Fisheries Extension Workers Competence, Challenges and Fisherfolk's Farming Technology Practices in Zamboanga City: Basis for Intervention

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Abstract

The study is an investigation of the level of competence and challenges of Fisheries Extension Workers (FEWs) and the fisherfolks's farming technology practices in Zamboanga City, Philippines. The study analysed the relationship between the competence of FEWs in seaweed farming and the farming technology practices of fisherfolk. The study secured the responses of 12 Fisheries Extension Workers (FEWs) from the Office of the City Agriculturist and 145 fisherfolk from Tumaga, Ayala and Culianan Agricultural Districts. The study employed a descriptive-correlational-quantitative research design. The results of the study revealed that FEWs are highly competent in seaweed production and are challenged in the implementation of fisheries extension programs. Furthermore, the fisherfolk highly practiced the farming technologies imparted to them by the FEWs. However, the competence of FEWs has no significant relationship to the farming technology practices of fisherfolk. Likewise, there is no significant difference in the competence of FEWs when data are categorized to profile. The study recommends continuous trainings and retooling of FEWs to further improve the level of competency. It also encourages the validation of the challenges encountered to improve the fisheries extension programs in the ground. Finally, it calls for the conduct of Technology Demonstration Projects in major seaweed-producing barangays for the fisherfolk to develop and apply the right farming technologies wherein actual seaweed farming activities can be applied, tested, modified and improved.

Keywords: Fisheries Extension Workers; fisherfolk, seaweed farming

1. Introduction

Extension is an informal educational process primarily directed toward the rural population (Oakley and Garforth,1985). Fisheries extension is a system which assist fisherfolk, through the conduct of meetings and classes, purposely to improve fishing, aquaculture and fish processing approaches, increasing production efficiency and income, and improving their socio-economic conditions. Fisheries extension in the Philippines plays a vital role in technology transfer to improve productivity and income of fisherfolk.

The Fisheries Extension Workers (FEWs) who are supposed to carry out this important function

must be competent in both content methodologies of communicating and teaching fisherfolk. Extension workers to be effective must have the necessary facilities and equipment in order that the teaching and communication process will achieve its desire end, which is agricultural modernization (Saz, 2007).

The effectiveness of extension services greatly depends on its management. Fisheries extension services is besieged by multiple challenges which makes its impact to the fisherfolk that it aimed to serve seemed negligible. Problems such as limited farm visits due to limited funds, the extension workers serve very few fisherfolk per visit in the locality. Another problem is the apparent disconnect and disharmony of programs and agenda of various agencies providing extension which have overlapping and redundant functions and activities (Ani and Correa, 2016).

With Zamboanga City as one of the big contributor in terms of seaweeds production in the region, fisherfolk engage in seaweed farming should always be guided by the application of Good Aquaculture Practices. FEWs should be constantly updated on the proper techniques of seaweed farming in order to provide effective and efficient extension services to the fisherfolk which would translate into an increase in seaweeds production and family income.

However, fisherfolk's farming technology practices in seaweeds farming has been stagnant as evidenced by the decrease in seaweeds production when historical data are analysed for the last ten years (PSA data, 2011 – 2021). This can be attributed to several factors such as climate change, lack of financial resources to purchase the necessary farm inputs and the lack of capability of the fisheries extension workers to teach, promote and extend the appropriate farming technologies.

On the basis of the literature cited, the researcher is motivated to investigate the level of competence and challenges met by the FEWs and their relationship to the fisherfolk's farming technology practices in Zamboanga City which will serve as a basis to develop appropriate intervention measures for the improvement of the extension services rendered.

2. Method

2.1 Research Design

The study employed descriptive-correlational-quantitative research design. Descriptive design was used to described the level of competence and challenges of the Fisheries Extension Workers and the level of farming technology practices of fisherfolk. Likewise, correlational design was used to determine the relationship between the level of competence of Fisheries Extension Workers and the level of fisherfolk's farming technology practices. Moreover, quantitative design was used to find out the significant difference on the level of competence of Fisheries Extension Workers when data are categorized into profile.

2.2 Population and Sampling Design

The researcher employed a non-probability purposive sampling design. The method was accomplished by applying expert knowledge of the population to select in a non-random manner a sample that represents the population of the clustered group. All the Fisheries Extension Workers of the Office of the City Agriculturist were selected as respondents in the study. Meanwhile, a total of 145 fisherfolk were utilized as respondents from Tumaga (97), Ayala (10) and Culianan (38) Agricultural Districts of Zamboanga City.

