EMPIRICAL ANALYSES OF RICE AND FISH AGRIBUSINESS VALUE-CHAIN NODES IN THE NIGER DELTA REGION OF NIGERIA: ISSUES FOR YOUTH AND WOMEN EMPOWERMENT

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ABSTRACT

The high rate of unemployment in Nigeria and particularly, in the Niger Delta Region, which has manifested in numerous social vices, including militancy and communal clashes continued to limit development within the Region. This study therefore analysed the rice and fish agribusiness nodes, with a view to identifying priority enterprises which can provide enough incentive for the youths and move them away from vices towards gainful and meaningful employment. On the basis of the margin and returns on investment analyses, the study concluded that enterprise nodes within the two enterprises provided enough returns on investment to attract the youth towards agribusiness in the region. The study therefore recommended specific agribusiness enterprises for the three categories of states within the Region. It further suggested the deployment of these agribusiness nodes as key enterprises under the on-going Federal Government and Multi-donor supported agripreneurs initiative in Nigeria.

Keywords: Agribusiness, Agripreneurs, Empowerment, Enterprise, Niger Delta Region

INTRODUCTION

Sequel to the shift from agriculture to crude oil and gas in the late 1960s, Nigeria's growth has continued to be driven by consumption and high oil prices (Federal Republic of Nigeria, 2017). Onyemauwa (2010) noted that declining level of agricultural production, rising food prices and increasing food import bills have become permanent features in Nigeria. According to the source, the situation becomes even more embarrassing given the nature of vast agricultural resources available in the country. Thus, the structure of the economy has been largely import dependent, consumption driven and undiversified. Oil accounts for more than 95 per cent of export and foreign exchange earnings while the manufacturing sector accounts for less than one percent of total exports (Federal Republic of Nigeria, 2017). Bakare (2011) noted that as agriculture export shrank from the traditional 12-15 commodities of the 1960s, Nigeria became a net importer of basic food it normally exported. Presently, majority of Nigerians remain under the burden of poverty, inequality and unemployment. FMARD (2011) established that Nigeria was the leading exporter of groundnut with a world's share of 42% and had 27% of the world's palm oil export, 18% of cocoa and 1.4% of cotton as the major West African cotton exporter. This glory however declined over years, with the dominance eclipsed by its competitors. The general economic performance is undermined by deplorable infrastructure, consumption and mismanagement of public finances (Federal Republic of Nigeria, 2017). Most regrettably, the country is currently facing unpromisingly increasing unemployment, particularly amongst its educated youth (Federal Ministry of Agriculture and Rural Development, 2017), youth unemployment became rife, with about 27% (22 million) youths unemployed, while transition from school to employment became difficult (International Fund for Agricultural Development, 2017). There was also no structured path to follow or role models to look up to. These developments are not unconnected to limited access to technical skills, insufficient, inappropriate and inaccessible finance, negative effect of climate change and the perception of agriculture as unattractive for generating income and sustaining life. According to Akinbamijo (2015), the shift in focus away from agriculture to petroleum brought about severe underinvestment in the sector by the public and private sectors and was further accentuated by weak, unenforced, poorly implemented and often conflicting policies at all levels of the country's governance structures (Nwuneli, undated). In a related development, Anaebonam (2015) posited that as desirable as agribusiness is to economic well-being, many countries in the sub-Saharan Africa, including Nigeria, are yet to optimise their potentials. According to the source, the challenges are not unconnected to the relegation of agriculture to subsistence farming, non-prioritization of agricultural entrepreneurship at the different levels of governance, lack of infrastructure, poor storage

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facilities, poor state of research, poor and disjointed value chains, occasioned by the discovery of oil (Anaebonam, 2015).

These challenges raise doubt as to the efficiency of agricultural enterprises within the Niger Delta Region of Nigeria. Thus, this study therefore examines the margins and returns from the rice and fish agri-business value chain enterprises within the Niger-Delta Region of Nigeria, with the view to identifying the most promising enterprises in each state based on the aforementioned criteria. Justification for this study stems from the need to identify viable and sustainable agricultural enterprises which can attract the pool of jobless unemployed youths and other vulnerable lots in the Region, particularly the women. According the Nigeria's Economic Recovery and Growth Plan, agribusiness and agro-allied industries will enable mass employment in the formal and informal sectors, given the colossal domestic demand, the potential for import substitution, and opportunities arising from increased yields and raw material processing.

The concept of agribusiness formed the basis for investigating the agricultural economy, studying the industrialization phase of agricultural development and was also the foundation for solving specific questions of the development of the agricultural sector. According to Davis and Goldberg (1957), agribusiness was defined as the sum total of all operations involved in the processing and distribution of products produced on a farm, covering production operations, storage, transportation and agricultural commodity marketing. Specific aspect covered by these definition were input supply sector for agriculture and food industry, agricultural primary production, feed industry, services for agriculture and food industry, food production and the processing industry, food trade and public catering. Ogidi (2015) noted that the evolution of agribusiness requires broader conceptualization and more accurate definition to convey a more dynamic and integrative discipline committed to value creation and sustainable orchestration of food. To this end, agribusiness was defined as moving from farm to market centric, where effective activities anticipate and respond to customers, markets and systems in which they function (my financial intelligence, 2015). Mendelu (undated) noted that the theoretical methodological approach of agribusiness facilitated the realization of the relationship between independent links of agribusiness food chain and how they interact to achieve results. Meanwhile, Boehlje (2002) captured the development in agriculture through agribusiness, having noted that the focus of agribusiness is broader than that of agriculture or rural development, given that it includes research in the downstream activities of processing and distribution.

