

## Socio-Economic Determinants of Women Participation in Rice Production Activities in Umuahia Agricultural Zone of Abia State, Nigeria

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### Abstract

The study analyzed the socio-economic determinants of women participation in rice production activities in Umuahia Agricultural Zone of Abia State, Nigeria. The specific objectives of the study were to: describe the socio-economic characteristics of the respondents; ascertain the level of participation of women in rice production activities in Umuahia Agricultural Zone and examine constraints faced by women rice farmers in the study area. A multi-stage sampling procedure was used in selecting a sample size of eighty-eight (88) women rice farmers for the study. Data were obtained with the help of structured questionnaire, and analyzed using descriptive and inferential statistics such as frequency, percentages, means and Ordinary least square (OLS) regression analysis. The study revealed that majority (34.1%) of the women farmers were between the ages of 31 and 40 years. The result also showed that the women farmers had a mean household size of 6 persons while 48.9% had secondary education. The result also revealed that the respondents had mean farm size and farming experience of 1.9 hectares and 14 years respectively. The result also showed high level of women participation in weeding and planting with mean scores of ( $\bar{x} = 3.10$ ) and ( $\bar{x} = 2.92$ ) respectively. High cost of fertilizer/herbicides ( $\bar{x} = 3.43$ ), inadequate credit facilities ( $\bar{x} = 3.40$ ) and inadequate fund to start-of ( $\bar{x} = 3.33$ ) were the major constraints faced by women participating in rice production activities in the study area. The OLS regression result revealed that marital status (2.837\*\*\*), household size (2.914\*\*\*), level of education (3.088\*\*\*) and access to inputs (3.114\*\*\*) were major determinants of women participation in rice production activities at 1%, and 5% levels of probability. The study concluded that access to credit, level of education, farm size and access to inputs were the major determinants of women participation in rice production activities in Umuahia Agricultural Zone of Abia State, Nigeria. Therefore, it recommended that the government assists in making favourable policies that would increase women access to farm inputs and credit facilities in order to boost their participation in rice production activities in the study area.

**Key words:** Socio-Economic, Determinants, Women, Participation, Rice, Production

**Introduction:** Agriculture is the vertical backbone of most developing countries, with a major part of the population earning its livelihood from various agricultural activities (Dwomoh, Agyabeng, Tuffour, Tetteh, Godi and Aryeetey, 2023). For instance, the Nigerian economy is still predominantly agrarian and

women are key players in the agricultural sector, most notably within rural communities (Joshua and Omahas, 2023). Although Nigeria has one of the lowest recorded female labour force participation rates which is way below that of their foreign counterparts, women still contribute between 40 and

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65% of all hours spent in agricultural production in Nigeria, thus providing more than two-thirds of the workforce in the agricultural sector (Beriso, Amare and Eneyew, 2023; Tijani and Tijani, 2019).

However, women still face formidable limitations in contributing their quota to the development of the agricultural sector (Awotide, Karimov and Diagne, 2016). Despite these obstacles faced by most female farmers in Africa, women have taken critical roles in agricultural production in Nigeria, ranging from crops such as rice, cassava etc., and livestock production to food processing, storage, and marketing.

Nigeria remains a principal producer of rice in West Africa producing close to half of the region's total production and equally the largest importer of rice (Okonkwo, Ukaogo, Kenechukwu, Nwanshendu and Okeagu, 2021). Rice is of high-value and occupies a significant place in the food expenditure of the majority of households in Nigeria (Oteh, Agwu, Okpokiri, Aniuga and Ani, 2018). Rice as a staple crop also aids the provision of basic food and source of income for both families and the nation at large. Its consumption is void of cultural, religious, ethnic or geographical barriers (Akinagbe, and Ayibiowu, 2020). Rice is also widely cultivated across all the agroecological zones in Nigeria, Abia State inclusive (Bello, Baiyegunhi and Danso-Abbeam, 2021).