2.3 Instruments

The study utilized two (2) sets of research instruments, one each for the Fisheries Extension Workers and fisherfolk, structured in a 4-point Likert Scale. The instruments for the Fisheries Extension Workers and fisherfolk were composed of five (5) indicators with ten (10) statements each measuring the level of competence and practice in seaweed farming, respectively. Moreover, an indicator for the challenges encountered with 15 statements has been added for the instrument of the Fisheries Extension Workers.

2.4 Data Gathering Procedure

Permission was sought for the approval from Office the City Agriculturist to conduct the survey. The research instruments for the Fisheries Extension Workers were administered thru online Google Forms. Meanwhile, the research instruments for the fisherfolk were distributed individually and were retrieved after 5 days.

3. Results and Discussion

3.1 Fisheries Extension Workers' Competence in Seaweed Farming

Table 1. Fisheries Extension Workers' Competence in Terms of Seaweed Farm Site Selection

Statement	Weighted Mean	Verbal description
Seaweed farm site selection ensures…		
basic biological needs of the seaweeds are met.	3.58	Highly Competent
area with moving water are chosen.	3.50	Highly Competent
strong water current and wave action are avoided.	3.00	Competent
protected coves are chosen.	3.17	Competent
far from freshwater tributaries .	3.33	Highly Competent
submerged area even at low tides.	3.33	Highly Competent
sea bottom substrate is relative dark.	2.75	Competent
presence of wild seaweed stocks.	3.00	Competent
human settlements are avoided.	3.17	Competent
exposure to optimal sunlight.	3.33	Highly Competent
Over-all Mean	**3.22**	**Competent**

Legend: 1.00-1.75 = Not Competent, 1.76-2.50 = Moderately Competent, 2.51-3.2 5= Competent, 3.26-4.00 = Highly Competent

Table 1 presents the level of competence of the Fisheries Extension Workers in terms of Seaweed Farm Site Selection. The table showed that half in the seaweed farm site selection indicators has a weighted mean described as competent while the other half has a weighted mean described as highly competent, however, the over-all mean is 3.22 described as competent. This implies that the Fisheries Extension Workers are competent and had the basic knowledge of criteria for the selection of ideal sites for the establishment of seaweed farms. Furthermore, the table revealed that the statement "basic biological needs of the seaweeds are met" has the highest weighted mean of 3.58 which described the FEW as highly competent. This is followed by the statement "area with moving water are chosen" with a weighted mean of 3.50 described still as highly competent. On the other hand, the statement "sea bottom substrate is relative dark" got the lowest weighted mean of 2.75 which described the FEW as competent.

Table 2. Fisheries Extension Workers' Competence in Terms of Seaweed Seedling Preparation and Planting

Statement	Weighted Mean	Verbal Description
Seaweed seedli*ng preparation and planting ensures…*		
young portion of the plant are selected.	3.58	Highly Competent
healthy branches are chosen.	3.58	Highly Competent
pointed tips are selected.	3.25	Competent
pigmented thallus are selected.	3.17	Competent
small seedlings are used.	3.33	Highly Competent
traces of grazing are avoided.	3.33	Highly Competent
epiphytes are removed.	3.42	Highly Competent
breakage of branches are avoided.	3.33	Highly Competent
plant is tied with allowance for growth.	3.67	Highly Competent
only one plant is tied.	2.83	Competent
Over-all Mean	**3.35**	**Highly Competent**

Table 2 presents the level of competence of Fisheries Extension Workers in terms of seaweed seedling preparation and planting. The table showed that 7 out of 10 indicators have a weighted mean which described the FEWs as highly competent. The statement "plant is tied with allowance for growth" got the highest weighted mean of 3.67, followed by the statements "young portion of the plant are selected" and "healthy branches are chosen" with the second highest weighted mean of 3.58 and the statements "small seedlings used", "traces of grazing are avoided" and "breakage of branches are avoided" got the third highest weighted mean of 3.33. All of these statements described the FEWs as highly competent. Meanwhile, the statement "only one plant is tied" got the lowest weighted mean with 2.83 which described the FEWs as competent.

