



## YuzuncuYil University Journal of Agricultural Science

<http://dergipark.gov.tr/yyutbd>



Araştırma Makalesi (Research Article)

### The Strategic Participation of Young People in Shrimp Farming Value Chain in Nigeria

Felix Odemero ACHOJA\*<sup>1</sup>, Theophilus Miebi GBIGBI<sup>2</sup>, Eguono Aramide IKPOZA<sup>3</sup>, Janet Ebidenere DENGHAN<sup>4</sup>

<sup>1,2,3,4</sup>Delta state University, Faculty of Agriculture, Dept. of Agr.Economics and Extension, Asaba, Nigeria.

<sup>1</sup><https://orcid.org/0000-0002-9705-4923> <sup>2</sup><https://orcid.org/0000-0002-1335-7231> <sup>3</sup><https://orcid.org/0000-0002-7633-7289>

<sup>4</sup><https://orcid.org/0000-0002-6117-3453>

\*Corresponding author e-mail: [lixmero40@yahoo.com](mailto:lixmero40@yahoo.com)

#### Article Info

Received: 18.12.2019

Accepted: 02.03.2020

Online Published 31.03.2020

DOI:10.29133/yyutbd.661848

#### Keywords

Aged labour population,  
Captured- shrimp value chain,  
Financial performance,  
Youth inclusion rate.

**Abstract:** This study investigates aged operators' willingness to quit operations and youths' inclusion in shrimp value chain. Primary data were obtained using structured questionnaire from randomly selected 120 shrimp operators. Descriptive and inferential statistical tools were used to analyze collected data. Demographic result suggests that majority (82.50%) of the operators were female and (52.50%) acquired secondary education. The finding shows that aged people (70.83%) dominated shrimp value chain with 29.17% inclusion rate for young actors. Result of hypothesis testing shows that the average income realized by youths is significantly higher than the net income realized aged. About 48% of the aged operators indicated willingness to quit shrimp harvesting in the future due to the drudgery involved. Incentives such as grants, loans and aquaculture – specific education should be given to the youth to encourage more participation. Youths should form important component of government policy and programmes for the development of shrimp industry in Nigeria.

### Nijerya'da Gençlerin Karides Yetiştiriciliği Değer Zincirine Stratejik Katılımı

#### Makale Bilgileri

Geliş: 18.12.2019

Kabul: 02.03.2020

Online Yayınlanma 31.03.2020

DOI:10.29133/yyutbd.661848

#### Anahtar kelimeler

Yaşlı emek nüfusu,  
Ele geçirilmiş karides değer zinciri,  
Finansal performans,  
Gençlerin katılım oranı.

**Öz:** Bu çalışma yaşlı yetiştiricilerin yetiştiriciliği bırakma istekliliğini ve gençlerin karides değer zincirine dahil olmalarını araştırmaktadır. Birincil veriler, rastgele seçilen 120 karides yetiştiricisinden yapılandırılmış anket kullanılarak elde edilmiştir. Toplanan verileri analiz etmek için tanımlayıcı ve çıkarımsal istatistiksel araçlar kullanılmıştır. Demografik sonuç, işletmecilerin çoğunluğunun (% 82.50) kadın ve (% 52.50) ortaöğretim derecesine sahip olduğunu göstermektedir. Dahil olma oranında yaşlıların (% 70.83) gençlere (% 29.17) göre karides değer zincirine egemen olduğunu göstermektedir. Hipotez testlerinin sonucu, gençler tarafından gerçekleştirilen ortalama gelirin, yaşlıların gerçekleştiren net gelirden önemli ölçüde daha yüksek olduğunu göstermektedir. Yaşlı yetiştiricilerin yaklaşık % 48'i, söz konusu ağır iş yükü nedeniyle gelecekte karides yetiştiriciliğini bırakma istekliliğini belirtmiştir. Daha fazla katılımı teşvik etmek için gençlere hibe, kredi ve su ürünleri yetiştiriciliğine özel eğitim gibi teşvikler verilmelidir. Gençler, Nijerya'da karides endüstrisinin gelişimi için hükümet politikası ve programlarının önemli bir bileşenini oluşturmalarıdır.

#### 1. Introduction

Shrimp (*Penaeus notialis*) is of the sub-phylum of crustaceans (Lawal-Are and Akinjogunla, 2012). It is a sea food which is proteinous. It is popularly consumed in Nigeria without cultural barrier. Shrimp is one of the trending agricultural export products of Nigeria. Over the past one and half decades, the international trade value of Nigeria shrimp stood at US\$12 billion (Bene and Heck,

2005). At present there, shrimping activities are expected to increase in the industry so as to generate more revenue.



