WILLINGNESS TO PARTICIPATE IN CATFISH PROCESSING AMONG STUDENTS OF FEDERAL COLLEGE OF ANIMAL HEALTH AND PRODUCTION, IBADAN, OYO STATE, NIGERIA

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ABSTRACT

The paper assessed the willingness of students of the Federal College of Animal Health and Production, Ibadan to participate in catfish processing enterprise. A two-stage sampling procedure was used to select 150 respondents for this study. Quantitative data were collected on the respondent's socio-demographic characteristics, willingness to participate in catfish processing activities, perception towards their catfish processing and constraints to participate in the processing of catfish. Data were described using frequency, percentage, means and standard deviation while Chi-square and Pearson correlation analyses were employed to carry out inferential statistics. Results showed that the students had a mean age of 22±3years and about half (50.7%) were female. The respondents indicated they had skill in killing life catfish ($\bar{x}$=1.18), leaning and washing the fish ($\bar{x}$=1.15) and had positive perception toward catfish processing. The high cost of processing machines ($\bar{x}$=1.52) and difficulty in raising initial capital ($\bar{x}$=1.51) ranked highest among the constraints affecting their participation in catfish processing. There is a significant correlation between the students' age (r=0.165), their perception of catfish processing (r=0.220), practical training received on catfish processing (r=0.554), perceived skill in catfish processing (r=0.689) and their willingness to participate in catfish processing. It was concluded from the study that the majority of the respondents were willing to participate in the production of catfish processing. It was recommended based on the findings that the cost of processing equipment should be subsidized and functional credit facilities should be provided for interested students to boost their participation in catfish processing after graduation.

Keywords: ***Catfish processing, constraints, perceived skills, perception, willingness***

INTRODUCTION

Nigeria is the second largest producer of aquaculture in Africa closely behind Egypt with an estimated production of 467 095 tonnes in 2020 (Food and Agricultural Organisation (FAO), 2022). Fish production is from both domestic or internal and imported sources with aquaculture as a major local source. Fish farming is a subset of agriculture that focuses on the rearing of fish under controlled or semi-controlled conditions for economic and social benefits. Fish is the cheapest form of animal protein in the human diet especially in the coastal areas of Nigeria (Olaoye and Ojebiyi, 2018). WorldFish (2018) reported that fish farming has the potential to contribute to alleviating poverty, improving nutritional and dietary needs, reducing youth unemployment and building profitable business ventures. According to Olagunju *et al.* (2022) and Malomo *et al*. (2022), the African catfish (*Clarias gariepinus*) is one of the most popular freshwater fish in Sub-Saharan Africa and the most widely cultivated fish in Nigeria because of its high tolerance for

unfavourable environmental conditions, resistance to disease, and high food conversion ratio. Its production in 2020 accounted for 70 % of total aquaculture production in Nigeria which was worth USD 753 million (FAO, 2022). FAO (2022) reported that Nigerian aquaculture production has increased from 25 718 tonnes in 2000 to 261 711 tonnes in 2020, but its growth is still at the infant stage when compared with the vast available market potential in the country. Despite this, Nigeria is still a net importer of fish (Dauda *et al.,* 2018) and with increasing importation of fish estimated at USD 188 million from 2000 to USD 811 million in 2019 (FAO, 2021). According to FAO (2020), about 1.7 MMT of fish was consumed in Nigeria when 1.2 MMT of fish was supplied from domestic sources with a net deficit of 527 849 tonnes. Similarly, Okechuckwu (2022) reported that the Federal Government of Nigeria signified that while the annual demand for fish was 3.6 MMT, the country was able to produce only 1.2 MMT through the artisanal, industrial and aquaculture.

