

SMALL BUSINESS ENTERPRISE FOR SMOKED OR “inagunan” SKIPJACK TUNA (*Katsuwonus pelamis*): An Extension Services Project

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ABSTRACT

The Training cum Production on Fish “inagunan” generally focused to increase the value of the smoked industry to residents of the coastal areas along Lagonoy Gulf, Philippines through capacity building for employment opportunities and vertical integration of smoked processing and marketing. The training conducted in smoked fish or “inagunan” technology is directly applicable to offer a big help and provide an opportunity to the selected participants in the communities of Sagnay. Majority of the participants were given trainings on how to develop entrepreneurial skills on fish smoking or “inagunan”. They were trained on how the technology on fish smoking is being conducted and what other herbal materials or smoked flavor enhancers they are going to use to have quality products.

The participants were trained to use the locally available fish catch as raw materials for livelihood. Aside from their traditional tuna “inagunan”, it can be substituted by tilapia, milkfish and sardines fish. As such, this project seeks to pursue this project to some of the coastal areas in Bicol Region, Philippines. Success of the business or enterprise were attained through effective and efficient production of fish “inagunan” with the application of standard process and methodology, and an aggressive promotion with the essential focus on the quality, customer (internal and external) satisfaction, and the establishment of organized women associations. Hence, to sustain the business the community needs facilities for processing of fish “inagunan” which are in compliant with quality standards and food safety set by the Philippines government. Hence, continued support of the University, LGUs and other Stakeholders is necessary to uplift participants’ awareness and increased responsibility for caring and sharing community resources

KEYWORDS – Small, Business, Enterprise, Smoked, tuna “Inagunan”

1. INTRODUCTION

Research is one of the important undertaking to improve the lives of the people. Science and technology are the products of research which needed to be implemented to the community through extension services or technology transfer. On the other hand, there are more and more governmental programs aimed at supporting the development of scientific research. These changes are more visible in countries that have a fast development compared to other less developed ones (Barton, 2007) ^[1]. Nicodemus, T.; Egwakh, J.A, (2019) ^[2] that Implementation of efficient technological transfer is gaining strategic importance under the current conditions of accelerated transformation of socio-economic processes caused by rampant technological development. In such an environment, technology transfer (TT) becomes an important factor for improving companies’ competitiveness through technological advancement and innovations, and contributes to socio-economic development of regions and countries (De Moortel, K.; Crispeels, (2018) ^[3].

Extension and community involvement is the key result area which makes the community feels the presence of the institution (Salazar, T. B., (2020) ^[4]. Gonzales and Maghamil ^[5] noted that the extension service in the Philippine has been implemented during Spanish era, though it was organized into national system in 1952. Israel, Harder and Brodeur ^[6] defined community extension program as “comprehensive set of activities that are intended to bring about a sequence of outcomes among targeted clients”. Extension programs are characterized by: a focus on the needs of the target audience, the intent to affect participant learning and behavior outcomes, multiple activities that are comprehensive in nature, and presence of a formal evaluation (Rubio, Jo-Anne May A et.al., 2016) ^[7].

Fishery extension services is one of the pillars for development and plays an important catalytic role in fisheries rural development efforts in Bicol region, Philippines. It serves as the source of information on new technologies for fish farming, fish processing and preservation which if adopted by the fisher folks can improve fish production and fishing industries thus improve standards of living through additional income of the fisher folks.

In 2015, the process of Smoking Indian Mackerel (*Rastrelliger kanagurta*) Using Bagasse as Flavor Enhancer was granted Intellectual Property Rights as Utility Model by the Bureau of Patent Intellectual Property, Philippines. The process has been applied and produce in the university. The process has been tested to other types of fish particularly skipjack tuna and tuna like fishes and was found palatable and acceptable to the market. Fish smoking in Philippine particularly in Bicol Region is traditionally carried out by women in coastal towns and villages. In most fishing communities, in fact, the main economic activity of women is fish processing. The type of fish to be smoked depends on its uses and possible storage period. The smoking process can take in the form of “wet” hot smoking or “dry” hot smoking. Both processes are carried out at temperatures above 80°C, which are high enough to cook the fish.

