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Marketing of Estuarine Shrimps in Akwa Ibom State, Nigeria

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Abstract
This study evaluated the economics of estuarine shrimps marketing in Akwa Ibom State, Nigeria. It was specifically designed to ascertain the profitability of the enterprise, evaluate the structure and conduct as well as the channels involved in shrimps marketing. A total of 180 marketers were interviewed during the study Results showed the existence of three marketing channels namely: producer/marketers, wholesalers and retailers. Factors that significantly ($p<0.01$) affected the profits of marketers were sex, age, educational level, primary occupation of marketers, marketing experience, access to credit and distance to the nearest shrimps market. The markets were highly spatially integrated with integration indexes lying between 0.78 and 0.91 with corresponding correlation co-efficient of between 0.82 and 0.84. The market was highly competitive with minimum barriers to entry and exit. Contrary to perceived notions the local market for shrimps was found to be highly organized and profitable and could offer a lot of employment opportunities. Most of the shrimps caught were sold in the local market. The export channel was the least patronized by the respondents.
Keywords: Marketing, Shrimps, Estuarine, Nigeria

1.0 Introduction

Shrimp is a common name given to any of about 2,000 species of small, aquatic animals related to crabs, lobsters and crayfish. Shrimp ranges in size from animals not much bigger than a fingernail to ones over 20 cm long. Larger species are often known as prawns, although many people interchange the two names for all species (Burnie, 2009). Shrimps live in a wide variety of freshwater and saltwater habitats, including lakes, coral reefs, and the depth of the sea.

Shrimps are an important part of the food web in the waters where they live. Open-water shrimp feed on zooplankton, microscopic animals that drift in the water. Bottom-dwellers feed on the dead remains of small animals and plants. Freshwater shrimps are important food for fish, while marine shrimps are eaten by many kinds of animals, including birds and seals. Shrimps and prawn production are of growing importance to global economics and household livelihood advancements especially income generation (i.e. poverty alleviation) and food security.

Shrimps are the world's most consumed seafood commodity with about 16% of international trade in value terms, or US $12billion (Sahel and West Africa Club. OECD, 2006). Shrimp trade is very important for developing countries, principally in Asia where about 80% of world shrimp exports originate. World shrimp production is growing quickly. This growth is part of a larger trend of increases in world aquaculture. Research has shown that fish and shrimp provide 22 percent of the protein intake in Sub-Saharan African (SSA) and have been referred to as "rich food for poor people" (Bene and Heck 2005). In 1976, total shrimp production in SSA was 1.5 million tons rising to 5.6 million tons in 2003 and 6million tons in 2004 (Sahel and West Africa Club/OECD, 2006). Shrimp aquaculture production started back in the early 1980s, and has been growing ever since. The prime target of the shrimp farming is the readily high-dollar international shrimp markets that exist for it. Over 70% of trawled shrimps in Nigeria are exported to meet foreign exchange demand of a country with an expected average annual population growth of 1.9% over the period 2002-2015 (World Bank 2004).

Nigeria is a maritime country where fishing plays a significant role in the national economy, providing employment, food, income and foreign exchange earnings for the citizens. Nigeria is blessed with all of the natural resources necessary to become competitive in shrimps production. Nigeria's potentials for shrimps production have however remained untapped due to crude fishing techniques. Shrimps farming is dominated by artisanal fisherfolks who are limited in scope and operation due to use of vessels like dug-out canoes and inability to venture beyond the 20 meter depth contour (Operwide and Ojo, 2013).

Earlier studies on shrimps marketing in Nigeria (Moll Staaij & Van Tilburg 2001 *et al.,* 2001; Fatchamps and Gabre-Madhin, 2006) indicate that transactions have been small and undocumented with many intermediaries resulting in traders adopting sharp practices. There have been reported cases of uneven quality of goods leading to adverse selection while screening of potential suppliers of fresh shrimps have been complicated due to lax payment practices (Nazneen, Peerling & Van Tilburg 2007 *et al,* 2007).

Nigeria faces several challenges including land acquisition and security issues in the areas most suitable for shrimp aquaculture; the petroleum rich Niger Delta. The high cost of capital, lack of encouragement and support for long-term investments, and the fact that shrimp aquaculture technology is currently unavailable and unproven in Nigeria are also challenges. To exploit available shrimps market opportunity, Nigeria needs to increase its shrimp production to meet both domestic and export demand.

