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Social and Cultural Peculiarities to Women Participation in Rice Value Chain in Enugu state, Nigeria

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ABSTRACT

This study examined the social and cultural peculiarities to women participation in rice value chain in Enugu state, Nigeria. One hundred and twenty female rice value chain actors were selected for the study using multi-stage, purposive and random sampling technique. An interview-administered questionnaire was used to collect data for the study. Data was analysed using frequency, percentage, participation index and factor analysis. Findings of the study indicated that more than half (64%) of respondents were married. The study observed that women were not involved in land preparation however, majority (74%) participated in planting. The participation index for milling (04), polishing (07), parboiling (01), and packaging (26) was low. Social factors that influence participation of women in rice value chain activities include limited access to credit/loans (0.621), literacy/level of education (0.457), physical strength (0.582), amongst others. Cultural factors that influence participation of women in rice value chain activities include land ownership (0.562), limited access to technology (0.490), mobility restrictions (0.528), amongst others. However, factors such as household chores, child care, marriage, financial constraints was high for both social and cultural factors. It is recommended that extension farm and home visits should be more frequent to keep women abreast with agricultural innovations.

Keywords: rice, value chain, women participation, social, cultural

1. INTRODUCTION

Rice (*Oryza sativa*) is a dietary essential for over half of the world, especially across Africa. Rice is a popular cereal for consumption in Nigerian homes. According to FAO (2024b), annual rice consumption in Nigeria has reached approximately 6.7 million metric tons. Nigeria is the largest rice producer in Africa, followed by Egypt, Madagascar, Tanzania and Mali (FAO, 2024b). In 2023, rice production in Nigeria was estimated at 8.9 million tonnes reflecting its status as a core national staple (FAO, 2024a).

Value chain is a series of interconnected activities involved in production, processing, distribution and consumption. It involves actors and activities that add value to agricultural products, spanning through initial cultivation, to end-user consumption. Concurrently, the rice value chain encompasses the entire process from rice production (land preparation, planting, pest/weed control), processing (milling,

polishing, parboiling), distribution (storage, packaging, transportation), marketing (selling in retail or wholesale) to consumption (food service, home-cooking) (Sanusi *et al*., 2025; Illankoon *et. al*. 2023; Ewuzie *et al*., 2020).

Women play a transformative role in agricultural value chains, comprising about 40 percent of the global agricultural workforce and as much as 50 percent in many regions (International Finance Corporation (IFC), 2024). Women perform important tasks in the agricultural value chain as both paid and unpaid family labor (Chowdury, 2019). According to Mujawamariya (2025) and Nnaji *et al.* (2019), women's participation in value chains is evident in on-farm tasks such as planting, weeding, and harvesting.

However, social and cultural paradigms fundamentally shape the dynamics of agricultural value chains, resource distribution, benefits and access to opportunities among men and women. Malhotra Kapoor & Masset (2024) opined that although women play a critical role in agriculture, power dynamics and sociocultural norms often restrict their participation to certain aspects of the agricultural value chain.

Across the rice value chain, women perform indispensable functions from field cultivation to processing and market distribution. Despite the significant contributions of women, World Bank (2023) estimated 84% gender gap in rice value chain participation in Nigeria exacerbating the need to study the social and cultural peculiarities that affect women participation in rice value chain. Specifically, this study

1. described the socio-economic characteristics of women in the rice value chain.
2. identified the activities of women in the rice value chain.
3. evaluated the level of participation of women in rice value chain activities; and
4. determined the factors influencing participation of women in rice value chain activities.

2. MATERIALS AND METHODS

This study was conducted in Enugu State, Nigeria. Enugu State is located in the South-East part of Nigeria. Enugu State lies within latitude 6°30'N and longitude 7°30'E with a total area of 13,161 km² and a population of about 4.6million. Enugu has good soil and climatic conditions all year round, and the soil is well drained during its rainy seasons. The mean temperature in Enugu is about 87.16 °F. Economically, the state is predominantly rural and agrarian, with a substantial proportion of its working population engaged in farming (Enugu State Government, 2019).

This study is targeted at women participating in the rice value chain in Uzo-Uwani Local Government Area, Enugu state Nigeria. One hundred and twenty (120) female rice value chain actors was selected using multi-stage, purposive and random sampling technique. In the first stage. one local government (Uzo-Uwani) was purposively selected based on the preponderance of rice production. In the second stage, three communities (Ogurugu, Igga, and Ojjor) were purposively selected based on the prevalence of rice production. In the third stage, 24 female rice value chain actors were randomly selected from each community to give a total of 120 female rice value chain actors for the study.

An interview-administered questionnaire was used to collect data for the study. Frequency/percentage, participation index and factor analysis were used in analysing the data.