The focus of the women and youth policies as detailed in the Agricultural Promotion Policy is to maximize the contributions of women and youths to agricultural production, eliminate discriminatory practices in employment, develop and launch entrepreneurship platforms that create a pathway for youths and women to enter agribusiness economy. The policy trusts are to expand cooperation with CBN's intervention funds targeted at women and youth; facilitate investment advisory support for potential entrepreneurs; review the subsisting gender policy document with a view to improving the implementation activities; expand training of key leaders and influencers across the Federal Ministry of Agriculture and Rural Development (FMARD) to ensure that gender and youth considerations are integrated into decision making; expand capacity building for women and youths for entrepreneurship, including technical training and access to financial services and facilitate dialogue with farmer groups and service providers (for women and youths) to expand pool of ideas. In a related development, Mahmood (2017) revealed that the goal of the youths and women in agribusiness investment programme of the FMARD is to promote decent livelihood for them through agribusiness, especially in the rural areas. According to the technocrat, the approach entailed identification of value chains based on government priorities, training, sustainable agricultural practices, group formation, and provision of starter packs to enable the establishment of agricultural enterprise of choice. Others included group formation and registration, identification and linkage to mentors, advocacy and identification of champions for scale up and support for the programme, access to credit and insurance.

FMARD (2016) established that the major constraints facing the agribusiness sub-sector were the lack of government coordination (100%), inconsistencies in policy, regulatory, laws, taxes and administrative practices (94%) and the lack of security of raw material supplies to food processors (75%), lack of human capital (50%). Other issues highlighted were the absence of processing technology and associated rural infrastructure, inadequate capacity for processing, lack of quality control, low private sector investment, absence of low cost, market oriented research prototyping,

inaccessibility and high cost of funds and low level capacity of fabricators. Other issues were poor quality of information and irregular dissemination, ill-timed service delivery and lack of sole point of contact.

Rice (*Oryza sativa*) is a cereal which has become a staple food of considerable importance in many African countries, including Nigeria. As at 2011, Nigeria import 2.1 Million MT of rice at the cost of NGN365 billion per annum as at 2011. By 2014, the country produced 4.8 million MT against the national demand of 6 million MT per annum, leaving a supply gap of about 1.2 million MT (FMARD, 2015). Rice has overtime developed into a major staple crop in the Nigerian diet, with a demand profile cutting across all regions. A variety of other factors have also contributed to this increased demand including rapid urbanization, acceleration in the population growth rate, increase in per capital income, and changes in family occupational structures. (Akpokodje *et al.,* 2001). The key players in the rice value chain are the actors, supporters and chain promoters. Participants of the rice value chain include the agro-input dealers, farmers, processors, wholesalers, retailers and consumers (Figure 1).
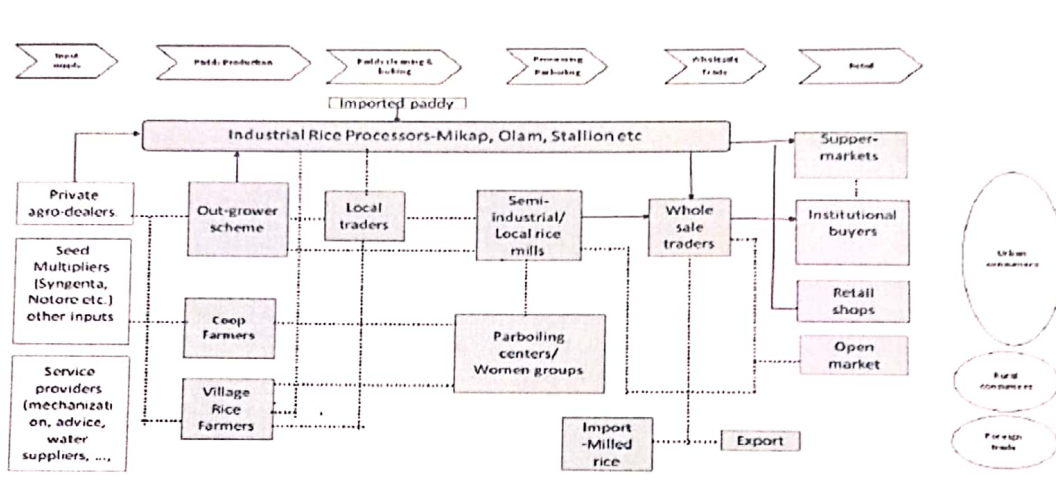

Figure 1: *Typical rice value chain map involving Olam's intervention in Nigeria*
Source: Open internet