The growing demand for catfish for home consumption and restaurants due to high-quality dietary protein and low-fat content has led to intensification and private investment in aquaculture production to optimize yield and profit in Nigeria (Ayoola, 2010; Wake and Geleto, 2019). A study of household fish consumption in Ibadan reported that 91 per cent of the population regularly consumed up to 3kg of catfish monthly (Eyabi-Eyabi, 2012). Despite the economic and nutritional benefits of catfish, there is statistical evidence that about 30 to 50% per cent of catfish produced in the country are lost to spoilage due to activities of micro-organisms which make it deteriorate very fast after harvesting if not immediately processed or added value to it (Adeyeye, 2016). This signifies the need to add value to fresh catfish to elongate its life span so that it can be sold on future dates. According to Kimani (2023), value addition is an important strategy to reduce food loss and waste, improve product quality, and make products more convenient to use. This can be accomplished by improved hygiene, better postharvest handling and processing which is one of the methods of value addition, as well as product packaging and branding. Availability of catfish to consumers at the right time and right place also requires an effective marketing system, which is highly important to sustain its production. According to George *et al.* (2014), lack of proper fish postharvest handling, processing techniques and poor storage facilities are some of the causes of low fish supply in Nigeria. To meet the growing demand for fish and fish products, it is imperative to actively pursue the growth of the fisheries subsector through use of modern processing techniques. This can only be achieved through active engagement of the youth in both production and processing of catfish.

High Level Panel of Experts on Food Security and Nutrition (HLPE) (2021) asserted that youth are agents of change and are supposed to be on the front lines of sustainable food systems; the rate of unemployment among the youth is three times higher than that of adults all over the world particularly in Nigeria. This is because they either do not believe or lack the knowledge of the fact that agricultural production can be a profitable venture. Youths are faced with many hurdles in the process of earning a livelihood from agriculture and agribusiness. Ikenwa *et al.* (2017) and Success *et al.* (2017) opined that transforming the Nigerian agricultural sector into an agribusiness model and creating sustainability in agribusiness development through increased youth involvement is the way forward but this is a great challenge for Nigeria because a majority of the youth are

not interested in agriculture. After all, it has not been seen to be delivering the types of dividends and status lifestyles that youths desire and expect (Udemezue, 2019).

According to Adeleke *et al.* (2022), catfish production and processing contribute significantly to economic growth and poverty reduction, and it offers a feasible solution to the rising rate of youth unemployment in Nigeria. Therefore, the participation of youth in catfish processing will enhance sustainable livelihood and reduce unemployment among youth, because most of the farmers that engaged in agricultural activities are ageing and a younger generation is needed to replace them to ensure maximum production of fish and availability of fish products to meet its ever-increasing nutritional demand and ensure food security (Adisa *et al*., 2017; Adeleke *et al*., 2022). According to the International Fund for Agricultural Development (IFAD) (2019), interventions that seek to empower youth to start their businesses are increasingly becoming part of the youth-oriented development agenda across the globe. Youth generally, be it rural or urban dwellers possess attributes and an ability to harness different entrepreneurial opportunities embedded in catfish production and processing since catfish enterprise has been seen as a lucrative venture for their survival in Nigeria (Thompson and Mafimisebi, 2014).

Previous studies by various scholars such as Bosompem *et al.* (2017), Alao *et al*. (2018), Kaki *et al*. (2019) and Anoke. *et al*. (2022) on students' intention and interest to engage in entrepreneurial activities revealed that a high percentage of undergraduate students in Nigeria were interested in entrepreneurial agribusiness activities and ready to venture into them after graduation if an enabling environment can be provided by relevant stakeholders. However, there has been relatively little empirical evidence on students' willingness to participate in catfish processing enterprise after graduation. Hence, this study aimed to fill the existing research gap by assessing students' willingness to participate in catfish processing, in Oyo State Nigeria.

Objectives of the study

The main objective of this study was to assess the willingness of students of the Federal College of Animal Health and Production, Ibadan to participate in catfish processing enterprise. The specific objectives were to:

i. describe the socio-demographic characteristics of the respondents in the study area;
ii. examine the respondents' perception towards their willingness to participate in catfish processing in the study area;
iii. examine perceived catfish processing skills possessed by the respondents;
iv. determine the willingness of respondents to participate in catfish processing activities in the study area; and
v. identify the constraints to students' willingness to participate in the processing of catfish

Hypothesis of the study

There is no significant relationship between some selected variables and willingness to participate in catfish processing in the study area