Smoked fish is an important diet as a protein source for developing countries due to its relevant cheapness and longer shelf life than other protein source (Otila, A.D., et al., 2022) ^[8]. Smoked fish and other traditional products of fish such as salted, dried or fermented products produced by small scale family establishments are common in the Philippines (FAO, 1990) ^[9]. According to Bureau of Fisheries and Aquatic Resources smoking as a means to preserve fish is not as prevalent as drying but is seen as an important industry in Camarines Sur. In fact, the Department of Trade and Industry of the province provides assistance and trainings that aims to improve quality of produced smoked fish ^[8].

The Lagonoy Gulf, which located in Partido Area of Camarines Sur where Sagnay Camarines, Philippines located is one of the major fishing grounds in the country with high concentrations of tuna outside General Santos City—the center of tuna fisheries in the country. Unlike General Santos’ complex tuna fishing industry, the tuna trade in the Lagonoy Gulf is confined to local community markets or—if the tuna harvest is deemed “of quality”—exported to consumer markets in the capital, Manila. Seventy percent of the tuna in the Lagonoy Gulf is traded only within the vicinity or in adjacent municipalities (Lagonoy Gulf Integrated Fisheries and Aquatic Resources Management Council, 2017; Bigueja, M., et.al., 2022) ^[10, 11]. Hence, sharing this technology innovation is smoking tuna which the product is locally known as “inagunan” will be feasible for small business enterprise.

Smoke tuna or “inagunan” is one best tuna products with yummy appetite. It is usually used as seasoning or cooking vegetables recipe. It traditionally prepared by the fisher folks using the manually prepared stove. The tuna fish were cut into chunk tight by bamboo stripe then hot smoked using the improvised stove. In 2017 Parido State University (PSU) tried to improve the process of smoking the tuna and was successfully of optimized the process (Bigueja, M. et.al., 2022) ^[12]. Hence, this technology on smoking skipjack tuna and tuna like fishes is successfully implemented to the Two-hundred eight (208) females and sixteen (16) males or a total of two hundred twenty-four (224) from different barangays of Sagnay, San Jose and Lagonoy, Camarines sur Philippines.

Moreover, fish is an important source of food and income to many people in the developing world. According to the report of Barut, N and Garvilles, E (2016) ^[13]. The fishing industry’s contribution to the country’s Gross Domestic Products (GDP) were 1.2 % and 1.4% at current and constant 2000 prices, respectively. This translates to some P197.23 billion for current prices and P122.25 billion for constant prices of the country’s GDP of P15,806 billion (current prices) and P8,666 billion (constant prices). The industry also accounted for 12.9% (P197.23 billion) and 16.5% (P122.25 billion) of the Gross Value Added (GVA) in Agriculture, Hunting, Forestry and Fishing Group of P1,527 ^[14]. Based on FishR data as of 2017, fisher folks were engaged in various fishing activities. Capture fishing has gathered the biggest share for this sector. Aside from this, aquaculture, vending, gleaning, fish processing, are some of the sources of their livelihoods ^[15].

The project aims to establish strong linkage on smoked fish production and marketing. The fisher folks, particularly women, were organized and provided with proper training, market information and market linkages. The smoked production was properly programmed and other strategies also introduced to further improvement of the process. Further, the project generates new information, capacitate, develops products to establish home-based smoked fish product enterprises for fisher wives in Sagnay in order to increase their income. This can

offer unique opportunities for the development of food products from fish which can improve nutrition, prevent diseases and co-morbidities. Hence, the proponents are seeking financial assistance for this project.

The Coastal and Wetland Center of Partido State University in coordination with the Municipality of Sagay conceptualized this project and was able to seek financial assistance from the Department of Labor and Employment (DOLE) to cater the needs of the affected communities.