The concept of value addition of fish products presents reasonable opportunity for additional revenue generation, job creation and effective post-harvest management (Amao *et al.,* 2006). Value chains reside at the core high-impact and sustainable initiatives focused on improving productivity, competitiveness, entrepreneurship and Small and Medium scale Enterprises (SMEs) growth (Miller and Da Silva, 2007). Fish and fish products are known worldwide as a very important diet because of their high nutritive quality and significance in improving human health. Though, fish contributes 36.6 gm per day of net protein utilization in Nigerian, its utilization, is still below the World Health Organisation's recommendation, attributable to none maximization and unsustainable utilization of available aquatic resources. Recent development of fish farming in Nigeria has been attributed to private investments and the federal government interventions through the Growth Enhancement Scheme of the Agricultural Transformation Agenda (ATA) (Gwary *et al.,* 2014). This led to a remarkable increase in annual fish production. In 2013, aquaculture contributed about 25.7% to total fish production in Nigeria and has witnessed tremendous growth in terms of production and operational volumes. Thus, the nation's fast growing population of about 170 million and its very high demand for fish, 2.66 million metric tonnes, has positioned fish production on a much stronger market-driven path (Gwary *et al.,* 2014). The key value chain actors of the fish value chain are the input suppliers, producers, processors, marketers and consumers (Figure 2).
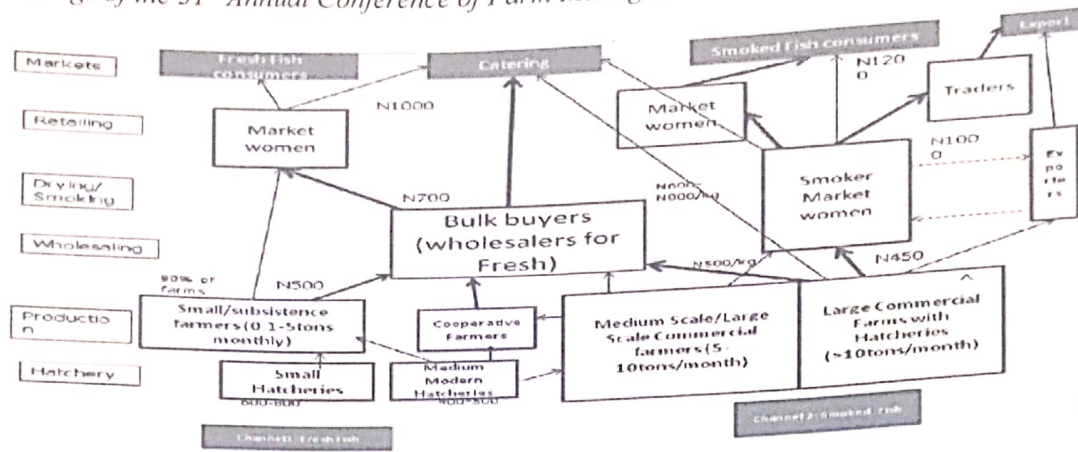
Figure 2: Fish value chain; source - open internet

RESEARCH METHODOLOGY

The Study Area

The study was undertaken in the Niger Delta States of Nigeria, located in the southern part of Nigeria and bordered to the south by the Atlantic Ocean and to the East by Cameroon. The region covers about 112,110 square kilometres, representing 12% of Nigeria's total surface area (Federal Republic of Nigeria, undated) and a population of about 30 million people, representing 18% of Nigeria's population. The region is located within the tropical rainforest climate zone on the northern regions and freshwater swamp and mangrove swamp forests in the southern regions, from Longitudes 4.15°N - 7.17°N and Latitudes 5.05°E - 8.68°N (Okoro *et al.*, 2014). It has the heaviest rainfall within West Africa, with an annual rainfall totals of between 1,300mm and 4,000mm (Anyadike, 1992; International Fund for Agricultural Development, 2002; Nicholson, 2003), with annual rainfall peak between April and October and an average temperature of 24-33.3°C (Kadafa undated; Umoh, *et al.*, (2013). The Region comprises nine States, spread across the South-South (Akwa Ibom, Cross River, Edo, Delta and Rivers States), South East (Abia and Imo States) and South West (Ondo State) Zones of Nigeria (Figure 3). Bayelsa, Cross River and Rivers States have extensive coastlines; Ondo, Delta and Akwa Ibom have coastlines and agricultural lands, while Abia, Edo and Imo have no coastlines. More than 40 ethnic groups including the Ijaw, Ikwerre, Itsekiri, Isoko, Urhobo, Ukwuani, Kalabari, Okrika, Ogoni, Oron, Efik, Ibibio, Igbo, Annang, Bini, Esan and Yoruba, inhabit the Niger Delta Region, speaking about 250 different dialects (FRN, undated).

Niger Delta is the richest part of Nigeria (and West Africa) in terms of natural resources and has huge oil and gas deposits, good agricultural land, abundant fish resources, as well as extensive forests (International Fund for Agricultural Development, 2002). The Region produces a variety of food and cash crops. The major food crops that could be developed more efficiently are cassava, yam, plantain and cocoyam, with enormous potentials for rice. The key cash crops are palm fruits, cocoa, rubber. A number of fruits like pineapples, oranges, grapes, lime lemon, guava, paw-paw and banana are also produced in the region. However, only 50% of available lands for growing crops have been put to use. Processing of palm fruits is a major industry in the area, with palm oil and kernels having many industrial uses. Scope also exists for investment in modern methods of animal husbandry particularly of small ruminants, poultry and, which are currently reared through traditional methods. Artisanal fishing is a major rural economic activity in the coastal States, while potentials for aquaculture fisheries abound.