Women account for over two-third of the farming population in Nigeria and take part in vital roles in agriculture, especially in food production, processing and marketing activities (Abdullahi, Muhammad and Bako, 2021). Women are also known to be fully involved in all operations of farming including planting, thinning, weeding, fertilizer application, harvesting, storing, marketing and processing (Chakma, Ruba, Senthil and Rahman, 2021). However, women are often impeded from actively participating in crop production activities, rice inclusive because of their limited access to production resources, household/caregiving roles, market opportunities, low educational levels and mobility restrictions unlike the men that have access to these opportunities (Adam, 2018). According to Dwomoh *et al.* (2023) and Beriso *et al.* (2023), a woman's access to productive resources will improve her decision-making within the

household, enhance her freedom of mobility and develop her views and voice. These will, in turn, improve interest in participating in agricultural activities.

The importance of women participation in rice production activities cannot be overemphasized, since rice farming has remained a major occupation among rural farmers in Abia State, Umuahia Agricultural Zone inclusive with women constituting the majority of the labour force (Effiong, Ijioma and Okolo, 2015). Women are often times responsible for sowing, fertilizer application and weeding in rice production activities. However, Onyinyechukwu (2023) noted that gender inequality in access to land and other farm inputs has been identified as one of the causes of the declining productivity in agriculture, including rice production activities in various regions in Nigeria, Abia State inclusive. Chakma *et al.* (2021) also reported that women have limited access to resources such as land, capital, input, technology, training, and marketing facilities as well as farm machinery, and transport equipment. These could have huge implications for the level of participation of women in rice production activities in the study area. Baurau and Oladeji (2017) also reported that the major determinants of women's participation in crop production activities include access to productive resources, women's share of farm income, cooperative participation, extension contact, age, educational level, farm size and level of experience. These determinants could also influence the level of women participation in rice production activities as well as their overall contributions to rice production in the study area. Therefore, considering the constraints constantly faced by women farmers and its implication for their levels of participation in rice production, there is the need to empirically analyze the socio-economic determinants of women participation in rice production activities in Umuahia Agricultural Zone of Abia State, Nigeria. Aimua, Adofu and Okwori (2023) also noted that despite the existence of agricultural interventions and policies by the Nigerian government and other private organizations in Nigeria, women's participation in agricultural activities is still very low, hence the need to periodically understudy the determinants of women's participation in agriculture

and identify factors capable of increasing women's participation in agricultural activities.

Furthermore, recent studies such as Attamah, Aguh, and Agwu (2023) ascertained the level of youths' involvement in rice production activities in Bende Local Government Area of Abia State, Nigeria while Joshua and Omahas (2023) analyzed socio-economic determinants of women participation in agriculture in Olamaboro local government area, Kogi State. Ufondu, Maziya-Dixon, Okonkwo and Okoyeuzu (2021) also examined socio-economic factors influencing women participation in agricultural production in some yam producing areas of Ebonyi State. Specifically, none of these studies analyzed the socio-economic determinants of women participation in rice production activities in Umuahia Agricultural Zone of Abia State, Nigeria, therefore the socio-economic determinants of women participation in rice production activities in Umuahia Agricultural Zone has not been extensively studied. The study therefore sought to empirically analyze the socio-economic determinants of women participation in rice production activities in Umuahia Agricultural Zone of Abia State.

**Objectives of the Study:** The broad objective of this study was to analyze socio-economic determinants of women participation in rice production activities in Umuahia Agricultural Zone of Abia State, Nigeria. The specific objectives of the study were to; describe the socio-economic characteristics of women rice farmers; ascertain the level of participation of women in rice production activities in Umuahia Agricultural Zone of Abia State and examine constraints faced by women rice farmers in the study area.

**Hypothesis:** There is no significant relationship between socio-economic characteristics of women and their participation in rice production activities in Umuahia Agricultural Zone of Abia State, Nigeria.

**Methodology:** The study was carried out in Umuahia Agricultural Zone of Abia State, Nigeria. Umuahia Agricultural Zone is one of the three Agricultural Zones in Abia State. The Agricultural Zone occupies an area of 6,320km and bounded by Imo State in the West; Akwa Ibom State in the East and Aba in the South (Njoku, Nzeakor, Ukoha and Echewodo, 2023).

