

# Assessing Formal Credit Access for Fishery Development: A Study of Fisher Socio-Economic Characteristics, Demand, and Issuance in Bayelsa State, Nigeria (2010-2015)

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**Abstract:-** This research explores the critical role of fisheries in Nigeria's economy, focusing on Bayelsa State. Despite contributing 3–5% to the agricultural GDP and being a vital protein source for Nigerians, the fisheries sub-sector faces challenges, notably in credit accessibility. The study investigates the nexus between credit, socioeconomics, and technology in Bayelsa's fisheries. With a population of 1.7 million, Bayelsa heavily relies on fishing, making the study pertinent. Data for the study was obtained from 160 fishers drawn from random but purposefully selected four Local Government Area's. (LGA) In each LGA four fishing communities and within each, 10 fishers were randomly selected based on list of registered fishers obtained from the Bayelsa Agricultural Development Programme Fisheries Division. The instrument of the study was a pre-tested questionnaire containing structured items, developed from literature review seeking responses on the fishers socioeconomic and demographic information. Information on the demand, issuance receipt of credit and value involved was obtained from the Bayelsa branch of Bank of Agriculture. Data collected was analyzed with descriptive statistics and presented in tables and chart and also inferential statistics (Pearson Product Moment Correlation). The socioeconomic characteristics of fishers reveal a male-dominated occupation, and the adoption of technology stands as a transformative force. However, the study finds a modest correlation (4%) between availed credit and technology adoption, emphasizing the need for targeted financial support. The results underline the inadequacy of current credit allocations, hindering progress in the fishing industry. The study's findings provide valuable insights for policy formulation, advocating for targeted credit schemes, gender-sensitive policies, and technology integration. The recommendations aim to address the identified challenges, fostering sustainable fisheries development in Bayelsa State. Overall, this research contributes to the understanding of the complexities and opportunities in fisheries development.

**Keywords:-** Fishery Development, Formal Credit Access, Bayelsa State, Socioeconomic Dynamics, Fisheries, and Technology Adoption.

## I. INTRODUCTION

Fishery is an important subsector of Agriculture in Nigeria's economy which contributes about 3–5% to the agricultural share of the Gross Domestic Product (GDP) (CBN, 2013). Fish are an important protein source in the diet of Nigerians. Protein from fish is highly digestible and of high nutritional value and consists of complete arrays of amino acids, vitamins, and minerals (CBN, 2013).

Fisheries play a pivotal role in Nigeria's agricultural sector, making substantial contributions to economic growth and food security. Bayelsa State, situated amidst freshwater and mangrove swamp forests, has become a key hub for fisheries development, leveraging its expansive waterways and dependence on fishery resources. This study aims to explore the nuanced interplay between credit accessibility, socioeconomic trends, and the integration of technology, all of which are pivotal factors driving the progress of fisheries in Bayelsa State, Nigeria.

In the broader context of Nigeria's economy, fisheries play a pivotal role, contributing approximately 3–5% to the agricultural share of the Gross Domestic Product (GDP) (Central Bank of Nigeria, 2013). The significance of fish as a rich source of high-quality protein is integral to the dietary habits of the Nigerian population, highlighting the importance of a thriving and sustainable fishing industry (Central Bank of Nigeria, 2013). With the potential to alleviate poverty and enhance livelihoods, the development of fisheries holds substantial promise for economic and social progress.

Despite the inherent potential, fisheries development faces multifaceted challenges, and one of the critical aspects is the accessibility of credit. The availability of financial

resources is pivotal for fishers to procure modern equipment, invest in processing facilities, and adopt advanced technologies that can elevate production efficiency. The inadequacy of credit in the agricultural sector, as noted by the Central Bank of Nigeria (2010), has direct implications for the fisheries sub-sector, hindering its capacity to reach optimal productivity.

Bayelsa State, with a population of around 1.7 million (Wikipedia, 2017), relies heavily on its abundant water resources for economic sustenance. Fishing is a major occupation, providing livelihoods to a significant portion of the population. The socioeconomic characteristics of fishers, including gender distribution, age demographics, marital status, educational background, and household size, contribute to the intricate fabric of the fishing communities in Bayelsa State.