To witness rapid growth in productivity and income from shrimps Nigeria needs to posses the ability to tackle constraints such as high market and trade transaction costs as well as weak producer and market institutions (Achike, 2012). Unfortunately not much information is available to guide policies in addressing these constraints. Untapped shrimps resources abound in Nigeria generally and in Akwa Ibom State in particular (TradeInvest, 2012). Nigerians are large consumers of fishery resources (including shrimps) with demand estimated at 1.4 million metric tons annually and a demand-supply gap for shrimps of at least 0.7 million metric tons nationally.

Akwa Ibom State's coastline of 129 km and endowment of mangrove swamps, rivers, creeks and flood plains offer great opportunities for trawling for fish and shrimps. These opportunities remain to be fully tapped. The relatively untapped shrimp potentials of Itu, Uruan, Ibeno and Ikot Abasi in the state offer abundant investment opportunities which are rich in main species of shrimps and other products like crayfish, snappers, catfish, sharks, sardines, croaker, bonga, barracuda, bivalves and periwinkles.

Effective marketing of shrimps hauled from the estuaries and creeks of Nigeria can be a major driver of the availability of this important estuarine resource in the country. Information on the amount of shrimps caught in Nigeria is fragmented, and sometime conflicting. For instance, data reported by the government of Nigeria to FAO during the decade 1990-2000 indicate that the annual shrimps catch varied from 15,000 tons to 30,000 tons with an average of 22,452 tons. However, trade data from the Organization for Economic Cooperation and Development (OECD) as cited in Solarin (2008) indicate a different average annual shrimps catch of 6,800 tons within the same period. Chemonics (2002) confirms that reliable data on shrimps catch in Nigeria have been scarce but historic data show reported landings of 10,000 -15,000 tons annually.

The international market for shrimps from Nigeria is fairly well developed stretching out to countries like Belgium, Portugal, Spain, France and the United States of America (Ogbonna, 2010). Shrimps export from Nigeria began in 1998 and has very organized product lines such as processed white shrimps, peeled deveined and decapitated brown shrimps as well as freshly caught shrimps. This cannot be said of the local shrimps trade that are largely undocumented with a retinue of small transactions and many reported cases of counter-trade practices (Nazneen *et al,* 2007).

Most of the shrimps sold in Nigeria are hauled from the wild (Zabbey, Erondu & Hart, 2010) by artisanal fisherfolks. It is doubtful whether these fishersfolks market their products efficiently more so as the performance of the local shrimps market is hindered by paucity of data on relevant indices (Ogbonna, 2010).

In view of the foregoing it has become necessary to initiate studies that would ensure proper documentation of shrimps marketing in Nigeria. In doing this there is the need to evaluate the structure and conduct of shrimps marketing, identify and chart the marketing channels for shrimps, identify and describe the roles played by various middlemen involved in shrimps marketing as well as determine the level of spatial price integration in shrimps markets. Akwa Ibom state with a coastline of 129 km and endowment of mangrove swamps, rivers, creeks and flood plains dominates shrimps production and marketing activities in Nigeria and offered a perfect environment for this study.

2.0 Theoretical Framework

One of the theories that guided this work is the agricultural marketing systems efficiency theory (Crawford, 1997 as reported in Samuelson & Nordhaus, 2005). This theory emphasizes that performance of certain functions and services by various marketing organizations and agencies ensures that commodities and product move from producers to consumers. However, these functions attract costs, often of considerable magnitude, affecting both marketing and marketing efficiency. Crawford noted that an efficient marketing system is one capable of moving goods from producer to customer at the lowest cost consistent with the provision of the services that customers demand. Once the costs involved in marketing have been identified then means can be devised to make the system more efficient. Increases in efficiency can be achieved in a variety of ways: by increasing the volume of business using improved handling methods, investing in modern technology, locating the business in the most appropriate place, implementing better layouts and working practices in production, improving managerial planning and control and/or by making changes in marketing arrangements through horizontal or vertical integration.