Majority of the working population of the Niger Delta Region is self-employed in commercial activities including agriculture (farming and fishing), trading, logging and associated wood processing, traditional craft, raffia palm tapping, raffia thatch, weaving of cloths, mats and baskets, metal works and blacksmithing. Economic activities relying on indigenous knowledge, like canoe carving, distilling also exist. However, youths and women are socio-economically disadvantaged and thus stand as pressing issue needing redress. Small-scale agriculture in the region, which stands as a mainstay of the majority of the rural population, is characterized by low productivity, low income levels, minimal domestic savings and lack of investment capital. The region has some key large scale industries related

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to the oil and hydrocarbon sectors. These include refineries, petrochemical plants, liquefied natural gas plants and a fertilizer plant. Numerous economic activities revolve around the oil and hydrocarbon sectors, which employ the bulk of the industrial work force in the region. However, these provide limited employment opportunities and have not been able to absorb the growing workforce of the region (Federal Republic of Nigeria, undated).
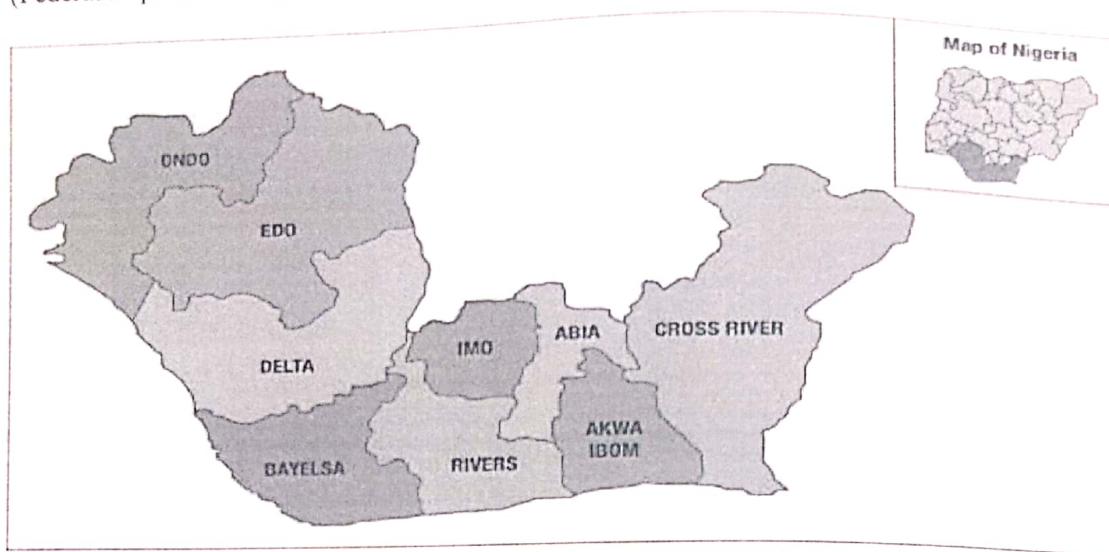

Figure 3: *Map of Niger Delta States (Inset-Map of Nigeria showing the Niger Delta States)*
Source: Yahaya (2016)

Sample Design, Techniques and Sample Size

The multi-stage sampling design, complemented with stratification was employed for this study. The first stage involved the selection of four States (Abia, Cross River, Edo and Rivers) out of the 9 Niger Delta States, based on regional stratification and performance criteria under the recently closed IFAD supported Community-based Natural Resource Management Programme.

The second stage was the random selection of one Local Government Area each under each of the three agro-ecological zones in each of these States, while the third stage was the selection of two communities each under each LGA, except for Umuahia North LGA in Abia State and Akpabuyo LGA in Cross River State which had three communities each, thus totalling 12 LGAs and 26 communities. The fourth stage entailed the interview of 50 respondents each under the rice and fish agribusiness nodes (production, processing, marketing and transportation) in each of the four states covered totalling 400 respondents in all (Table 1.0).

Table 1: Details of Sample Selection and Questionnaire Administration

STATE	ZONE	LGA	COMMUNITIES	Respondents proposed	Respondents interviewed
ABIA					
	Abia North	Bende	Etiti Ugwueke		
	Abia Central	Umuahia North	Akoli Imenyi		
			Umuezike Ofeme	100	100
			Okwuta		
			Okwoji		
	Abia South	Ugwunagbo	Etiti Akano Ngwa		
			Ngwa Iyi Ekwe		
CROSS RIVER	Calabar	Akpabuyo	Idebe Offiong		
			Umo		
			Urua Ndung		
			Ikot Ekiriba		
			Offiong		
	Ogoja	Bekwara	Ugbaro	100	100
			Nyanya		
	Ikom	Obubra	Iyamoyong		
			Ovukwa		
EDO	Edo North	Akoko Edo	Ikiran-Ile		
			Ureme –Erhunrun		
	Edo South	Uhumode	Ennuhu	100	100
			Evbuohuan		
	Edo Central	Esan	Oria/Illushi		
			Okhuesan		
RIVERS	Zone 1	Obia Akpo	Eneka		
			Alua		
	Zone 2	Abuah	Okana	100	50
			Ajrokwu		
	Zone 3	Ikwere	Ozuaha		
			Apani		
TOTAL				400	350

