

Mechanism For Establishing Credible Seafood Rearing with Less Impediments in Fresh Water Pond in Ebonyi State.

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Abstract

The general purpose of the study was to evolve Mechanism for Establishing Credible Seafood (farm) with less impediment in fresh water pond for achieving food security in Ebonyi State. Specifically, the study determined the following areas of seafood rearing impediments, financial resources, material resources and health benefits. It was carried out in Ebonyi State. The population was 35 lecturers in 3 tertiary institutions in Ebonyi State. The instrument for data collection was structured questionnaire, thirty five copies of questionnaire were administered to the respondents while the 35 copies administered were retrieved and analyzed using means and standard deviation of the lecturers in Agricultural Education in the tertiary institution in Ebonyi State. Findings reveals that impediment, financial resources, material resources and health benefits exist in seafood rearing in Ebonyi state.

Key words: *mechanism, establishing, seafood, credible, rearing.*

I. Introduction

Mechanism is the system for doing something following a normal procedure, step by step in an organized way. Mohamed (2018) stress that mechanism has to do with maintenance, repair, organize, the stated procedures for achieving an expected goals. Mechanism in the contest of this study is the organized system for rearing wild seafood with fresh water ponds using scientific method in attempt to produce more edible aquaculture which are highly needed for the benefit of human life. However, establishing is to develop, put in place, to stabilize, in a formal system. Lawal (2015) stress that establishing has to do with thing that has empirical proof recognizing the actual method generally accepted. Establishing in the contest of this study is the actual system for keeping seafood with less impediment. Therefore credible has to do with normality, due process, functionality of a system based method. Oke (2021) maintains that credible is generally accepted actions, normal things and organize system of doing things, character wise. However, rearing is domesticating, husbanding among others. Olubade (2022) stress that rearing has a process, which has to match with the life of what to rear. Rearing in the contest of this study is an attempt to rear wild seafood with fresh water pond, with the aim of finding possible alternatives of integrating wild seafood which live in salt water to adapt with fresh water pond. He stress that this scientific method will help to produce more seafood resources in Ebonyi State, Nigeria.

The seafood are regarded as sealives, which are food to man and non-edible one(s) in water bodies which are used as food for other plants (fertilizer). Seafood in the view of Redmond (2019) are edible aquatic animals like, fish, shellfish, molluses, crustaceans, echinoderms, periwinkle, crab, crayfish, oysters, snails among others. Ogba (2022) see seafood as one of the most essential in food industry which speaks volume; in the world traded commodities that prevent hunger and mal-nutrition. He stress that seafood is a compound world which sea is water, which is deep, wide, which may have color and contains many animals that lives inside the water. While the animals inside the water are harvested, killed and consumed by human beings as food. Aaron (2020) maintains that seafood is healthful for people of all ages – growing children, pregnant women, active adults and elderly ones for their numerous nutrients meant for human development, body repair, and nourishment among others. Gupta (2023) see seafood to include fresh water fish, catfish, salmon, tuna, trout, tilapia, shrimp, and periwinkle among others. He stress that periwinkle contains omega 3 fatty acid which reduces common diseases, wound healing, cell regeneration, regulate hormones and enzymes, with all the vitamins B: 2,6,12,A and Vit.E for reproductive health, vitamin B for prevention and control of diabetes, chlorine for nervous system and maintains brain functions.

Ogba (2023) stress that seafood have different forms of mollusks which is the most diverse group of animals on planet with at least 500,000 species of living organisms with head and foot region bodies covered with exoskeletons as in the shell of snails and clams. He stress that the importance of animals in human history as sources of food, jewelry, tools and pots among others cannot be over-emphasized. Seafood in the contest of this

study are the animals which are harvested, hunted and killed by human being for their consumption, which may be in the sea, fresh water and land snails which are edible, useful to man and his economic development. In another development impediments is the hindrances, obstacles and difficulties associated with the harvesting, hunting and killing of the sea, aquaculture, fresh water and land snails for human consumption. These impediment have different forms in the utilization of seafood in Nigeria, Ebonyi State in particular, which some seafood like fish, crab, snails among others exist in the state. The impediments or hindrances may include factors of ignorance of health benefits, lack of confidence in selecting and preparing them as food, government to promote policies relevant to production of seafood, lack of skills for harvesting them by women and youth for empowerment, lack of breeding by youth and women, wrong use of chemicals and antibiotics among others. Impediments in the contest of the study are the problems which are associated with the hunting, harvesting, killing, selecting and preparing them, lack of skills for breeding and ignorant among others in the utilization of the seafood in Ebonyi State.