Also in line with the theory of spatial price determination, if two shrimps markets are linked by trade in a free market regime, excess demand or supply shocks in one market will have an equal impact on price in both markets (Rapsomanikis, Hallam & Conforty, 2005). Thus, it is expected that a proportional increase in the international price will result in an equal proportional increase in the domestic price of shrimp at all points in time provided that tariff levels remain unchanged. Whether this is true of domestic shrimps markets in Nigeria is yet to be established.

Dixie (1989) as reported in Anyaegbunam, Nwosu & Mbanasor (2011) also highlights the relevance of price and income theories and the potential contribution of agriculture and food marketing towards attempts to improve rural incomes in developing countries. The inequality of incomes between the rural and urban areas

draws people away from agricultural production and places great stress upon the infrastructure and social services of a country's towns and cities. Nowhere was this more dramatically demonstrated than in Nigeria when petroleum oil was discovered and exploited in the 1970s, he noted. A large number of jobs were created in the urban areas and people abandoned agricultural production in large numbers. Nigeria as a result has become a net importer of many agricultural products of which it had formerly been a net exporter. As long as the world price for petroleum remains high the economy thrives and could well afford the food import bill. However, as soon as the world price for oil falls the food import bill would become a serious burden. Nigeria could avoid this scenario if she is able to motivate people to continue in agriculture so as to reduce rural-urban income disparity. Rurally based enterprises, including shrimping, would improve their earning potential by adopting a market orientation. This could encourage the farmers to add value to their shrimps catch since value addition brings about higher marketing margins and marketing efficiency.

Another development which this study considers relevant is the increased interest in market liberalization. The view is that direct and indirect government participation in production and distribution of goods and services has brought about structural distortions in economies of developing nations. Measures intended to correct these distortions include, the encouragement of a competitive private sector participation through commercialization, and sometimes privatization, of all or some of the functions of government marketing agencies. If private individuals are allowed free rein in shrimps marketing chances are that marketing functions will be better organized and more profitably rendered.

The marketing system is also expected to signal the needs of those who consume shrimps to the shrimps farmers. Thus the shrimps marketing system is expected to motivate and reward all of the parties whose participation is essential to the delivery of products to final consumers. The marketing system for shrimps is also expected to play some roles including buying and selling, storage, transport and processing, and so on that can be categorized into sub systems of production, distribution, consumption and regulation. These sub-systems often have conflicting interests that have to be resolved if the system as a whole is to be efficient and effective.

3.0. Research Methodology

3.1. Study Area

The study was conducted in Akwa Ibom State of Nigeria. The State was created from former Cross River State in 1987. The state has an official population figure of 3.9 million people (NPC, 2006). There are 31 local government areas (LGAs) and three senatorial districts in the state with well over 71% of the people living in rural areas. The state is Nigeria's foremost oil producing state.

Several ethnic nationalities inhabit the state but the most prominent ones are Ibibio, Annang and Oron. Lying between intitudes $40^{o}33^{1}$ and $50^{o}33^{1}$ North and longitudes $70^{o}35^{1}$ and $80^{o}25^{1}$ East Akwa Ibom State falls within the tropical zone with a dominant rain forest vegetation of green foliage trees, shrubs and an oil palm belt. It has an area of 8,412 square kilometers with its Atlantic Ocean coastline stretching to 129km from Oron in the East to Ikot Abasi in the West.

The state is bounded on the east by Rivers State, on the west by Cross River State, on the north by Abia State and on the south by the Gulf of Guinea. Considerable shrimping activities take place in all the communities in the state. Selected fishing settlements in the state are designated shrimps centres based on their location, size and number of fisher folks and volume of shrimps fishery vis – a – vis other forms of fisheries.

3.2. Materials and Methods

Primary data were used for the study. Data were collected using structured and pre-tested questionnaires. One set of questionnaire was administered to each of the three levels of market participants, namely: producer/marketers (producers who also market their shrimps catch by themselves), wholesalers and retailers with the help of trained field assistants. The questionnaires were designed to collect information on the socio – economic characteristics of the respondents, capital size, labour, input utilization, shrimps marketing systems prevalent in the area, the market structure for shrimps as well as returns from shrimps marketing.

Data collected were analyzed using bivariate correlation co-efficient and multiple regression analysis. The four functional forms of the ordinary least square (DLS) multiple regression models were tried and the semi-log form gave the best fit and was used for analysis.