MATERIALS AND METHODS

The study was conducted in Ibadan Southwest Local Government Area, Oyo State. The population of the study comprised undergraduate students of the Federal College of Animal Health and Production, Moor Plantation, Apata, Ibadan. The college has ten Departments with only six of these departments offering Agriculture-based courses. A two-stage sampling procedure was used to select the respondents for this

study. In the first stage, six departments offering agriculture-based courses were purposively selected. These departments are Fisheries, Animal Health technology, Animal Production Technology, Pasture and Range Management, Agribusiness Management, Agricultural Extension and Management Technology. At the final stage, 37 per cent of the undergraduate students (Higher National Diploma I and Higher National Diploma II) were proportionately selected across the six selected departments, which translated into 41 students from Agricultural Extension and Management Technology, 48 from Animal Health Technology, 43 from Animal Production Technology and 13 from fishery while 3 and 2 students were selected from Agribusiness Management and Pasture and Range Management respectively, to give a total of one hundred and fifty respondents.

Measurement of Variables

The willingness of respondents to participate in activities involved in the processing of catfish was the dependent variable for the study. A list of twelve (12) activities that relate to participation in catfish processing were listed and measured on a 3-point Likert-type scale. The willingness of the respondents to participate in the listed activities was indicated and scored as follows: very willing (2 points), willing (1 point) and not willing (0 points). The mean scores for each activity as indicated by the respondents were calculated as the willingness to participate score (WTP). This score was used to categorise the respondents into two using mean. Respondents with WTP scores of less than the mean were regarded as low and respondents with WTP score above the mean was regarded as high. Skill possessed by respondents in catfish processing was measured by asking the respondents to indicate skill possessed in catfish processing during their practical training on ten listed activities from good skill (2 points), low skill (1 point) and no skill (0 point). The mean scores for each activity as indicated by the respondents were generated as perceived skill scores. The willingness to participate index score with a mean score of 10.0 was adopted to categorise respondents into high (mean score and above) and low (below mean score). Perception of respondents towards their willingness to participate in catfish processing was measured with eight (8) perceptional statements and scored on a five-point Likert scale as Strongly agreed=5, Agreed=4, Un/decided=3, Disagreed=2 and Strongly disagreed=1. The mean score for each perceptional statement was calculated and used to rank the perception of the respondents towards participation in catfish processing. A list of ten constraints to students' willingness to participate in the processing of catfish was measured and scored on a three-point scale from Very severe = 2, severe = 1 and not severe = 0**.** The mean score for each constraint was calculated and used to rank the constraints militating against catfish processing in the study area.

RESULTS AND DISCUSSION

Socio-demographic Characteristics

Table 1 shows that half (50.7%) of the respondents were female. This implies that although an almost equal number of males and females were willing to participate in catfish processing, females showed more interest in catfish processing. This study supports the findings of Igbolekwu *et al.* (2020) who reported that female undergraduates were more willing to participate in agricultural enterprises than their male counterparts but contrary to the findings of Alao *et al.* (2018) reported that more male undergraduates students were willing to participate in agribusiness. The mean age of the respondents was 22 ±3years, suggesting respondents were in their active ages and still had strength for

participating in catfish processing activities. This is similar to the findings of Alao *et al*. (2018) and Adesoji *et al*. (2019) who reported that the mean age of undergraduate students in Nigeria was 23±3 years. The results in Table 1 also show that the majority (95.3 %) of the respondents were single. This implies that respondents' willingness to participate in catfish processing could be very high while they are still single when there are little or no family responsibilities and can concentrate on the enterprise without any distractions. Many of the students indicated that they were interested in fishery (43.3%) and poultry (28%). This result shows that students were more interested in fisheries which might be because students perceived it as a more profitable enterprise. Besides, above half (56%) of the respondents had been involved in catfish processing before. This is an indication that many of the respondents had previous experience and knowledge in catfish processing before, which means they will be more attracted to take up catfish processing after graduation. This is similar to Bosompem *et al.* (2017) that youths' previous involvement in agribusiness activities motivates them to venture into it. Above half (56.7%) of the respondents had received practicals on catfish processing before. This is an indication that respondents have been trained in one way or the other which might motivate their willingness to participate in catfish processing. Finally, the result indicates that the majority of the students mostly sourced information on catfish agribusiness from the internet and social media (78%), and lectures from the colleges (73.3%). This implies that the internet and social media coupled with lectures from the college were the main sources of information on catfish processing for the students. Since students generally were versatile in the use of the internet and social media which can serve as quick access to information and training on catfish processing, moreover lectures and practicals they are receiving from time to time will also enhance their knowledge of catfish processing.