The socio-economic characteristics and activities of women in the rice value chain were described using frequency and percentage. To determine level of participation, participation index (PI) was used. Levels of participation was indexed as either frequently (3), occasionally (2), seldom (1) and never (0) involved. Based on recorded response frequencies, the PI was developed. Participation index for each activity was computed by using the following formula:

PI = (N1 X 3) + (N2 X 2) + (N3 X 1) + (N4 X 0)

Where

PI= participation index for women in rice value chain activities

N1= Number of women who participate frequently

N2 = Number of women who participate occasionally

N3= Number of women who seldom participate

N4=Number of women who never participate

Women's level of participation was categorised into high (132-197), moderate (66-131) and low (0-65)

Factor analysis was used to determine the social and cultural factors that influence participation using loadings of 0.4 and above.

3. RESULTS & DISCUSSION

Socio-economic characteristics of women in the rice value chain

Results in Table 1 indicate that 36% aged between 36-46years; 33% of the respondents aged between 47-57 years, 18% aged between 25-35 years, while 13% are aged 58years and above. More than half (64%) of the respondents are married, 29%, are widows and 7% are single. About 44% attained secondary education, 27% had primary education, 21% had tertiary education, while 8% had no formal education. Less than half (42%) had 4-6 persons in their household, 33% had more than 7 persons in their household while 25% had 1-3 persons in their household. About 33% had more than 16years experience in rice value chain activities, 30% had 11-15 years' experience, 28% had 6-10years experience, while 9% had 0-5years experience.

From the results, it can be observed that majority of the respondents were within the productive age bracket (mean age 45.4) married, had at least 5 persons in a household, had some level of education and were highly experienced in the rice value chain activities with at least 12 years of experience. Invariably, the women were family-oriented with household/child care responsibilities in addition to participating in rice value chain. This result agrees with Nnaji et. al (2019), who opined that majority (72%) of female rice farmers were married, about 37% had primary education and 57% of the female rice farmers had between 16 years and above of farming experience. Siaw and Norsida (2023) also observed that most (84%) women farmers were married, 54% of the respondents have 3 to 5 dependents, and about 69% of women farmers were highly experienced.

Table 1: Socio-economic characteristics of women in the rice value chain

Socio-economic characteristic	Frequency (n=120)	Percentage	Mean
Age			
25-35	22	18	
36-46	43	36	45.4
47-57	40	33	
58+	15	13	
Marital Status			
Single	08	7	
Married	77	64	
Widowed	35	29	
Educational attainment			
None	10	8	
Primary	32	27	
Secondary	53	44	
Tertiary	25	21	
Household size			
1-3	26	25	
4-6	54	42	5
7+	40	33	
Experience			
0-5	11	9	
6-10	33	28	12
11-15	36	30	
16+	40	33	

Activities of women in the rice value chain

Results in table 2 portray that none of the women (0%) participated in land preparation, 83% participated in seed selection, 74% participated in planting, 96% participated in weeding, 80% participated in retail marketing, 98% participated in food service and home cooking respectively. This implies that women did not engage directly in land preparation at all but were active in seed selection, planting and weeding phase. Land is considered a male property as such women are not encouraged to prepare the land for

agricultural production. Men oversee the use of machineries or manual labour to prepare land because it is considered as their duty. Thapa et al., (2020) concurs with the assertion that land preparation is dominated by male farmers. Nnaji et al., (2019) asserted that 88% of women were involved in planting of rice which agrees with the result of this study.

Table 2 further reveal that 27% of women participated in threshing, 55% participated in fertilizer application, 28% participated in pesticide application, 42% participated in harvesting, 96% participated in weeding while 80% participated in retail marketing. In the rural communities, women are expected to weed the farm regularly and sell the farm produce whereas men thresh and harvest. Thapa et al., (2020) asserted that weeding is mostly done by women in the farm whereas the application of fertilizer and pesticides in the field was rarely done by women. Nnaji et al., (2019) and Sapkota et al. (2020) also acknowledged that pest control and threshing was considered as an activity for men while weeding and harvesting was more of women activity. Pesticide application is considered a herculean task hence females are not allowed to spray pesticides in the farm. It is an a priori expectation that women dominate food service (98%) and home cooking (98%) because traditionally, it is a woman's duty to cook and serve food.