Source: Field Survey, (2017)

Method of Data Collection and Management

Given the limited time frame, a rapid survey using focused group discussion (FGD) was employed for data collection. The approach entailed using the existing profile of enterprise groups and to identify groups to be interviewed where available. In all, 12 Enumerators were involved in the survey, comprising 3 enumerators per state.

Data collection covered input and output data of the rice and fish value chain actors under the 4 targeted value chain nodes (production, processing, marketing and transportation). Data analysis was undertaken by the research team using SPSS and EXCEL Packages to generate descriptive statistics, such as mean, frequencies, ratios; benefit cost analysis and Returns on Investment in percent.

Model Specification

The models specified under this study were for the gross margin and returns on investment (Equations 1 and 2).

Gross margin (GM) = $$\sum TR - \sum TVC \qquad \qquad ...(1)$$

where;

TR = Mean of Total revenue of respondents, and

TVC = Mean of Total Variable Cost of Production

Return on Investment (ROI) % = $$\frac{\sum GM}{\sum TVC} \, X \, 100 \qquad \qquad ...(2)$$

RESULTS AND DISCUSSION

Fish Agribusiness Enterprises

The analysed results for the fish agribusiness value chain across the 4 states considered are as detailed in Table 2.0. The state level gross margin analysis shows that fish production enterprise was the most profitable, with a margin of eight hundred and forty thousand, two hundred and forty-one naira, eight kobo (₦840,241.8k), while gross margin from transportation business was the least, estimated at forty-nine thousand, four hundred and fourteen naira, twenty-nine kobo (₦49,414.29k). However, in terms of Returns on Investment for all states combined (Figure 4.0), marketing enterprise yielded the highest return of 2,479.31%, while transportation enterprise returned the least of 41.80%, implying that for ₦24.79k and 0.42k were obtained from ever naira spent on these enterprises.
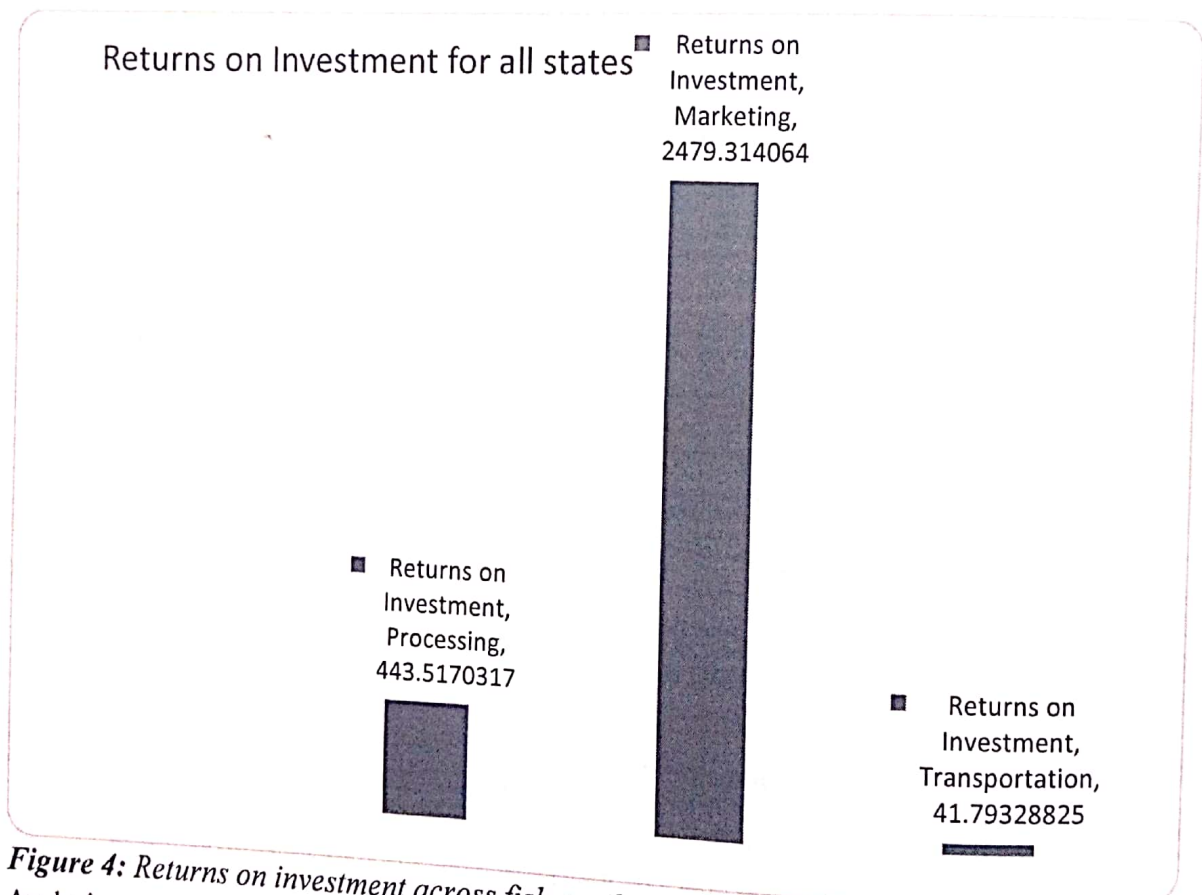