Table 3. Fisheries Extension Workers' Competence in Terms of Seaweed Farm Care and Maintenance

Statement	Weighted Mean	Verbal Description
Seaweed farm care and maintenance ensures…		
rice sacks are used in propagule transport.	3.00	Competent
exposure to rain of transported propagules are avoided.	3.25	Competent
use of fertilizer is prohibited.	3.42	Highly Competent
farm visits are conducted.	3.50	Highly Competent
removal of lumut and other debris.	3.33	Highly Competent
removal of dead and dying plants.	3.42	Highly Competent
replacement of lost plants.	3.25	Competent
replacement of destroyed farm structures.	3.50	Highly Competent
replacement of lost anchors.	3.42	Highly Competent
retying of loosened planting lines.	3.50	Highly Competent
Over-all Mean	**3.36**	**Highly Competent**

Table 3 presents the level of competence of Fisheries Extension Workers in terms of seaweed farm care and maintenance. The table showed that 7 out of 10 indicators have a weighted mean which described the FEWs as highly competent with an overall mean of 3.36. The statements "farm visits are conducted", "replacement of destroyed farm structures" and "retying of loosened planting lines" got the highest weighted

mean of 3.50 which described the FEWs as highly competent. This implies that the FEWs gave importance to regular visits ensuring that the seaweed farms are taken care of. These are followed by the second highest statements "use of fertilizer is prohibited", "removal of dead and dying plants" and "replacement of lost anchors" with a weighted mean of 3.42 and the third highest statement "removal of lumut and other debris" with a weighted mean of 3.33. All of which described the FEWs as highly competent. Meanwhile the last with a mean of 3.25 which described as competent are the statements "exposure to rain of transported propagules are avoided" and "replacement of lost plants".

Table 4. Fisheries Extension Workers' Competence in Terms of Seaweed Disease and Health Management

Statement	Weighted Mean	Verbal Description
Seaweed disease and health management ensures…		
effect to growth rate is reduced.	3.33	Highly Competent
total harves*t of crops if 'ice-ice' disease is observed.*	3.42	Highly Competent
transfer of plants to unaffected sites.	3.42	Highly Competent
affected plants are replaced with new seedlings.	3.08	Competent
macro epiphytes in the lines are removed.	3.25	Competent
total harvest of crops if meso-epiphytes are observed.	3.08	Competent
synchronized farming minimized the effect of grazers.	3.42	Highly Competent
barrier nets prevent the entry of grazers.	3.17	Competent
cropping back during seasonal periods of grazers prevent loss.	2.92	Competent
catching of grazers for aquaculture is encouraged	3.08	Competent
Over-all Mean	**3.23**	**Competent**

Table 4 presents the level of competence of Fisheries Extension Workers in terms of seaweed disease and health management. The table showed that 6 out 10 indicators have a weighted mean which described the FEWs as competent with an overall mean of 3.23. The statements with the highest weighted mean of 3.42 described the FEWs as highly competent are "total harvest of crops if 'ice-ice' disease is observed", "transfer of plants to unaffected sites" and "synchronized farming minimized the effect of grazers". This implies that 'ice-ice' disease and presence of grazers are the most common problems in seaweed farming and the respondents are highly competent to mitigate its effects by conducting total harvest or transferring the farm to other sites. The statement "effect to growth rate is reduced" followed this with the second highest weighted mean of 3.33. The third highest is the statement "macro epiphytes in the lines are removed" with a weighted mean of 3.25 described as competent. Meanwhile, the lowest has a weighted mean of 2.92 described as competent from the statement "cropping back during seasonal periods of grazers to prevent loss".

Table 5. Fisheries Extension Workers' Competence in Terms of Seaweed Harvesting and Post-Harvest Management

Statement	Weighted Mean	Verbal description
Seaweed harvesting and post-*harvest ensures*…		
45 days of culture are observed.	3.17	Competent
emergency harvest during 'ice-ice' and epiphytes infestations are conducted.	3.50	Highly Competent
seaweeds are cleaned to ensure good quality harvest.	3.50	Highly Competent
seaweed are washed to remove debris and other foreign particles.	3.33	Highly Competent
hygienic principles during drying are observed.	3.42	Highly Competent
drying directly to the ground are avoided.	3.17	Competent
night time covering of dried seaweeds are observed.	3.25	Highly Competent
use of salt in drying is avoided.	3.42	Highly Competent
7:1 wet to dry ratio are achieved.	3.42	Highly Competent
stray animals in the drying area are not allowed.	3.42	Highly Competent
Over-all Mean	**3.36**	**Highly Competent**