The bivariate correlation coefficient is a statistical measure of association commonly applied in determining spatial integration (Trotter, 1992 as described in Anyaegbunam, Nwosu & Mbanasor, 2011). The model is specified generally as :

P_1j, P_1k …….. P_1m ..... (1)

P_2j, P_2k ..... P_2m ……...(2)

P_nj, P_nk ……...P_nm ……..(3)

Where,

P_1 = Average price in period 1-n

and j = 1 ….m = various locations of the markets.
The mathematical definition of this correlation coefficient rjk is given as rjk = $(j_1-j)(k_1-k)/\sum j \sum k$ ……(4)
Where,
rjk, = correlation co-efficient of prices in market j with prices in market k
jnkn = price observations for markets j and k
j1k = average prices for markets j and k
∑j∑k = the respective deviations
A more simplified form of the above equation can be written as:
$P_{ij} = \beta_o + \beta_i P_{ik} + e$ ……. (5)

Where
Pij = price series of market j
Pik = price series of market k
β_o, β_k = intercepts and slopes co-efficient respectively
e = error term
The closer b_i is to unity the more spatially integrated the market of the product in question is. The size of this co-efficient and its significance show the level of interdependence of markets. Correlation co-efficient (r) greater than 0.8 signifies strong correlation. When (r) falls between 0.6 and 0.8, it is regarded as moderate correlation while when (r) is less than 0.6 it is termed weak correlation (Asumugha et al, 2003).
The OLS model for the determinants of the profit margins of participants in shrimps marketing was specified as follows:
$Prof(\pi) = \beta_o + \beta_1^{SEX} + \beta_2^{HHSIZ} + \beta_3^{AGE} + \beta_4^{LEDUC} + \beta_5^{OCCUP} + \beta_6^{EXPHH} + \beta_7^{ASSCRED} + \beta_8^{EXPR} + \beta_9^{MKTINFO} + \beta_{10}^{DISTMKT} + u$ ……. (6)
Where,
Π = Profit margin of marketers (in Naira)
SEX = Sex of household head (Dummy 1 = male, Female = 0.0001)
HHSIZE = Household size (No of persons in the household)
AGE = Age of household head (years)
LEDUC = Level of education of household head (years spent in school)
OCCUP = Primary occupation of household head (Dummy, 1= Fisherfolk, others = 0.0001)
EXPHH = Expenditure of household head used to proxy for household income (₦)
ASSCRED = Access to credit (1 = yes, 0.0001 = No Access)
EXPHH = Households head years of marketing experience on shrimps
MKTINFO= Access to market information (1= yes, 0.0001 = No Access)
DISTMKT = Distance to the nearest shrimps market (km)
U = stochastic error term
β_o = intercept
β_1 - β_{10} = slopes

3.3 The Bivariate correlation co-efficient

Bivariate double logged regression analysis gave the results of the slope co-efficients (β_1) of the respective locations/markets (Table 1) as 0.91, 0.84 and 0.78 respectively for Ishiet and Oron Beach Market, Ishiet and Mbo Market and Oron and Mbo market. The corresponding correlation co-efficients (r) were 0.84, 0.82 and 0.83 respectively. These figures are relatively high by our earlier identification of values of r showing very strong association between the various markets. The implication of the high values for the slope co-efficients of the bivariate regression is that prices in the various markets are spatially integrated. These estimates lie above the significant region of 0.80 and show that the shrimps markets are interdependent. The f-ratio of the model was high also and significant at $p<0.01$ (Table 2). Such strong integration could have arisen as a result of existence of free flow of market information. It appears that there is perfect knowledge of the shrimps market systems by the marketers creating an enabling environment for perfect competition to flourish. This agrees with the theory of spatial price determination which suggests that if two markets are linked by trade in a free market regime, excess demand or supply shocks in one market will have an equal impact on price in both markets (Rapsomanikis, Hallam & Conforty, 2005)

3.4 Determinants of the profit margins of shrimps marketers

The result of the OLS regression on effects of socio-economic characteristics on marketers' profit margins (Table 3) showed that five attributes namely sex, age, educational level, occupation and level of access to credit

of marketers were statistically significant. For instance, co-efficient of the variable sex (5, 51, 134.00) was positively signed and significant at $p<0.01$ indicating greater chances of making profit to the tune of about N5, 512, 134 (Nigerian Naira) per anum if the marketer were to be a male. It means that male marketers have greater potentials to make more profits from shrimps marketing than their female counterparts' inspite of the preponderance of females in shrimps marketing.

