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Assessment of Women Participation in Rice Production value Chain in Cross River State, Nigeria

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Abstract
With an emphasis on identifying the barriers women encounter in rice production activities, this study evaluates their involvement in the value chain of rice production in Cross River State, Nigeria. The three agricultural zones in the state that are actively involved in the rice value chain were the sites of the investigation. 284 women in all were chosen from different blocks and cells within the zones using a multi-stage sampling technique. The study aimed to ascertain the level of women's involvement in rice production and highlight the factors hindering their participation. Findings revealed that most women sourced rice seeds from local markets (56.1%) and previous harvests (39.2%), with limited access to improved seed varieties or extension services. Additionally, women primarily engaged in manual rice production activities, with very few using mechanized methods. The study further identified key constraints affecting women's participation, including the high cost of fuel (ranked 1st), poor access to credit (2nd), illiteracy (3rd), inadequate training (4th), and limited access to extension services (5th). These constraints were found to significantly impede their ability to engage in large-scale rice production. The lack of mechanization and insufficient technical support were particularly limiting factors. The findings demonstrated how important fuel and loan availability are to raising women's participation and productivity in the rice value chain. The study comes to the conclusion that boosting women's participation in rice production requires tackling these obstacles with focused interventions, such as more inexpensive fuel, better finance availability, improved automation, and increased extension services. For women in Cross River State, these adjustments may result in increased economic empowerment, increased productivity, and better socioeconomic results. According to the report, policy changes are necessary to increase women's access to landed resources and guarantee their long-term involvement in agricultural value chains.

Keywords: Women Participation, Rice Value Chain, Rice Production Constraint, Agriculture, Cross River State

Introduction

West African women participate in significant way at each stage in rice production programme; from production to value addition, distribution to food utilization. Women have key role to promote resilience and flexibility to uncertainty and shocks including the consequences of climate change (Quilter, 2022; Aboh & Effiong, 2019a). According to a Food and Agriculture Organization (FAO, 2018) study, women produce over half of the world's food, with that percentage rising to 60–80% in Nigeria and other sub-Saharan African nations where household food consumption is high. According to the report, up to 90% of the labor employed in rice cultivation in southwest Nigeria is performed by women. These results emphasized how crucial women are to the rice value chain. Although women produced half of the world's food, they are still only considered domestic producers or farm laborers rather than independent farmers and economic agents (USAID, 2023). In northeastern Nigeria, another study on women's involvement in agricultural practice planning and implementation (Abdulmumini et al., 2022; Aboh & Effiong, 2019b) found that women's involvement in agricultural practice planning was low ($\bar{x}$=2.27), while their involvement in agricultural practice implementation was high ($\bar{x}$=3.74). The important role that women play in agriculture was also noted by other studies (Buehren et al., 2019). According to Okwu and Umoru (2018), women participate in every facet of farming operations required for food production.As reported in a paper by (Mohammad et al., 2022), which examined the causal relationship between high-yielding rice variety, rice productivity, farm income, and household nutrition, women are responsible for choosing the variety of rice seed. Another independent study on the role of women in the rice value chain Northern Agro-ecological zone of Cross

River State (Alawa et al., 2015) involved 273 rural women and the results showed that women contributed significantly to the production of rice by tending to livestock and participating in farm activities like planting, weeding, and harvesting rice, among other tasks. (Etim, Effiong, Okoi, & Ntui, 2022; Etim & Effiong, 2022; Ijioma, et al., 2014; Nkang & Effiong, 2015; Ntui et al., 2022).