However, different seafood may have its own peculiar hindrance despite its numerous health benefits. Azubuike (2022) maintains that nutrients found in shrimps are used to reduce heart attack, stroke, bone degradation, increased oxygen content in the body, for improving memory performance, survive brain cells and remove inflammatory disease, but its major hindrance is high cost of shrimps (price) which deprived the poor man from its consumption since almost exclusively sold to luxury consumers in domestic and international markets. Erundu (2020) see harvesting of wild seafood which is called hunting and fishing while the cultivation and farming of seafood is referred to as aquaculture or fish farming in case of fishing and other edible aquatic ones in fresh water. He maintained that both fish farming and cultivation of wild seafood is regarded as seafood in the current industrial seafood market. He stressed that culture of some people, their traditions, scarcity of available sources of water, method of chemicals used in water among others are their major hindrances. Ogba, (2022) see snail as one of the pest to crop farmers before but later discovered that snails are edible with a lot of health benefit, like protein, snail slime which is used for treatment of lining inflammation of the eye, itching, toothache among others. He stress that thousand species of snails are available but divided them into land snails, sea snails and fresh water snails each of them have impediments or hindrances. However, Food and Aquacultural Organization (FAO; 2022) see crab to contains nutrients like protein, selenium, omega 3 acid among others, which is used in treatment of eye sight, improve eye health, major source of vitamin A, develop cell membrane of brain, of Fetus during pregnancy, skin cells among others. They stress that crab impediment or hindrance, is the skills of harvest, ignorance of health benefit. Okpara and Ogba (2012) stress that crab are popular creature in the sea and some are raised in crab hatcheries for controlled cultivation all contains essential nutrients like Vit B, selenium and omega 3 acids which boost immune system. It heals wound, selenium in crab protect your defense system, thyroid hormones synthesis for reproduction among others with its impediments in some peoples culture. Adamson, G and Melitta (2022) maintains that prawn is delicious and belong to Phylum Arthropoda, with class of crustacea which attract foreign currency. They stress that cultivating prawn in fresh water in planned scientific manner will increase its availability for consumption. Ogba (2023) stress that the most popular seafood for human benefit include, mulusks, most diverse animals on the planet, such family organism as snail, octopuses, squid, clams, scallions, oysters, chitins, others are periwinkles, snail, crabs, prawn, crayfish, shrimps, fish among others. He maintains that snails are three categories (a) land snails (b) marine water snails and (c) fresh water snails.

Statement of the Problem

The benefits inherent in seafood are numerous and contributes to economic development of any country that produce them. Despite all these benefits, seafood has its own impediments, like climate change, which affect the rainfall pattern, in the ocean temperature, acidic nature of aquatic ecosystem which leads to the death of millions of marine organisms (shrimps) oysters cannot form their shells, management skills for culturing seafood in pond, like monitoring oxygen level, prevent predators, monitory water level infestation by parasite lack of essential mineral and vitamins, environmental problem by change in acidity and alkalinity on fresh water pond among others, with all these critical issues, motivated the researchers to go into this study. However, the main purpose of the study is to determine the mechanism for establishing credible seafood rearing in Ebonyi State specifically. The study tends to:

1. Ascertain the impediments in seafood rearing in the fresh water ponds in tertiary institutions in Ebonyi State.
2. Determine the financial sources for seafood rearing in fresh water ponds in tertiary institutions in Ebonyi State.
3. Ascertain the material resources for seafood rearing in tertiary institutions in Ebonyi State.
4. Determine the health benefits in rearing wild seafood in fresh water pond in tertiary institutions in Ebonyi State.

