

Social-Economic Status of Shellfish Enterprises in Some Communities in Rivers State

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Abstract: The study was carried out in three different communities (Abonnema, Buguma, and Degema, of Rivers State, Nigeria). The objectives were to examine how the socio-economic characteristics and factors affect shellfish enterprises in the study areas. Purposive and multistage random sampling techniques were used to collect primary data from 150 respondents using a well-structured questionnaire. Data were analyzed using descriptive statistics. The results showed that shellfish marketing is dominated by women (78%) in Abonnema, (98%) in Buguma, and (100%) in Degema, and most marketers were either under 20 or above 50 years old. Many were married and had secondary education as their highest qualification. Most had 1–10 years of marketing experience, and shellfish trading was largely family-based, with large household sizes (10 members or more). Market concentration analysis revealed that Abonnema and Degema had higher concentration ratios, meaning a few traders control prices and market demand, limiting competition and opportunities for smaller traders. It is imperative to create a more organized and competitive market system to reduce dominance and oligopoly and create an orderly shellfish market that will encourage more people to enter the shellfish industry, in order to boost incomes, improve market efficiency, and address emerging market challenges.

Keywords: Socioeconomic, Shellfish, Enterprises, and Benefits.

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I. INTRODUCTION

Nigeria is richly blessed with a vast and wide range of natural resources found both on land and across its intricate network of waterways, including creeks and rivers (Omokaro *et al.*, 2024). This abundance of resources has significantly influenced the occupational patterns of the people, providing them with various means of livelihood that contribute to both family survival and the socio-economic development of their communities. Key among these occupations is fishing, agriculture, and commercial trading (Kolawole *et al.*, 2010). This study focuses on shellfish (molluscs, crustaceans, and echinoderms), a category of aquatic seafoods prominently harvested and utilized in numerous coastal communities (Aswani *et al.*, 2015). In Nigeria's southern coastal zones, shellfish is a deeply rooted tradition, and it is one of the primary sources of income for many households (Ibeme, 2014). While men often dominate the actual harvesting of aquatic life, women play an important and distinctive role in the post-harvest sector, particularly in the processing and marketing of

shellfish such as periwinkles, oysters, and crabs etc. (Adegoye, 2022). These shellfish are typically sourced from rivers, creeks, lagoons, and mangroves within the coastal environment (Jimoh and Lemomu, 2010).

Agbalajobi (2010) affirms the important role women play in fostering progress in rural areas. According to his findings, sustainable rural development is nearly impossible without the meaningful participation, dedication, and contribution of women. Their involvement spans across essential aspects of life such as childbearing and rearing, agriculture, and small-scale trading, all of which are integral to ensuring the well-being of their families and communities (Fatima, 2024). In the context of shellfish trading, women have established a strong presence in regional coastal markets (Chuku *et al.*, 2022). These markets serve as key commercial hubs where the buying and selling of shellfish not only provide daily sustenance for numerous households but also generate significant income that supports family upkeep, education, and other financial responsibilities (Ontong, 2023). Thus, shell fish commerce has evolved into

both a cultural and economic pillar within Nigeria's coastal societies, highlighting the importance of integrating women's contribution into broader strategies for community development and economic planning (Odunlade and Isikwei, 2022).

Shellfishes have been found to be a major source of protein for the general population, particularly those residing in the riverine and coastal communities, where they are commonly found in large quantities within brackish and freshwater ecosystems (Davies and Jamabo, 2016). These aquatic organisms are recognized for their rich nutritional profile, especially their provision of high-quality protein that contains all essential amino acids necessary for human growth, tissue repair, and overall body maintenance (Ajomiwe *et al.*, 2024).

Over the years, various species of shellfish have gained recognition not only as a source of food but also for their health-promoting properties (Anumudu *et al.*, 2024). Among these are the Rock snail (*Thais coronata*), the Mud-flat periwinkle (*Tympanotonus fuscatus*), the Mangrove oyster (*Crassostrea gasar*), the Marine crab (*Callinectes Amnicola*), and the Land crab (*Cardisoma guanhumi*). These species, commonly harvested from mangrove swamps, tidal creeks, and estuarine environments, have been widely acknowledged for their beneficial contribution to human nutrition. Their intake supports dietary diversity and enhances food security, especially in low-income communities (Davies and Jamabo, 2016).