Figure 4: *Returns on investment across fish agribusiness value chain (combined for all states)*

Analysis across the individual states provided insight into the states specific performance. For Edo State for instance, processing yielded the most return on investment of 134.21% while transportation yielded the least of 17.02%, implying that ₦1.34K was obtained on every naira spent. In Abia State, processing yielded the highest RoI of 1,838.20%, while marketing returned the least of 53.85%. For Rivers State, marketing recorded the highest return of 116.52%, while transportation returned the least with only 33.33% (Figure 5.0).
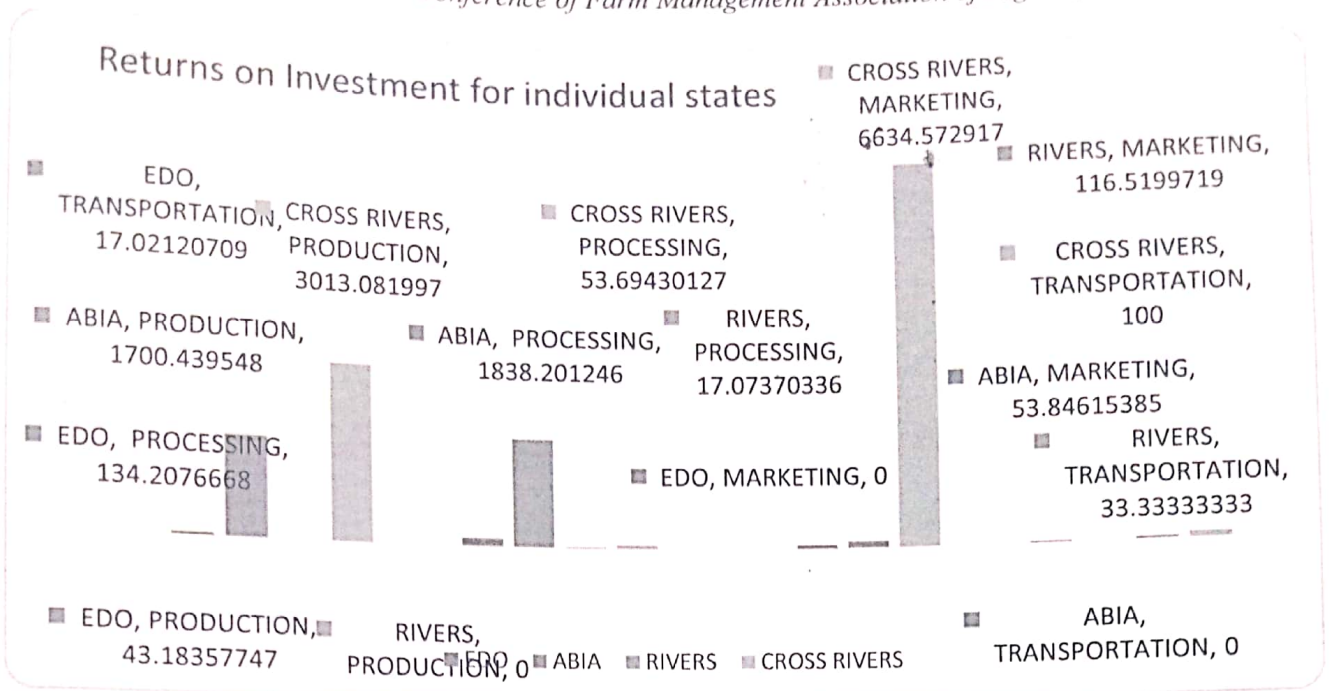
Returns on Investment for individual states

CROSS RIVERS, MARKETING, 6634.572917

RIVERS, MARKETING, 116.5199719

EDO, TRANSPORTATION, 17.02120709

CROSS RIVERS, PRODUCTION, 3013.081997

CROSS RIVERS, PROCESSING, 53.69430127

CROSS RIVERS, TRANSPORTATION, 100

ABIA, PRODUCTION, 1700.439548

ABIA, PROCESSING, 1838.201246

RIVERS, PROCESSING, 17.07370336

ABIA, MARKETING, 53.84615385

EDO, PROCESSING, 134.2076668

EDO, MARKETING, 0

RIVERS, TRANSPORTATION, 33.33333333

EDO, PRODUCTION, 43.18357747

RIVERS, PRODUCTION, 0

EDO, 0

ABIA

RIVERS

CROSS RIVERS

ABIA, TRANSPORTATION, 0

Figure 5: *Returns on investment (RoI) on fish enterprise across sampled states*

With respect to Cross River State, highest RoI of 366.39% was obtained under fish marketing, while processing business yielded the least of 53.70% (Table 2). Thus, based on the criteria of prioritization using the ROI, it thus implies that processing business should be prioritized in Edo State, followed by production and transportation in that order. In Abia however, fish processing should be the first priority, followed by fish production and then, marketing; for Rivers State, fish marketing should be prioritized, followed by fish transportation and in Cross River State, fish marketing should be the priority, followed by fish production, transportation and lastly processing.