In addition, women help prepare farmland and manage it by applying fertilizer and pesticides. Despite these many activities, Nigeria's land use system often restricts women's access to farmland (Effiong & Aboh, 2018; Effiong & Aboh, 2019; Effiong & Aboh, 2024). In addition to insecurity, land rights also hinder Nigerian women's efforts in the rice value chain (Udegbunam, 2021). In addition, many Nigerian communities continue to use the traditional and family inheritance system of land ownership, which favors male offspring. A 2012 gender policy study by the Federal Ministry of Agriculture and Rural Development (Udegbunam, 2021), found that in rural Nigeria, just 8.5 per cent of the women own land compared to 38.1 per cent men. In the relatively poor rural areas, 10.1 per cent of women have access to land versus 46.1 per cent men. In metropolitan areas, 49.5 percent of men possess land, whereas just 4.5 percent of women have access to it. Compared to 28% of their male counterparts, only 5.9% of women in the urban poor population own land. In addition, women supply household income and oversee various farm-related tasks. The scarecrow approach is one of the farm management strategies evaluated in this study. A number of studies have been conducted on women's participation in the rice value chain in Nigeria, but the availability of labor for women in this sector is frequently insufficient for intense scarecrow involvement. Women's inclusion in broad sectors is a fundamental prerequisite for gender equality and genuine democracy. Women must be taken into consideration in policy issues because it affects capital assets that can positively motivate their participation in the agriculture value chain. Incorporating women into policy issues also ensures better accountability to women and facilitates their direct engagement in public decision-making (Hossain & Fischer, 1995; Effiong, 2013; Effiong, 2024a; Effiong, 2024b).

For example, a study on the role of women in the rice value chain in Nigeria's Cross River State was conducted by Ben (2015). Like other Nigerian states, Cross River State has faced numerous difficulties in assessing women's involvement in the rice value chain program and its impact on rice output and income (Effiong & Asikong, 2013; Effiong, Etuk, & Iyamah, 2023; Effiong, Ijioma, & Effiong, 2016; Effiong, Aboh, & Aya, 2021). Additionally, a study on the livelihood contributions of women in the rice value chain in the Northern agro-ecological zone of Cross River State, Nigeria, was carried out by Akano et al. in 2023. The study's conclusions showed that women's contributions to agriculture were not fully acknowledged.Gender Dimension in Agricultural Food Value Chain Development in Nigeria: The Women Perspective was the subject of another study by Ejike et al. (2018). The study's aggregate data also revealed that a significant portion of women (43 percent of the global labor force and 60 to 80 percent in developing nations) contributed to all farm and non-farm tasks (Effiong, 2012; Effiong, & Etim, 2024; Effiong and Iheme, 2024; Effiong et al., 2023).The study was carried out to fill the gap in the literature by making the findings available to relevant stakeholders. The specific objectives of the study were to ascertain the participation of women in rice production and identify the constraints to women participation in rice production value chain. While a number of studies have been conducted on women's participation in the gender dimension and the rice value chain in some parts of Cross River State, as well as other states in Nigeria and the world at large, none of the studies included an assessment of women's participation in the rice value chain in this study area in Cross River State.

Material and methods

This research was carried out in the three agricultural zones of Cross River State, located in the South-South region of Nigeria. Cross River State, which spans 20,156 square kilometers, is situated within the Niger Delta and lies along the Atlantic coastline. The state is bordered by Benue State to the north, Akwa Ibom State to the southwest, Ebonyi and Abia States to the west, and Cameroon to the east. Cross River is known as "the People's Paradise" and is located in the tropical rainforest belt, with an average temperature range of 15°C to 30°C. According to the National Bureau of Statistics (2023), the estimated population of Cross River State was over 3.8 million as of 2016. The study area includes the three agricultural zones where rice value chain activities are carried out, focusing specifically on women involved in these activities. The population for the study comprised women participating in the rice value chain program in Cross River State. A multi-stage sampling procedure was employed to ensure a representative sample. In the first stage, all three agricultural zones of the state were considered for inclusion due to their involvement in rice value chain activities. The second stage involved purposively selecting one block from each agricultural zone based on the level of rice value chain activities. In the third stage, purposive sampling was used again to select three cells from each block, with the selection based on the volume of rice value chain activities in those cells. This approach ensured that the most relevant areas for the study were included. In the final stage of sampling, a list of registered women groups involved in the rice value chain activities was obtained from the Cross River Agricultural Development Programme (CRADP).

