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The Assessment of Fixed Capital Asset-Based Capacity of Fish Farm in Nigeria

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Abstract

The study area of the research work was Jere and Konduga Local Government Area of Borno State, North East Zone, Nigeria. An area that met the environmental requirement for fish farming which have significantly contributed to the development of fish production in the country, Nigeria. The study concerned with the assessment of fixed capital asset-based capacity of fish farm in the study area. Data for the study was collected within the period of thirty-one (31) days from 14th March, to 13th April 2023 through a questionnaire with informal discussion with the fish farmers. Information were also solicited from farmers book of accounts and other organizational official records were used. Thus, both primary and secondary sources of data were employed. The result of the study showed that fixed capital asset-based capacity of concrete fish farm in the study area was below average. Recommendation were made to create an avenue for the fish farmers in the study area to access fixed capital asset adequately for the improvement of fish farm asset-based capacity to expand operation for higher output.

Keywords: Asset; Capacity; Fixed Capital; Fish Farm

Abbreviations: MMC: Maiduguri Metropolitan Council; IDPS: Internally Displaced Persons.

Introduction

Fish farming is a millennium-old activity that has evolved slowly, often by building on traditional knowledge, advances gained through farmer curiosity, needs, positive experience and errors or cooperation. As a result, it has expanded for centuries, integrated with its natural, social, economic and cultural environments. Major developments in fish farming have benefitted from scientific progress in the twentieth and twenty first centuries. The result in terms of growth has been unprecedented, and fish farming now supplies more than half of the World's fish for human consumption [1].

Properly managed fish farming practices that foster the sustainable use of resources while preserving aquatic biodiversity are needed to ensure the future of the sector. The role of new technologies in minimizing food loss and waste across the fish value chain will allow for the more efficient use of resources and move towards more complete utilization of fish, thereby reducing the need to extract further resources [2].

Technological developments keep improving efficiency by reducing costs and saving energy globally. Examples include innovations in propulsion systems, improvements in

vessel hull design, reduced use of wooden vessels, and the use of larger vessels. Other technological innovations focus on increasing fishing efficiency and reducing environmental or ecological impacts [3].

The uneven distribution pattern in fish farming and development across regions and countries around the globe remain largely unchanged. There are many developing nations with high aspirations for strong aquaculture development to feed their fast – growing populations. This requires political will to promote appropriate policies, strategies, private and public investment and cooperation with a clear focus on sustainable production increases. Nigeria has increased its aquaculture production significantly to become the second major producer in Africa, although the share of Africa is still low at about 2.7 percent of world aquaculture production [4].

Despite some gains made and the huge potential of the aquaculture sector in Nigeria it is however bedeviled with constraints such as inadequate infrastructure, inadequate supply of fish feed, irregular electricity supply, poor finance, high cost of feed, land acquisition, high price of input, disease and poaching, poor extension services, poor market/price and cannibalism [5,6].

Aquaculture initiative was launched in Borno State under a comprehensive response program to restore agriculture-based livelihoods in the state, designed to build technical capacity of fish actors on safe and sustainable aquaculture. The initiative has boosted fish availability in the state especially around the benefitting communities such as Zabarmari, Gongulong, Dusman, Alau and Gamboru in Jere, Konduga and Maiduguri Metro-politan Counci Local Government Areas of Borno State, Nigeria. This have improved food security and malnutrition considered major challenges, especially for millions of women and children affected by insurgency in the state and promoted sustainable water management for income generation in the state [7].

Zanna B, et al. [8] Fishers in the study area developed interest in aquaculture as a result of skill acquired in a training workshop organized by the federal government of Nigeria but no any additional support services neither from the government nor from any other non-governmental organizations for expansions was provided except from friends, relatives and closed associates e.g. startup capital assets which was inadequate for further expansion. Regulatory framework in the study area was not in existence and other support system from governmental and non-governmental organizations, co-operative societies and other major stakeholders in the system should initiate policies that will promote aquaculture for the attainment of community sustainable fisheries development in fishing communities across developing countries globally.