In the contemporary era, the integration of technology stands as a transformative force in fisheries development. Advanced fishing equipment, data-driven approaches, and sustainable practices are integral to ensuring the long-term viability of the industry. Technologies such as GPS navigation, sonar systems, and data analytics contribute not only to increased yields but also to sustainable and responsible fishing practices.

As Bayelsa State navigates the complexities of fisheries development, addressing the nexus between credit accessibility, socioeconomic dynamics, and technological integration is paramount. This research endeavors to unravel these complexities, offering a roadmap for sustainable fisheries development that aligns with contemporary challenges and opportunities.

The findings of this study would be helpful for policy formulation towards the development of the fishery sub-sector. Therefore, the findings of this work would be providing some basic information on the challenges of financing fisheries in Bayelsa state. A state where fishing is a major occupation of its residents. Furthermore, this work will provide feedback to Government and research institutions such as International Fund for Agricultural Development (IFAD) and Green River project at Nigerian Agip Oil Company (NOAC), on the existing credit schemes for improvement.

The broad objective of the study examined access to formal credit facilities for fisheries development in Bayelsa State, while specifically describing the socio-economic characteristics of fishers in the study area, and examining the relationship between the availed credit and development by fishers through the adoption of innovations and technologies in fishery.

**II. MATERIALS AND METHODS**

*A. Study Area*

The study took place in Bayelsa State, Nigeria, with geographical coordinates between longitude 4.2°E and 5.22°E and latitude 4.16°N and 5.23°N, (Google Earth Imagery, 2017). The state is characterized by freshwater and mangrove swamp forests, receives significant rainfall, and has a population of around 1.7 million and its economy relies on fishery resources due to its abundant waterways and is bordered by Delta, Rivers, and the Atlantic Ocean, (Wikipedia, 2017).