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The projected population stood at 1,370,744 persons as at 2020 with an annual growth rate of 2.7 percent (NPC, 2020). The Zone has favorable agro-climatic ecologies which favour the growth and survival of most tropical food crops such as rice, yam, etc, trees as well as livestock production. Multi-stage sampling procedure was used to select the sample size for the study. For stage one, there was a purposive selection of two (2) blocks in the Zone due to the intensity of rice production in those blocks. For stage two, there was also a purposive selection of four (4) cells from each of the two (2) selected blocks. This gave a total of eight (8) cells. For the final stage, random sampling technique was used to select eleven (11) women rice farmers from each of the selected cells. This gave a grand total of eighty-eight (88) women rice farmers which constituted the sample size for the study.

### **Data collection and analysis**

Primary data were obtained with the aid of structured questionnaire, and analyzed using descriptive and inferential statistics such as percentages, means and Ordinary least square regression analysis. The socio-economic characteristics of the women rice farmers, the level of participation of women in rice production activities and constraints faced by women in rice production were analyzed using frequency, percentages and means, while the hypothesis was tested using ordinary least square regression analysis.

The level of women farmers' participation in rice production activities was realized using a 4 point rating scale, which was based on the question options of: always = 4, occasionally = 3, rarely = 2 and never = 1. The options were quantified as 1, 2, 3 and 4. The mean of 1, 2, 3 and 4 equals 2.50 i.e.  $1+2+3+4/4 = 2.50$ . For the purpose of decision making, the maximum weighted score of 4 was further divided by 3 to obtain the class interval of 1.33. Thus the class interval (1.33) was successively deducted from the maximum mean score (4) to obtain the three categories of farmers' participation levels. As a result, class ranges for the three categories of farmers' participation levels emerged as follows;  $0.00 - 1.33 =$  low participation;  $1.34 - 2.67 =$  moderate participation; and  $2.68 - 4.00 =$  high participation.

Constraints faced by women in rice production activities were realized using a 4 point rating scale of;

strongly agree = 4, agree = 3, disagree = 2 and strongly disagree = 1. In using the four point rating scale, a mid-point was obtained by adding 4, 3, 2 and 1 which gave 10 and when divided by 4 gave a mean score of 2.50. For the purpose of decision making, the maximum weighted score of 4 was further divided by 3 to obtain

The Ordinary least square (OLS) regression model was expressed implicitly as;

$$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, X_{10}, X_{11}, e_i) \dots \dots \dots (1)$$

The four functional forms of OLS in explicit form were specified as;

Linear function

$$Y = \beta + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 \dots \beta_n X_n + e_i$$

Exponential function

$$\text{Log} Y = \beta + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 \dots \beta_n X_n + e_i$$

Semi-log function

$$Y = \beta_0 + \beta_1 \ln X_1 + \beta_2 \ln X_2 + \beta_3 \ln X_3 + \beta_4 \ln X_4 + \beta_5 \ln X_5 \dots \beta_n \ln X_n + e_i$$

Double log function

$$\text{Log} Y = \beta_0 + \beta_1 \ln X_1 + \beta_2 \ln X_2 + \beta_3 \ln X_3 + \beta_4 \ln X_4 + \beta_5 \ln X_5 \dots \beta_n \ln X_n + e_i$$

Where,

Y = Participation in rice production activities (mean score)

X<sub>1</sub> = Age (number in years)

X<sub>2</sub> = Sex (male = 1; female = 0)

X<sub>3</sub> = Level of education (years of schooling)

X<sub>4</sub> = Marital status (married = 1; otherwise = 0)

X<sub>5</sub> = Farming experience (years)

the class interval of 1.33. Thus the class interval (1.33) was successively deducted from the maximum mean score (4) to obtain the three categories of constraint levels. The categorization emerged as follows; low constraint = 0.00 – 1.33; moderate constraint = 1.34 – 2.67 and high constraint = 2.68 – 4.00.

X<sub>6</sub> = Household size (number of persons living in a household)

X<sub>7</sub> = Estimated annual income (₦)

X<sub>8</sub> = Farm size (hectares)

X<sub>9</sub> = Frequency of extension contact (weekly = 6, forth nightly = 5, monthly = 4, quarterly = 3, yearly = 2 and never = 1)

X<sub>10</sub> = Access to credit (yes = 1; no = 0)

X<sub>11</sub> = Membership of cooperative society (yes = 1; no = 0)

e<sub>i</sub> = error term.