Generally, Borno State, North-East, Nigeria have the environmental requirements for fish production which plays a fundamental role in the establishment of fish farm such as water resources, soil and temperature of the state are suitable for fish production throughout the year. Other critical determinants of viable fish farming system include; the socio-economic characteristics of the fish farming community, mode of land acquisition, fixed capital asset and running cost. Thus, the assessment of fixed capital asset-based capacity of fish farms in north-east Nigeria involved an approach to the fish farmers based on distribution according to the level of fixed capital asset-based capacity and the value of fixed capital asset-based capacity in the study area.

Fixed capital is usually divided in to various components; pre-project study and analysis expenses, main equipment, equipment installation, piping (installed), instrumentation and control, electrical installation, construction (including services), auxiliary services, land and land improvement, starting-up costs and interest during construction. Each of these components can be estimated separately, and its magnitude will vary considerably according to the nature of the project [9].

There is a period between formal completion of construction and commencement of normal production, "starting-up" and which can last from a few weeks to several months. Obviously, a series of costs are incurred during this period. They can be divided in to two main groups.

- Construction costs during starting-up (loss on production lines and equipment, flaws in design to be solved, malfunction of equipment, need for additional equipment etc.).
- Starting-up operational costs (salaries, raw-materials, semi-finished or finished products falling outside specifications etc.).

While the first are always included as fixed capital and as such, depreciate during the plant's useful life, there is no single criterion for the second. Depending on the accounting philosophy of the production firm, they can also be capitalized or considered abnormal operational costs and charged to the loss's component. Although in this last instance they are not considered in the economic evaluation of the project. However, the general tendency is to reduce starting – up costs as much as possible by prevention at design stage [10].

The value of land does not decrease with time and is therefore not included in fixed investment when annual cost of depreciation is calculated. Although land does involve capital investment, it is usually preferred to include in fixed capital only those items for which depreciation is allowed by law thus excluding land [9]. The part of improvement for land form part of fixed capital investment which includes

the cost of materials for fences, levelling of the land, roads, parking and other similar costs [11].

In many estimating methods, piping component is calculated separately from the rest of the equipment. In a detailed estimate, calculation of cost of pipes is made with a diagram of the pipes and their sitting. Piping costs can vary greatly in the fishery industry from low to a relatively high value. The costs involved in electrical installations consist mainly of labor and materials necessary for supplying power and to the lighting process. While the cost of illuminating the service, buildings are normally included in the cost of auxiliary services [11].

Problem Setting and Research Objectives

The problem of access to capital and adequate capital for expansion either by the means of loan with or without interest or through other support program from individuals, societies, government and or non-governmental organization at the state, national and international level. Poor educational level of the fish farmers is another problem of the fish farmers in the study area. Consequently, inadequate technologies and technical know – how in line with the fishing practice of fish farming in the study area. As the fixed capital asset-based capacity level of the fish farm determines the operational size of the fish farm and the ability of the fish farmer to adopt improved practice in the study area, there is therefore an inverse relationship between the level of fixed capital asset-based capacity of the fish farm, the fish farmer know-how, the farming method and technique in practice in the study area and the fish farm output level. There exist limited number of research work directly related to fixed capital asset-based capacity of fish farms in the study area, if any. This research work was also undertaken to close the literature gap.

In view of the above, this research work was undertaken with the main objective of assessing the fixed capital asset-based capacity of fish farm in Jere and Konduga Local Government areas, Borno State, North-East zone, Nigeria. The specific objectives are to:

- determine the level of fixed capital asset-based capacity of the fish farm in the study area,
- evaluate the value of fixed capital asset-based capacity of the fish farm in the study area.

This research work may enable the identification of various types of fixed capital asset that are in used in the study area and the proportion of the contribution of the various individual fixed capital asset to the farm output in the study area. The information obtained may served as a source of data for planning purpose at individual and organizational level both governmental and non-governmental level of governance.