Table 2: Activities of women in the rice value chain

Activities	*f (%) (n=120)*
Land preparation	0 (0)
Seed selection	100 (83)
Planting	89 (74)
Fertilizer application	66 (55)
Pesticide application	33 (28)
Weeding	115 (96)
Harvesting	50 (42)
Threshing	32 (27)
Winnowing	18 (15)
Milling	06 (5)
Polishing	14 (12)
Parboiling	05 (4)
Storing	43 (36)
Packaging	21 (18)
Transportation/Distribution	17 (14)
Wholesale Marketing	60 (50)
Retail Marketing	96 (80)
Food service	118 (98)
Home cooking	118 (98)

Level of participation of women in rice value chain activities

Participation is a process by which people engage actively in defining the issues that interest them, making decisions about factors affecting their lives, planning, developing, and taking action to achieve change (McEvoy *et al.* 2019). Using participation index (PI), women's level of participation for each rice value chain activity was categorised into high (132-197), moderate (66-131) and low (0-65). Results in Table 3 showed that the participation index for land preparation (63), harvesting (36), threshing (15), winnowing (12), milling (04), polishing (07), parboiling (01), storing (46), packaging (26), and transportation/distribution (38) was low. This result connotes that women do not usually engage in those activities in the study area because milling, polishing, packaging, and threshing require a lot of physical strength that women do not possess. Rice value chain activities like fertilizer application (81), pesticide application (82), drying (78), and wholesale marketing (82) had moderate participation by women in the study area.

This result suggested that women periodically engaged in drying, wholesale marketing, pesticide/fertilizer application and wholesale marketing based on their discretion. Rice value chain activities such as seed selection (189) planting (194), weeding (197), retail marketing (197), food service (182) and home cooking (196) had high participation by women in the study area signifying that women immensely participated in these activities in concurrence with previously observed in activities of women in the rice value chain.

Table 3: Level of participation of women in rice value chain activities

Rice Value Chain activities	Frequently (3)		Occasionally (2)		Seldom (1)		Never (0)		Total		PI
	N	%	N	%	N	%	N	%	N	%	
Land preparation	0	0	25	20.8	13	10.8	82	68.3	120	100	63
Seed selection	59	49.2	2	1.7	8	6.7	51	42.5	120	100	189
Planting	61	50.8	4	3.3	3	2.5	52	43.3	120	100	194
Weeding	64	53.3	2	1.7	1	0.8	53	44.2	120	100	197
Fertilizer application	18	15	7	5.8	13	10.8	82	68.3	120	100	81
Pesticide application	17	14.2	8	6.7	15	12.5	80	66.6	120	100	82
Harvesting	6	5	6	5	6	5	102	85	120	100	36
Threshing	3	2.5	1	0.8	4	3.3	112	93.3	120	100	15
Winnowing	2	1.7	2	1.7	2	17	114	95	120	100	12
Drying	10	8.3	19	15.8	10	8.3	81	67.5	120	100	78
Milling	0	0	0	0	4	3.3	116	96.7	120	100	04
Polishing	1	0.8	1	0.8	2	1.7	116	96.7	120	100	07
Parboiling	0	0	0	0	1	0.8	119	99.2	120	100	01
Storing	5	4.2	12	10	7	5.8	96	80	120	100	46
Packaging	4	3.3	4	3.3	6	5	94	78.3	120	100	26
Transportation/Distribution	3	2.5	5	4.2	19	15.8	93	77.5	120	100	38
Wholesale marketing	8	6.7	11	9.2	36	30	65	54.2	120	100	82
Retail marketing	64	53.3	2	1.7	1	0.8	53	44.2	120	100	197
Food service	58	48.3	3	2.5	2	1.7	57	47.5	120	100	182
Home cooking	65	54.2	1	0.8	0	0	54	45	120	100	196

This observation is supported by Siaw and Norsida (2023) who stated that most women agreed that they participated in planting, crop maintenance, crop harvesting, marketing, and selling of agricultural products. Banerjee et al., (2024) acknowledged that 88% participated in cooking in Bangladesh and 93% of women participated in cooking in India. In agreement with the results in Table 3, a study by Adugna and Gessesse (2019) stated that in male-headed households, women had high participation in seed cleaning/soaking (129), planting (124), fertilizer application (122), weeding (151), and storage (135). Activities like land preparation (0), harvesting/drying (34) and transporting (20) had low participation using the interval 0-49, 50-100 and 101-157 for low, medium and high participation respectively. In female-headed households, women had high participation in seed cleaning/soaking (127), planting (87), fertilizer application (121), weeding (99), smearing/threshing (93) and storage (120). Activities like land preparation (0), transplanting (22), transporting (36) had low participation using the interval 0-41, 42-84, 85-127 for low, medium and high participation respectively. Transplanting (60) and smearing/threshing (70) had medium participation for male-headed households, while harvesting/drying (74) had medium participation for female-headed households.

