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

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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.

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 the 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 shrimp sub-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:

Ho1: 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:

\[ N_i = TR - TC \]

where:

\( N_i \) = 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:

\[ t = \frac{\bar{\pi}_y - \bar{\pi}_a}{\sqrt{\frac{SD_y}{ny} + \frac{SD_a}{na}}} \]

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

\( ny \) = number of young operators, \( na \) = 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/% | CumulativeFreq. | Mode                  |
|-------------------------|-------------|-----------------|-----------------------|
| Age                     |             |                 |                       |
| Youth (18-50)           | 35 (29.17)  | 29.17           |                       |
| Aged (51and above)      | 85 (70.83)  | 100.00          | Aged (51yrs and above)|
| Gender                  |             |                 |                       |
| Male                    | 21 (17.50)  | 17.50           |                       |
| Female                  | 99 (82.50)  | 100.00          |                       |
| Marital Status          |             |                 |                       |
| Unmarried               | 55 (45.83)  | 45.83           |                       |
| Married                 | 65 (54.17)  | 100.00          |                       |
| Educational level       |             |                 |                       |
| No formal Education     | 23 (19.16)  |                |                       |
| Primary                 | 29 (24.17)  |                |                       |
| Secondary               | 63 (52.50)  |                | Secondary             |
| Tertiary                | 5 (4.17)    |                |                       |
| Operating experience    |             |                 |                       |
| Below 10 years          | 16 (13.33)  |                |                       |
| 10 – 20 years           | 48 (40.00)  |                |                       |
| Above 20 years          | 56 (46.64)  |                |                       |
| Income level/week       |             |                 |                       |
| Less than 4 000 naira   | 10 (13.33)  |                |                       |
| 4 000 – 8 000 naira     | 62 (40 000) |                | 6 000                 |
| Above 10 000 naira      | 48 (46-67)  |                |                       |
| Quantity traded         |             |                 |                       |
| Basket module           | 55 (45.83)  |                |                       |
| Sack                    | 65 (54.17)  |                |                       |

(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%) Incomes Level: The result in the Table 1 indicated that majority of the operators earned 4 000-8 000 naira (4.00%) 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                  | ₦18 500    | 0.80                       |
|       | Retailers       | ₦35 700       | 16 950                  | ₦18 750    | 1.11                       |

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

\[
\text{Aged} = 15 600 + 36 200 + 18 800 + 18 750 = ₦149 550
\]

\[
\frac{149550}{5} = ₦29 910
\]

Table 5. Financial performance of young operators

| S/No. | Operators       | Total Revenue | Investment (Total cost) | Net Income | Net return/investment ratio |
|-------|----------------|---------------|-------------------------|------------|----------------------------|
| 1.    | Input 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).

\[
\text{Youth} = 20 500 + 78 600 + 40 075 + 36 950 + 24 000 – 200 125
\]

\[
\frac{200125}{5} = ₦40 025
\]

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 ₦29,910 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      | 40025  | 1125  | 70  | 94.69| Significant |
| Aged actors       | 9910   | 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 decrease technical efficiency 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.

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