Research Questions:

1. What are impediments in rearing wild seafood in fresh water pond in tertiary institutions in Ebonyi State?
2. What are the financial sources for rearing wild seafood in fresh water ponds in tertiary institutions in Ebonyi State?
3. What are the material resources for rearing wild seafood in fresh water ponds in tertiary institutions in Ebonyi State?
4. What are the health benefits in rearing wild seafood in fresh water ponds in tertiary institutions in Ebonyi State?

II. METHODOLOGY

Research Design:

This study made use of survey research. Survey design according to Colorado state university (2018) is the design in which the researcher makes a list of questionnaire to extract specific data, from a particular group of people .the study adopted survey design because questionnaire was employed to collect data from lecturers of agricultural science education in the two universities and one college of education in Ebonyi state.

Area of the Study

The study was carried out in Ebonyi state. The state has two universities that offers agricultural education and one college of education which offers agriculture education for Nigerian Certificate of Education (NCE) established by National Commission for College of Education (NCCE).

Population of the study

The population of the study was 35 lecturers in the 3 tertiary institution teaching agricultural education in the state.

Sample and sampling techniques

There was no sampling for the study since, the entire population is used in the study within the state. Instrument for data collection A – 40 seafood rearing items questionnaire, was developed from literature reviewed and used for data collection. The questionnaire was made up of four (4) parts. Part one was on the impediment in mechanism for establishing credible seafood rearing in Ebonyi state. Part two was on the financial sources for rearing seafood in fresh water pond. Part three (3) was on material resources for rearing seafood in fresh water pond. Part (4) four was on health benefit in rearing wild seafood in fresh water pond. Each parts of the questionnaire had four response scale option Strongly Agreed (SA) Agreed, (A) Disagreed (DA) and Strongly Disagreed (SA). With the corresponding value of 4, 3, 2, and 1 respectively. Three experts validated the instrument, two experts from Department of Technology and Vocational Education, Agric Education Unit and one expert from science education in measurement and evaluation all at Ebonyi state university. The experts were Requested to look at the adequacy of the items, in lines with the research questions, remove any items or statements that is not appropriate. The suggestion of the validates was used to prepare the final questionnaire items for the study.

Reliability of the Instrument

The reliability of the instrument was determined using Crownback Alpha (a) method and a reliability coefficient of 0.87 was obtained. The high level of the coefficient is an indication that the instrument is reliable.

Method of Data Collection:

The instrument was administered to the respondents by the researchers and the retrieval of 35 copies of the structured questionnaire administered were retrieved and used in the study

Method of Data Analysis

The data collected from the respondents were analyzed using mean and standard deviation, likert, scale was used any item whose weighed mean is 3.50 and above was regarded as strongly agreed, below 3.50 is regarded as Disagreed.

Research Question I: What are the impediments in rearing wild seafood in fresh water pond in tertiary institution in Ebonyi State?

Table I: mean rating and standard deviation responses of lecturers on impediment for establishing credible seafood rearing in Tertiary Institution in Ebonyi state.

S/N	Items on impediments for rearing seafood.	$\bar{X}$	SD
1.	Seafood farming requires proper knowledge of aquacultures?	3.94	1.06
2.	Selecting suitable location for establishing seafood may be a setback?	4.36	0.73
3.	Selecting quality seafood for combination rearing must be appropriate?	4.80	0.71
4.	Some seafood are contaminated with mercy elements in marine water?	4.73	0.63
5.	Hunting and capturing periwinkles as wild life for training requires skills	4.	0.66

6.	Breeding wild seafood with fresh water requires temperature control, maintenance, regulation, among others	4.86	0.62
7.	Ignorance of feed of seafood and water level is a problem.	4.50	0.64
8.	Deciding on the type of seafood for rearing and what and what to integrate into the water pond	4.64	0.56
9.	Selecting appropriate cultivar of seafood is a setback.	4.54	0.72
10.	Identifying relevant inputs consumables is required as setback	4.62	0.83
11.	Inability to monitor oxygen level may cause problem in seafood rearing.	4.53	0.48

Key = $\bar{X}$ mean of respondent. SD = standard deviation SA = strongly agree A = Agree D = Disagree SD = Strongly Disagree

The data presented in tale I above revealed that the eleven (11) impediments items on seafood rearing in tertiary institutions in Ebonyi State had their mean values ranged from 3.94 – 4.86 and they were above the cut of points indicating that all the (11) eleven items on seafood impediments were strongly agreed by the respondents (lecturers) in Ebonyi State tertiary institutions. The standard deviation of the (11) eleven impediments items on rearing seafood had their item ranged from 0.48 – 1.06. This indicates that the respondents were not too far from their mean response and from one another in their option. This has added value to the validity of the mean.

