared and started on time.

Table 4. Frequency Distribution on the Evaluation of Timeliness of Activity on Logistics of the Activity Conducted

Criteria	Average Mean	Interpretation
1. Were you given copy of the program or activity flow of training?	4.47	Better
2. Were you given of hand-outs for your further review and learning on the day of training?	4.87	Best
3. Were materials or supplies needed for the training made available to you	4.42	Best
4. Were food provisions served to you on time, if there are provisions	4.62	Better
overall	4.62	Best

As shown in Table 2 the participants agreed that they were given of hand-outs for your further review and learning on the day of training and materials or supplies needed for the training was with the rating of best or 4.73 and 4.87 respectively while on the question about copy of programs of the trainings and food provision was rated better. Generally, the Logistics of the activity was rated 4.62 or best. This result indicates that the material and food was available during the training.

Table 5. Frequency Distribution on the Evaluation on Timeliness of Activity on the Human Resource of the Activity Conducted

Criteria	Average Mean	Interpretation
1. Were you able to come and attend the training on time?	4.83	Best
2. Were you able to finish workshops of training on time?	4.70	Best
3. Were facilitators attentive to answer your needs during the training?	4.65	Best
Overall	4.73	Best

Table 3 showed the results for Timeliness of Activity on the human resource. The data revealed the trainees rated they were able to come and attend the training on time, finish workshops of training on time and facilitators attentive to answer their needs during the training with rating of 4.83, 4.70 and 4.65 or best respectively. This result implied that the program was properly planned.

Table 6. Frequency Distribution on the Evaluation on Timeliness of Activity on the Training Proper of the Activity Conducted

Criteria	Average Mean	Interpretation
1. Were contents of training?		
a. relevant to you	4.88	Best
b. enriching	4.72	Best
c. well-organized ideas	4.65	Best
2. Were you around at all times during the training?	4.83	Best
3. Were you able to learn the topics of training only this day?	4.73	Best
4. Was the time to administer this evaluation sufficient?	4.68	Best
Overall	4.75	Best

For the training proper, the relevant of the training was rated 4.88 or best. On the other hand, the question if the training enriched them and the ideas of training were well-organized was rated best or 3.72 & 4.65 respectively. It was also revealed that human resources are around at all times during the training having the rating of 4.83 or best. Interestingly, the training proper was rated best or 4.75 which means that the training answered to the needs of the participants.

3.4.2. Quality Performance of Activity

Table 7. Frequency Distribution on the Evaluation for Quality Performance of Activity on Date, Time & Venue

Criteria	Average Mean	Interpretation
1. Was the venue of the training conducive for learning?	4.63	Best
2. Was allotted time for certain programme or training flow sufficient?	4.63	Best
3. Was the date of training made in your availability or flexibility?	4.67	Best
Overall	4.75	Best

Table 5 shows the data for Quality Performance of Activity on Date, Time & Venue that the majority said that the venue of the training were conducive for learning with an average mean of 4.63, on the time allotted for certain flow of training were sufficient. With regards to the date of training majority rated 4.63 while on the availability & flexibility of time was rated 4.75 or best. This result indicates that Quality Performance of Activity on Date, Time & Venue was excellent. **Table**

8. Frequency Distribution on the Evaluation on the Evaluation on Quality Performance of Activity on Training/ Content

Criteria	Average Mean	Interpretation
1. Were the topic discussion or presentation of training:		
a.) easy to understand;	4.72	Best
b.) interesting;	4.77	Best
c.) informative;	4.70	Best
2. We're training methods (lecture/ discussion/workshop/ eyes breaker) applied relevant?	4.62	Best
3. Were the methods applied appropriate and suitable to your learning?	4.60	Best
4. Were you able to find the training responsive to your present needs?	4.73	Best
Overall	4.69	Best

Table 9 shows the frequency distribution on the evaluation on quality performance of activity on training/ Content. Generally, the Training content was rated 4.69 or best. This result noted the training content motivates and responsive to the needs of the participant,

Table 10. Frequency Distribution on the Evaluation on Quality Performance of Activity on Logistics

<i>Criteria</i>	Average Mean	Interpretation
1. Were materials o supplies helpful for your review and further learning?	4.73	Best
2. Were technical equipment (e.i. computer, projector, television) used helpful in visualization of training topics?	4.63	Best

It was noted that supplies, materials and equipment needed in the training for effective and efficient conduct of bottling fish sardines are available and sufficient.