Data collection for the research work was carried out within the period of thirty one (31) days from 14th March, to 13th April, 2023 due to the fact that during that period majority of the fish farmers embarked on harvest as pre-planned for intensive marketing as there was high demand for fish as a result of religious events and other festivities.

Methodology and Data

The study was carried out in Jere and Konduga Local Government Area of Borno State, North eastern zone of Nigeria. Borno State which has an area of 61,43589 km is the largest state in the federation of the Federal Republic of Nigeria in terms of land mass. The state occupies the greatest part of the Chad Basin and shares borders with the Republic of Niger to the North, Chad to the North – East and Cameroon to the East. Jere Local Government Area of Borno State, Nigeria, has its headquarters in the town of Khaddamari. Jere is one of the twenty-seven local government areas of Borno State, carved out of Maiduguri Metropolitan Council (M.M.C.) in 1996. It lies within latitudes 110 401 E and 120 05 N and longitudes 130 501 and 120 201 E; it occupies a total landmass of 160 square kilometers. Within the state, it shares boundaries with Mafa Local Government Area to the east, Maiduguri Metropolitan Council to the north and Konduga Local Government Area to the South. Jere Local Government Area has a projected population of 211, 204 persons with annual growth rate of 2.8%. Majority of the inhabitants are farmers, traders, and civil servants. The major ethnic groups are Kanuri and Shuwa Arab. Others includes Hausa, Bura, and Fulani and many immigrant settlers from within and outside Nigeria [12]. In khaddamari, the wet season is hot, oppressive and mostly cloudy and the dry season is sweltering and partly cloudy. Over the course of the year, the temperature typically varies from 580 F to 1060 F and is rarely below 520 F or above 1100 F. The hot season lasts for 2.4 months from March 14th to May 27th with an average daily high temperature above 1020 F. The hottest month of the year in Khaddamari is May, with an average high of 1030 F and low of 800 F. The cool season lasts for 2.1 months, from July 20th to September 23rd with an average daily high temperature below 920 F. The coldest month of the year in Khaddamari is January, with an average low of 590 F and high of 920 F. The rainy period of the year last for 6.0 months, from April 23rd to October 21st, with a sliding 31-day rainfall of at least 0.5 inches. The month with the most rain in Khaddamari is August, with an average rainfall of 5.9 inches. The rainless period of the year lasts for 6.0 months, from October 21st to April 23. The month with least rain in Khaddamari is December, with an average rainfall of 0.0 inches [13]. Konduga is a community in Borno State, Nigeria and the Centre of a Local Government Area of the same name about 25km to the Southeast of Maiduguri situated on the North bank of Ngadda River. The local government area is

shown within Nigeria coordinates: 110 39' 6'' N, 130 25' 10" E. Konduga Local Government Area have an area of about 6000 square kilometers with a population of 375,000. The ethnic groups in the local government are Kanuri, Shuwa Arab, Marghi, Mulgwai, Wula, Gamargu, Fulani and Hausa. The main occupation of the people is subsistence farming combined with livestock rearing, fishing and trading. The road network in the local government is over 300km mostly (over 90%) untarred bush roads and foot paths with substantial part of the villages living behind a river, which keeps them away from the local government headquarters. Those living behind the rivers use canoes to cross to the local government headquarters. The terrain becomes difficult during the rainy season [14]. In Konduga, the wet season is hot and mostly cloudy and dry season is sweltering and partly cloudy. Over the course of the year, the temperature typically varies from 580 F to 1060 F and is rarely below 520 F or above 1100 F. The hot season lasts for 2.4 months, from March 11th to May, 24th, with an average daily high temperature above 1020 F. The hottest month of the year in Konduga is April, with an average high of 1050 F and low of 770 F. The cool season lasts for 2.1 months, from July, 20th to September, 22nd with an average daily high temperature below 920 F. The coldest month of the year in Konduga is January, with an average low of 590 F and high of 920 F. The rainy period of the year last for 6.1 months, from April, 20th to October 22nd with a sliding 31- day rainfall of at least 0.5 inches. The month with the most rain in Konduga is August, with an average rainfall of 6.2 inches. The rainless period of the year lasts for 5.9 months, from October, 22nd to April 20th. The month with the least rain in Konduga is December, with an average rainfall of 0.0 inches [13].