Table 5 presents the level of competence of Fisheries Extension Workers in terms seaweed harvesting and post-harvest management. The table showed that 8 out 10 indicators in have a mean which described the FEWs as highly competent with an overall weighted mean of 3.36. The statements "emergency harvest during 'ice-ice' and epiphytes infestations are conducted" and "seaweeds are cleaned to ensure good quality harvest" got the highest weighted mean with 3.50. This implies that the FEWs are highly competent and gave importance to the conduct of emergency harvests during seaweed disease outbreaks to prevent total loss of farm produce and cleaning of harvested seaweeds by removal of debris and other materials to maintain quality harvest to fetch a higher price. Likewise, the FEWs were also described as highly competent from the statements that got the second highest weighted mean of 3.42 "hygienic principles during drying are observed", "use of salt in drying is avoided", "7:1 wet to dry ratio is achieved" and "stray animals in the drying area are not allowed". Subsequently, the third highest weighted mean of 3.33 is from the statement "seaweeds are washed to remove debris and other foreign particles". Meanwhile, the lowest weighted mean of 3.17 described the FEWs as competent are from the statements "45 days of culture are observed" and "drying directly to the ground are avoided".

Table 6. Summary of Fisheries Extension Workers Competence in Seaweed Farming

Competencies	Weighted Mean	Verbal description
Seaweed farm site selection	3.22	Competent
Seaweed seedling preparation and planting	3.35	Highly Competent
Seaweed farm care and maintenance	3.36	Highly Competent
Seaweed disease and health management	3.23	Competent
Seaweed harvesting and post-harvest management	3.25	Competent
Grand Mean	**3.28**	**Highly Competent**

Table 6 presents the summary on the level of Fisheries Extension Workers Competence. The table showed that 3 out of the 5 components described the FEWs as competent while the remaining 2 components

described as highly competent. Moreover, the table revealed the grand mean is 3.28. This indicates that the FEWs are highly competent in the overall aspect of seaweed production and management. This shows that the FEWs have the necessary skills and knowledge in seaweed farming to impart the right technology to the fisherfolk.

3.2 Fisheries Extension Workers Challenges

Table 7. Level of Fisheries Extension Workers' Challenges

Challenges	Weighted Mean	Verbal description
lack of trainings.	3.00	Challenged
lack of skills to work with fisherfolk.	2.75	Challenged
lack of funding.	3.00	Challenged
lack of administrative support.	2.83	Challenged
lack of transportation for field works.	2.75	Challenged
lack of incentives.	2.83	Challenged
lack of fisherfolk participation.	2.75	Challenged
lack of extension personnel.	3.00	Challenged
lack of technology demonstration projects.	2.83	Challenged
inaccessibility of farms.	2.58	Challenged
lack of communication skills.	2.50	Not Challenged
lack of opportunity for higher education.	2.83	Challenged
*fisherfolk's apprehension to new te*chnologies.	2.75	Challenged
lack of Information and Communication Technology (ICT) tools and equipment.	3.08	Challenged
low morale.	2.25	Not Challenged
Over-all Mean	**2.78**	**Challenged**

Legend: 1.00-1.75 = Not Challenged, 1.76-2.50 = Moderately Challenged,
2.51-3.25 = Challenged, 3.26-4.00 = Highly Challenged

Table 7 presents the level of the Fisheries Extension Workers challenges encountered in the implementation of fisheries extension programs. The table showed that 13 out 15 indicators of challenges encountered by the FEWs in the implementation of extension programs have a weighted mean described as challenged. Among the 15 indicators the statement "lack of Information and Communication Technology (ICT) tools and equipment" got the highest weighted mean of 3.08 which is described as challenged. This implies the need of ICT tools and equipment such as computers and laptops to aid the respondents in their work-related activities. This is supported by the statement of Swanson and Davis (2014) that extension workers should remain current with emerging technologies, to be able to handle challenges, opportunities and demonstrate competency in services.

This is followed by the second highest weighted mean of 3.00 from the statements "lack of trainings", "lack of funding" and "lack of extension personnel" described as challenged. This implies that the respondents are not well equipped to implement effective and efficient extension programs to the seaweed farmers due to lack of necessary trainings and funding support. Likewise, the FEWs perceived that the number of personnel assigned to implement such programs are not enough. The third highest weighted mean is 2.83 described as challenged from the statements "lack of administrative support", "lack of incentives", "lack of technology demonstration projects" and "lack of opportunity for higher education". Meanwhile, the

statements "lack of communication skills" and "low morale" with a weighted mean of 2.50 and 2.25, respectively, described as not challenged, implies that the respondents do not consider these as problems in the implementation of extension programs.

The over-all mean of 2.78 revealed that the FEWs are challenged, meaning FEWs had experienced difficulty in the implementation of fisheries extension programs.