Figure 1. Shrimp (*Penaeus notialis*) (Adapted from Anyanwu, et al., 2011).

The beginning of shrimping could be traced to China. About 3 decades ago, China was the major supplier of shrimp (Essay UK, 2018). At present, Thailand has been reported as the major producer of shrimp. It has over-taken China. Asia is presently regarded as the leading supplier in world shrimp market (Essay UK, 2018). Globally, the aquaculture sub-sector has grown in recent years, although there is still need to exploit its potential to the fullest. To satisfy the ever growing demand for shrimps. Achoja, (2019) has made efforts to examine the developing shrimp market in Nigeria. He independently studied shrimp market chain and shrimp value chain respectively as catalyst of economic growth in Nigeria.

An estimated population of Nigeria is over 198 million (Daily Post, 2018) with 3.2% as the annual growth rate. However, few operators between 8.23 to 18.27 million operators are engaged in shrimp business (Anyanwu, et al., 2011). The socio-economic attributes of the relevant actors especially age classifications, is important to the growth of shrimp industry in Nigeria. Therefore youths' inclusion rate in the labour force for the sector, deserves critical investigation and policy choices in Nigeria. With its sizeable mangrove and coastal areas, Nigeria has environmentally advantageous to occupy leading position in the shrimp sub-sector. Ogbonna, (2001) has earlier lamented that inactive youth participation has been responsible for the slow pace of growth of the sub-sector in Nigeria. The potential of Nigeria in the industry can further be enhanced through strategic youth inclusion. The current debates in workshops, conferences and publications on youths as potential drivers of prosperity in the shrimp industry (Achoja, et al., 2020) has generated impetus for advocacies and policy frameworks among research experts, government, development agencies, practitioners and other stakeholders for youth inclusion in the industry. Even at that, there is scarcity of information on strategies that would attract youth inclusion to the industry. Strategies such as financial benefits in shrimp business will go a long way to determine youth inclusion in the business.

Financial gain is the pull factor of every business, including shrimping. It is capable of encouraging new investors in the business (Achoja, 2013). Consequent upon this, the need to critically examine the financial gain of operators in shrimp business is reasonable. The present study reports the financial benefits of youths in shrimp business. Financial information can attract more youth inclusion and thus the progress of shrimp industry. This information is capable of sustaining the investment interest of current and potential operators in shrimp industry in the future. Furthermore, there are indications of quitting preferences of aged actors in the sector as reported in recent work (Achoja, 2019). Until this trend is addressed, the sustainability of shrimp sub-sector will be at stake. At present, strategies for attracting of youths to the shrimpsub-sector has been an understudied issue and unpopular in Nigeria. This study is an effort to significantly bridge the existing knowledge gap in this

respect. The present research was therefore designed to deepen our understanding of the aged operators' exit rate and subsequent inclusion of youth actors in the shrimp sub-sector.

The main thrust of the paper was to examine strategic youth inclusion as driver of sustainable shrimp value chain.

- i. Describe the demographic features of operators in shrimp value chain;
- ii. Ascertain the inclusion rate of youth in shrimp value chain.
- iii. Assess the financial gains of aged and young actors;
- iv. Compare the financial performance the aged and young operators.

The following hypothesis was tested in the study:

H<sub>01</sub>: There is no significant difference between the financial performances of aged and young operators of shrimp business.

## 2. Materials and Methods

### 2.1. Study area, sampling methods and sample size

Delta State, Nigeria was the study area. The survey was conducted in 2018. Delta state was selected for the research due to the fact that shrimp business is a popular means of livelihood in the study area. Delta State is a mangrove swamp forest area with yearly rainfall that ranges from 2500mm to 2800mm. Artisanal shrimp business is a popular economic activity in the area. All the shrimp business operators were considered as the population of interest for the investigation. A sample frame for the study was obtained from the extension contact list of shrimp harvesters, processors and dried shrimp marketers. Systematic sampling method was used to compose the sample. The sample includes 6 communities in the study. In every selected community, 5 shrimp producers, 5 processors and 10 marketers were purposively chosen. This gave a sum of 120 respondents.

### 2.2. Data collection methods and analytical frameworks

Quantitative and qualitative primary data were obtained for the investigation. Structured and validated questionnaire was the instrument used for data collection. The collected data were analyzed with descriptive and inferential statistical tools.