Perceived Catfish Processing Skill Possessed by the Respondents

Respondents were asked to indicate the perceived skill they had and exhibited in catfish processing during their past training as shown in Table 2. The result shows that respondents had skill in the killing of life catfish ($\bar{x}$=1.18), cleaning and washing of the fish ($\bar{x}$=1.15), sourcing for catfish in farmers ($\bar{x}$=1.12), and brining (salting) of the fish ($\bar{x}$ =1.10) among others. This implies that the students perceived that they had the necessary skills needed to start and operate their own catfish processing business though at a low level. If these skills are well developed and utilized, the students would be able to operate as good agripreneurs in catfish processing enterprise after graduation without any problem.

The willingness of the respondents to participate in catfish processing activities

The result in Table 3 shows that the majority of the respondents were willing to participate in all catfish processing activities. Cleaning and washing of unprocessed catfish ($\bar{x}$= 1.28) took the lead, closely followed by marketing and distribution of processed fish ($\bar{x}$= 1.22), buying of catfish from producers ($\bar{x}$= 1.18), packaging and branding of processed catfish into polythene ($\bar{x}$= 1.15) in that order. This finding implies that respondents possessed a strong interest and willingness to engage in catfish processing as their means of livelihood after graduation. Using the participation index of 10.0, Figure 1 reveals that the majority (68%) were highly willing to participate in catfish processing enterprise. This is similar to the previous findings of

Table 1: Socio-demographic characteristics of the respondents

Variables	Frequency	Percentage	Mean ± S.D
Sex			
Male	74	49.3	
Female	76	50.7	
Age			
16-20	59	45.7	
21-24	68	45.5	22±3years
25-28	23	15.3	
Marital status			
Married	7	4.7	
Single	143	95.5	
Involvement in catfish processing before			
No	66	44.0	
Yes	84	56.0	
Livestock interest			
Sheep & Goat	10	6.7	
Poultry	42	28.0	
Fishery	65	43.3	
Cattle	4	2.7	
Piggery	5	3.3	
Snailery and Apiary	24	16.0	
Practical and training received in catfish processing			
No	65	43.3	
Yes	85	56.7	
Sources of information			
Radio	101	67.3	
Television	101	67.3	
Lectures from the college	110	73.3	
Extension service	54	36	
Print media	64	42,7	
Workshop/seminar	56	37.3	
Friends/family	64	42.7	
Professional organization	42	28	
Internet and social media	117	78	
Research institute	46	30.7	

Source: Field survey, 2022

Alao *et al.* (2018) and Ebewo and Rugimbana (2017) that a large percentage of agricultural students were willing to take up agribusiness as a means of livelihood after graduation. The fact that the majority of the students exhibited high willingness and interest to participate in catfish processing as an agribusiness activity after graduation suggests that there is a lot of potential for a catfish processing enterprise if the

government can provide a conducive and enabling environment to sustain it. This is because there are a lot of unemployed graduates who are joining the labour market each year from different higher institutions in Nigeria without any hope of being absorbed into both private and public sectors. The only way out for them is to engage in agribusiness enterprises like catfish processing as a means of livelihood and survival.

Table 2: Perceived Skill possessed by the Respondents in catfish processing

Processing activities	Mean	Rank
Killing of catfish	1.18	1st
Cleaning and washing catfish	1.15	2nd
Sourcing for catfish from producers	1.12	3rd
Brining or salting of fish	1.10	4th
De-gutting	0.97	5th
Marketing of processed fish	0.95	6th
Packaging/branding the fish in a polythene	0.92	7th
Oven drying	1.91	8th
Sourcing for packaging materials	1.89	9th
Smoking of fishing	1.87	10th

Source: Field survey, 2022

Table 3: Willingness of the respondents to participate in catfish processing activities