2. PROJECT DESCRIPTION AND OBJECTIVES

The project aims to transfer the new technology of producing “inagunan” to the stakeholders particularly the fisher folks and establish a strong linkage on smoked fish production and marketing. The fisher folks both men and women, were organized and provided with proper training, market information and market linkages. The participants were trained by applying the new technology developed by proponents in this project.

The project generated new information, capacitated, developed product and established home-based smoked fish product enterprise to fisher wives in barangays, Sagnay, San Jose and Lagonoy, Camarines Sur, Philippines. It offered unique opportunities for the development of food products from fish which improves nutrition, prevents diseases and co-morbidities.

The Coastal and Wetland Center (CWC) of Partido State University (PSU) coordinated these Municipalities in the selection of the trainees or participants for the training. The barangay council shouldered the fare of each participant. PSU coastal & Wetland Center funded the equipment, materials, supplies for processing “inagunan” and foods for the participants. The duration Project is one year. 10 days for the skills training; 10 days for capability training on basic entrepreneurial knowledge and skill; 10 days for the Good manufacturing practices including food quality assurance, food safety and food labelling; 10 days for orientation for creating cooperative and other organizations and including capability training on preparing simple proposals and work values and ethics.

The participants were organized and were encouraged to be a member of the cooperative for the sustainability of small enterprise. Monthly meetings were conducted to monitor the monthly income of the enterprise. The project aims to increase the value of the smoked industry to the area through capacity building for employment opportunities and vertical integration of smoked processing and marketing and minimized the loss of surplus catch tuna and tuna like fishes in the area and to improve the municipality economy. With the rapid technological and market development in fisheries sectors this project aims to enhance competitiveness in the global market. Shmeleva, N., et al. 2021^[16] stated that Rapid technological and market development and growing demand to enhance competitiveness in global economic space create specific requirements for the formation of an innovative business environment. Being the main goal of any business, the process of creating value can be carried out by enterprises independently, but in order for this process to be innovative, active links with the external environment are required. The growing importance of collaboration and networking for innovative development has been emphasized by E. von Hippel, H. Chesbrough, and M. Bogers^[17,18].

The novel end-to-end technologies require the involvement of a wide variety of participants (individual actors, groups of actors, and ecosystems) with different competencies in the process of developing innovations. The key strategy therein should be an interaction of subjects in various sectors of the economy (the so-called cross-sectoral or inter-sectoral interaction) through the creation of new business models and end-to-end business processes at the intersection of industries, and through cross-border cooperation^[19,20]. This project is intended to create links between science and industries to promote an innovative business enterprise.

3. PROJECT PROCESS

The extension services started in the conduct survey from the fisher's folk in the coastal areas of Partido Area of Camarines Sur, Philippines with the permission from the barangay captain. The survey is intended to seek the willingness of the men, women and out of school to participate in this project. After the survey the proposal has been prepared and presented to the president for approval of the proposal. Assistance from the different stakeholder such as: , Bureau of Fisheries and Aquatic Resources (BFAR) for technical assistance; Department of Science and Technology (DOST) for chemical and nutritional analysis of the smoked and for quality assurance of smoked products; Department of Trade and industry (DTI) for the assistance in securing business permit and assistance on the protection of consumers; Department of Labor and Employment (DOLE) assistance of the Occupational Safety and Health Standards and financial supports; and LGUs for financial support and business permit; and the Business organizations in Area for sustainability of enterprises. The idea to tap these stakeholders is for the sustainability of the Small Business Enterprise. Mahajan, M. and Bose, M., 2018^[21]

stated that the Business and Sustainable Development Commission has indicated that a focus on business sustainability only four aspects under the SDGs- namely health and wellbeing, food and agriculture, cities and energy and materials- can open market opportunities worth US\$12 trillion. Hence, there is a need to seek the aid of these stakeholders to sustain the enterprises and for the improvement of the finished products for the protection of consumers thus creating opportunity for both local and global market The Project Monitoring TEAM (PMT) of PSU has monitored the sustainability of the business enterprise in terms of food safety, quality assurance, preventing pollution and health, sanitation and market stability