Nutritionally, shellfish are highly valued for their rich protein content, delivering all essential amino acids required for human physiological functions, including tissue repair, growth, and metabolic balance (Awuchi *et al.*, 2022). Their protein quality is often compared favorably with that of terrestrial animals, making them a crucial source of nourishment in many parts of the world (Odeku *et al.*, 2024). In a broader context of seafood, shellfish represent a substantial portion of global marine food production, with recent trends showing an accelerating expansion in shellfish aquaculture, fueled by advancements in marine farming technologies and increasing demand for sustainable seafood (FAO, 2022). Shellfish enterprises represent a more diverse range of livelihood activities focused on the harvesting, handling, processing, and marketing of shell-bearing aquatic species such as Oyster, periwinkles, snails, shrimps, bloody cockles, and crabs (Atindana, 2021). These operations are typically small-scale and largely informal, deeply rooted in the social and economic lives of communities situated along coastal and riverine zones (Fabinyi *et al.*, 2022).

Hence, this study seeks to know the socioeconomic status/characteristics of shellfish enterprises in the study area in order to ensure a controlled market system. Basically, this study covered the various shellfishes' products been marketed in Abonnema, Buguma and Degema, Rivers State, Nigeria.

II. MATERIALS AND METHODS

➤ The Study Area/Location

This study was carried out in three different communities cutting across three Local Government Areas, Akuku-Toru, Asari-Toru & Degema, Rivers state. These communities were carefully and purposefully selected and established as the study stations based on its characterized network of rivers and creeks that supports fishing and fisheries related activities and the previous information for extensive shellfish production, marketing activities and accessibility.

• Station 1(Abonnema):

This station is situated on an island in the Kalabari region of Rivers State. Abonnema lies between latitude 4° 43' 23.221 N and longitude 6°46' 43.846 E. The town is the headquarter of Akuku-Toru Local Government Area. This area has a nutrient rich mangrove and estuarine ecosystem. The market is well known for its vibrant trade in shell fish such as Periwinkles, Ngolo, Oysters, Shrimps, Crabs, Cockles. They are often sold in fresh and processed form.

• Station 2 (Buguma):

Buguma is a large town in Rivers State, Nigeria. It lies between latitude 4° 44' 10.1 N and longitude 6° 51' 44.5 E. The town is the headquarters of the Asari-Toru Local Government Area and the base of Kalabari Kingdom, a Nigerian traditional state. Fishing and trading especially of shellfish such as Periwinkles, Oysters, Shrimps, Crabs, Bloody Cockles are the dominant economic activities, providing livelihood support to both men and women.

• Station 3(Degema):

Degema is situated in Rivers State, Nigeria. Its geographical coordinates lie between 4° 46' 10.23 N and longitude 6° 46' 5.29 E. This station is located along the Sombreiro River and relies heavily on shellfish collection and distribution with a well-connected riverine transportation system that links a major market like Port Harcourt.

➤ Study Design

This research utilized a descriptive survey design, a methodological approach well-suited for gathering comprehensive information from a population. It enables the collection and integration of both quantitative and qualitative data to gain an in-depth understanding of the dynamics surrounding shellfish enterprises in the three stations.