Age of the marketer was also positively signed and significant at $p<0.01$ with a co-efficient of 124,366. The implication is that a unit increase in age will increase level of profit by ₦124, 3669 (Nigerian Naira). The implication also is that the older the marketer gets the greater the chances of making profit from shrimps marketing. This could be explained by additional experience as the years go by. Level of education was also significant indicating that more literate marketers are in a better position to make more profit from shrimps marketing. Increased literacy is capable of improving marketers entrepreneurial potentials. This is in consonance with the existing body of literate (Onoja and Emodi, 2010). Occupation was also positively signed and significant at $p<0.01$. This implies that those in fishing and allied occupations are more likely to make more profit from shrimps marketing. This result agrees with the findings of Crawford (1997) and Ellis (2000) who in separate studies established a positive link between profitability in agro-product marketing and the occupation of the marketer. Access to credit was also identified to have had negative but significant effect on profitability in shrimps marketing. Previous studies have actually confirmed that credit not properly managed could affect negatively the operations of farm firms (Girabi & Mwakaje, 2013). Unless properly monitored credit obtained by farmers may get diverted to social issues rather than economic purposes for which the loans were approved in the first instance. If this happens repayment may be difficult with attendant negative impacts on the profitability of the farm enterprise.

3.5 Marketing Channels for Shrimps in Akwa Ibom State

The path through which freshly caught shrimps got to the final consumers, otherwise known as the marketing channels, can be illustrated in many ways (fig 1). The most popular path was, however, through producer-retailer-consumer which as many as 73% of respondents agreed was their most frequently used channel (Table 4). The least frequently used channel was producer-wholesaler-exporter-consumer implying that local trade in shrimps appeared to be more predominant than export trade. In other words most of the shrimps caught were consumed locally.

3.6 Structure of the Shrimps Markets

Three marketing levels were the most prevalent namely: producer/marketers, wholesalers and retailers. Trading at farmgate was not popular due to the remoteness of locations where shrimps were caught. Most producers marketed their shrimps through agents (middlemen) who always bought in bulk. Unionization was no barrier to entry into shrimps marketing in the area thus indicating very healthy competition. Respondents also confirmed the presence of large numbers of buyers and sellers in the shrimps business (Table 5).

4.0 Conclusion

This study explored the status of shrimps marketing in Akwa Ibom State, Nigeria. The Shrimps market was found to be competitive with minimum barriers. Contrary to *a priori* expectation that the local trade in shrimps was unorganized the study showed that the typical local market on shrimps was very highly organized with clearly defined marketing channels the most popular one being producer/marketer-wholesaler-retailer-consumer. Shrimps marketing was clearly dominated by private traders and there was no evidence of state interventions. Wholesalers dominated marketing activities securing higher profit margins although other agents also had fair share of the market. Socioeconomic characteristics that determined the profit margins of the marketers were age, gender, educational status, household income, distance to the nearest shrimps market and access to market information.

The markets were highly spatially integrated. For Ishiet and Oron Beach markets the spatial price integration index was 0.91, that of Ishiet and Mbo markets was 0.84 while Oron Beach and Mbo had an index of 0.78 with high correlation scores of 0.84, 0.82 and 0.83 respectively. Existence of smooth and free flow of information enabled adequate knowledge of the shrimps market systems by all participants such that excess demand and/or supply shocks in one of the markets was easily and adequately handled by moving products from the markets with surplus to ones with deficit and vice versa . Major constraints to local trade in shrimps in the study area were fluctuating prices of shrimps (88%), the perishable nature of the product (87%) while cost of transport and poor storage facilities each scored 68%. The study recommends that adequate efforts need to be made to improve on those socioeconomic variables that significantly affected the profit margins of marketers.

