The Journal of Agricultural Sciences - Sri Lanka
Vol. 19, No 1, January 2024. Pp 14-30
https://doi.org/10.4038/jas.v19i1.9763

Rural Households' Youth Participation in Rice Agribusiness Value Chain Activities: Implications for Employment Opportunities

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Received:09th May 2023 / Accepted: 16th September 2023

ABSTRACT

Purpose: *Rice is a food security and multi-value chain crop in Nigeria having the potential to provide employment and income for the teeming population of unemployed youth. The study identified the various rice value chain activities youth participated in, investigated their levels of participation, how they perceived participation in rice agribusiness value chain activities and the constraints affecting their participation.*

Research Method: *A four-stage sampling procedure was used to sample youth from 144 rural households engaging in rice agribusiness activities. Well-validated interview schedule was used to collect quantitative data which was summarised using appropriate descriptive statistics with the hypotheses also adequately tested.*

Findings: *Results show that more males were participating in rice agribusiness value chain activities with a mean age of 29 years. Respondents participated in multiple rice agribusiness activities and majority (77.8%) had favourable perception towards participation. Constraints limiting youth participation include poor land tenure system and bird invasion; majority (89.6%) participated in rice agribusiness value chain activities at high level. Income (r = 0.250) and length of experience (r = 0.211) were significantly related to youth participation. Difference existed in youth participation in rice value chain activities across the three agro-ecological zones.*

Originality/value: *The study revealed that youth actively participated in almost all the activities along rice agribusiness value chain.*

Keywords: *Agribusiness, household, participation, rice, rural youth, value chain*

INTRODUCTION

Youth are the fundamental assets of any nation (Kimaro *et al*., 2015). According to the National Bureau of Statistics in Collaboration with Federal Ministry of Youth Development (NBS-FMYD) (2012), Nigeria has about 64 million youth within the ages of 15 and 35 years. They form a very significant proportion of rural communities in Nigeria (Odebode, 2000) and are the most physically and mentally active component of the rural households. Unlike the older population, young people are a prime mover for achieving sustainable development in agriculture due to their great potential and willingness to embrace innovations and modern technologies that are crucial to transforming the sector (Afande *et al*., 2015). In addition to being mentally active and innovative, participation of Nigerian youth in the agricultural sector is vital to acquiring a growing level of knowledge, skills, self-assurance and opportunities to work together as a team to develop the sector (Akinbile *et al*., 2008). Despite the desirable attributes of youth, it is rather

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unfortunate that Nigeria's farming population is dominated by the aged people which makes it extremely difficult for the agricultural sector to meet the food demand of the ever-increasing populace (Aphunu and Atoma, 2010).

Rice (*Oryza sativa*) is one of the multi-value chain crops contributing significantly to food security, employment and income generation in Nigeria. Rice is cultivated in almost all the states in Nigeria and across all the major ecological zones covering close to 3.7 million hectares of land (Ilu, 2015). Food and Agriculture Organisation in Nigeria (2023) reported that Nigeria's rice production rose from 3.7 million metric tons in 2017 to 4.0 million metric tons in 2018. ThriveAgric (2020) revealed that Nigeria produces the largest quantity of rice in Africa after Egypt with an average production capacity of 8 million metric tons and as of 2019, the country produced about 55% of Africa's total rice volume of 14.6M and also ranked as the 14th largest rice producer in the world.

Despite its production capacity, the country ranks the world's second largest rice importer (Aminu *et al.,* 2017). This is because rice is a staple in the diet of both the rural and urban populations across all socio-economic groups as it accounts for over 20 per cent of the total weekly food consumption of a typical Nigerian household (Federal Ministry of Agriculture and Rural Development (FMARD), (2012). Although, it was reported that over the past decade, production of rice increased annually at the rate of 3.7% (Aminu *et al.,* 2017), yet, only 75% of local demand could be met by domestic production as it was estimated that the annual rice demand in Nigeria as at 2015 was about 5.9 million metric tons, while local production was about 2.7 million metric tons (Sahel, 2015). While ThriveAgric (2020) put Nigerians' yearly rice consumption at almost 7 million tons, Klynveld Peat Marwick Goerdeler (KPMG) (2019) specifically stated that Nigeria being the 11th largest rice consumer globally, consumes 6.7 million metric tons of rice yearly out of which it only produces about 57% resulting in deficit supply of about 3 million metric tons. Implying that the local supply is far below the demand. Importation then becomes necessary so as to meet the supply deficit of rice which has assumed a steady rise in the last decades compared to other cereal crops. It was also reported that the nation expends over USD$11 billion in the importation of wheat, rice, sugar and fish every year with rice accounting for about USD$3.56 billion of the total amounts (Akinwumi, 2012). According to PricewaterhouseCoopers (PWC) Nigeria (2018), at the household level, rice accounted for 10% of household food spending, and 6.6% of total household spending.