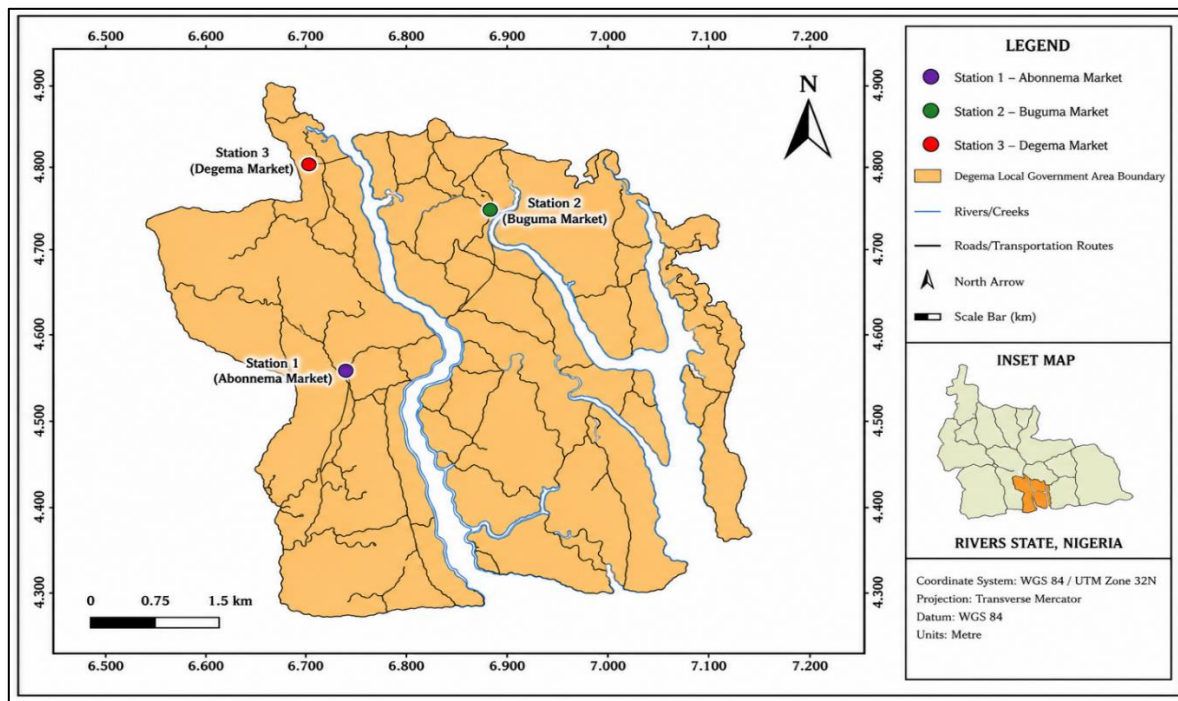


Fig 1: Map of Study Area Showing the Three Fish Markets in Abonnema, Buguma, and Degema.

➤ Sample Size and Techniques

The study population included all individuals and groups actively involved in shellfish enterprises in Abonnema, Buguma, Degema. This includes shellfish harvesters, processors, wholesalers, retailers, market women, transporters, and middlemen in the shellfish value chain. The study used a mix of purposive, simple random, and stratified sampling methods. Abonnema, Buguma, and Degema were purposively selected due to their active shellfish trade. Key informants, such as traders and officials, were also selected purposefully. Within each community, shellfish harvesters, processors, and sellers were randomly selected from available lists and stratified by their roles to ensure fair representation across all enterprise levels.

III. DATA COLLECTION AND ANALYSIS

Data collection was carried out using both structured questionnaires and face-to-face in-depth interviews. This process was conducted over a period of four months to ensure comprehensive coverage of the target population. Respondent's answers were obtained on the spot and systematically recorded to uphold data integrity. In order to ensure accurate data set, the researcher personally retrieved all distributed questionnaires, thereby attending a 100% response rate minimizing the risk of data loss or inconsistency.

The data collected for this study were analyzed using descriptive methods to ensure accurate interpretation of the findings. Descriptive statistics, such as frequency distributions, percentages, and means, were used to summarize respondents' demographic and socioeconomic characteristics of shellfish enterprises. Charts and graphs were used to enhance the presentation of data in a visual format for easy understanding.

IV. RESULTS AND DISCUSSION

➤ Demographic Characteristics of Respondents in Abonnema, Buguma, and Degema Communities

The demographic characteristics of shellfish marketers that were examined in this study include age, gender, marital status, family size, years of experience, highest level of education, and family assistance (Table 1).

Table 1 shows the demographic characteristics of the respondents in the three study locations. The result of their age distribution reveals that most of the respondents (80%) were between the active and productive ages of 31–50 years of age. This assuredly will have a positive impact on marketing activities in the study areas since strength, energy, and maturity are essentially needed for effective and efficient marketing operations. The age distribution results indicate that the shellfish value chain in the areas is dominated by middle-aged and adults. These findings are consistent with Nwosu *et al.*, (2022), who noted that middle-aged individuals dominate small-scale fisheries in Nigeria due to their physical capacity and economic responsibility.

The findings from the study were also in agreement with Adeleke and Afolabi (2012), who worked on fresh fish marketing in Ondo State and recorded that 95.6% of respondents belonged to the active segment of the population (below 60 years), while the remaining 4.4% were aged.

The results of the gender distribution of respondents in the study areas of the three study locations revealed that the female gender was more involved in the marketing activities when compared to their male counterparts (Table 1). Abonnema is said to have more females with the percentage

of (78%), this can also be seen in both Buguma and Degema, the pooled reveals that 94% of respondents were females while 6% were males. This could be attributed to the various marketing strategies employed by women, the small start-up capital required, and their bargaining power, which contributes to increased income generated from sales. This result is in accordance with the report of (Akande and Faturoti, 2021), who reported that women play a critical role in fish marketing and post-harvest activities in coastal communities, and Nwabunike (2015), who worked on the socio-economic characteristics of fish marketers in Abakaliki metropolis of Ebonyi State and reported 90% of fish marketers as females.

The educational level of the respondents in the study areas is presented in Table 1. Secondary education is prevalent across the three study areas (50%). This result is

consistent with (Ekanem *et al.*, 2021), who reported that fish traders in Niger Delta communities typically possess basic literacy skills that aid in record-keeping and effective communication.