Table 2: Enterprise Gross Margins (Naira) and Returns on Investments for Fish Enterprise

ENTERPRISE	STATES	PRODUCTION		PROCESSING		MARKETING		TRANSPORTATION	
		Gross Margin	Returns on Investment	Gross Margin	Returns on Investment	Gross Margin	Returns on Investment	Gross Margin	Returns on Investment
FISH	ALL STATES	840,241.79	-	257,789.25	443.52	772,328.97	2479.31	49,414.29	41.79
	EDO	290,726.19	43.18	286,710.00	134.21	0.00	0.00	-143,840.00	17.02
	ABIA	1,849,916.78	1700.44	187,622.22	1838.20	520,730.77	53.85	0.00	0.00
	RIVERS	854,986.43	-	329,787.00	17.07	1,232,458.00	116.52	62,500.00	33.33
	CROSS RIVERS	917,565.38	3013.08	245,800.00	53.69	860,522.73	6634.57	98,000.00	100.00

Source: Author's computation from field data

Rice Agribusiness Enterprises

For the rice enterprise value chain, the results across the 4 states considered are as detailed in Table 3.0. The gross margin analysis shows that rice production enterprise was the most profitable, with a gross margin of six hundred and eleven thousand, seven hundred and forty naira, fourteen kobo (₦ 611,740.84K), while margin from transportation business was the least, estimated at sixty-two thousand, one hundred and seventy-five naira (₦ 62,175.00k). However, in terms of Returns on Investment for all sampled states combined (Figure 3.0), production business yielded the highest return of 210.72%, while transportation enterprise returned the least of 22.99%, implying that for ₦2.10k and 0.22K were obtained from ever naira spent on these enterprises.
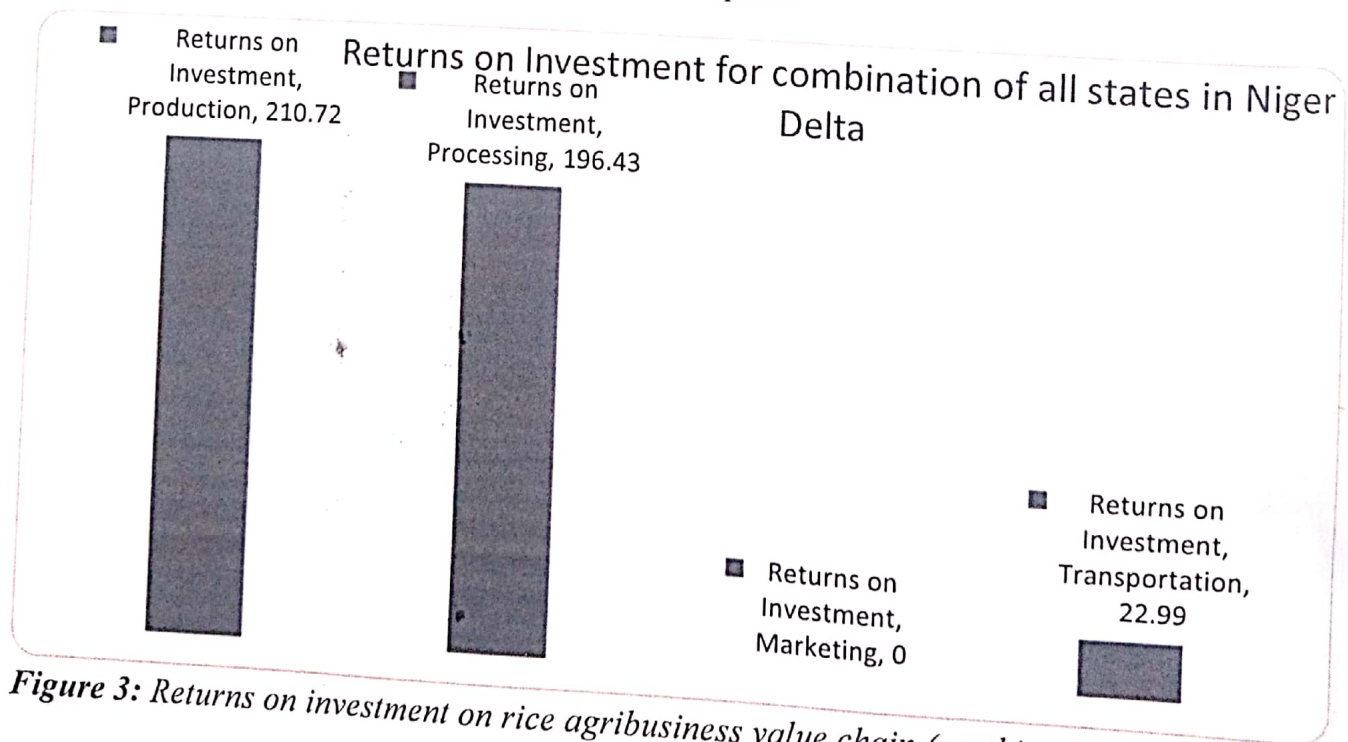