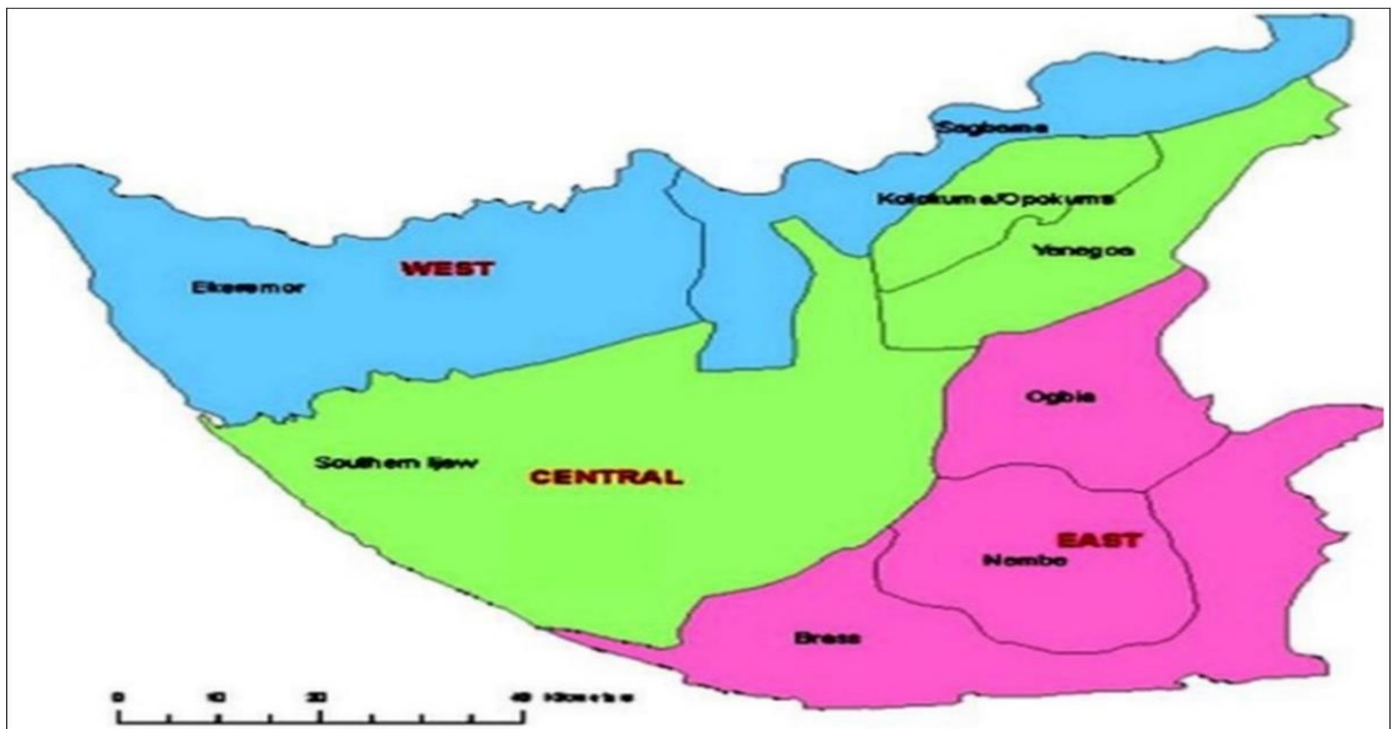


Fig 1 Map of Bayelsa State Showing the Local Government Areas and Senatorial Districts  
Source: Alagoa (1999)

Key: Pink – East Senatorial district, Green – Central Senatorial district, Blue – West Senatorial district

**B. Sample and Sampling Technique**

A multi-stage sampling technique was adopted for selecting the fishers during the study, Four out of the eight (8) Local Government Areas (LGA) were purposely selected for the study. A stratified purposive sampling technique was used to select the LGAs for the study. This is based on their fishing activities, hence only riverine LGAs where the main occupation is fishing were selected. From each LGA four

communities were randomly selected based on the list of existing communities from the LGA office. In each selected communities, ten (10) fishers were randomly selected based on the list of registered fishers from Agricultural Development Programme (ADP) - Fisheries Division register, a total of one hundred and sixty fishers were selected for the study. The selected LGAs and the communities are in Table 1.

Table 1 Local Government Areas and Selected Communities for the Study

S/N	LOCAL GOVERNMENT AREA	SELECTED COMMUNITIES
1.	Southern Ijaw	Ekeni, Ezetu, Koluama 1 Koluama 2
2.	Brass	Sangana, Odioma, Imbikiri, Fishtown
3.	Nembe	Etiema, Agresaba, Ologoama, Ewelesuo
4.	Ekeremor	Ageh, Peretoru, Toru-Indoro, Aleibiri

**C. Data Collection**

The research systematically gathered information from both primary and secondary sources, specifically examining the access of fishers to formal credit and the challenges they encountered during the application process from 2010 to 2015. Primary data, acquired through a meticulously designed questionnaire, encompassed various aspects such as socio-economic and demographic profiles of fishers, details about their income, constraints faced in obtaining credit, and the influence of credit on the adoption of contemporary fishing technologies. To ensure the reliability of the questionnaire, a split-half reliability test was conducted, revealing a robust reliability coefficient of 0.928.

Additionally, secondary data from the Bank of Agriculture (BOA) furnished historical credit-related information. The Bank of Agriculture, established in 1973 with the aim of addressing credit requirements in the agricultural sector, served as a valuable source for understanding the credit landscape within the specified timeframe, (Alfred-Ockiya, 1997; FAO, 1997; Akpabio, 2000; Omotoso and Daramola, 2005; Fakoya and Daramola, 2008; Acquah and Abuyuwah, 2011).

**D. Method of Data Analysis**

The data collected were analyzed using statistical techniques such as descriptive statistics (Percentage, Frequencies, and Mean) and tables and charts for presentation and inferential statistics (Pearson Product Moment Correlation). The Pearson Product Moment Correlation Analysis was used to determine causal relationship between availed credit and development by fishers through the adoption of fisheries innovations and technologies.