A higher percentage of individuals have working experience of 6–10 years in Abonnema, while Buguma and Degema have more individuals with experience of 1–5 years. Abonnema's dominance in 6–10 years' experience suggests greater business maturity compared to Buguma and Degema's shorter experience ranges (1–5 years), which may indicate higher rates of new entrants into the business. It can be observed that work is done with the assistance of the family across various areas. This observation agrees with (Okeke *et al.*, 2022), who reported that small-Scale fisheries in Nigeria often rely on unpaid family labour to reduce costs.

Table 1: Demographic Characteristics of Respondents in the Study Areas

VARIABLE	Category	Abonnema F (%)	Buguma F (%)	Degema F (%)
AGE (YEARS)	Below 20	1 (2.0)	4 (8.0)	6 (12.0)
	21–30	9 (18.0)	7 (14.0)	11 (22.0)
	31–40	22 (44.0)	16 (32.0)	17 (34.0)
	41–50	17 (34.0)	18 (36.0)	14 (28.0)
	Above 50	1 (2.0)	5 (10.0)	2 (4.0)
GENDER	Male	11 (22.0)	1 (2.0)	0 (0.0)
	Female	39 (78.0)	49 (98.0)	50 (100.0)
MARITAL STATUS	Single	6 (12.0)	11 (22.0)	17 (34.0)
	Married	34 (68.0)	22 (44.0)	24 (48.0)
	Divorced	9 (18.0)	12 (24.0)	4 (8.0)
	Widowed	1 (2.0)	5 (10.0)	5 (10.0)
HIGHEST EDUCATIONAL LEVEL	No Formal Education	16 (32.0)	8 (16.0)	10 (20.0)
	Primary Education	13 (26.0)	16 (32.0)	12 (24.0)
	Secondary Education	14 (28.0)	16 (32.0)	25 (50.0)
	Tertiary Education	6 (12.0)	4 (8.0)	2 (4.0)
	Vocational Education	1 (2.0)	6 (12.0)	1 (2.0)
YEARS OF EXPERIENCE IN THE ACTIVITY	Less than 1 year	4 (8.0)	5 (10.0)	14 (28.0)
	1–5 years	12 (24.0)	17 (34.0)	15 (30.0)
	6–10 years	21 (42.0)	16 (32.0)	12 (24.0)
	Above 10 years	13 (26.0)	12 (24.0)	9 (18.0)
WORK ARRANGEMENT	Alone	10 (20.0)	16 (32.0)	15 (30.0)
	With Family	40 (80.0)	32 (64.0)	30 (60.0)
	With Hired Workers	0 (0.0)	2 (4.0)	5 (10.0)

Key: F= Frequency, (%) = Percentage

➤ Socio-Economic Impacts of Shellfish Enterprises in Abonnema, Buguma, and Degema Community

Figure 2 shows that respondents in all three communities predominantly answered “Yes” to the statement that shellfish enterprises improve living standards, with only a small minority saying “No” and a modest share choosing “Somehow”. Buguma and Degema recorded the highest positive response, with 75% and 73% of respondents respectively, affirming that shellfish enterprises had improved their standard of living. In Abonnema, 60% of

respondents answered “Yes” while 35% responded “Somehow”, and only 12% indicated “No”. The predominance of positive responses across the three communities suggests that shellfish-related activities constitute a significant livelihood source capable of enhancing household income and food security. This finding agrees with the work of Allison and Ellis (2001), they observed that fisheries provide employment opportunities and income diversification for coastal households, thereby enhancing resilience against economic shocks.

The results of Figure 3 reveal strong disagreement among respondents that shellfish activities have contributed less to poverty reduction. This suggests that in these communities, shellfish activities are not perceived as a significant driver of poverty reduction. Overall, the findings reveal that while shellfish enterprises may contribute to income generation and food security, their impact on

poverty reduction is viewed as limited, particularly in Abonnema and Buguma. The neutral responses in Degema, however, imply that under improved conditions such as better market access, credit facilities, and value-chain support shellfish enterprises could potentially play a strong role in addressing poverty.