Equation 1 was estimated by trying the four functional forms of linear, exponential, double-log and semi-log in order to make choice for the lead model. The choice of the lead equation was determined by the magnitude of the coefficient of the multiple determination (R<sup>2</sup>), number of significant variables and level of significance and the sign of the significant variables as they conformed to *a priori* expectation.

**Results and Discussion**

**Objective 1: Describe the socioeconomic characteristics of the women rice farmers in Umuahia Agricultural Zone of Abia State, Nigeria**

Table 1: Describe the socioeconomic characteristics of women rice farmers in Umuahia Agricultural Zone of Abia State, Nigeria

**Table 1: Distribution of women rice farmers according to their socio economic characteristics**

Variables	Frequency	Percentage	Mean
Age (years)			
<b>21 – 30</b>	19	21.6	
<b>31 – 40</b>	30	34.1	
<b>41 – 50</b>	21	23.9	
<b>51 – 60</b>	15	17.0	
<b>61 – 70</b>	3	3.4	<b>43 years</b>
Marital status			
<b>Single</b>	15	17.0	
<b>Married</b>	55	62.5	
<b>Widow/widower</b>	7	8.0	
<b>Divorced</b>	11	12.5	
Level of education			

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<b>No formal education</b>	0	0.0	
<b>Primary education</b>	22	25.0	
<b>Secondary education</b>	43	48.9	
<b>Tertiary education</b>	23	26.1	
Household size (persons)			
<b>1 – 5</b>	23	26.1	
<b>6 – 10</b>	58	65.9	
<b>11 – 15</b>	7	8.0	<b>6 persons</b>
Farming experience (years)			
<b>1-10</b>	14	15.9	
<b>11-20</b>	47	53.4	
<b>Above 20</b>	27	30.7	<b>14 years</b>
Farm size (hectares)			
<b>1.1-2.0</b>	56	63.6	
<b>2.1-3.0</b>	16	18.2	
<b>3.1-4.0</b>	16	18.2	<b>1.8 hectares</b>
Membership of social organization			
<b>Yes</b>	66	75.0	
<b>No</b>	22	25.0	
Access to credit facilities			
<b>Yes</b>	21	23.9	
<b>No</b>	67	76.1	
Access to land			
<b>Yes</b>	29	33.0	
<b>No</b>	59	67.0	
Access to inputs			
<b>Yes</b>	32	36.4	
<b>No</b>	56	63.6	
Frequency of extension contact			
<b>Weekly</b>	30	34.1	
<b>Forth Nightly</b>	19	21.6	
<b>Monthly</b>	0	0.0	
<b>Quarterly</b>	3	3.4	
<b>Yearly</b>	0	0.0	
<b>Never</b>	36	41.0	

Source: Computed from field survey data, 2023

Note: Figures in parentheses are percentages

The result in Table 1 reveals that 34.1% of farmers were between the ages of 31 and 40 with a mean age of 43 years. The result also shows that 62.5% of the respondents were married with a mean score household size of 6 persons. This implies that rice production in Umuahia Agricultural Zone is mostly done by relatively young married women with relatively large household sizes. Rice production is highly labour intensive and large household sizes can provide labour for rice production activities. The result

corroborates the findings of Ukpai, Nwachukwu and Apu (2021) who reported that majority of sampled rural farmers were married and in their active stages of life. Otuu (2021) also states that rice business has become a viable enterprise for married individuals to engage in to enable them cater for their family needs. The result also reveals that 48.9% of the women had secondary education with mean farming experience of 14 years. This implies that the majority of the women rice farmers are quite literate and experienced in rice

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farming. Zalkuwi (2019) opined that education is significant in farm decision making processes. Chakma *et al.* (2021) also noted that high farming experience enables rural women cope with both engaging in crop production activities and household responsibilities. Table 1 further reveals that 33.0% of the women had access to land with mean farm size of 1.9 hectares. This implies that the women rice farmers in the study area are small scale rice producers who produce on a subsistent basis. This is in tandem with Utoo (2021) who reported that rice producers in Ebonyi State had relatively small farm sizes. The result further shows that 75.0% of the women

belonged to cooperative organizations, 36.4% had access to production inputs while 23.9% had access to credit facilities. Women farmers belonging to cooperative societies can enable them pool their resources together in order to boost their participation in rice production. It could also enhance their accessibility to credit facilities and serve as a medium for exchange of ideas that can improve their rice production activities (Okore, 2023). Idibia (2023) also noted that rice farmers in South-East Nigeria, Abia State inclusive still had poor access to credit which affects their rice production activities in the region.