Factors influencing the participation of women in rice value chain activities

Rasheed *et al.*, (2020) asserted that participation of women in rice production has been low because of social barriers and cultural constraints. Respondents were asked to indicate factors that inhibited full/maximum participation in rice value chain activities. Using factor analysis, these factors were grouped into social or cultural factors. Social factors refer to societal influences that shape individual behaviour, attitudes and interactions such as families, schools, economic conditions, social networks. Cultural factors refer to specific beliefs, customs, traditions, and values shared by a group of people that shape how individuals think, behave, and interact with each

other. Results in Table 4 point out factors influencing participation of women in rice value chain activities as either social, cultural or both using loadings of 0.4 and above.

Table 4: Factors influencing participation of women in rice value chain activities

Variables	Social factors	Cultural factors
Household chores	**0.883**	**0.913**
Child care	**0.794**	**0.751**
Land ownership	0.372	**0.562**
Limited access to credit/loans	**0.621**	0.304
Literacy/Level of Education	**0.457**	0.367
Use of processing machines	0.209	**0.738**
Lack of access to agricultural inputs	**0.681**	0.333
Limited access to information	**0.730**	0.377
Limited access to technology	0.246	**0.490**
Marriage	**0.943**	**0.891**
Decision-making power	**0.775**	**0.732**
Access to agric. training/extension education	0.322	**0.414**
Physical strength	**0.582**	0.370
Mobility restrictions	0.372	**0.528**
Financial constraints	**0.866**	**0.611**

Results from Table 4 showed that household chores loaded high for social (0.883) and cultural (0.913) factor, child care loaded high for social (0.794) and cultural (0.751) factor, marriage loaded high for social (0.943) and cultural (0.891) factor, decision-making power loaded high for social (0.775) and cultural (0.732) factor, financial constraints loaded high for social (0.866) and cultural (0.611) factor.

These findings resonate with Mekonnen (2022) who stated that women lack empowerment, access to key factors of production, decisions on finance and managing their time at home. Takele et al., (2024) observed that access to and use of agricultural inputs, land, improved technologies, market/credit access, human/physical capital, and marketing of agricultural outputs were the factors that contributed to widening the gap between males and females in agricultural production. Banerjee et al., (2024) also observed that female respondents spend more time in food preparation, maintenance and care tasks than in agricultural tasks. Limited or no access to farmland in addition to household responsibilities of cleaning, cooking, and caring for children, elders, and the home limits women participation in value chain (IFC, 2024).

Social factors that influence participation of women in rice value chain activities include limited access to credit/loans (0.621), literacy/level of education (0.457), lack of access to agricultural inputs (0.681), limited access to information (0.730) and physical strength (0.582). In agreement to this finding, Banerjee et al., (2024) observed that women gain access to land/agricultural inputs upon marriage but do not necessarily control it. The participation of women is hindered by systemic inequalities in education, training, agricultural input acquisition and financial services (IFC, 2024).

Cultural factors that influence participation of women in rice value chain activities include land ownership (0.562), use of processing machines (0.738), limited access to technology (0.490), access to agricultural training/extension education (0.414) and mobility restrictions (0.528). These findings concur with Takele et al., (2024) who opined that women with children, spend less time on farming operations due to domestic chores, child care, and other household duties. This time-constraint affects women's attendance to extension training which in turn affects inability to adopt innovative technology in farming. Mairiga and Bello (2019) asserted that cultural barrier and financial barrier was a constraint which needs to be tackled if women participation in agricultural value chain is to be improved. With regards to mobility restrictions, Banerjee et al., (2024) stated that only 2.69% of women can travel out of their places of residence. Often times, children and spouse deter women from travelling/commuting to far places.

4. CONCLUSION AND RECOMMENDATIONS

Generally, women participation in the rice value chain was influenced by social and cultural differentials for instance, females are not allowed to spray pesticides in the farm because it is considered a herculean task and. However, seed selection planting, weeding, retail marketing, food service and home cooking had high participation by women in the study area because it is considered a woman's duty. This study recommends that extension farm and home visits should be more frequent to keep women abreast with agricultural innovations. Also, time for meetings should be considered so that women can attend. Women should not be restricted to certain activities to foster a conducive environment for their participation in agricultural value chains. Most importantly, the unique capabilities of women in the rice value chain can be harnessed while contributing to a panoramic agricultural system in Nigeria.

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Author Contributions

Authors contributed equally in the study.

Informed consent

Written and oral informed consent was obtained from all individual participants included in the study.

Conflicts of interests

The author declare that they have no conflicts of interest, competing financial interests or personal relationships that could have influenced the work reported in this paper.

Ethical approval & declaration

The study was done in conformity with ethical guidelines. Participation was entirely voluntary, and all respondents provided informed consent. The participants' anonymity and confidentiality were ensured, and the data obtained were utilized purely for the study. The ethical guidelines for Human Subjects are followed in the study.

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Data and materials availability

All data associated with this study will be available based on the reasonable request to corresponding author.

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