Research Question II. What are the financial resources in rearing seafood in fresh water in tertiary institution in Ebonyi State?

Table II mean rating and standard deviation responses of lectures on financial resources for rearing seafood in in Tertiary Institution in Ebonyi State.

The data presented in table II above revealed that the nine (9) items on financial resources in rearing seafood in

S/N	Items on financial sources for rearing seafood.	$\bar{X}$	SD
1.	University management constructed standard aquaculture ponds for students' practical demonstration.	4.64	0.63
2.	University management provide fund for purchasing wild seafood for rearing especially during accreditation.	4.53	0.66
3.	TETFUND money is usually voted for aquaculture pond of different sizes in departments and faculty.	4.58	0.63
4.	University management usually supply or finance to the departments or money for purchasing them during students practicals	4.52	0.74
5.	University management release fund purchasing consumables like,	4.56	0.88
6.	Students normally pull their money together and buy seafood (fishes) for practicals themselves	4.59	0.54
7.	Some lecturers may decides to carryout research on their own, provide money for seedling (aquaculture) and consumables.	4.53	0.63
8.	Some lecturers may attract some grants to the university, as selected site in their standard ponds.	4.56	0.48
9.	Special interest from Non-Governmental agents and Governments may decides to assist students on research, build modified ponds.	3.56	0.62

fresh water pond in tertiary institution in Ebonyi State had their mean value ranges from 3.56 – 4.88. They were above the cut off points indicating that all the nine items on financial resources were strongly agreed. The standard deviation of nine financial resources in seafood rearing had their items ranged from 0.48 – 0.88. This shows that the respondents were not far from their mean and from one another and added value to the validity.

Research question III. What are the material resources for rearing wild seafood in fresh water pond in tertiary institutions in Ebonyi State?

Table III: Mean rating and standard deviation responses of lecturers on material resources.

S/N	Items on Material Resources for rearing seafood	$\bar{X}$	SD
1.	Material resources for rearing seafood is feed to be available.	4.53	0.48
2.	Fish seedling and other related aquaculture	4.50	0.46
3.	Fish ponds of different sizes, well connected with pipes of water.	4.51	0.63
4.	Water sources to be constant.	4.29	0.81
5.	Drugs of fish (aquacultures) for introducing into a pond with good management	4.60	0.91
6.	Drugs for bacteria, virus, fungi, protozoa, among others.	4.63	0.88
7.	Nets for covering ponds.	4.54	0.68
8.	Organic maters for grooming water weeds.	4.53	0.60
9.	Liming materials for reducing the acidic level of water, increasing oxygen level of water.	4.59	0.83
10.	Fish and other aquaculture supplements essential minerals & vitamins.	4.66	0.65

The data presented in table III revealed that the ten (10) items on material resources in rearing seafood in fresh water ponds in tertiary institution in Ebonyi State, had their mean value ranged from 4.29 – 4.63. These scores were above the cutoff point. This indicate that all the ten (10) items were strongly agreed by the respondent (lecturers) in Tertiary Institutions in Ebonyi State. Standard deviation of the ten (10) items on material resources from 0.46 – 0.91. This indicate that the respondents were close to their mean and one another in their opinion.

Research Question IV. What are the health benefit for rearing seafood in fresh water pond in Tertiary Institution in Ebonyi State?

Table IV mean rating and standard deviation responses of lecturers on health benefit for rearing (wild) seafood in tertiary institution in Ebonyi State.