Table 1: Summary of Major Estimates of Spatial Price Integration Parameters in Shrimps Markets in Akwa Ibom State

	Spatial price attributes		Parameter estimates	
	Mean price at different locations per kg		$\beta_1$estimated	Correlation co-efficient
1	Ishiet Market	= ₦1,773	_____	_____
2	Oron Beach Market	= ₦1,631	_____	_____
3	Mbo Market	= ₦1,623.83	_____	_____
4	For the three markets combined	= ₦1,675.94	_____	_____
	Mean Price differences			
1.	Between Ishiet and Oron Beach Market	= ₦142	0.91	0.84
2.	Between Ishiet and Mbo markets	= ₦149.17	0.84	0.82
3.	Between Oron and Mbo Markets	= ₦7.17	0.78	0.83

Source: Field data, 2013

Table 2: Results of Bivariate Regression Indicating Spatial Price Integrations across various major markets of Shrimps in Akwa Ibom State

	Ishiet (Y_1) and Oron (X_1) prices	Ishiet (Y_2) and Mbo (X_2) Prices	Oron (Y_3) and Mbo (X_3) Prices
Model Attributes	*Regression Statistics*		
Multiple R	0.841	0.825	0.834
R square	0.707	0.68	0.695
Adjusted R square	0.702	0.674	0.69
Standard Error	0.275	0.288	0.259
Observations	60	60	60
Ishiet and Oron Beach Mkts	*Coefficients*	*Standard Error*	*t Stat*
Intercept	0.701	0.566	1.24
In Oron Beach Price in Naira per Kg	0.973	0.077	11.818
F ratio estimate	*139.658*		
Ishiet (Y) and Mbo (X) prices	*Coefficients*	*Standard Error*	*t Stat*
Intercept	1.232	0.555	
In Mbo Prices in Naira per Kg	0.842	0.076	
F ratio estimate	123.199		
Oron (Y) and Mbo (X) prices	*Coefficients*	*Standard Error*	*t Stat*
Intercepts	1.592	0.499	3.193
In Mbo Prices in Naira per kg	0.784	0.068	11.491
F ratio estimate	132.047		

Source: Field Data, 2013

Table 3: Regression Results Showing Model Properties and Estimates of Parameters on Socio-economic Determinants of Profit in Shrimps Marketing

Variable	Coef.	t-Stat	Prob.	Coef.	t-Stat	Prob.	Coef.	t-Stat	Prob.	Coef.	t-Statistic	Prob.
	Linear			Semi-log			Double-log			Exponential		
Intercept	-11106955.00	-9395***	0.000	9.991	20.136***	0.000	7.634	3.8908***	0.000	-21374058.000	-4.358***	0.000
SEX	5512134.00	11.728***	0.000	1.258	60377***	0.000	0.138	6.2963***	0.000	605435.600	11.053***	0.000
HHSIZE	98481.51	1.540	0.125	0.016	0.600	0.549	0.075	0.4320	0.666	494826.500	1.133	0.259
AGE	124366.20	4.177***	0.000	0.028	2.250**	0.026	1.240	2.4523**	0.015	5131328.000	4.058***	0.000
EDUC	2027578.00	3.605***	0.000	0.881	3.731***	0.000	1.533	3.7605***	0.000	3889727.000	3.816***	0.000
OCUPATN	972439.40	5.082***	0.000	0.395	4.916***	0.000	0.753	4.7680***	0.000	1771429.000	4.487***	0.000
HSHLDEXPN	2.15	1.558	0.121	0.000	-0.431	0.667	0.135	1.7476	0.082	503064.100	2.590***	0.010
CREDITACS	-17.53	-4.542***	0.000	0.000	-3.649***	0.000	-0.035	-3.637***	0.000	-68473.360	-2.972***	0.003
EXPR	12072.22	0.318	0.751	0.011	0697	0.487	-0.088	-0.373	0.709	-453558.700	-0.773	0.441
MKTINFO	177734.70	0.444	0.657	-0.023	-0.135	0.893	-0.007	-0.420	0.675	-6561.811	-0.149	0.882
DISTMKT	14290.64	1.550	0.123	0.006	1.561	0.120	0.0898	1.4194	0.1576	248697.700	1.573	0.118
R-squared	0.60			0.41			0.43			0.45		
Adjusted R-Squared	0.58			0.38			0.40			0.42		
Akaike info Criterion	32.327			2.960			2.927			1.788		
F-statistic	25.435			11.945			12.910			13.919		
Prob(F-statistic)	0.000			0.000			0.000			0.000		