In addition to being a food security crop, rice is an essential cash crop for smallholder farmers in Nigeria who consume only one-fifth of their production while they sell the remaining 80 percent, hence, generating more income for them than any other cash crop (KPMG, 2019). Participation of rural youth in rice agribusiness activities along its value chain is very important as this will boost food security by narrowing the gap between rice demand and supply in Nigeria, curb rice importation, improve the socio-economic status of rural households and more importantly, encourage the development of vocation-oriented agriculture among the youth (Bello *et al.,* 2011). This will assist in minimising youth unemployment and migration from rural to urban centres since interested youth can find some business niche along the value chain.

"Norton (2014) defines a value chain as a set of connected activities that add value to a product, involving the actors and their actions that enhance the product in the process of linking producers to processors and markets. Odoemena et al. (2008) reported that a commodity value chain development approach was adopted in Nigeria in 2006 for the transformation of the rice agribusiness sub-sector. The value chain in rice agribusiness comprises a long chain of intermediaries, namely the processors, transporters, and marketers, between the producers and consumers. Activities within the value chain include cultivating and harvesting rice, constructing rice mills for milling and processing, and working within wholesale distribution or further processing of rice to create other products like rice flakes, rice flour, and rice wine/liquor. Amolegbe and Adewumi (2016) also identified four stages along the rice value chain. Stage 1 involves production to harvesting,

the second stage entails moving harvested paddy from the field to the processing unit for milling. Stage 3 involves transporting the milled rice from processing locations to urban centers, while wholesale and retail activities occur at the fourth stage. Each of these stages involves a series of activities in which youth from rural households can actively participate. For instance, the production stage includes various pre-planting and planting activities such as site selection, land preparation, seed planting, and field management, among others. The participation of youth in these activities can have a positive and significant effect on productivity. In this study, youth are considered part of the household actors participating in various activities along the rice agribusiness value chain, serving as producers, processors, transporters, and marketers.

Several programs have been implemented by successive governments to boost rice production in Nigeria. One of the most recent initiatives is the Agro-borrowers program through the Central Bank of Nigeria, which allocated ₦200 billion to develop the rice sector and provides a credit facility of ₦20 billion in loans to rice farmers (Vanguard News, 2018). The Osun State Government has also declared that the state is on the verge of becoming the hub for rice production in southwestern Nigeria, with its recent focus on "Ofada" rice cultivation in collaboration with rice farmers in the state (Guardian News, 2018).

Studies, such as those by Ityokumbul (2020), Mgbanya et al. (2019), and Omoare and Oyediran (2017), have focused on rice value chain analysis and its effects on the socio-economic characteristics of rice farmers. Others, such as Fakayode et al. (2010) and Alarima et al. (2011), have focused on rice production, consumption, and some aspects of profitability and marketing. However, there is inadequate information on the participation of youth, who are the most active members of rice farmers' households, in rice agribusiness value chain activities. Hence, this study aims to identify the various activities in which youth participate alongside other members of their households at each stage of the rice value chain, examine their perceptions towards participation in these activities, identify the constraints affecting their participation, and determine their level of participation along the value chain. The study tests two hypotheses: the first aims to determine the relationship between youths' demographic characteristics and their participation in rice agribusiness value chain activities, while the second aims to determine differences in participation across the three agro-ecological zones of the state."

MATERIALS AND METHODS

"The study was conducted in Osun State, Nigeria, which was purposefully selected based on the history of youth participation in previous agricultural transformation agendas. Osun State covers an approximate land area of 9,251 square kilometers and shares its boundaries with Kwara State to the north, Ekiti and Ondo States to the east, Ogun State to the south, and Oyo State to the west. It is located within coordinates of 7° 30' N and 4° 30' E. According to the Federal Republic of Nigeria Official Gazette (2009), the state has a total population of 3,416,959 and is divided into 30 Local Government Areas (LGAs). The state is further divided into three agro-ecological zones: Iwo, Ife/Ijesa, and Osogbo.