The test statistics is given as:

$$r = \frac{n(\sum XY) - (\sum X)(\sum Y)}{\sqrt{[n(\sum X^2) - (\sum X)^2][n(\sum Y^2) - (\sum Y)^2]}}$$

(Downie and Heath, 1965)

Where:

r = Pearson Moment Correlation Coefficient

n = number of respondents

$\sum$  = sum of

$\sqrt{\phantom{x}}$  = square root

X = variance of scores of X

Y = variance of scores of Y

Pearson correlation analysis and percentages was carried out using SPSS software. The level of significance level chosen was 0.05

**III. RESULTS AND DISCUSSION**

**A. Socioeconomic Characteristics of Fishers in the Study Area**

➤ *Sex of Fishers*

Table 2 presents the distribution of genders among the studied fishers. The findings reveal a predominant representation of males, constituting 81.3% of the respondents, while females account for 18.7%. These results suggest a clear gender imbalance within the fishing community, indicating that the profession is predominantly pursued by males. The prevalence of males in this occupation is attributed to its physically demanding nature and the inherent risks involved, often exacerbated by unpredictable weather conditions, such as ocean currents and turbulent waves.

This observation aligns with the research of Tawari (2014), who similarly noted that male fishers dominate fishing communities in Nigeria. Consistent patterns are also found in related studies by Akpoko (2003), Onemolease and Oriakhi (2011), as well as Olaoye et al. (2012), all of whom underscored the male-dominated nature of artisanal fishery. Onemolease and Oriakhi (2011) further highlighted that the risks associated with offshore fishing activities could be a contributing factor to the limited participation of females in this field. This collective body of research emphasizes the gendered dynamics within the fishing industry, shedding light on the challenges and occupational preferences that

contribute to the underrepresentation of females in fishery-related occupations.

#### ➤ *Age of Household*

In Table 2, the distribution of household heads by age reveals that a significant majority, accounting for 74.3%, fall within the age range of 31-50 years. Additionally, 12.5% of household heads are aged between 20-30 years, while 13.1% belong to the age group of 51-60 years.

#### ➤ *Marital Status*

The results of marital status (Table 2) reveals that 76.3% of the surveyed fishers were married, 12.5% were widowed, and 6.3% were either divorced or separated. A negligible proportion, 0.05%, identified as single. During the study, it was noted that males predominantly assumed the role of household heads. However, in cases where the husband passed away, the wife typically took on the responsibility of the head of the household. Single heads of households were likely to be short-lived fishers seeking cash to meet their children's educational expenses or may have succumbed to fishing-related hazards, leading to the untimely loss of their parents.

Contrary to the findings of Olaoye et al. (2012) in the Lagos area, who reported that 59% of fishers aged between 21-40 years were married and operated nuclear families, the present study observed different results. The disparity could be attributed to variations in the study locations. Fishermen in the Lagos area might be more transient or engaged in fishing part-time due to the plethora of alternative job opportunities available in Lagos and its environs.

Furthermore, the study revealed that the heads of households had been engaged in fishing as their primary occupation for over 10 years. This aligns with the observations of Okwu et al. (2011), who noted that capture fisheries are commonly dominated by individuals in the age bracket of 31 – 50 years, which he defined as the active age range for fishing.

Table 2 also presents a comprehensive overview of the educational profile, household size, fishing experience, and annual income of fishers in the study area.

The educational distribution among fishers reveals a diverse landscape. Notably, 40.6% of fishers had no formal education, while 34.3% had completed primary education. A significant portion, 18.7%, had attained a secondary education, and a modest 6.2% possessed tertiary education qualifications. This distribution marks a departure from findings by Onemolease et al. (2000), who reported that a majority of fishers acquired fishing skills through informal means during childhood, with over 60% lacking formal education or having only primary education.

Analysis of household size indicates a trend toward smaller family units. Specifically, 62.5% of households maintained a size ranging from 1 to 5 persons. A sizeable 30.0% had a household size of 6 to 10 persons, while only 7.5% reported a household size exceeding 15 persons. This shift toward smaller households aligns with observations made by Onemolease and Oriakhi (2011) in their study of artisanal fishers in Delta State. Larger households, as observed among artisanal fishers, serve as a crucial source of labor for fishing operations, consistent with the findings of Ukoha et al. (2014), who highlighted the advantage of a larger household size for securing cost-effective labor.