Catfish processing activities	Mean	Rank
Cleaning and washing of unprocessed catfish	1.28	1st
Marketing of processed fish	1.22	2nd
Buying of catfish in wholesale	1.17	3rd
Packaging and branding	1.15	4th
Sourcing for packaging material	1.13	5th
Salting/brining	1.10	6th
Killing of the fish	1.08	7th
Oven drying	1.05	8th
Smoking	1.04	9th
De-gutting	1.02	10th

Source: Field survey, 2022

Constraints Militating Against Student's Participation in Catfish Processing

Table 5 shows the constraints militating against catfish processing in the study area. The results show that the high cost of processing machines ($\bar{x}$= 1.52) and inadequate capital ($\bar{x}$= 1.51) were the most severe constraints that would militate against students' willingness to participate in catfish enterprise after graduation. This was followed by unfavourable government policy ($\bar{x}$= 1.45), inadequate skill and technical knowhow ($\bar{x}$=1.36) among others. The result suggests high cost of processing equipment and inadequate capital are the major constraints that would limit their willingness to participate in catfish processing enterprise after graduation. The findings imply that relevant stakeholders such as the government should give priority to minimizing these problems to sustain the interest of students in catfish processing enterprise after graduation. This is similar to Issa and Kagbu (2016), Alao *et al*. (2018), Mulema *et al*. (2021) and Anoke *et al*. (2022) who reported that inadequate capital,

high cost of machines and unfavourable government policies constitute some of the major barriers to youths participating in agribusiness.

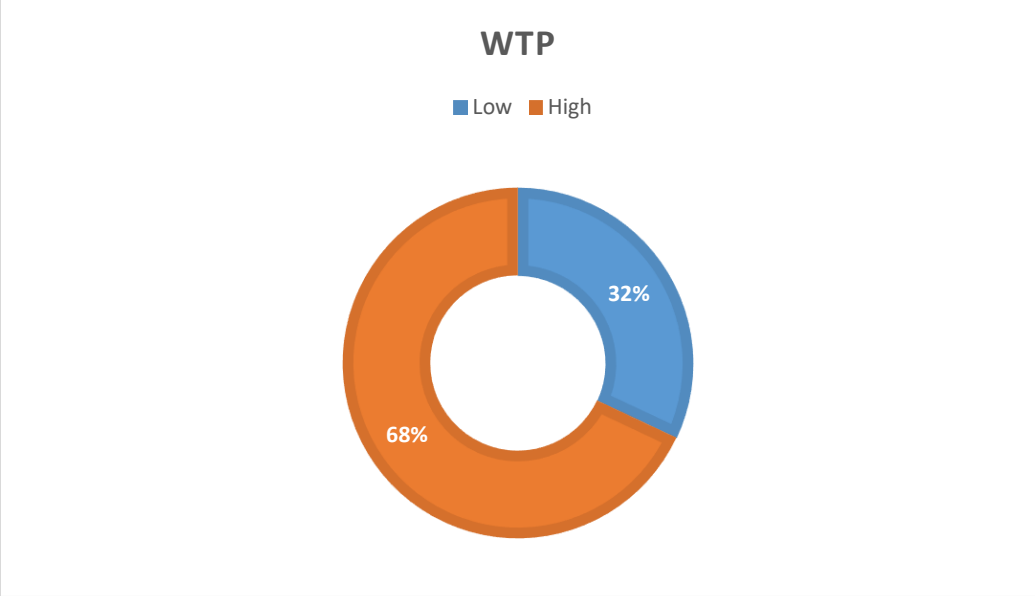

Figure 1: Level of WTP in catfish processing enterprises

Table 4: Perception of the respondents toward catfish processing

Perception statements	Mean
The enterprise will offer me opportunities to be self-reliant	4.29
Catfish processing will be a lucrative venture	4.16
Processed fish will move faster because of its nutritive value	4.14
Processing of the fish enhanced its shelf life hence, the risk of spoilage totally reduced	3.87
Processing is too strenuous	3.06
Catfish processing is not enough to rely on as a livelihood enterprise	1.17
Catfish is not a befitting job for a graduate	1.09
Catfish has an unpleasant odor that I cannot withstand	1.02

Source: Field survey, 2022

Table 5: Constraints militating the student's participation in catfish processing