The population under study comprised the youth participating in activities along the rice agribusiness value chain. A four-stage sampling procedure was employed to select the sample. At each stage, purposive sampling was employed to ensure that the appropriate set of respondents was captured, given that rice agribusiness activities were location and household-specific within the study area. The first stage involved purposive selection of 2 LGAs from each of the 3 zones with a prevalence of rice agribusiness activities: Ola-oluwa and Iwo LGAs from Iwo zone, Oriade and Ife North LGAs from Ife/Ijesa, and Orolu and Osogbo LGAs from Osogbo zone. Subsequently, at the second stage, two rural communities with the highest rice agribusiness activities were purposively selected from each of the 6 previously chosen LGAs, resulting in a total of 12 communities, namely, Bode-osi and Ogbagba from Ola-oluwa LGA, Ijebu-Ijesa and

Ipetu-Ijesha from Oriade LGA, Ifon and Ilajue from Orolu LGA, Iwo and Yakoyo from Iwo LGA, Ipetumodu and Edunabon from Ife North LGA, and Osogbo and Oba from Olorunda LGA. In the third stage, 12 households actively involved in rice agribusiness were purposively selected from each of the 12 communities, totaling 144 households. Finally, one youth participating in rice agribusiness was purposively selected per household, resulting in a total of 144 respondents.

Primary data were collected using a well-structured and validated interview schedule. The validation process involved seeking input from specialists in the field, which was used to modify the instrument before data collection. Data collected were processed using SPSS version 22, and appropriate statistics were employed for analysis. Pearson's Product Moment Correlation analysis and Analysis of Variance were used for inferential purposes.

The dependent variable for this study was youth participation in activities along the rice agribusiness value chain. This was measured by calculating the total score of each respondent based on four indicators: Form of participation, number of hours of participation per day, number of days of participation per week, and frequency of participation in rice value chain activities. Form of participation was scored as Apprentice (1), employee (2), self-employed (3), employer (4). Each hour spent per day was scored as 1 point, with a maximum of 12 and a minimum of 1 hour per day. Participation of 6 hours and below was categorized as part-time, while more than 6 hours was considered full-time. Each day spent on participation per week was scored as 1 point, with a maximum of 6 and a minimum of 1 day per week. The frequency of participation in 36 activities was scored on a Likert-like scale, indicating whether participants engaged often (3 points), occasionally (2 points), rarely (1 point), or not at all (0 points). The maximum possible score from the four indicators was 130, while the minimum was 4. An equal interval was used to categorize overall participation into low, moderate, and high levels. Respondents with participation scores below 42 were categorized as having a low level of participation, those with scores above 84 were categorized as having a high level, while those with scores in between were considered to have a moderate level of participation.

Respondents' perception towards participation in rice agribusiness activities was assessed based on their reactions to 12 perception statements, scored on a five-point Likert scale: Strongly Agreed (5 points), Agreed (4 points), Undecided (3 points), Disagreed (2 points), and Strongly Disagreed (1 point) for positive statements, and vice versa for negative statements. A cut-off point of 3 (5+4+3+2+1 ÷ 5 = 3) was applied to categorize perceptions as favorable or unfavorable. Mean values ≥ 3 indicated favorable perceptions, while mean values < 3 indicated unfavorable perceptions for positive statements, and vice versa for the negative statements.

Constraints affecting youth participation in the agribusiness rice value chain were scored on a Likert-like scale: very severe (3 points), severe (2 points), less severe (1 point), or not at all (0 points). A cut-off point of 1.5 was used to categorize the identified constraints into major and minor. Constraints with mean values ≥ 1.5 were classified as major, while those with mean values < 1.5 were considered minor."

RESULTS AND DISCUSSION

Demographic Characteristics

"Table 01 shows that the majority of respondents (72.9%) were not older than 32 years of age, with a mean age of 29 ± 4.42 years. This suggests that respondents were in their active and energetic years, qualities that could enhance their participation in rice agribusiness value chain activities. This aligns with the African Youth Charter (2006), which categorizes individuals between 15 and 35 years of age as youth. The majority of respondents (78.5%) were male, while 21.5% were female, indicating male dominance among youth participating in rice agribusiness value chain activities. This is consistent with findings from Mgbanya et al. (2019) and Omoare

and Oyediran (2017), which reported that males constitute the majority of participants in rice value chain activities.