Table 11. Frequency Distribution on the Evaluation on Quality Performance of Activity on Human Resource

<i>Criteria</i>	Average Mean	Interpretation
1. Were your trainer/ facilitator accommodating to your needs while training is on-going?	4.77	Best
2. Were your trainer/ facilitator promptly responded to your queries relevant to training topics?	4.70	Best
3. Were your trainer/ facilitator articulated topics?	4.70	Best
Overall	4.72	Best

As shown in the Table above the criteria given on the on quality performance of activity on human resource was rated by the trainees as best or 4.72. It indicates that human resources are accommodating and facilitating the activities.

4. LESSONS LEARNED AND WAY FORWARD

Canning or bottling is one of the best methods of preserving fish for the long period of time. Rianto, B., et.al., (2017) ^[6] stated by way of development of domestic fish canning industry with hermetic application technology. With the development of industrialization of this fish canning, then:

1. Can produce more hygienic fish processing results.
2. Can be produced that have a longer consumption period, even up to 1 or 2 years.
3. Can be produced with higher economic value.
4. The period of consumption of long fish processing results, allowing the canned fish processing business, can reach a wider market.
5. Through the business of this fish canning industry, the group of processors and marketers of canned fish, is no longer highly dependent on the fishing season in running their business.

Hence, the introduction of canning or bottling technology to the community, with the application of environmentally friendly technology will be able to reach the middle class fish processing and marketer fish community, thus enabling businesses with the application of this technology can be accepted by the local community. Besides sardine’s fish are the cheapest fish sold in the region as well as in the country because of spiny flesh but this will be bottled and will have higher economic value.

Based from the comments of the participants of this training development of fish canning industry in Nato, Sagnay, Camarines Sur, Philippines there is a need to empower the people's economy as well as in the provision of national food, given that fish are processed in hermetically sealed container or canning method and has a longer economic value and more hygienic values compared to other fish processing method.

5. CONCLUSION AND RECOMMENDATION

The training was successfully implemented and was rated by the participants as the best training they had ever experienced. For the development of the domestic fish canning industry as well as to fulfill the domestic market, based on survey of sardines catches in Nato, Sagnay, Camarines, Philippines is sufficient, so it is possible to establish a bottling industry. To process sardines fish into entrepreneurs to the domestic fish canning fishery allows, the improvement of Sardines fish processing economy. However, with regards to the technical aspect of hermetic fish processing technology transformation in canned fish production, continuous facilitation

is needed to the production system of certain quality standards and get the authorization from the authorized institution^[6]. Hence the support from different public and private stakeholders is needed. Providing canning to the community is important to sustain the business enterprise.

The project was implemented successfully through financial support of the Sangay LGU. There were sixty (60) participants trained in bottling sardines fish in Spanish style and 250 bottled sardines produced during the training. As a new venture, this project seeks to pursue this project since barangay Nato, Sagnay, Camarines Sur has potential for tourist market. This project can demonstrate its capacity to generate meaningful income if properly managed and followed the food safety guidelines on fish processing. Success of the business enterprise can be attained through effective and efficient production of bottled sardines by applying the standard process and methodology, and an aggressive promotion with the essential focus at quality, customer (internal and external) satisfaction and the establishment of women associations. Further, the community must have facilities needed in the processing of bottled fish products. Hence, to sustain this project, the university and LGU should support the implementer to acquire the needed equipment and processing area in the community.

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