Figure 3: *Returns on investment on rice agribusiness value chain (combined for all states)*

With respect to the individual states, processing enterprise yielded the most returns on investment of 332.89% and 249.57% for Edo and Abia States respectively, implying that ₦3.32K and 2.49k were

obtained on every naira spent. For Cross River State, production recorded the highest return of 185.13%, while processing returned only 28.97%.
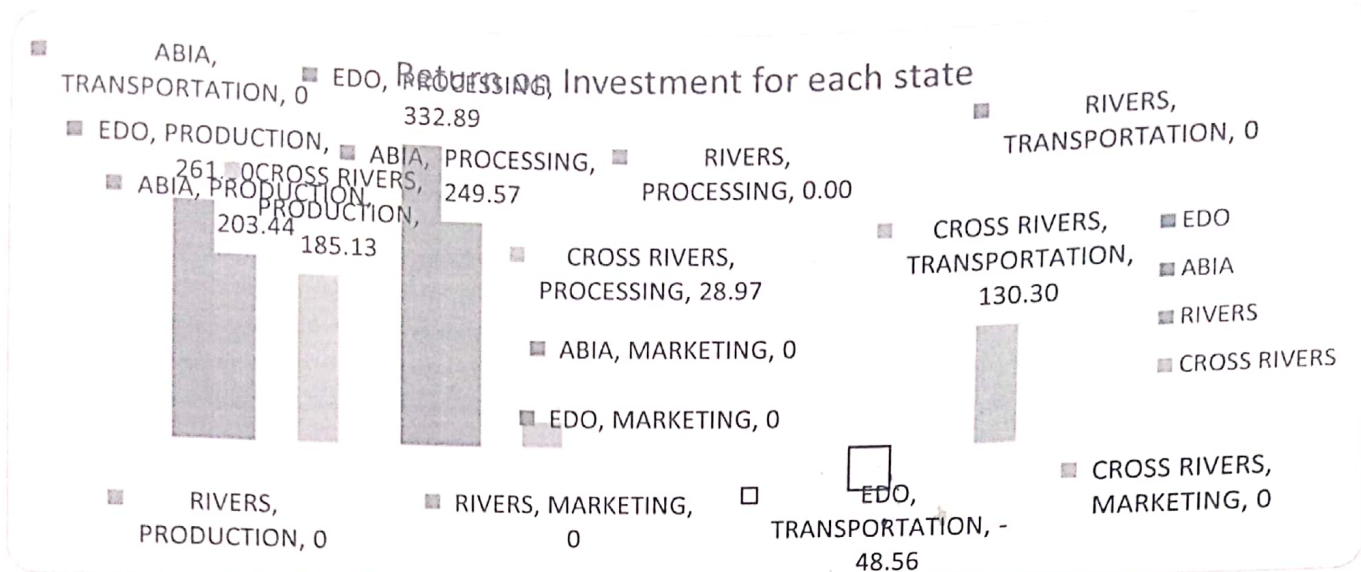

Returns on Investment for each state

Figure 4: Returns on investment (RoI) on rice agribusiness across sampled states

Based on the above result, it thus implies that processing business should be prioritized in Edo and Abia States, followed by production. In Cross River, rice production should be the priority, followed by rice transportation and lastly processing.

Table 3: Enterprise Gross Margins (Naira) and Returns on Investments for Rice Venture

ENTERPRISE	STATES	PRODUCTION		PROCESSING		MARKETING		TRANSPORTATION	
		Gross Margin	Return on Investment	Gross Margin	Return on Investment	Gross Margin	Return on Investment	Gross Margin	Return on Investment
RICE	ALL STATES	611,740.84	210.72	371,359.09	196.43	-	-	62,175.00	22.99
	EDO	680,561.90	261.00	165,150.00	332.89	-	-	-6,200.00	-48.56
	ABIA	712,230.00	203.44	647,250.00	249.57	-	-	-	-
	RIVERS	-	-	-	-	-	-	-	-
	CROSS RIVERS	502,617.12	185.13	590,370.00	28.97	-	-	258,000.00	130.30

Source: Author's computation from analysed data

CONCLUSION AND RECOMMENDATIONS

The study concluded that rice and fish agribusiness enterprises are generally profitable with high Rates of Returns on Investment, particularly, the processing enterprise. Consequently, for states with extensive coastline (Bayelsa, Cross River and Rivers) rice production should be the first lien on investment followed by rice transportation business. For the coastline states (Ondo, Delta and Akwa-Ibom), rice production should be the first priority followed by rice processing, while for states with no coastline (Abia, Edo and Imo), rice processing should be the first consideration, followed by rice production. For the fishery enterprises, fish marketing should be the main focus of the extensive coastline states, followed by fish production. With respect to the coastline states however, fish marketing should be prioritized, while for the states without coastline, fish processing should be the first lien followed by fish production.

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