Examining fishing experience, the data in Table 2 reveals a varied landscape. Approximately 12.5% of respondents had 1 to 5 years of experience, while a substantial 41.3% had 6 to 10 years. Notably, 33.7% reported 11 to 15 years of fishing experience, and an additional 12.5% had accrued 16 to 20 years. This distribution suggests a significant number of fishers dedicating a substantial portion of their lives to fishing, resonating with findings by Alfred-Ockiya (1997), who documented similar patterns among artisanal fishers in Bayelsa State.

The annual income distribution among fishers indicates positive economic growth. A notable 61.3% of fishers reported an annual income ranging from ₦601,000.00 to ₦961,000.00. Furthermore, 10.6% and 12.6% of fishers earned between ₦240,000.00 – ₦360,000.00 and ₦361,000.00 – ₦480,000.00, respectively. A smaller proportion (15.6%) reported an annual income between ₦481,000.00 – ₦600,000.00. This improved income trend aligns with Okwu et al.'s (2011) findings, emphasizing that the majority of fishers (56.6%) earned over ₦300,000.00 per annum. The study suggests that this increase in income could be linked to the fishers' cumulative experience and their educational achievements. Notably, education is highlighted as a catalyst for entrepreneurial skills, contributing to enhanced income levels, a viewpoint supported by Omotoso and Daramola (2005), Samson (2006), and Adeokun et al. (2006) in their respective studies.

Table 2 Socioeconomic Characteristics of Fishers

PARAMETERS	Frequency	Percentage (%)
<b>Sex</b>		
Male	130	81.3
Female	30	18.7
<b>Age (Years)</b>		
20 – 30	20	12.5
31 – 40	60	37.5
41 – 50	59	36.8
51 – 60	21	13.1
<b>Marital Status</b>		
Single	8	0.1
Married	122	76.2
Widowed	20	12.5
Divorced/Separated	10	6.2
<b>Educational Level</b>		
None Formal Education (NFE)	65	40.6
Primary	55	34.7
Secondary	30	18.7
Tertiary	10	6.2
<b>Household Size (No of Persons)</b>		
1 – 5	100	62.5
6 – 10	48	30.0
11 – 15	12	7.5
<b>Fishing Experience (years)</b>		
1 – 5	20	12.5
6 – 10	66	41.3
11 – 15	54	33.7
16 – 20	20	12.5
<b>Average Income/Annum (₦)</b>		
₦ 240,000.00 – 360,000.00	17	10.6
₦ 361,000.00 – 480, 000.00	20	12.5
₦ 481, 000.00 – 600,000.00	25	15.6
₦ 601, 000.00 – 960, 000.00	98	61.2
<b>Total</b>	<b>160</b>	<b>100.0</b>

Source: Field Survey, 2017.

### B. Exploring the Nexus between Credit Availability and Adoption of Innovations and Technology among Fishers

The dynamics of the interplay between availed credit and its utilization for the adoption of innovations and technology are encapsulated in the findings presented in Table 3.

The outcomes reveal that the utilization of availed credit for the acquisition of modern equipment aimed at enhancing production was notably restrained. Pearson moment analysis applied to the data illustrated a meager correlation of 4% at a 0.05 alpha level, as illustrated in Table 3.

The paltry correlation implies that the availed credit was insufficient to cover the substantial costs associated with procuring fishing equipment, gears, and essential facilities for processing and storage. Consequently, fishers seemingly diverted the credit towards meeting familial consumption needs, given its inadequacy in fulfilling their

fishing equipment requisites. This interpretation aligns with the perspective put forth by the Central Bank of Nigeria (CBN) in 2010, suggesting that the agricultural sector often grapples with insufficient funds, resulting in diminished production capacity. The contention here is that the continuity of funding in agriculture necessitates a robust commitment from the formal credit supply chain, recognizing that farming, as a business, demands substantial financial provision.