**Objective 2: Ascertain the level of participation of women in rice production activities**

Table 2: Level of women participation in rice production activities in the study area

S/N	Level of participation	$\sum F \bar{x}$	$\bar{x}$	Remark
1	Clearing of rice farmland	144	1.64	Moderate
2	Land cultivation	129	1.47	Moderate
3	Planting	257	2.92	High
4	Weeding of rice farm	273	3.10	High
5	Application of fertilizer	241	2.74	High
6	Bird scaring	216	2.45	Moderate
7	Application of pesticides	227	2.58	Moderate
8	Harvesting	195	2.22	Moderate
9	Heaping/packaging of harvested paddy rice	191	2.17	Moderate
10	Transportation of harvest paddy	172	1.96	Moderate
<b>Grand mean</b>			<b>2.33</b>	<b>Moderate</b>

Source: Computed from field survey data, 2023

Note:  $\bar{x}$  = Mean responses; low participation = 0.00-1.33; moderate participation = 1.34-2.67; high participation = 2.68-4.00.

$\sum F \bar{x}$  indicates sum total for nominal Likert values multiplied by frequencies.

The data in Table 2 shows the distribution of women farmers according to their level of participation in rice production activities in Umuahia Agricultural Zone of Abia State. The result reveals that the women participated highly in weeding, planting and application of fertilizer with mean scores of ( $\bar{x}$  = 3.10), ( $\bar{x}$  = 2.92) and ( $\bar{x}$  = 2.74) respectively. The result also shows that women had a moderate level of participation in clearing of rice farmland ( $\bar{x}$  = 1.64) and land cultivation ( $\bar{x}$  = 1.47). This may be attributed to the strenuous nature of these farm activities which are mostly carried out by men in the study area. The

grand mean score ( $\bar{x}$  = 2.33) also shows that women participation in rice production activities in the study area was moderate. This implies that women were relatively engaged in rice production activities in the study area. The finding is in agreement with Chakma *et al.* (2021) who reported that majority (61.25%) of the sampled women farmers had a moderate level of participation in rice farming. Similarly, Asamu *et al.* (2020) reported a moderate level of women participation in agricultural production in Warri South local government area of Delta State.

**Objective 3: Examine the constraints faced by women in rice production in the study area**

Table 3: Constraints faced by women in rice production activities in the study area

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S/N	Production constraints	$\sum F \bar{x}$	$\bar{x}$	Remark
1	Pests and diseases	289	3.28	High
2	Untimely supply/distribution of farm inputs	211	2.40	Moderate
3	Drought	266	3.02	High
4	Unfavorable weather conditions	289	3.28	High
5	Lack of good planting seed variety	230	2.61	Moderate
6	Lack/inadequate credit facilities	299	3.40	High
7	Inadequate fund for start-off	293	3.33	High
8	Inadequate farm inputs	223	2.53	Moderate
9	Inadequate farmland	247	2.81	High
10	High cost of labour	275	3.12	High
11	Scarcity of labour	259	2.94	High
12	High cost of fertilizer/herbicides	297	3.37	High
13	Poor extension contact	243	2.76	High
14	Difficulties of rice harvest	266	3.02	High
15	Ineffective farm cooperatives	259	2.94	High
<b>Grand mean</b>			<b>2.99</b>	<b>High</b>

Source: Computed from field survey data, 2023

Note:  $\bar{x}$  = Mean responses; low constraint = 0.00-1.33; moderate constraint = 1.34-2.67; high constraint = 2.68-4.00  
 $\sum F \bar{x}$  indicates sum total for nominal Likert values multiplied by frequencies.