4. OUTPUTS AND OUTCOMES

The Training cum Production on tuna “inagunan” generally focused to increase the value of the smoked industry to residents of Sagñay through capacity building for employment opportunities and vertical integration of smoked processing and marketing. Specifically, it aimed to: a) offered training in smoked fish or “inagunan” technology that is directly applicable to communities in Sagñay; b) developed entrepreneurial skills among the target groups; c) encouraged home-based and labor intensive income generating activities to enhance capital build-up to sustain projects; and d) utilized local fish catch as raw materials for livelihood projects.

The training on Fish “inagunan” was attended by selected residents of Barangays of Sagñay and nearby municipalities like San Jose and Lagonoy. Two-hundred eight (208) females and sixteen (16) males or a total of two hundred twenty-four (224) were present during the activity.

4.1 Profile of the Recipients of the project

Table 1. Shows the profile of the participants. These participants were the one that signified during the survey conducted that they are willing to be part of the project because they wanted to have a small business enterprise that could give them an additional income to support their family living. Beside they are willing to gained the new technology of producing tuna “inagunan” so that they could kept the product for a longer period of time since they are only using the traditional method which the products last two three days only. According to them, their main problems or issues not to succeed in this kind of enterprise because they could not keep their “inagunan” for a longer period of time and since they do not have some equipment that can be used to improve the quality of their products hence they grab the opportunity to be part of this project, looking forward that this can give them a better life.

TABLE 1. The Profile of the Recipients in Terms of Sex, Civil Status, Age and Highest Educational Attainment

Profile	Total	Percentage
Sex		
Male	16	7%
Female	208	93%
Total	224	100%
Civil Status		
Single	77	34%
Married	115	51%
Separated	12	5%
Widow	20	9%
Total	224	100%
Age		
20-29	35	16%
30-39	23	10%
40-49	66	29%
50-69	63	28%
60 above	37	17%
Total	224	100%
Highest Educational Attainment		0%

Elementary Graduate	97	43%
High School Graduate	69	31%
College Under Graduate	44	20%
College Graduate	14	6%
Total	224	100%
Occupation:		0%
Fishermen	35	16%
Farmers	58	26%
Non-Government Employee	20	9%
Housewives/husband	111	50%
Total	224	100%

As shown in the table above 93% of the participants were women and only 7% were male. This finding supports some issues presented by some researchers. Graziano, Pollnac, & Christie, 2018; Harper, Grubb, Stiles, & Sumaila, 2017^[22,23] said that in coastal fishing communities, there are clear roles for men, women, old, young, rich and poor Gender relationships are determined by social structures and shaped by social relations (Choo & Williams, 2014)^[24]. Examples of gender differences that influence men's and women's status, needs and priorities in fishing communities are as follows (Chandra et al., 2017; Torell, Owusu, & Okyere, 2016)^[25,26]: a) Women and men have different roles in the fisheries sector; b) Women tend to have less access than men to formal decision-making authorities and are less involved in local decision-making structures; c) Women and men have different access to, and control over, fisheries resources, d) Women and men have different spheres of traditional knowledge and leadership; and e) Women and men have different domestic responsibilities, including financial expenditures.