About half of the respondents (50.7%) indicated that their households consisted of 4 to 6 people, with a mean value of 3 people. This suggests that rural households are becoming moderate in size, possibly due to improved knowledge and perception of rural households towards family planning. This finding supports Akpomuvie's (2010) assertion that the modal rural household size in Nigeria falls within the range of 4 to 6 members. The mean years of schooling were 9.35 ± 4.82 years, indicating that youth participating in rice agribusiness value chain activities could read and write, giving them better access to information that could enhance their participation. This aligns with the understanding that education enhances people's perception, interpretation, and adoption of innovations more effectively than their illiterate counterparts (Mignouna et al., 2011; Lavison, 2013).

The majority (61.8%) of respondents indicated that their households earned between N150,001 and N400,000 annually, with a mean annual income of N209,409.72 ± N107,162.21, translating to N17,407.72 per month. However, this income is just one of their sources, as respondents mentioned that their households engaged in other occupations, with rice enterprise contributing significantly to their livelihoods.

Table 01 also reveals that respondents had a mean length of experience in rice agribusiness activities of 9.15 ± 3.80 years, indicating that they had been participating in various rice value chain activities for a considerable number of years. This extended engagement suggests that youth had acquired significant knowledge and technical expertise in the enterprise. A vast majority (97.2%) of respondents had traveled out of their communities for various reasons, implying that many of the youth had a high degree of cosmopolitanism, which could enhance their external orientation and exposure to improved practices in rice agribusiness value chain activities.

Furthermore, the data showed that the majority (90.3%) of respondents' households acquired land through leasehold, possibly due to the dominance of non-indigenes in rice agribusiness in the study area. More than three-quarters (81.9%) indicated that personal savings were their primary source of initial capital. This suggests that most households did not rely on formal sources of finance to start their agribusiness ventures. This reliance on personal savings might limit the ability of resource-poor rural households to afford the machinery and tools needed along the rice value chain because informal sources of credit are generally smaller in scale compared to formal sources like microfinance banks.

Results in Table 01 further demonstrate that respondents sourced information on rice agribusiness from various channels, with peers/friends (84%) being the most prominent, followed by radio (54.8%), television (54.2%), and extension agents (52.1%), among others. This finding may reflect a decreasing number of extension agents in the study area, as they are traditionally considered the most reliable source of agricultural information. However, alternative sources like friends, radio, and television are becoming increasingly relevant. This aligns with Bello et al.'s (2014) findings, which indicated that a significant proportion of sampled youth had limited contact with extension agents. It is worth noting that this finding differs from that of Idrisa et al. (2012), who reported that radio was less important for disseminating information to farmers."

Identification of Rice Agribusiness Value Chain Activities the Youth Participated in and their Participation Levels

Results in Table 02 show youth participation in various activities at varying degrees across the value chain.

Table 01: Respondents' demographic characteristics

Variable	Freq.	%	Mean	Standard Deviation
Age of respondents				
≤ 20	7	4.9		
21.00 - 26.00	40	27.8		
27.00 - 32.00	58	40.3	28.91	4.42
≥ 33.00	39	27.1		
Gender				
Male	113	78.5		
Female	31`	21.5		
Household size				
≤ 3.00	70	48.6		
4.00 - 6.00	73	50.7	3.03	1.70
≥ 7.00	1	.7		
Years of formal Education				
No education	21	14.6		
≤ 6.00	28	19.4		
7.00 - 12.00	74	51.4	9.35	4.82
13.00 ≥	21	14.6		
Income from rice value chain activities				
≤ 150000.00	50	34.7		
150001.00 - 400000.00	89	61.8		
400001.00 - 650000.00	3	2.1	209,409.72	₦107,162.21
650001.00 >	2	1.4		
Years of experience				
≤ 5.00	37	25.7		
6.00 – 10.00	58	40.3	9.15	3.80
11.00 – 15.00	47	32.6		
16.00 ≥	2	1.4		
Cosmo-politeness				
Not at all	4	2.8		
Neighbouring LGAs	13	9.0		
Other State within Nigeria	124	86.1		
Outside Nigeria	3	2.1		
Acquisition of land				
By inheritance	6	4.2		
By purchase	7	4.9		
By lease	130	90.3		
By gift	1	0.7		
Sources of initial capital				
Personal savings	118	81.9		
Relatives	25	17.4		
Micro-finance bank	1	0.7		
Sources of information				
Peer/Friend	121	84		
Radio	79	54.8		
Television	78	54.2		
Extension agent	75	52.1		
Research institution	65	45.1		
Magazine/Newspaper	47	32.6		
Internet	37	25.7		
Mosque/Church	7	4.8		

Field survey, 2019

Table 02: Types of rice agribusiness value chain activities youth participated in