The financial performance of operators was determined using profit equation as presented below:

$$N_i = TR - TC \quad (1)$$

where:

N<sub>i</sub> = Net income (naira)

TR = Total revenue (naira)

TC = Total cost (total variable cost + total fixed cost)

Comparison of the level of profit earned by the young and aged actors was achieved using t-statistics presented as:

$$t = \frac{\bar{\pi}_y - \bar{\pi}_a}{\sqrt{\frac{SD_y^2}{n_y} + \frac{SD_a^2}{n_a}}} = \frac{SD_y}{\sqrt{n_y}} + \frac{SD_a}{\sqrt{n_a}} \quad (2)$$

Where:  $\bar{\pi}_y$  = mean profit of young operators;  $\bar{\pi}_a$  = mean profit of aged operators

$SD_y$  = standard deviation profit of young operators;  $SD_a$  = standard deviation profit of aged operators

$n_y$  = number of young operators;  $n_a$  = number of aged operators

## 3. Results

### 3.1. Descriptive of demographic parameters of operators

The result of demographic parameters of operators is presented in Table 1.

Table 1. Distribution of demographic parameters of operators.

Parameter	Frequency/%	Cumulative Freq.	Mode
<b>Age</b>			
Youth (18-50)	35 (29.17)	29.17	
Aged (51 and above)	85 (70.83)	100.00	Aged (51 yrs and above)
<b>Gender</b>			
Male	21 (17.50)	17.50	
Female	99 (82.50)	100.00	female
<b>Marital Status</b>			
Unmarried	55 (45.83)	45.83	
Married	65 (54.17)	100.00	married
<b>Educational level</b>			
No formal Education	23 (19.16)		
Primary	29 (24.17)		
Secondary	63 (52.50)		Secondary
Tertiary	5 (4.17)		
<b>Operating experience</b>			
Below 10 years	16 (13.33)		
10 – 20 years	48 (40.00)		
Above 20 years	56 (46.64)		Above 20 years
<b>Income level/week</b>			
Less than 4 000 naira	10 (13.33)		
4 000 – 8 000 naira	62 (40.00)		6 000
Above 10 000 naira	48 (46.67)		
<b>Quantity traded</b>			
Basket module	55 (45.83)		
Sack	65 (54.17)		Sack

(Source: 2018 Field Data)

*Figures in parenthesis are the corresponding percentage values:*

**Age:** The result showed that majority of the operators in the shrimp value chain were within the age bracket of 51 years and above. The remaining were below 50 years.

**Gender:** The result of the study indicates that majority of the operators were within the female category (82.50%) while the remaining were males (17.50%). This is attributed to the fact that females have more responsibilities and ability for small-scale agricultural business compared to the male counterparts.

**Marital status:** The study indicates that above 54.17% of the operators were married, about (25.83%) were single and (12.50%) were divorced and 7.50% are widowed. The finding shows that the operators fall within the married category with about (54.17%). This is attributed to the fact that married people take responsibilities for family and business compared to the rest.

**Educational level:** The result showed that majority of the operators had acquired at least secondary education (52.50%) and the remaining were non-formal education (19.16%) primary (24.17%) tertiary (4.17%).

**Operating Experience:** The result shows that majority of the operators had below 10 years of experience (13.33%) while the remaining were 10-20 years (40.00%) above 20 years (46.67%)

**Income Level:** The result in the Table 1 indicated that majority of the operators earned 4 000-8 000 naira (40.00%) while the remaining income level are less than 4 000 (13.33%) and above 10 000 naira (46.67%) income level.

**Quantity Traded:** The finding indicates that majority of the actors (54.17%) measured their product in sacks while remaining (45.83%) made use of basket or module.

Table 2 presents the finding on youth inclusion rate in shrimp value chain. The finding shows that the youth inclusion rate is 29.17%, while the aged actors participation rate is 70.83%. This finding implies that young people inclusion rate is very low compared to that of aged operators. The finding implies that the youths were substantially excluded from shrimp sub-sector in Nigeria. Older people accounted for higher proportion of the work force in shrimp value chain. This result portrays a weak

work force in the sub-sector. Weak work force can only generate small and slow development of shrimp value chain.

Table 2. Young people Inclusion Rate in Shrimp Value Chain.