3.3 Fisherfolks's Farming Technology Practices

Table 8. Level of Fisherfolks' Farming Technology Practices in Terms of Seaweed Farm Site Selection

Statement	Weighted Mean	Verbal description
Fisherfolk has been taught…		
the basic biological needs for a seaweeds to grow.	3.52	Highly Practiced
to plant seaweeds in moving water.	3.23	Practiced
to locate seaweed farms in protected cove.	3.38	Highly Practiced
to avoid areas with strong water current and wave action.	3.30	Highly Practiced
to locate seaweed farm area far away from freshwater tributaries.	3.48	Highly Practiced
to select site that is submerged even at low tides.	3.29	Highly Practiced
to select sea bottom substrate that are relative dark.	2.65	Practiced
to select site with wild seaweed stocks.	2.82	Practiced
to avoid areas with human settlements.	3.20	Practiced
to select site with optimal sunlight exposure.	3.01	Practiced
Over-all Mean	**3.19**	**Practiced**

Legend: 1.00-1.75 = Not Practiced, 1.76-2.50 = Moderately Practiced, 2.51-3.25 = Practiced, 3.26-4.00 = Highly Practiced

Table 8 presents the level of fisherfolk's farming technology practices in terms of seaweed farm site selection. The table showed that half of the indicators have a weighted mean described as highly practiced while the other half described as practiced. The over-all weighted mean of 3.19 implies that the fisherfolk have practiced the right seaweed farming technologies in terms of site selection. The respondents have the basic knowledge in the proper selection of suitable sites for seaweed farming. The highest weighted mean of 3.52 described as highly practiced is from the statement "the basic biological needs for a seaweeds to grow". This implies that fisherfolk has been taught and knew the biological needs for a seaweeds to grow such as light, water motion, fertility, water salinity and temperature. The statement "to locate seaweed farm area far away from freshwater tributaries" got the second highest weighted mean of 3.48 described as highly practiced which implies that the respondents have been taught the negative effect of freshwater to the growth of seaweeds. This is followed by the statement "to locate seaweed farms in protected cove" with a weighted mean of 3.38, the third highest, described still as highly practiced. Meanwhile the lowest weighted mean is 2.65 described as practiced from the statement "to select sea bottom substrate that are relative dark".

Table 9. Level of Fisherfolk's Farming Technology Practices in Terms of Seaweed Seedling Preparation and Planting

Statement	Weighted Mean	Verbal description
Fisherfolk has been taught…		
to select the young portion of the plant.	3.56	Highly Practiced
to choose healthy branches.	3.56	Highly Practiced
to select pointed tips.	3.30	Highly Practiced
to select heavily pigmented thallus.	3.15	Practiced
to use small seedlings in planting.	3.26	Highly Practiced
to avoid seedlings with traces of grazing.	3.29	Highly Practiced
to remove epiphytes.	3.27	Highly Practiced
to avoid breakage of branches.	3.26	Highly Practiced
to tie plant with allowance for growth.	3.43	Highly Practiced
to tie only one plant.	3.14	Practiced
Over-all Mean	**3.32**	**Highly Practiced**

Table 9 presents the level of fisherfolk's farming technology practices in terms of seaweed seedling preparation and planting. The table showed that 8 out of 10 indicators have a weighted mean described as highly practiced with an overall weighted mean of 3.32. This implies that the fisherfolk have highly practiced the farming technologies in seedling preparation and planting. The statements "to select the young portion of the plant" and "to choose healthy branches" got the highest weighted mean with 3.56 described as highly practiced. This implies the importance given to fisherfolk in the selection of good quality seedlings for planting by choosing the young and healthy branches. The statement "to tie plant with allowance for growth" with a weighted mean of 3.43 is the second highest which implies that respondents knew that tightly tying the seedlings affect seaweed growth. This is followed by the 3rd highest statement "to select pointed tips" with a weighted mean of 3.30 described as highly practiced. Meanwhile, the lowest weighted mean is 3.14 described as practiced from the statement "to tie only one plant".

Table 10. Fisherfolk's Farming Technology Practices in Terms of Seaweed Farm Care and Maintenance

Statement	Weighted Mean	Verbal description
Fisherfolk has been taught…		
to use rice sacks during propagule transport.	2.84	Practiced
to prevent exposure to rain of transported propagules.	3.45	Highly Practiced
to avoid the use of fertilizer.	3.08	Practiced
to visit farm.	3.49	Highly Practiced
to remove lumut and other debris.	3.54	Highly Practiced
to remove dead and dying plants.	3.39	Highly Practiced
to replace lost plants in the planting lines.	3.45	Highly Practiced
to shake plants with sediments.	3.29	Highly Practiced
to replace destroyed farm structures.	3.39	Highly Practiced
to replace lost anchors.	3.44	Highly Practiced
Over-all Mean	**3.34**	**Highly Practiced**