The study area has population of 5,86,204 inhabitants. The targeted population for this study has 211,204 and 375,000 persons from Jere Local Government Area and Konduga Local Government Area of Borno State, Northeast, Nigeria respectively. Ten (10) respondents, fish farmers were used from each of the two (2) local government areas, made a total sum of twenty (20) respondents for the study. Fish farmers that are engaged in concrete pond fish farming method were considered for the purpose of this study.

Sources of data for the study were both primary and secondary sources. Primary data was collected from the farmers by the way of farm and market survey method with the used of questionnaires. The questionnaires were completed by interviewing the farmers which ensured that questionnaires were well attended with accurate and reliable information. The information obtained through the questionnaires were supplemented with information that was collected through informal discussed with the farmers. The information elicited from the respondents through the questionnaires were on fixed capital asset-based capacity of fish farm in the study area. Secondary data was obtained from the farmers books of account where available and through officially documented records and discussed with officials of Federal College of Freshwater Fisheries Technology, Baga, Maiduguri and State Ministry of Animal and Fisheries Development Maiduguri, Borno State.

Multistage sampling technique was employed for the selection of the respondents. In the first stage, two local government areas (Jere and Konduga Local Government Area) of Borno State, North-east, Nigeria were purposively selected, areas that met the environmental requirement for fish farming in terms of water, soil, and temperature. More so, fish farming in Jere and Konduga Local Government Areas have became dominant as a result of the "BOKO HARAM" insurgency that ravaged almost all the fishing communities in Borno State of Nigeria made the population of the study areas increased due to inflows of internally displaced persons (IDPS) in to Jere Local Government Area and part of Konduga Local Government Area. In the second stage ten (10) respondents were randomly selected in the study area from a list of registered fish farmers in each of the two local government areas of the state. The list of registered fish farmers group of the Borno State Ministry of Animal and Fisheries Resources Development formed the sampling frame. The randomly selected ten (10) fish farmers from Jere Local Government Area and another ten (10) from Konduga Local Government Area made a sample size of twenty (20) respondents for the study.

Quantitative technique was employed in the analysis of the data. Descriptive statistics was used in the determination of the level of fixed capital asset-based capacity of fish farm in the study area and in the evaluation of fixed capital asset-based capacity of fish farm in the study area.

Results and Discussions

The Distribution of Fixed Capital Asset-Based Capacity of Fish Farm in Jere and Konduga Local Government Area, Borno State, North-East Zone, Nigeria

Table 1 shows that Basin/Basket was the major fixed capital asset of farmers fish farm in Jere Local Government Area with (26%) asset-based capacity level. Followed by Fish Pond with 18.68%. and Fishing Net with 12.64% asset-based capacity. Other fixed capital asset of the fish farmers in Jere Local Government Area falls within the range of 5% to 10% asset-based capacity level includes; Water Hose with 8.79%, Water Pump Machine with 6.59%, Weighting Scale Machine with 6.04% and Bore Hole (Well) Pump with 5.49% asset-based capacity level. Those fixed capital assets that falls below 5% asset-based capacity level involves Power

Generator with 4.95%, Hatching Equipment with 1.65%, Pelleting Machine with 1.10%, Water Quality Instrument with 0.55% asset-based capacity level. Finally, Grinding Machine and Vehicle shows 0% asset-based capacity level.