Variable	F	%
*Production activities		
Pre-planting activities		
Site selection	131	91.0
Verification of seed viability	131	91.0
Sourcing for inputs	127	88.0
Purchase of inputs	122	85.0
Sourcing for labour	115	80.0
Nursery activities	114	79.0
Drafting calendar of operation	105	73.0
Land preparation	96	67.0
Compost making from rice residues	58	40.0
*Planting activities		
Direct seeding	131	91.0
Transplanting of seedlings	127	88.0
Manual weeding	114	79.0
Chemical weed control	96	67.0
Water management activities	91	63.0
Pest management activities	58	40.0
Manual harvesting	58	40.0
Thinning and supply	12	8.3
*Transportation activities		
Transportation of paddy rice to farm gate	144	100
Transportation of paddy rice to processing centre	144	100
Transportation of milled rice to rural markets	144	100
Transportation of milled rice to urban markets	144	100
*Processing activities		
Weighing of rice	134	93.1
Bagging of rice	134	93.1
Drying	132	91.7
Paddy cleaning	132	91.7
Parboiling	122	85.0
Milling of paddy	114	79.0
De-stoning	105	73.0
Paddy separation	96	67.0
Grading	91	63.0
Storage	43	29.9
*Marketing activities		
Selling of paddy and milled rice at farm gate	144	100
Selling of paddy and milled rice to retailers	143	99.3
Selling of paddy and milled rice to wholesalers	143	99.3

** Multiple response ; Field survey, 2019*

Production activities: The majority of the respondents participated in pre-planting activities such as site selection and seed viability verification (91.0%), sourcing for inputs (88%), purchase of inputs (85%), sourcing for labor (80%), nursery activities (79%), and drafting a calendar of operations (73%), among others. A majority also engaged in planting activities, including direct seeding (91%), transplanting of seedlings (88%), manual weeding (79%), chemical weed control (67%), and water management activities (63%), among others. This implies the possibility of youth showing interest in rice farming as a means of livelihood.

Transportation activities: All (100%) of the youth participated in every transportation activity, including the transportation of paddy rice to the farm gate, transportation to processing centers for milling, and transportation of milled rice to rural and urban markets. This finding suggests that youth can find job opportunities by providing transportation services for other actors along the rice agribusiness value chain if they are financially assisted to purchase their personal transport facilities like motorbikes or tricycles.

Processing activities: The majority participated in processing activities, such as weighing and bagging of rice (93.1%), drying and paddy cleaning (91.7%), parboiling (85%), milling (79%), and de-stoning (73%), among others. This shows that a significant proportion of unemployed youth in rural areas can profitably engage in rice processing agribusiness.

Marketing activities: All (100%) participated in selling paddy and selling milled rice at the farm gate, while the majority (99.3%) participated in selling rice to retailers and wholesalers. The result indicates that youth are keenly interested in rice marketing and could potentially become a reliable source of employment.

In summary, the findings suggest that youth actively participated in key activities at every stage along the rice agribusiness value chain, which could spark entrepreneurial interest in them. Participation has provided them with the opportunity to learn the skills and acquire the knowledge needed to operate independently. These findings align with those of Onuk et al. (2010), which showed that youth and children actively participate in various farm operations, including land preparation, planting, weed control, harvest, storage, and processing. Additionally, Bello et al. (2014) reiterated that youth in their area of study actively participated in rice production activities, such as land clearing, soil tillage, planting, weeding, harvesting, and marketing.

Youth Participation in Rice Agribusiness Value Chain Activities

"This section encompasses respondents' mode of participation in rice agribusiness value chain activities, the number of hours spent per day, the number of days per week, and their frequency of participation in various activities. Table 03 reveals that respondents participated in rice agribusiness value chain activities in various forms: as apprentices (6.3%), employees (6.3%), self-employed (67.4%), and as employers of labor (20.1%). This implies that the majority of the youth were self-employed in rice value chain activities. The table also shows the number of hours respondents spent per day on these activities, categorized into 6 hours and below (43.1%) and above 6 hours (56.9%). The former was considered part-time, while the latter was classified as full-time. The implication is that the majority of the youth participated in rice value chain activities on a full-time basis. Similarly, the number of days of participation per week was categorized into 3 days and below (0.7%) and above 3 days (99.3%), with the former considered part-time and the latter full-time. This further emphasizes that the majority of the youth were engaged in these activities on a full-time basis.