According to the Philippine Department of Labor and Employment cited by Torell, E., et.al., (2020)^[27], 90 per cent of those employed in fisheries are men. However, this number is based on a narrow definition of fisheries, which includes only fishing by boat (Choo & Williams, 2014; Kleiber, Harris, & Vincent, 2015; Siason, 2000)^[24,28,29]. In fact, women command enormous value in the fisheries sector and play a vital role in its healthy function. Women's fisheries activities are very important for household food security, because seafood harvested by women is more likely to be for subsistence (i.e. consumed by their household members) (Kleiber et al., 2015)^[28]. Women are also active in all aspects of the fisheries value chain. They sell fish to local, small-scale retailers who service nearby communities and marketplaces (Prieto-Carolino et al., 2016)^[30]. In the Visayan Sea (VS), women also dominate wholesale trading as “*factoradors*” (wholesale sellers of shrimp and first-class species) and “*beneficiadors*”, who deal with lower-value species. However, value chain studies of the Philippine abalone and tuna industries found that female traders have less access to profitable markets than men (Prieto-Carolino et al., 2016; USAID Oceans, 2018)^[30,31]. While in Lagonoy gulf, Philippines are also abundance of tuna and tuna like fish. The tuna caught by the husbands of women in this gulf are sold fresh and processed into “*inagunan*”. This can protect from being dominated by the “*factorador*” and “*beneficiadors*” hence more women join in this project for reasons stated.

These women are the majority were married and age ranges from 40-69, high school graduate and housewives. This finding is related to the studies Sustainable Livelihood and Enterprise Development of Tilapia Processing conducted by Bigueja, M., et al., 2022^[32] that most of the participants in the training are aged 40 above and majority are housewives. On the other hand, the majority of the participants are Elementary Graduate (43%) and the least is College Graduate (6%). Interestingly, these participants were able to finish the training and were to establish their smoked tuna small enterprise through the close supervision of the PMT.

4.2 Training in smoked fish or “inagunan” technology that is directly applicable to communities in Sagnay
The training conducted in smoked fish or “*inagunan*” technology is directly applicable to offer a big help and provide an opportunity to the selected participants in the communities of Sagnay. The total trained women and men were two hundred twenty-four (224) from different barangays of Sagnay and nearby municipalities like San Jose and Lagonoy. This training gave an open view to experience and learned the basic principles and application on the proper technology in smoked fish or “*inagunan*”. The lessons they have gained gave insights to improve the traditional and their conventional practices on fish smoking.

Based on the lecture given, participants were divided into two-to-four groups to perform the actual tuna “inagunan”. Each day, participants were able to group themselves to their actual fish smoking “inagunan”. Each group had their specific assignments from the beginning of the application of what they have learned during lecture. Tasking per group was implemented and everyone was involved in the processing of fish smoking “inagunan”.

4.3 Entrepreneurial skills among the target groups

Majority of the participants were given trainings on how to develop entrepreneurial skills. Everyone taught the skills on fish smoking. They were trained of how they are going to engage in business out of their finish product. Techniques and strategies were given to the participants to be able to market their fish “inagunan”. They were trained on how the technology on fish smoking being conducted and what other herbal materials they are going to use to have different taste of their product develop.

Hence, training like this is not just important for the fishing villages but even to those persons willing to adapt and learned the skills in fish smoked technology. The target recipient or community directly applicable the trainings they gained.

4.4 Home-based and labor intensive income generating activities or Create Micro Enterprise (ME) to enhance capital build-up to sustain projects

The participants were encouraged to replicate the technology they have learned in the training and established a small business enterprise. They have trained that the skills they have developed can increase their income through proper procedure of fish smoking following the standards in making fish smoking. This kind of activity brought them an idea to generate income out of doing the right process to enhance the finished product before marketing. Besides, some participants express their thoughts that this could be an alternative livelihood for them especially to the fisher wives. According to them, this kind of training is one of a kind that could truly improve their lives by way of adapting the technology. With this, they can sustain the skills they adapt and get through the actual application and adaptation of the knowledge to sustain their living. However, putting up a business is not an easy undertaking. It needs capital to start a business. That's why the government agencies were tapped to support this project and support the participants to start a micro enterprise. With the help of PSU, LGUs and DOLE the participant organized one group and created a cooperative to sustain the business. If tuna is out of season they use other fish species like milkfish, tilapia and sardines fish as alternative species that can be smoked just to sustain the business. This project contributes contribute to the creation of social value in the communities where this is implemented. According to Carrasco-Montegudo and Buendía-Martínez 2013^[33] cited by Soriano, D. R., 2017^[34] stated that Small businesses transform and develop communities. Entrepreneurs create ways to connect resources and growth across cultures, policy contexts, economic conditions and political situations that differ from a region to another. Enterprises must create strategies that will ultimately resolve major economic and social challenges and, in this sense, improve the quality of life of the region where they are located (Godar, O'Connor, and Taylor 2005)^[35]. Entrepreneurship is thus a driving force within the economy, particularly because of entrepreneurs' innovative nature (Fuellhart and Glasmeier 2003; Maxwell and Stone 2004)^[36,37].