This result is in line with the finding of Voldimarson G [15] the cost of construction includes the expenditure on labor, materials, and supplies needed for the construction of all buildings connected to the plant. They include plumbing costs, electrical installation, ventilation, air conditioning, and similar building services. The cost of constructing a fish plant usually varies according to the country and the site of the plant but not in line with the findings of Dale GB, et al. [16] the accepted definition for auxiliary services for a process are the structures, equipment and services not directly involved in the process. These include equipment for the supply of steam, water, electricity, compressed air and fuel. Some of these services can be bought from other companies in which case they are considered part of production costs and are not included in investment calculations. Waste disposal equipment, fire extinguisher and other similar equipment are usually included in the cost.

Table 1 represents that fixed capital asset of Fish Pond was highest with (21.17%) asset-based capacity level in Konduga Local Government Area. Followed by fixed capital asset of Basin/Basket with 18.98% asset-based capacity level, Fishing Net and Water Hose with 11.68% asset-based capacity level. Other fixed capital assets in Konduga Local Government Area that falls between the range of 5% to 10% asset-based capacity level were Power Generator with 9.49%, Water Pump Machine with 8.76% and Bore Hole (Well) Pump with 7.29% asset-based capacity level. Fixed capital assets that falls below the range of 5% asset-based capacity level includes Smoking Klin with 2.19% and Pelleting Machine with 0.73% asset-based capacity level. Whereas Fixed Capital Assets of Grinding Machines, Vehicle, Hatching Machine and Water Quality Instrument shows 0% asset-based capacity level in the study area.

This result partly confirmed to the findings of Parin MA, et al. [11] the costs involved in electrical installations consist mainly of labor and materials necessary for supplying power and to the lighting process. While the cost of illuminating the service, buildings are normally included in the cost of auxiliary services. But partly shows inconsistency with the findings of Parin MA, et al. [11] in many estimating methods, piping component is calculated separately from the rest of the equipment. In a detailed estimate, calculation of cost of pipes is made with a diagram of the pipes and their sitting. Piping costs can vary greatly in the fishery industry from low to a relatively high value.

S/NO.	Fixed Capital Asset	Jere Local Government Area (4.1A)		Konduga Local Government Area (4.1B)		Total (4.1C)	
		FRQ	PCTD%	FRQ	PCTD%	FRQ	PCTD%
1	Water Pump Machine	12	6.59	12	8.76	24	7.52
2	Pelleting Machine	2	1.1	1	0.73	3	0.94
3	Grinding Machine	-	-	-	-	-	-
4	Water Hose	16	8.78	16	11.68	32	10.03
5	Vehicle	-	-	-	-	-	-
6	Weighting Scale	11	6.04	11	8.03	22	6.89
7	Hatching Equipment	3	1.65	-	-	3	0.94
8	Generator	9	4.95	13	9.49	22	6.89
9	Water Quality	1	0.55	-	-	1	0.31
10	Smoking Kiln	13	7.14	3	2.19	16	5.02
11	Fishing Net	23	12.64	16	11.68	39	12.23
12	Basin/Basket	48	(26.37) *	26	18.98	74	(23.19) *
13	Fish Pond	34	18.68	29	(21.17) *	63	19.75
14	Bore Hole (Well) Pump	10	5.49	10	7.29	20	6.27
	Total	182	100%	137	100%	319	100%

Source: Field Survey (Data Analysis) 2023

Note: The Symbol (*) Indicate High % Recorded in each Classification.

Table 1: Distribution of Fixed Capital Asset-Based Capacity of Fish Farm in Borno State, North-East Zone, Nigeria.

Table 1 indicates the total distribution of fixed capital asset-based capacity level of fish farms in Jere and Konduga Local Government Areas of Borno State, North-East Zone, Nigeria which shows that cumulatively Basin/Basket was the highest fixed capital asset with (23.19%) asset-based capacity level in the study area. The fixed capital assets that falls between the range of 10% to 20% asset-based capacity level were Fish Pond with 19.75%, Fishing Net with 12.23% and Water Hose with 10.03% asset-based capacity level. Fixed capital asset such as Water Pump Machine with 7.52% asset-based capacity level, Weighting Scale Machine and Generator with 6.89% asset-based capacity level, Bore Hole (Well) Pump with 6.27% asset-based capacity level and Smoking Kiln with 5.02 falls between the range of 5% to 10% asset-based capacity level in the study area. The fixed capital asset that falls below the range of 5% asset-based capacity level includes Pelleting Machine and Hatching Equipment with 0.94% asset-based capacity level. Finally, Grinding Machine and Vehicle categories of fixed capital asset were classified under 0% asset-based capacity level in the study area.