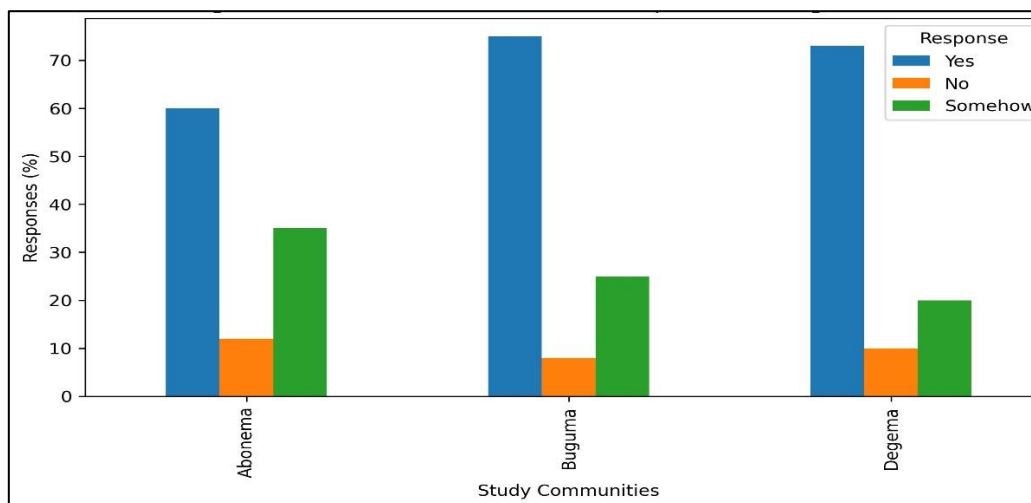


Fig 3: The Respondents Showing if Shellfish Enterprises has Raised Living Standard.

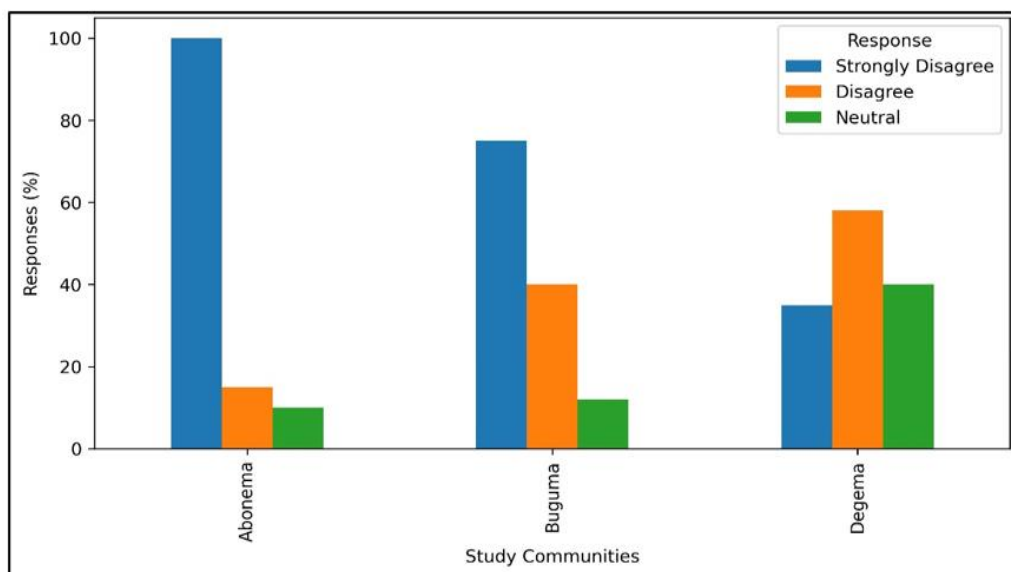


Fig 4: The Respondents Showing if Shellfish Enterprises has Helped Reduce Poverty in your Community.

V. CONCLUSION AND RECOMMENDATION

Shellfish is a major food commodity in the South-South region of Nigeria owing to its vast economic importance. The study assesses the socioeconomic characteristics of shellfish marketers in Abonnema, Buguma, and Degema of Rivers State. The study reveals that the shellfish value chain in the respective study areas is predominantly female-led, middle-aged adults, with a secondary education level and sustained by family assistance and labour. The study also showed that a large percentage of the respondents were experienced and would have access to people who could assist in carrying out their

marketing functions, hence, limited/no cost of hired labour. Trade positively impacts livelihoods, living standards, and community cohesion. Therefore, it is recommended based on this study that shellfish enterprises should be taken seriously by local and national agencies so as to improve and boost the economy of the country, and also organize trading workshops on seafood business planning to improve profitability. Incentives should be initiated to attract and retain youths in the shellfish sector, especially in Degema, to address generational skill/knowledge transfer gaps and ensure a market where prices will be determined by interactions of demand and supply forces hence, breaking market oligopoly.

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CONFLICT OF INTEREST STATEMENT

There are no conflicts of interest to be declared.

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