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Random sampling was then applied to select 40 percent of the women from each group in the chosen cells. This resulted in a total sample size of 284 respondents out of a population of 710 farmers used for the study. Also, from the number, 160 respondents participated in the rice production activities in the study area. The multi-stage sampling procedure allowed for a detailed and targeted representation of women in the rice value chain across the three agricultural zones in Cross River State. A set of semi-structured questionnaire was used to elicit information from the women in rice value chain programme in the study area. Participation of women in rice value chain production activities: were analyzed using inferential and descriptive statistics such as frequencies, percentages, mean and ranking, while Constraints to women participation in rice value chain production activities was analyzed using mean and ranking. A list of constraints were obtained from literature and presented to the randomly selected women in rice value chain to rate their awareness on the challenges using a five-point Likert scale as follows: Strongly Agreed (SA) = 5, Agreed (A) = 4, Uncertain (UC) = 3, Disagreed (D) = 2, and Strongly Disagree (SD) = 1.

Table 1
Sampling procedure and Sample size

Zones	Selected Blocks	Selected Cells	No. of selected rural women group	No. of members in the group	40 percent Sample size
Calabar	Biase	Abini	3	65	26
		Apket 1	3	60	24
		Adim	3	75	30
Ikom	Obubra	Obubra Urban	3	90	36
		Obubra	3	80	32
		Ababene	3	75	30
Ogoja	Yala	Ugaga	3	80	32
		Ijegu	3	80	32
		Okpoma	3	105	42
Total	3	9	27	710	284

Source: Field Survey, 2023

Results

Table 2
Participation of women in rice value chain (production)

Variables	Frequency	Percentage
Choice of sources of rice seed*		
Previous harvest	100	39.2
ADP	0	0
Research institutes	4	1.6
Markets	143	56.1
Others	8	3.1
Choice of seed		
Yes	160	100.0
No	0	0.0
Land preparation*		

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Choice of land	160	31.9
Manual clearing and tillage	158	31.4
Use of tractor	2	0.4
Use of chemical	127	25.2
Bush burning	56	11.1
Farm weeding		
Yes	160	100.0
No	0	0.0
Pesticide application		
Yes	72	45.0
No	88	55.0
Farming cycles per year		
One	120	75.0
Two	40	25.0
Fertilizer application		
Yes	131	81.9
No	29	18.1
Scarecrow		
Yes	7	4.4
No	153	95.6
Harvesting		
Yes	160	100.0
No	0	0.0

*= Multiple response
Source: Field survey data, 2025

Table 3
Constraints to women participation in rice value chain (production)

Variables	A (5)	U (4)	UC (3)	D (2)	SD (1)	Mean	Ranking
High cost of fuel	233	43	0	5	3	4.754	1st
Poor access to credit facilities	189	77	3	8	7	4.525	2nd
Illiteracy level of women producers	201	53	5	15	10	4.461	3rd
Inadequate trainings on relevant skills	188	62	12	14	8	4.437	4th
Inadequate access to extension service	189	65	2	17	11	4.420	5th
Inadequate access to improved seeds	192	54	4	29	5	4.405	6th
Poor access to land	163	97	2	16	6	4.391	7th
Poor mobility	158	87	21	16	2	4.349	8th
Poor access to improved production equipment	156	86	6	21	15	4.222	9th
Inadequate knowledge of post-harvest technology	148	86	9	34	7	4.176	10th

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Inadequate storage facilities	134	71	13	43	23	3.880	11th
Poor implementation of policies on rice value chain programme	78	92	86	19	9	3.743	12th
Inadequate support from private and public sectors	69	88	85	30	12	3.606	13th
Effect of climate change	89	74	48	52	21	3.556	14th
Frequency of flooding	58	80	46	85	15	3.285	15th
Frequency of communal clashes	47	66	70	88	13	3.162	16th

n = 284, Weighted arithmetic mean (m) = 15/5 = 3.00, (m ≥ 3.00 = Very significant constraints, m < 3.00 = Insignificant constraints). Where SA = Strongly Agreed, A = Agreed, UC = Uncertain, D = Disagree, SD = Strongly Disagree

Source: Field survey data, 2025.