Table 04 displays respondents' frequency of participation in each of the rice value chain activities. They often participated in all pre-planting activities such as land preparation (mean = 2.73), site selection (mean = 2.71), verification of seed viability (mean = 2.64), and sourcing for inputs (mean = 2.63), among others. Likewise, they often participated in most of the planting activities, such as direct seeding (mean

= 2.71), manual harvesting (mean = 2.64), and pest management activities (mean = 2.60). The table also shows that the youth often participated in all transportation activities, including the transportation of paddy rice to the farm gate (mean = 2.95), transportation of paddy rice to the processing center (mean = 2.90), transportation of milled rice to rural markets (mean = 2.88), and transportation of milled rice to urban markets (mean = 2.73). Additionally, they often participated in processing activities like bagging of rice (mean = 2.92), weighing of rice (mean = 2.88), drying of paddy (mean = 2.73), paddy cleaning (mean = 2.72), and milling (mean = 2.65), among others. Furthermore, the youth often participated in all marketing activities, including selling of paddy and milled rice at the farm gate (mean = 3.00), selling of paddy and milled rice to retailers (mean = 2.98), and selling of paddy and milled rice to wholesalers (mean = 2.95). These results imply that youth in the study area often participated alongside their household members in almost all the key activities along the rice value chain. This finding is consistent with Mgbanya et al. (2019), which reported that the majority of youth involved in rice value chain activities in Ebonyi State highly participated in activities that spanned different stages along the value chain, such as site selection, land clearing, seed planting, transplanting, transportation of the rice, manual threshing, manual winnowing, manual bagging, and marketing of rice to buyers."

Overall Participation

Table 05 displays the overall participation of respondents along the rice agribusiness value chain activities, with the majority (89.6%) participating at a high level, a few (9.0%) at a low level, and very few (1.4%) participating moderately. This implies that the majority of the youth actively participated in these livelihood activities of their respective households, indicating there are entrepreneurial potentials for rural youth along the rice agribusiness value chain. If well explored by relevant authorities, this potential can minimize rural-urban migration in search of white-collar jobs that are not readily available. Moreover, during the interviews, it was emphasized that the underlying reasons for youth participation in this enterprise value chain were to generate employment and income for themselves, provide food for their household members, and sustain their family's rice business heritage.

Table 03: Respondents' mode, number of hours and days of participation in the value chain activities

Variables	F	%
Forms of participation		
Apprentice	9	6.3
Employee	9	6.3
self-employed	97	67.4
Employer	29	20.1
Hours per day participation		
6 hours and below (part time)	63	43.1
more than 6 hours (full time)	82	56.9
Days per week participation		
3 days and below (part time)	1	0.7
more than 3 days (full time)	143	99.3

Source: Field survey, 2019

Table 04: Frequency of youth participation in rice agribusiness value chain activities

Activities	Ranked mean score	Standard Deviation
*Production activities		
Pre-planting activities		
Land preparation	2.73	0.86
Site selection	2.71	0.87
Verification of seed viability	2.64	0.90
Sourcing for inputs	2.63	0.92
Purchase of inputs	2.59	0.96
Drafting calendar of operation	2.59	0.90
Sourcing for labour	2.56	0.97
Making compost from rice residues	2.51	0.93
Nursery activities	2.43	0.98
*Planting activities		
Direct seeding	2.71	0.87
Manual harvesting	2.64	0.93
Pest management activities	2.60	0.89
Chemical weed control	2.57	0.91
Transplanting of seedlings	2.49	0.91
Manual weeding	1.38	0.92
Water management activities	1.27	0.82
Thinning and supplying	0.01	0.83
*Transportation activities		
Transportation of paddy rice to farm gate	2.95	0.30
Transporting paddy rice to processing centre	2.90	0.45
Transportation of milled rice to rural markets	2.88	0.52
Transportation of milled rice to urban markets	2. 73	0.86
*Processing activities		
Bagging of rice	2.92	0.50
Weighing of rice	2.88	0.52
Drying	2.73	0.86
Paddy cleaning	2.72	0.86
Milling	2.65	0.87
De-stoning	2.03	1.13
Paddy separation	1.95	0.71
Parboiling	1.88	0.62
Grading	1.84	0.64
Storage	1.10	1.04
*Marketing activities		
Selling paddy and milled rice at the farm gate	3.00	0.00
Selling of paddy and milled rice to retailers	2.98	0.14
Selling of paddy and milled rice to wholesalers	2.95	0.16

*Scale of measurement (often participated=3; occasionally= 2; rarely =1; not at all =0); * Multiple response*
Source: Survey, 2019

Table 05: Overall level of participation in rice value chain activities.