S/N	Items on health Benefit for rearing seafood in tertiary institution in Ebonyi State.	$\bar{X}$	SD
1.	Periwinkle contains Vitamin A, vitamin E, Vitamin B1, B6 and B12 for body organs, system and tissue functioning.	3.91	0.63
2.	Vitamin A for Eyes, functioning.	3.95	0.81
3.	Vitamin E is for reproduction improvement.	3.68	0.89
4.	Vitamin B12 is for control and prevent diabetes	3.66	0.72
5.	Periwinkles contains a lot of choline which is key component for nervous system.	3.82	0.64
6.	Periwinkle contains choline nutrient which help brain functioning	3.63	0.58
7.	Periwinkle is fortified with iron and phosphorous which is meant for red blood cell formation.	4.56	0.63
8.	Periwinkle contains phosphorous nutrient which act as channel of energy used for metabolism of fat and starches.	4.46	0.93
9.	Periwinkles contains Omega-3 fatty acids which improves brains health with cell membranes and improve memory.	4.92	0.81
10.	Periwinkles is high in selenium and magnesium which fight diseases like cancers, reproductive and hearth diseases.	4.86	0.83
11.	Periwinkle vitamins and nutrients form antioxidant which prevent aging and deterioration of tissues.	4.83	0.88
12.	Periwinkle is needed for over 300 enzymatic reactions in the bodies.	4.68	0.76

The data presented in Table IV revealed that the (12) item on health benefits for rearing wild seafood in fresh water ponds in tertiary institution in Ebonyi State had their mean values ranged from 3.63 – 4.92 which is above the cutoff point. This indicates that the respondents (lecturers) all agreed in all the items in Tertiary Institution in Ebonyi State. The standard deviation of the 12 items ranged from 0.63 – 0.93. This implies closeness of their respective means from one another.

Discussion of Results. From the study, it was found out that the respondents lecturers in tertiary institution agreed that all the 40 (forty) items of rearing seafood in fresh water pond in tertiary institution were agreed in Ebonyi State. The findings of this study is in line with study of Ogba, E. I. (2023) who stress that seafood is the most popular in giving health benefit to humanity and they are most diverse animals on planet. He maintain that all the nutrients required for human being are derived from them. This implies that there is need to create a mechanism for recurring them in fresh water pond, like, these categories of seafood snails, crabs, crayfish among others in Ebonyi State. The finding on rearing seafood were in agreements with findings of the Gupta (2015) who maintains that seafood are numerous and need to be reared in alternative places since, they are used in preventing nervous health system and maintain brain functions. He stress that they are over 500,000 species of living organism which include fishes in fresh water, catfish, periwinkles, tilapia among others.

The findings on research question two reveals that all the lectures in the tertiary institutions agreed that rearing seafood using financial support normally solve the production problem. This study is in line with study of Azubuike (2022) who maintains that each stage of production process requires finance which when not solved will destroy all the efforts put in the process. This indicate that whatever that is required in changing fresh water temperature, acidic, alkalinity, among others which finance can solve.

The findings on research questing three, reveals that all the respondents agreed strongly, since all the mean values were above the cutoff point and the standard deviation were close in items agreement. This indicates that material resources is crucial in seafood rearing in fresh water ponds in tertiary institution with experts in the aquaculture. This finding is in line with study of Aron (2020) who maintains that seafood is essential for all ages of human being, growing children, pregnant women, active adult, elderly ones. He stress that material resources are essential as production factors.

Research question four findings reveals that all 12 items in health benefit of seafood rearing in fresh water pond in tertiary institution using experts (lecturers) as the respondents, all agreed that its benefits are numerous, and should be produced to reduce the cost of shrimps, periwinkles among others.

This study is in line with the Adamsin, G and malitta (2022) who maintain that seafood attracts foreign currency and protect deficiency system since all the respondents agreed that they are in consonant with all the items of health benefit. The closeness of the standard deviation indicted the validity of the mean value.

III. Conclusion:

From the result of this study, it was discovered that lectures of agricultural education in tertiary institution in Ebonyi State agreed that the mechanism identified for establishing credible seafood in fresh water ponds are functional, while, the impediments, financial resources, material resources and the health benefits factors identified were highly recommended. That if the industries and government need to attract foreign currency to the state and the country in general. The knowledge of all these production factors must be seriously considered so that seafood production will solve health problems, financial resources, among others.

IV. Recommendations

Based on the findings of this study, it was recommended as follows. That the identified production factors for seafood production in the fresh water ponds be integrated into the students curriculum in the ministry of education lecturers of tertiary institution be encouraged to increase their research ethic through sponsorship in funds by the university management using tetfund.

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