Table 10 presents the level of fisherfolk's farming technology practices in terms of seaweed farm care and maintenance. The table revealed that 8 out 10 indicators in the have a weighted mean described as highly practiced with an overall mean of 3.34. This implies that the fishefolk have highly practiced the farming technologies in terms of seaweed farm care and maintenance. The respondents knew how to properly care and maintain their farms to increase seaweeds production. The highest weighted mean is 3.54 described as highly practiced from the statement "to remove lumut and other debris". This implies that the respondents have been taught that lumut and other debris can be competitors for space and nutrients for their seaweeds in the farms and therefore should be removed. The second highest mean is from the statement "to visit farm" with a weighted mean of 3.49 described also as highly practiced. This implies the importance to the respondents of regular visits to their farms to know the status of their cultured seaweeds. This is followed by the 3rd highest statements "to prevent exposure to rain of transported propagules" and "to replace lost plants in the planting lines" with a weighted mean of 3.45 described still as highly practiced. Meanwhile, the lowest mean of 2.84 described as practiced is from the statement "to use rice sacks during propagule transport".

Table 11. Level of Fisherfolk's Farming Technology Practices in Terms of Seaweed Disease and Health Management

Statement	Weighted Mean	Verbal description
Fisherfolk has been taught…		
that seaweed disease affects growth rate.	3.42	Highly Practiced
total harvest of crops if 'ice-ice' disease is observed.	3.30	Highly Practiced
transfer of plants to unaffected sites.	3.44	Highly Practiced
affected plants are replaced with new seedlings.	3.33	Highly Practiced
macro epiphytes in the lines are removed.	3.34	Highly Practiced
total harvest of crops if meso-epiphytes are observed.	3.42	Highly Practiced
synchronized farming minimized the effect of grazers.	2.74	Practiced
barrier nets prevents the entry of grazers.	2.59	Practiced
cropping back during seasonal periods of grazers prevents loss.	3.07	Practiced
catching grazers for aquaculture is encouraged.	2.66	Practiced
Over-all Mean	**3.13**	**Practiced**

Legend: 1.00-1.75 = Not Practiced, 1.76-2.50 = Moderately Practiced, 2.51-3.25 = Practiced, 3.26-4.00 = Highly Practiced

Table 11 presents the level of fisherfolk's farming technology practices in terms of seaweed disease and health management. The table showed that 6 out 10 indicators has a weighted mean that ranges from 3.30 to 3.44 described as highly practiced, however the overall mean is 3.13 described as practiced. This signifies that fisherfolk practiced the right farming technologies in terms of seaweed disease and health management. The highest weighted mean of 3.44 described as highly practiced is from the statement "transfer of plants to unaffected sites". This implies that fisherfolk have been taught to transfer their plants to other sites as mitigation measures during disease outbreaks. The statements "that seaweed disease affects growth rate" and "total harvest of crops if meso-epiphytes are observed" have the second highest weighted mean with 3.42 described also as highly practiced. The third highest is the statement "affected plants are replaced with new seedlings" with a weighted mean of 3.33 described still as highly practiced. Meanwhile, the lowest weighted mean of 2.59 described as practiced is from the statement "barrier nets prevents the entry of grazers".

Table 12. Fisherfolks' Farming Technology Practices in Terms of Seaweed Harvesting and Post-Harvest Management

Statement	Weighted Mean	Verbal description
Fisherfolk has been taught…		
to harvest seaweeds after 45 days of culture.	3.08	Practiced
to conduct emergency harvest during 'ice-ice' and epiphytes infestations.	3.21	Practiced
to clean seaweeds to ensure good quality harvest.	3.46	Highly Practiced
to rinse to remove debris and other foreign particles.	3.36	Highly Practiced
to observe hygienic principles during drying.	3.34	Highly Practiced
to avoid drying directly to the ground.	3.34	Highly Practiced
to observe night time covering of dried seaweeds.	3.38	Highly Practiced
to avoid use of salt in drying.	3.38	Highly Practiced
to attain the 7:1 wet to dry ratio.	3.36	Highly Practiced
to prohibit stray animals in the drying area.	3.41	Highly Practiced
Over-all Mean	**3.33**	**Highly Practiced**