	Participation mean score	F	%
Low	Below 42.00	13	9.0
Moderate	Between 42.00– 84.00	2	1.4
High	Above 84.00	129	89.6

Source: Field survey, 2019

Perception of Youth towards Participation in Rice Agribusiness

Table 06 illustrates respondents' favorable perception of positive statements related to participating in rice agribusiness: it can help reduce the rate of youth unemployment (mean = 4.81); it can minimize rural poverty (mean = 4.80); rice agribusiness is lucrative (mean = 4.79); youth participation in rice agribusiness will increase productivity (mean = 4.78); youth participation in rice agribusiness will solve the problem of food shortage (mean = 4.47); and rice value chain strengthens the link between agricultural stakeholders (mean = 4.25). However, their perception was unfavorable towards negative statements: rice agribusiness is not for the youth (mean = 4.83); participation in rice agribusiness cannot increase the standard of living of actors (mean = 4.82); participation in rice agribusiness does not benefit the youth (mean = 4.72); and there is no steady employment opportunity in rice agribusiness (mean = 4.72). They also favorably perceived the negative statements that rice agribusiness is capital-intensive (mean = 1.74) and that rice agribusiness is dominant in agrarian communities (mean = 1.56). These findings indicate the youth's agreement with positive perception statements and their disagreement with most of the negative statements. The implication is that they view their participation in rice agribusiness value chain activities in support of their households as a welcome development.

Table 06: Perception of youth on participation in rice agribusiness

Statements	Ranked Mean Score
Rice agribusiness is not meant for the youth	4.83
Participating in rice agribusiness cannot increase actors' standard of living	4.82
Participation in rice agribusiness can help reduce youth unemployment	4.81
Participation in rice agribusiness can reduce rural poverty	4.80
Rice agribusiness is lucrative	4.79
Youth participation in rice agribusiness will increase productivity	4.78
Participating in rice agribusiness does not benefit the youth	4.74
There is no steady employment in rice agribusiness	4.72
Youth participation in rice agribusiness can solve the problem of food shortage	4.47
Rice value chain activities strengthens the link between agricultural stakeholders	4.25
Participation in rice agribusiness is capital intensive	1.74
Rice agribusiness is dominant in agrarian communities	1.56
Overall perception	
Favourable	77.8%
Unfavourable	22.2%

Cut-off point = 3 ; Source: Survey, 2019

Results in Table 06 further show the overall perception of the respondents towards participation in rice agribusiness. The majority (77.8%) of the youth had a favorable perception towards participation in rice agribusiness activities, while 22.8 percent indicated an unfavorable perception. The finding suggests the potential for youth-oriented entrepreneurial development opportunities along the rice agribusiness value chain if the government can provide an enabling environment for them. This finding disagrees with the opinion of Ovwigho and Ifie (2009) that youth have unfavorable perceptions of agriculture.

Constraints associated with participation in rice agribusiness value chain activities

Results in Table 07 reveal that major constraints limiting youth participation in rice agribusiness value chain activities include a poor land tenure system (mean = 2.92), bird invasion (mean = 2.83), high labor costs (mean = 2.79), high costs of processing machines (mean = 2.51), high costs of inputs (mean = 2.50), unfavorable government policies (mean = 2.42), lack of credit facilities (mean = 2.23), lack of appropriate technology (mean = 2.17), and a poor attitude of the government towards the rice value chain (mean = 2.17), among others. This is similar to the findings of Omoare and Oyediran (2017), which reported high labor costs, bird disturbances, high input costs, inadequate finance, poor rural infrastructure, and land tenure problems as the main constraints to farmers' involvement in rice agribusiness value chain activities. The implication of these findings is that these identified constraints should be well-addressed by relevant government agencies to encourage the optimum participation of youth in rice agribusiness.

Hypotheses Testing

"Table 08 shows that at $P \leq 0.01$, a significant association exists between the level of youth participation in rice value chain activities and sex ($\chi 2 = 25.958$), sources of information ($\chi 2 = 32.848$), acquisition of land ($\chi 2 = 21.565$), and sources of initial capital ($\chi 2 = 10.859$). This implies that these variables are associated with participation.