Constraints	Mean	Rank
High cost of processing machine	1.52	1st
Inadequate capital	1.51	2nd
Unfavourable government policies	1.45	3rd
Inadequate skill and technical know-how	1.36	4th
Inadequate infrastructure	1.29	5th
Epileptic power supply	1.26	6th
Unfavourable market /low profit	1.23	7th
Poor recognition of agripreneur	1.16	8th
Too strenuous	1.10	9th
Lack of readiness to make a career decision	1.02	10th

Source: Field survey, 2022

Hypothesis Testing

Results in Table 6 show a Chi-square analysis of some selected variables measured at the nominal level. The result reveals that livestock interest (χ^2=29.230, p = 0.000), and involvement in catfish processing before (χ^2=30.859, p=0.000) had a significant association with respondents' willingness to participate in catfish processing. This implies that students' livestock interest and involvement in catfish processing before influenced their willingness to participate in catfish processing.

The result in Table 7 shows a correlation analysis of some selected variables measured at interval and ratio scales, and the result shows that the age of the students (r=0.165), perception of catfish processing (r=0.220), practical training received on catfish processing (r=0.554) and perceived catfish processing skill (r=0.689) had a positive and significant relationship with students' willingness to participate in catfish processing. This means the higher the age of the students, the higher the willingness of the students to participate in catfish processing and vice versa. This implies that older students will be more willing to venture into catfish processing after graduation rather than wasting their time looking for a white-collar job that is not there than younger students. This supports the findings of Kaki *et al*. (2019). Also, students with a positive disposition towards catfish processing will be more likely to participate in catfish processing than those with a negative disposition. This is consistent with the report of Kaki *et al*. (2019) that the perception of agricultural students towards agribusiness influenced their willingness to participate in agribusiness; because positive perception sharpens and stimulates people's interest in agribusiness. Besides, the higher the number of practical training received by the students on catfish processing, the more their willingness to venture into catfish processing. This is an indication that practical training received by students on catfish processing will motivate them to venture into the enterprise. Finally, the higher the skill possessed by the students in catfish processing, the higher their willingness to undertake it as an enterprise in future.

Table 6: Chi-square analysis between the selected variables and WTP in catfish processing

Variables	χ^2	D.f	p-value
Sex	0.433	1	0.511
Religion	1.639	1	0.201
Marital status	0.099	1	0.753
Sponsor	4.030	3	0.258
Livestock interest	29.230	5	0.000
Involvement in catfish processing before	30.859	1	0.000

Source: Field survey, 2022

Table 7: Correlation between selected variables and WTP in Catfish processing

Variables	r^2	p-value
Age	0.165*	0.43
Industrial Training	0.123	0.134
Perception about catfish processing	0.220**	0.007
Practical training received on catfish processing	0.554**	0.000
Perceived skill in Catfish processing	0.689**	0.000

Source: Field survey, 2022

CONCLUSIONS AND RECOMMENDATIONS

The majority of the students possessed the requisite skills needed to start up a catfish processing enterprise based on their previous experience and practical training received and they had a high level of willingness to venture into catfish processing after graduation. Apart from these, they also had a positive disposition about catfish processing as a profitable enterprise to undertake after graduation instead of looking for white-collar jobs. However, despite the positive perception of the students about catfish processing as a profitable agribusiness and the high willingness to venture into it after graduation, the high cost of processing equipment and inadequate capital pose serious challenges to their willingness to participate in catfish processing after graduation. Furthermore, age, perception of catfish processing, practical training received and perceived skills were significantly related to their willingness to participate in catfish processing agribusiness. It is therefore recommended that the government should formulate favourable policies that will stimulate and sustain youth interest in catfish processing and other agribusiness through the creation of an enabling environment, provision of financial support such as functional credit facilities and micro credits facilities for prospective agripreneurs especially graduate youths and capacity building in form training should be organized by relevant stakeholders to empower them. Finally, practical training on various aspects of agripreneurship should be introduced into the curriculum of all higher institutions in Nigeria to prepare students with the necessary skills needed to take up agribusiness as a means of livelihood thereby reducing the rate of graduate unemployment in Nigeria.

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