4.5 Local fish catch as raw materials for livelihood projects

The participants in the training were trained to use the locally available fish catch as raw materials for livelihood. Aside from their traditional tuna “inagunan”, the trainees were able to learn that in the absence of tuna if there is low catch it can be substituted by tilapia, milk fish and sardines fish which also abundant in the area. Since, tilapia and milkfish is one of the freshwater/ brackish water species that is locally available year round, Sardines fish are also abundant in bicol region and smoked sardines are utilized in processing bottled products. These three species are just the example of available resources or local catch that can be used for fish smoking. After the actual fish smoking “inagunan”, participants were sold the product and the income was used to generate another products and be starting capital for micro enterprise or business.

5. LESSONS LEARNED AND WAY FORWARD

On the overall observation, the training is a big help to them since they were the prime actors in this activity. Although the training was successfully implemented supported by some government agencies but these women still need the support from the government/ private agencies to the Development of Women's Fish Processing Activities particularly on the following aspect:

- Training and mentoring assistance to help the producer/marketing groups established by women fish processors to improve different aspects of their income-generating activities.

- Access to credit: Support to groups and group members to establish and manage savings-led credit facilities, including intensive training and mentoring.
- Business development skills training: Provision of training and mentoring on basic skills for individuals, households and micro-enterprises engaged in fish processing as an income generating activity.
- Micro-enterprise development: The capacity of individuals and/or producer/marketing groups to significantly improve their income-generation potential may be facilitated by the establishment of more formal micro-enterprises among interested women.
- Family nutrition education: Women fish processors need to be trained on the basics of family nutrition. The actions we take today will influence future
- Integrated programming is a coordinated Extension approach to address multi-faceted community issues especially in coastal and upland areas. An integrated Extension approach is needed to address complex community issues in a meaningful way. Planning, implementation, and evaluation of an integrated program should be considered as a joint effort by the partnering Extension agents. This article describes how to document the impacts of an integrated Extension program to reflect the coordinated effort of the Extension team.
- Documentation as well as sharing impacts with the partners is necessary to strengthen the collaboration and sustain the integrated Extension programming effort.
- Community members' involvement in community development activities.

Based from the experience of the extensionist or the implementers of this project, the participants were thankful, happy and hoping that their business enterprise will be sustained to the continues support of the actors and players of this undertakings.

6. CONCLUSION AND RECOMMENDATION

The project was implemented successfully through financial support of the university. Two-hundred eight (208) females and sixteen (16) males or a total of two hundred twenty-six (224) were present during the training. Participants said that this training is a good avenue for new prospects in business and everyone is looking forward to more training with skills to be implemented by the ParSU and LGU. In general, the training on fish smoking led them to value local catch for this new venture.

As such, this project seeks to sustained this project since some of the coastal areas in Sagnay are practicing fish “inagunan” which could be a potential for tourist market. This project can demonstrate its capacity to generate meaningful income if properly implemented and followed the food safety guidelines on fish processing. Success of the business enterprise can be attained through effective and efficient production of fish “inagunan” by applying the standard process and methodology, and an aggressive promotion with the essential focus on the quality, customer (internal and external) satisfaction, and the establishment of organized women associations.

Further, the community must have facilities needed in the processing of fish “inagunan” products which is compliant to food safety. Hence, to sustain this project, the university and LGU should support the implementers to acquire the required equipment and processing area to the community where the recipients uplift their awareness and increased their responsibility for caring and sharing community resources.

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