Table 12 presents the level of fisherfolk's farming technology practices in terms of seaweed harvesting and post-harvest management. The revealed that 8 out 10 indicators have a weighted mean described as highly practiced with an over-all mean of 3.33. This implies that the fisherfolk have highly practiced the farming technologies in terms of seaweed harvesting and post-harvest management. The respondents have been applying the proper post-harvest techniques to produce good quality dried seaweed. The statement "to clean seaweeds to ensure good quality harvest" has the highest weighted mean with 3.46 described as highly practiced. This implies that the respondents knew that by cleaning and removing non-seaweed materials, this will improve the quality of their produce. This is followed by the statement "to prohibit stray animals in the drying area" with a weighted mean of 3.41 described also as highly practiced. This implies that the respondents do not allow dogs, cats and other animals in their drying areas because this could tarnish their produce. Likewise, the third highest are the statements "to observe night time covering of dried seaweeds" and "to avoid use of salt in drying" with a weighted mean of 3.38 described still as highly practiced. Meanwhile, the statement "to harvest seaweeds after 45 days of culture" has the lowest weighted mean of 3.08 described as practiced.

Table 13. Summary of Fisherfolk's Farming Technology Practices

Practices	Weighted Mean	Verbal description
Seaweed farm site selection	3.19	Practiced
Seaweed seedling preparation and planting	3.32	Highly Practiced
Seaweed farm care and maintenance	3.34	Highly Practiced
Seaweed disease and health management	3.13	Practiced
Seaweed harvesting and post-harvest management	3.33	Highly Practiced
Grand Mean	**3.26**	**Highly Practiced**

Table 13 presents the summary on the fisherfolk's farming technology practices. The table revealed that the grand mean is 3.26 which implies that the fisherfolk highly practiced the seaweed farming technologies imparted to them by the Fisheries Extension Workers.

3.4 Relationship between FEWs' competence and Fisherfolk's farming technology practices

Table 14. Relationship Table between FEWs' Competence and Fisherfolks' Farming Technology Practices

x	y	r-value	p-value	Decision	Interpretation
Fisheries Extension Workers Competence	Fisherfolks' Seaweed Farming Technology Practices	0.242	0.448	Not Significant	No Correlation

Legend: 0= No Correlation; 0.01-0.20 = Very Low Correlation; 0.30-0.40 = Low Correlation; 0.50-0.60 = Moderate Correlation; 0.70-0.80 = High Correlation; 0.81-0.99 = Very High Correlation; 1.0 = Perfect Correlation
(Significant @ alpha = 0.05)

Table 14 presents the result of the relationship between Fisheries Extension Workers' Competence and fisherfolk's farming technology practices. The table showed that there is no significant relationship between the Fisheries Extension Workers' competence and the fisherfolk's seaweed farming technology practices. This means that there is no correlation between the competence of Fisheries Extension Workers and the farming technology practices of fisherfolk. This implies that the high competence of Fisheries Extension Workers in teaching and providing advisory services does not translate to highly practiced farming technologies of fisherfolk. Furthermore, the competence of FEWs has no significant effect to the farming technology practices of fisherfolk.

3.5 Significant difference in the profile of Fisheries Extension Workers

Table 15. Significant Difference in FEWs' Competence According to Gender

Variable	Gender	Mean	t-value	p-value	Decision
Fisheries Extension Workers' Competence	Male	3.18	-0.402	0.696	Not Significant
	Female	3.38			

(Significant @ alpha = 0.05)

Table 15 presents the T-test analysis on the significant difference in Fisheries Extension Workers' Competence according to gender. The table showed there is no significant difference. The data imply that the respondents do not differ in their competence when based on their gender. Likewise, this means that the level of competence of the respondents whether male or female is the same.

Table 16. Significant Difference in FEWs' Competence According to Age

Variable	Age	Mean	F-value	p-value	Decision
Fisheries Extension Workers' Competence	21 – 30	3.48	0.803	0.526	Not Significant
	31 - 40	2.79			
	41 – 50	3.82			
	>50	3.55			

(Significant @ alpha = 0.05)

Table 16 presents the Analysis of Variance (ANOVA) to determine the significant difference in Fisheries Extension Workers' competence according to age. The table revealed that there is no significant difference for respondents' competence. This means that when the respondents are grouped by age, the level of competence is the same. Additionally, this implies that age of the respondents does not determine its competence in fisheries extension.

Table 17. Significant Difference in FEWs' Competence According to Position

Variable	Position	Mean	F-value	p-value	Decision
Fisheries Extension Workers' Competence	Agricultural Technologist	3.51	0.400	0.682	Not Significant
	Aquaculturist	3.04			
	Others	3.42			

(Significant @ alpha = 0.05)

Table 17 presents the Analysis of Variance (ANOVA) to determine the significant difference in Fisheries Extension Workers' competence according position. The table showed there is no significant difference for respondents' competence according to their position in the office. This means that when the respondents are grouped by position title, the level of competence is the same. This implies that higher positions in the office does not corresponds to high competency in fisheries extension programs.