This result shows consistency with the findings of Zugarramurdi A, et al. [9] the value of land does not decrease with time and is therefore not included in fixed investment when annual cost of depreciation is calculated. Although land does involve capital investment, it is usually preferred to include in fixed capital only those items for which depreciation is allowed by law thus excluding land and the findings of Parin MA, et al. [11] the part of improvement for land form part of fixed capital investment which includes the cost of materials for fences, levelling of the land, roads, parking and other similar costs.

Although the total fixed capital asset-based capacity of the fish farm in the study area of the study area revealed below average as indicated that the fixed capital asset Basin and Basket with the highest asset-based capacity of (23.19%).

Table 2 shows that the value of fixed capital asset that falls below the range of N99,999 was the highest value with (69.95%) asset-based capacity in Jere Local Government Area, Borno State, North-East, Nigeria, followed by the value of fixed capital asset between the range of N100,000-N199,999 with 11.48% asset-based capacity level, the value of fixed capital asset between the range of N200,000–N299,999 with 10.39% and the value of fixed capital asset between the range of N500,000 to N599,999 with 3.83% asset-based capacity level. While fixed asset with 0% asset-based capacity level includes fixed capital asset between the range N400,000 to N499,999 value. Other fixed capital asset with 0% asset-based capacity also involves fixed capital asset between the range of N600,000 – N699,999, N700,000–N799,999, N800,000–N899,999, N900,000–N999,999 and N1000,000 above in the fish farm of Jere Local Government Area, Borno State, North-East Zone, Nigeria. This result is in line with the findings of Zugarramurdi A, et al. [9].

Table 2 represents that the value of fixed capital asset that fall below the range of N99,999 was highest with (60.32%) asset-based capacity in Konduga Local Government Area, Borno State North-East, Nigeria, followed by the fixed capital asset valued between the range of N300,000 to N399,999 with 23.02% and fixed capital asset valued between the range of N100,000–N199,999 with 16.67% asset-based capacity. While the fixed asset with 0% asset-based capacity includes the value of the fixed capital asset between the range of N200,000–N299,999 in the study area. Other fixed asset with 0% asset-based capacity involves value of fixed capital asset between the range of N400,000–N499,999, N500,000–N599,999, N600,000–N699,999, N700,000–N799,999, N800,000–N899,999, N900,000–N999,999 and N1000,000 above in the fish farm of Konduga Local Government Area, Borno State, North-East, Nigeria. This result confirmed to the findings of Zugarramurdi A, et al. [9].

Table 2 indicates the distribution of the total value of fixed capital asset of fish farm in Jere and Konduga Local Government Area, Borno State, North-East Zone, Nigeria; under which the value of fixed capital asset that fall below the range of N99,999 was highest with (66.02%) asset-based capacity, followed by the value of fixed capital asset between the range of N100,000–N199,999 with 13.59%, the value of fixed capital asset between the range of N300,000–N399,999 with 11.97%, the value of fixed capital asset between the range of N200,000–299,999 with 6.15% and the value of fixed capital asset between the range of N500,000–N599,999 with 2.27% asset-based capacity level. The value of fixed capital asset between the range of N400,000–N499,999 indicate 0% asset-based capacity level. Other value of fixed capital asset between the range of N600,000–N699,999, N700,000–N799,999, N800,000–899,999, N900,000–N999,999 and N1000,000 above also indicate 0% asset-based capacity level in the fish farm of Jere and Konduga Local Government Area, Borno State, Nigeria.