Table 07: Identified constraints associated with youth participation in rice value chain activities

Constraints	Ranked Mean
Poor land tenure system	2.92
Bird invasion	2.83
High cost of labour	2.79
High cost of processing equipment	2.51
High cost of inputs	2.50
Unfavourable government policies	2.42
Lack of credit facilities	2.23
Lack of appropriate technology	2.17
Poor attitude of government towards rice value chain	2.17
High cost of transportation	2.13
Poor rural infrastructure	2.01
Inadequacy of market	1.85
Lack of storage facilities	1.84
Economic instability	1.74
Lack of irrigation facilities	1.58
High rate of corruption	1.56
Low level of external orientation	1.40
Low level of education	1.35
Bad foreign trade	1.19

Bench mark: 1.5 ; Source: Survey, 2019

Table 08: Result of Chi-square analysis

Variables	χ^2	Degree of freedom	*p*-value
Sex	25.958**	1	0.000
Marital status	0.254	1	0.615
Ethnicity	2.721	1	0.099
Level of education	7.152	7	0.413
Cosmo-politeness	3.821	7	0.800
Sources of information	32.848**	14	0.003
Acquisition of land	21.565**	3	0.000
Sources of initial capital	10.859**	2	0.004

***significant at P ≤ 0.01*

Source: Survey, 2019

Table 09: Result of Pearson's Product Moment Correlation

Variables	Correlation coefficient (r)	*p*-value
Age	0.820	0.331
Household size	0.106	0.204
Length of residence (years)	0.077	0.360
Years of formal schooling	-0.012	0.886
Length of experience (years)	0.211*	0.011
Income from rice value chain	0.250**	0.003

*** 0.01 Level Of Significance, * 0.05 Level of Significance*
Source: Survey, 2019

Further analysis in Table 09 reveals that at P≤0.01, income (r = 0.250), and at P≤0.05, length of experience (r = 0.211), were positively and significantly related to youth participation in rice value chain activities. This suggests that the higher the income and years of experience, the higher the youth participation. This finding aligns with Nnadi and Akwiwu (2008) and Sunday et al. (2015), who also established a relationship between income and youth participation in agricultural enterprises.

Difference in youth participation in rice value chain activities

Results in Table 10 indicate a significant difference in youth participation in rice value chain activities across the three agro-ecological zones of the state (F = 24.834) at P ≤ 0.01. A post hoc analysis of multiple comparisons of youth participation in the rice value chain across the agricultural zones in the study was conducted using the Tukey test to identify the zones where the difference occurs. The results in Table 11 reveal a statistical difference in youth participation between Ife/Ijesa and Iwo agricultural zones, as well as between Ife/Ijesa and Osogbo agricultural zones, while there is no significant difference in youth participation between Iwo and Osogbo zones. This suggests that the Ife/Ijesa zone accounted for the observed difference in youth participation in rice value chain activities, indicating that they participated more actively than their counterparts in the other two zones. The reason for the significant difference observed in the Ife/Ijesa zone could be attributed to the fact that traditionally, rice business is a generational business among the Ijesa people, being passed down from older to younger generations.

Table 10: Analysis of variance of youth participation in rice value chain activities across the agricultural zones

Variables	Sum of squares	Degree of freedom	Mean square	F	Significance
Between groups	14.290	1	14.290	24.834	0.000
Within groups	81.710	142	0.575		
Total	96.000	143			

Source: Field survey, 2019

Table 11: Result of Turkey test for post hoc analysis of multiple comparisons

Individual zone	Other zone	Mean Difference	Std. Error	Significance
Iwo	Osogbo	0.43750	3.54026	.992
	Ife/ijesa	21.64583*	3.54026	.000
Osogbo	Iwo	-0.43750	3.54026	.992
	Ife/Ijesa	21.20833*	3.54026	.000
Ife/Ijesa	Iwo	- post hoc analysis of multiple comparisons 21.64583*	3.54026	.000
	Osogbo	21.20833*	3.54026	.000

Significant at 0.01

Source: Survey, 2019

CONCLUSIONS

The study revealed that sex and sources of start-up capital have a significant association with youth participation in rice agribusiness value chain activities. Participation was male-dominated, and personal savings were the major source of respondents' start-up capital. Income and length of experience also have a positive and significant relationship with participation, as the enterprise significantly contributed to the livelihood of rural households. The youth actively participated across key activities along the rice agribusiness value chain, and they demonstrated a favorable perception towards their participation. Poor land tenure systems, bird invasions, high labor costs, and high costs of processing machines were identified as significant constraints affecting the sampled youth's participation. The government and other relevant youth development agencies can leverage the high participation of youth in rice agribusiness activities, as revealed in this study, to enhance youth entrepreneurial interest in specific agribusiness opportunities along this commodity value chain. However, providing an enabling environment and formulating favorable policies that focus on youth capacity building and development are essential for sustaining youth interest in this rural enterprise."

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