Age Parameter	Frequency	Inclusion rate
Youth participants (18-45 years)	35	29.17%
Aged participants (46 years and above)	85	70.93%
Total	120	100%

### 3.3. Aged operators' willingness to quit shrimp value chain

Table 3. Aged operators willingness to quit shrimp value chain

Aged operators' Preferences	Frequency	Quitting preference
Willing to quit	41	48%
Not willing to quit	44	52%
Total	85	100%

Table 3 presents the result of aged operators' willingness to quit shrimp value chain in the study area. About 48% (41) of the aged operators indicated interest in quitting shrimp harvesting in the wild due to the strenuous labour involved.

### 3.4. Profit performance of youths and aged operators

Table 4. Financial performance of aged operators

S/No.	Operators	Total Revenue	Investment (Total cost)	Net Income	Net return/investment ratio
1.	Input suppliers	30 000	14 400	15 600	1.08
2.	Producers	₦70 500	10 300	₦60 200	5.84
3.	Processors	₦40 250	4 050	₦36 200	8.93
4.	Marketers				
	Wholesalers	₦42 300	23 500	₦18 800	0.80
	Retailers	₦35 700	16 950	₦18 750	1.11

Note: ₦ is the symbol for Nigerian national currency (US\$1 = ₦360).

Aged =  $15\ 600 + 36\ 200 + 18\ 800 + 18\ 750 = \underline{\underline{₦149\ 350}}$

$$\frac{149\ 350}{16\ 400} = \underline{\underline{₦9\ 110.}}$$

Table 5. Financial performance of young operators

S/No.	Operators	Total Revenue	Investment (Total cost)	Net Income	Net return/investment ratio
1.	Inputs suppliers	37 070	11 570	₦20 520	1.77
2.	Producers	₦98 070	10 300	₦73 200	7.86
3.	Processors	₦56 675	16 600	₦40 075	2.41
4.	Marketers				
	Wholesalers	₦50 620	13 670	₦26 950	2.70
	Retailers	₦30 500	14 500	₦24 000	1.66

Note: ₦ is the symbol for Nigerian national currency (US\$1 = ₦360).

Youth =  $20\ 500 + 78\ 600 + 40\ 075 + 36\ 950 + 24\ 000 - 200\ 125$

$$\frac{100\ 125}{24\ 000} = \underline{\underline{₦4\ 172}}$$

Tables 4 and 5 present the financial performance of aged and young actors in shrimp industry. The finding reveals that the aged actors realized mean income of ₦9,110 per month while the youths

in shrimp business earned a mean income of ₦40,025 per month. This finding suggests that the few youths involved in the shrimp business earned larger income than the aged actors.

### 3.5. Comparison of financial performance the aged and young operators

Table 5. Hypothesis Testing

Variables	Mean N	SD	Df	t	Remark
Young actors	40 025	1125 70	35	94.69	Significant
Aged actors	9 910	85			

Table 5 shows the result of hypothesis testing of the significant difference in income of youths and aged operators in the value chain. The t-statistics (94.69) implies that the mean income earned by youths is significantly ( $p < 0.01$ ) higher than the income of aged work force in the shrimp value chain. This result could be attributed to the fact that the youths have more physical strength and are educated.

## 4. Discussion and Conclusion

The main thrust of this research was to investigate how strategic young people inclusion in shrimp value chain could affect the overall financial performance of the shrimp industry.

The aged operators' decision to quit shrimp harvesting in the deep sea could be due to the strenuous labour involved. As they grow older, their productivity/man hour per day and shrimp output get reduced. This is a potential threat to the development of captured-shrimp value chain in the near future. This findings is similar to Guo, *et al* (2015) who reported a similar trend in the agricultural labour population in China. The strength and resourcefulness of youths could have enable them achieve more productivity and financial reward in shrimp value chain. The dual effects of physical strength and education must have contributed to better financial performance. This finding agrees with Omodafe, (2018) who reported that youths possess better human capital to perform better in aquaculture related business in the study area. He concluded that youths will be more productive and contribute to the development of the aquaculture industry, if they are supported. Youth participants out-performed the aged operators in terms of financial performance. Saiyut et al. (2017) had obtained similar result that aged labourforce above 50 years tend to increase technical inefficiency while labourforce of 15 – 50 increase technical efficiency in Thai agriculture. They advocated the formulation of public sector policy to encourage young people involvement in agriculture. The youth operators contributed more to the Gross Domestic Product (GDP). Also the operators channeled more money to total amount of money in circulation. This result has implications for the overall development and growth of Nigerian economy. Youths are both important agents and beneficiaries of economic growth and development. Youths should occupy important position in the government development policy and programmes for the Nigerian shrimp sub-sector. We recommend that more young people should be given incentives such as loans, grants and input subsidy to encourage their smart inclusion in shrimp value chain.