This result shows consistency with the findings of Porter JL, et al. [10] there is a period between formal completion of construction and commencement of normal production, “starting-up” and which can last from a few weeks to several months. Obviously, a series of costs are incurred during this period. They can be divided in to two main groups. First, construction costs during starting-up (loss on production lines and equipment, flaws in design to be solved, malfunction of equipment, need for additional equipment etc.). Secondly, starting-up operational costs (salaries, raw-materials, semi-finished or finished products falling outside

specifications etc.). While the first are always included as fixed capital and as such, depreciate during the plant's useful life, there is no single criterion for the second. Depending on the accounting philosophy of the production firm, they can also be capitalized or considered abnormal operational costs and charged to the loss's component. Although in this last instance they are not considered in the economic evaluation of the project. However, the general tendency is to reduce starting–up costs as much as possible by prevention at design stage.

S/NO.	Value of Fixed Capital Asset ((₦)	Jere Local Government Area (4.2A)		Konduga Local Government Area (4.2B)		Total (4.2C)	
		FRQ	PCTD%	FRQ	PCTD%	FRQ	PCTD%
1	Under - 99,999	128	(69.95) *	76	(60.32) *	204	(66.02) *
2	100,000 – 199,999	21	11.48	21	16.67	42	13.59
3	200,000 – 299,999	19	10.38	-	-	19	6.15
4	300,000 – 399,999	8	4.37	29	23.02	37	11.97
5	400,000 – 499,999	-	-	-	-	-	-
6	500,000 – 599,999	7	3.83	-	-	7	2.27
7	600,000 – 699,999	-	-	-	-	-	-
8	700,000 – 799,999	-	-	-	-	-	-
9	800,000 – 899,999	-	-	-	-	-	-
10	900,000 – 999,999	-	-	-	-	-	-
11	1000,000 & above	-	-	-	-	-	-
	Total	183	100%	126	100%	309	100%

Source: Field Survey (Data Analysis) 2023

Note: The Symbol (*) Indicate High % Recorded in each Classification.

Table 2: Distribution According to the Value of Fixed Capital Asset-Based Capacity of Fish Farm in Borno State, North-East Zone, Nigeria.

Nevertheless, the total value of the fixed capital asset-based capacity of the fish farm in the study area revealed below average as shown as per the result of the evaluation which fall between the range below N99,999 with (66.02%) asset-based capacity.

Summary and Conclusion

The study concerned with the assessment of fixed capital asset-based capacity of fish farm in North- East Zone of Nigeria. The study revealed fixed capital asset of Basket and Basin was the highest fixed capital asset with (23.19%) asset-based capacity in the study area. The finding of the study also revealed there was fixed capital asset with 0% asset-based capacity such assets as the Grinding Machine and Vehicle in the study area. Other outcome of the study revealed the highest value of fixed capital asset was below the range of N99,999 with (66.02%) asset-based capacity and other fixed capital asset were at 0% asset-based capacity between the ranges of N600,000–699,999 to N1000,000 and above in the study area. The result showed the fixed capital asset-based capacity of fish farm in the study area was below average.

Therefore, the need for improvement in the fixed capital asset-based capacity of the study area. Thus, the following recommendation were made:

- Create an avenue for the fish farmers in the study area to access capital adequately with the intervention of government and non-governmental organizations.
- The underdevelopment of fish farmers in modern system of fish farming should be redressed through education and development programs with innovative research with reference to the applicability of fixed capital asset in line with the fishing practice of the study area.

Acknowledgement and Conflict of Interest

Contributions; Conceptualization: Babagana Zanna, writing original draft preparation: Babagana Zanna, Writing – review and editing; Mohammed Musa and Babagana Zanna, Supervision: Mohammed Musa. The authors have read the manuscript and agreed for onward vetting, corrections, guidance for further consideration and approval and subsequent publishing of the final version of the manuscript accordingly. The research work was carried out by Babagana

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