* = significant at 10%
** = significant at 5%
*** = significant at 1%
(Source: Field Data, 2013)

Table 4: Frequencies of Marketing Channels Adopted by Shrimp Marketers in Akwa Ibom State

S/N	ITEMS	Frequency "Yes"	Percentage "Yes"	Total Frequency
1	Producer-Registered Agent-Wholesaler-Consumer	60	33	180
2	Producer-Wholesaler-Retailer-Consumer	108	60	180
3	Producer-Wholesaler-Exporter-Consumer	36	20	180
4	Producer-Wholesaler-Large Collector –Small Collector-Retailer-Consumer	84	47	180
5	Producer---Retailer-Consumer	132	73	180

Source: Field Survey, 2013

Table 5: Perception on Market Size of Consumers and Suppliers

Response	Frequency	Percent
How would you describe the number of Shrimp buyers?		
Very Small	20	11
Small	57	32
Large	103	57
Total	180	100
How would you describe the number of Shrimp sellers		
Very small	13	7
Small	34	19
Large	133	74
Total	180	100

Source: Field Survey, 2013

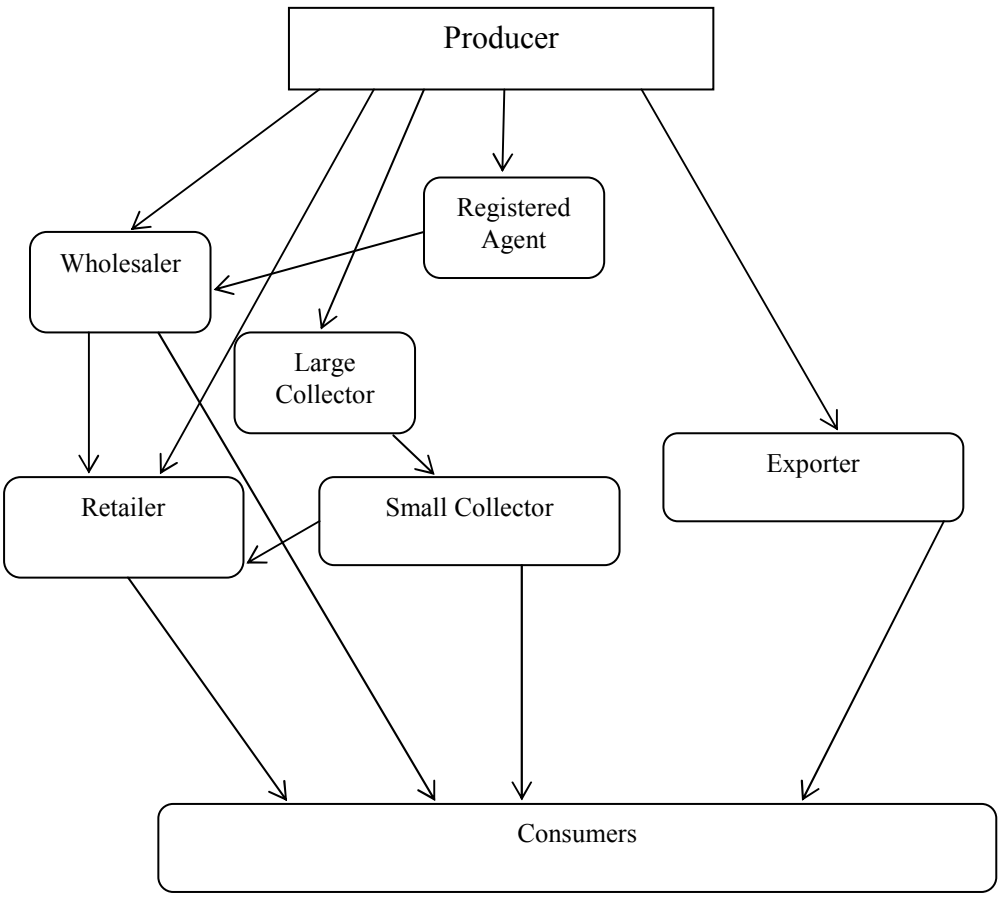

Figure 1: Marketing Channels Existing in the Shrimp Trade in Akwa Ibom State

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