Table 18. Significant Difference in FEWs' Competence According to Educational Attainment

Variable	Educational Attainment	Mean	t-value	p-value	Decision
Fisheries Extension Workers' Competence	Bachelor	3.39	0.656	0.527	Not Significant
	Masteral	3.03			

(Significant @ alpha = 0.05)

Table 18 presents the T-test analysis on the significant difference in Fisheries Extension Workers' Competence according to educational attainment. The table revealed no significant difference for Fisheries Extension Workers' competence according to their educational qualification. This means that when the respondents are grouped by educational attainment, the level of competence is the same. This implies further that both Bachelor and Masteral degree holders have the same level of competence as Fisheries Extension Workers.

Table 19. Significant Difference in FEWs' Competence According to Length of Service

Variable	Length of Service	Mean	F-value	p-value	Decision
Fisheries Extension Workers' Competence	1 – 5 Years	3.61	0.285	0.758	Not Significant
	6 – 10 Years	3.32			
	>10 Years	3.16			

(Significant @ alpha = 0.05)

Table 19 presents the Analysis of Variance to determine the significant difference in Fisheries Extension Workers' competence according to length of service. The table revealed that there is no significant difference in Fisheries Extension Workers' competence according to their length of service. This means that when the respondents are grouped by length of service, the level of competence is not different. This shows that the level of competence for both new and older Fisheries Extension Workers are the same.

Table 20. Significant Difference in FEWs' Competence According to Good Aquaculture Practices Training

Variable	GAqP Training	Mean	t-value	p-value	Decision
Fisheries Extension Workers' Competence	With Training	3.13	-0.723	0.486	Not Significant
	Without Training	3.47			

(Significant @ alpha = 0.05)

Table 20 presents the T-test analysis on the significant difference in Fisheries Extension Workers' Competence according to attendance to Good Aquacultural Practices Training. The table showed there is no

significant difference for Fisheries Extension Workers' competence according to their Good Aquacultural Practices Trainings attended. This implies that the respondents who attended and have not attended trainings on Good Aquacultural Practices in seaweed farming have the same of level of competence.

Table 21. Significant Difference in FEWs' Competence According to Fisheries Professional License

Variable	FP License	Mean	t-value	p-value	Decision
Fisheries Extension Workers' Competence	With License	3.23	-0.248	0.809	Not Significant
	Without License	3.35			

Table 21 presents the T-test analysis on the significant difference in Fisheries Extension Workers' Competence according to Fisheries Professional License. The table revealed that there is no significant difference for Fisheries Extension Workers' competence according to their Fisheries Professional License. This means that passing the Fisheries Professional licensure examination does not correspond to competence as Fisheries Extension Worker.

4. Conclusion

The Fisheries Extension Workers are highly competent in seaweed production. FEWs are highly competent to teach, assist, guide and provide advisory services to the fisherfolk. FEWs are likewise challenged in the implementation of fisheries extension programs. FEWs experienced difficulties and encountered numerous challenges which may in turn affects the implementation of fisheries extension programs to the fisherfolk. They are not well equipped to implement effective and efficient extension programs to the fisherfolk due to lack of ICT tools and equipment, trainings and funding support.

Moreover, the fisherfolk highly practiced the farming technologies imparted to them by the FEWs. The fisherfolk have the basic knowledge in seaweed farming from site selection to post-harvest management. However, there is no significant relationship between the Fisheries Extension Workers' competence and the fisherfolk's farming technology practices. The competence of Fisheries Extension Workers has no significant effect to the farming technology practices of fisherfolk. Lastly, there is no significant difference in Fisheries Extension Workers' competence when data are categorized into profile of respondents.

5. Recommendations

Based on the findings the following recommendations were made:

1. To further improve the level of competency of the Fisheries Extension Workers in seaweed production, continuous trainings and retooling should be conducted. The FEWs should undergo the basic Good Aquacultural Practices and Season-Long Trainings in Seaweed Farming.
2. To improve the fisheries extension programs, the challenges encountered by the Fisheries Extension Workers should be properly addressed. The challenges encountered should be validated in the ground.
3. To develop and to apply the right seaweed farming technologies, Technology Demonstration Projects in major seaweed-producing barangays should be conducted. The Fisheries Extension Workers will be partnered with fisherfolk wherein theory and actual seaweed farming activities can be applied, tested, modified and improved.

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