It is important to note that the results of the study are specific to the Nigerian shrimp value chain. That notwithstanding, the results can be domesticated as a template for shrimp value chain development in locations that share demographic homogeneity with Nigeria.

### Acknowledgements

We hereby acknowledge all the authors whose works were incisively consulted in the course of writing this article. We give special thanks to all the field enumerators and the data analyst.

### References

Achoja, F. O. (2013). Financial risk threshold determination in broiler enterprise in Delta State in Nigeria, *Agricultural Tropica ET Subtropica*, 46 (14), 111-117.

- Achoja, F.O. (2019). Analysis of financialability in shrimp value chain in Delta state, Nigeria, *Ege Journal of Fisheries and Aquatic Sciences*, 36(2),125-133.
- Achoja, F. O., Gbigbi, T. M., Ikpoza, E. A. & Denghan, J.E. (2020). Upgrading rural youths' capacity for driving shrimp-based agribusiness value chain in Nigeria. *Asian Journal of Agriculture and Rural Development*, 10(1), 47-55.
- Anyanwu, P.E. Ayinla, O.A. Ebonwu, B.I. Ayaobu-Cookey, I.K. Hamzat, M.B. Ihimekpen, A.F. Matanmi, M.A. Afolabi, E.S. Ajijo M.R. & Olaluwoye, B.L. (2011). Culture Possibilities of *Penaeus monodon* in Nigeria. *Journal of Fisheries and Aquatic Science*, 6, 499-505.
- Bene, C. & Heck, S. (2005). Fish and Food Security in Africa. In: Fishforall; a turning point for aquaculture and fisheries in Africa. *World Fish Centre Quarterly* 28 (2 and 3), 8 – 13.
- Borisov, P., Radev, T. & Nikolov, D. (2019). Young Farmers and New Entrants in Bulgarian Agriculture – Profiling their Challenges and Needs. *Ikonomika i upravlenienaselskotostopanstvo*, 64(2), 60-71.
- Daily Post (2018). Federal Government reveals Nigeria's current population <https://dailypost.ng/2018/04/11/fg-reveals-nigerias-current-population/> (Retrieved 13th February, 2020)
- Dery, K., Grant, D. & Wilblen, S. (2006). Replacing or enhancing work and organizational studies, *Human Resource Information Systems*, Australia: The University of Sydney Nsw.
- Dublin–Green J. & Tobor, G. (1992). Fin and shellfish of conservation interest in Nigeria. Nigerian Institute for Oceanography and Marine Research, *Technical Paper*, 79.
- Essays, UK. (2018). The World Shrimp Production. Retrieved from <https://www.ukessays.com/essays/economics/the-world-shrimp-production.php?vref=1>
- Guo, G. Wen, Q &Zhu, J. (2015). The impact of Aging Agricultural labour population on farm land output: From the perspective of farmer preferences, *Mathematical problems in Engineering*, 2015 (730628), 1-7.
- Kaplinsky, R. & Morris, M. (2001). *A Handbook for Value Chain Research*. International Development Research Centre.
- Lawal-Are A.O., & Akinjogunla V. F. (2012). *Penaeus notialis* (Pink Shrimps): Length-Weight Relationships and Condition Factor in Lagos Lagoon, South West, Nigeria *Science and Technology*, 2(3), 32-40.
- Ogbonna, J.C. (2001). Reducing the impact of tropical Shrimp trawling fisheries on the living marine resources through the adoption of environmentally friendly techniques and practices in Nigeria. <http://www.fao.org/docrep/007/y2859e/y2859e00.htm>. (Retrieved 18<sup>th</sup> January, 2012).
- Omodafe, C.O. (2018). Profitability of Government Assisted Fish Farming among youths in Delta state, Nigeria, (Unpublished Msc. Dissertation) ,Department of Agricultural Economics and Extension, Delta state University, Asaba campus Nigeria.
- Saiyut, P. Bunyasiri, I. Sirisupluxana P. & Mahathnaseth I. (2017). The impact of age structure on technical efficiency in Thai Agriculture, *Kasetsart Journal of social sciences*, 38 (3)
- Smehro, (2008). A value chain Marketing system. Retrieved from <https://smehro.files.wordpress.com/2018/11/value-chain-marketing-system>.