This statistical representation in Table 3 underscores the modest correlation between availed credit and the adoption of innovations and technology by fishers, emphasizing the need for a more substantial and targeted approach to credit disbursement to catalyze transformative changes in the fishing industry. The figures suggest that the current credit allocations may be falling short of empowering fishers to embrace technological advancements for improved productivity.

Table 3 Summary of the Analysis of the Relationship between Availed Credit and Adoption of Innovations and Technology by Fishers

Variable	N	Mean	STD Dev	Pearson correlation	Sig.
AVAIL CREDIT	160	75.1568	28.52463	0.040	0.611
INNOV.TECH	160	35.0000	22.46591	0.040	0.611

Source: Field Survey, 2017

#### IV. CONCLUSION

This study delves into the intricate dynamics of fisheries development in Bayelsa State, Nigeria, recognizing its pivotal role in both the regional economy and the nutritional well-being of the population. The findings highlight the multifaceted nature of challenges faced by the fishing communities, particularly the crucial issue of credit accessibility. The insufficient availability of credit emerges as a bottleneck, hindering the adoption of modern equipment and technologies essential for enhancing productivity and sustainability in the fishing industry.

The socioeconomic characteristics of fishers underscore the predominantly male composition of the fishing community and the significant contribution of fishing to household incomes. The study identifies a need for nuanced policy interventions that consider the gendered nature of the fishing profession and address the specific challenges faced by fishers in Bayelsa State.

Moreover, the research emphasizes the transformative potential of technology in fisheries development. However, the meager correlation between availed credit and the adoption of innovations and technology indicates a critical gap that requires targeted and strategic financial support. Recognizing the limitations of the current credit landscape, the study advocates for a more substantial commitment to funding the fisheries sub-sector to drive sustainable development.

Ultimately, the findings of this study offer valuable insights for policy formulation, urging policymakers, financial institutions, and development agencies to align their efforts with the nuanced needs of fishers in Bayelsa State. By addressing the challenges of credit accessibility and fostering the integration of technology, the fishing industry can be propelled towards a more sustainable and economically prosperous future.

#### RECOMMENDATIONS

- Recognizing the pivotal role of credit in fisheries development, there is a need for targeted efforts to enhance credit accessibility for fishers in Bayelsa State. Financial institutions, government agencies, and development partners should collaborate to establish tailored credit schemes that address the specific needs of the fishing community. This could include low-interest loans, flexible repayment terms, and simplified application processes to ensure that fishers can easily access the financial resources required for modern equipment and technology adoption.

- Given the predominantly male composition of the fishing community, policymakers should implement gender-sensitive policies that consider the unique challenges faced by female fishers. This could involve providing targeted support programs, training, and financial resources to empower women in fisheries-related activities. By promoting gender inclusivity, the industry can harness the full potential of its workforce and contribute to more equitable economic development.
- To promote sustainable fisheries development, there should be a concerted effort to integrate technology into the fishing practices of Bayelsa State. This involves providing training programs for fishers on the use of advanced fishing equipment, GPS navigation, sonar systems, and data analytics. Additionally, partnerships with technology providers and research institutions can facilitate the dissemination of innovative and sustainable fishing practices. This would not only improve productivity but also contribute to responsible and environmentally friendly fishing methods.

These recommendations aim to address the identified challenges in credit accessibility, gender dynamics, and technological integration, providing a comprehensive approach to fostering sustainable fisheries development in Bayelsa State. Implementing these recommendations would require collaboration between government agencies, financial institutions, research organizations, and the fishing communities to create an enabling environment for growth and progress in the fisheries sub-sector.

#### CONTRIBUTION TO KNOWLEDGE

This study significantly contributes to understanding the intricacies of fisheries development in Bayelsa State, Nigeria. By examining the interplay between credit accessibility, socioeconomic dynamics, and technological integration, it sheds light on the challenges hindering optimal productivity. The research underscores the gendered nature of the fishing profession, emphasizes the transformative potential of technology, and highlights the inadequacy of current credit allocations. Recommendations advocate for tailored credit schemes, gender-sensitive policies, and technology integration, offering a comprehensive roadmap for sustainable fisheries development aligned with contemporary challenges and opportunities.

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