Discussion

A summary of respondents socioeconomic characteristics showed that; in age distribution, majority of the women fell in the range of 30-39 years (35.9 percent) and 40-49 years (35.2 percent) with mean age of 43. It also revealed that active participation of the women began to decline from age 50 and above in the study area. Majority of the women (71.1 percent) were married. Majority of the women (76.8 percent) had no access to extension service. Majority of women had secondary education (40.8%), household size of 5 – 9 (56.7%), farming experience between 5-9 (57.0%), among others. Several authors have indicated the low level of women access to agricultural resources and extension (Effiong, Aboh, & Azu, 2024; Effiong, Asuquo, Azu, & Ajao, 2025; Effiong, Azu, Ekpenyong, & Etim, 2025). Results in table 2 showed the frequency and percentage distribution of participation of women in rice value chain (production). The results of the women in rice value chain (production) showed that the women decided on which sources to get rice seed for planting. Majority (56.1 percent) got rice seeds from the markets while 39.2 percent got rice seeds from previous harvest. None of the women indicated they got rice seed from ADP while only 1.6 percent said they got rice seed from research institutes. This position did not encourage the use of improved rice seed that can contribute favorably to increased rice output. The study also showed that the women carried out most of the rice programme activities manually as 31.4 percent were involved in manual clearing and tillage while only 0.4 percent said they used tractor for farm land preparation. This finding was supported by (Okwu & Umoru, 2018) where it was reported that women in rice programme were involved in all aspect of farming activities necessary for food production.

Results in table 3 showed the mean rating and ranking of the constraints to women participation in rice value chain production activities. The results of the constraints to women participation in rice value chain production in the study were significant as the mean values were all greater than the benchmark of 3.0. However, the most significant constraints were high cost of fuel which ranked 4.754; poor access to credit facilities ranked 4.525; illiteracy level of women producers ranked 4.461; inadequate trainings on relevant skills 4.437; followed by inadequate access to extension service which ranked 4.420 respectively amongst other constraints as shown in table 3. Without fuel for regular power supply; motorized rice production equipment cannot function for large scale rice production. Similarly, mobility for rice product transportation will also be made high thereby increasing cost of production. The significant rating of inadequate access to extension service is supported by the inadequate ratio of extension agents to farmers (rice producers) that has continued to decrease in Nigeria with the ratio ratedbetween1:5000 and 1:10000 (Davis et al., 2019). This hinders improved technological knowhow of the women in rice value chain production programme.

Conclusion

Women participate significantly in rice production value chain in the study area. Women also play significant role to build resilience and adaptability to uncertainty and shocks in he rice production value chain. Results of the women in rice value chain (production) showed among other predictor variables that the women participated in deciding the sources that they get rice seed for planting. Majority (56.1 percent) got rice seeds from the markets while (39.2 percent) got rice seeds from previous harvest. None of the women indicated they got rice seed from Agricultural Development Programme (ADP) while only (1.6 percent) said they got rice seed from research

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institutes. About (31.4 percent) of women were involved in manual clearing and tillage while only (0.4 percent) said they used tractor for farm land preparation. Source of seeds and land preparation were key activities for actors in rice value chain production. The identified constraints to women participation in rice value chain production in the study were all significant as the mean values were all greater than the benchmark of 3.0. However, the most significant constraints were high cost of fuel ranked (4.754); poor access to credit facilities ranked (4.525); illiteracy level of women producers ranked (4.461); inadequate trainings on relevant skills (4.437) and inadequate access to extension service ranked (4.420) respectively amongst other constraints. The research concludes that addressing these barriers through targeted interventions, such as affordable fuel, improved access to credit, enhanced mechanization, and expanded extension services, is essential to increasing women's involvement in rice production. These changes could lead to greater economic empowerment, improved productivity, and better socioeconomic outcomes for women in Cross River State.

Recommendations

Based on the findings, the following recommendations were put forward;

- Women association in rice value chain programme should network appropriately with Agricultural Development Programme (ADP) to be able to access improved seeds from research institute to enhance a profitable participation in rice production.
- To enable increased effects and influence of women participation in rice value chain production in Cross River state and Nigeria as a whole; women access to land should be reviewed by policy makers on land tenure system to enhance women land holding right for enhance output and income.

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