Table 3 shows that high cost of fertilizer/herbicide ( $\bar{x}$  =3.43), pest and disease attacks ( $\bar{x}$ =3.28), inadequate fund to start-of ( $\bar{x}$ =3.33), inadequate credit facilities ( $\bar{x}$ =3.40), unfavorable weather conditions ( $\bar{x}$ =3.28), high cost of labour ( $\bar{x}$ =3.13) and scarcity of labour ( $\bar{x}$ =3.03) were the major constraints faced by women in rice production in Umuahia Agricultural Zone of Abia State. A grand mean of 2.99 recorded in the study area is also a clear indication that the women were highly constrained by many factors which could limit their level of participation in rice production. High cost of fertilizer/herbicides may be attributed to the current increase in the naira to dollar exchange rate which has given rise to inflation and hike in prices of goods such as farm inputs in the market. More so, high

cost of these inputs may limit the level of use and thus affect participation in rice production in the study area. This result is in agreement with Tijani and Tijani (2019) who reported that lack of capital and credit facilities, high cost of production inputs and lack of access to lands were the major problems faced by women farmers participating in agricultural production activities in Damaturu local government area of Yobe State. Nwaekpe (2021) also revealed that inadequate funds and credit facilities negatively affect farmers in purchasing the required farm inputs. Talaka (2023) also posited that attack by insect pests is one of the major reasons for the low production of rice in Nigeria.

Table 4: Ordinary Least Square (OLS) multiple regression result of the significant relationship between socio economic characteristics of women and their participation in rice production activities in Umuahia Agricultural Zone of Abia State, Nigeria

Variable	Linear+	Exponential	Double-log	Semi-log
<b>Constant</b>	2.920 (10.989)***	1.256 (7.188)***	1.444 (5.595)***	2.312 (3.867)***
<b>Age</b>	-0.003 (-0.802)	-0.002 (-0.586)	-0.046 (-0.387)	0.024 (0.258)
<b>Marital status</b>	0.340 (2.837)***	0.026 (0.329)	0.211 (0.771)	0.133 (1.392)

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<b>Household size</b>	0.013 (2.914)***	0.002 (0.477)	0.026 (0.541)	0.954 (1.237)
<b>Level of education</b>	0.010 (3.088)***	0.416 (2.878)***	0.051 (3.213)***	0.088 (4.042)***
<b>Household size</b>	-0.002 (-0.229)	0.006 (0.557)	0.016 (0.318)	-0.542 (-1.123)
<b>Estimated annual income</b>	-1.485E-7 (-0.970)	-2.380E-7 (-2.365)**	1.472 (4.016)***	23380.180 (2.449)**
<b>Farming experience</b>	0.039 (0.457)	0.028 (2.812)***	0.771 (2.531)**	0.327 (0.767)
<b>Farm size</b>	0.040 (2.413)**	0.009 (4.130)***	0.034 (3.190)***	1.388 (2.921)***
<b>Access to inputs</b>	0.230 (3.114)***	1.213 (3.004)***	0.042 (3.117)***	-0.167 (-3.082)***
<b>Access to credit</b>	0.149 (4.083)***	0.007 (0.152)	0.019 (0.365)	-0.071 (-2.944)***
<b>Extension contact</b>	0.161 (2.485)**	0.005 (0.803)	0.052 (0.970)	1.215 (2.587)**
<b>Membership of cooperative</b>	0.038 (2.399)**	0.014 (1.978)**	-0.035 (-0.728)	0.134 (1.233)
<b>R<sup>2</sup></b>	0.694	0.577	0.589	0.494
<b>Adjusted R<sup>2</sup></b>	0.623	0.508	0.516	0.427
<b>F-statistic</b>	7.078***	5.976***	4.137***	4.399***

Source: Computed from field survey data, 2023

Note: \*\*\*, \*\*, and \* indicates statistically significant at 1%, 5% and 10% levels of significance respectively. + = Lead equation.

The result of the ordinary least square multiple regression analysis used to test the hypothesis that there is no significant relationship between the socio economic characteristics of women and their participation in rice production activities in Umuahia Agricultural Zone of Abia State, Nigeria is presented in Table 4.

The result reveals that the linear model was selected based on the magnitude of the coefficient of multiple determinations ( $R^2$ ), the signs of the regression coefficients as they conform to *a priori* expectation and the number of significant variables. The value of the coefficient of multiple determinations ( $R^2$ ) was 0.694, implying that about 69.4% of the variations in participation in rice production activities in the study area was explained by the independent variables (socio-economic characteristics of women) included in the model. The computed F-statistic (7.078\*\*\*) was also statistically significantly at 1% level of significance implying that there was significant relationship between the socio-economic

characteristics of women and their participation in rice production activities in Umuahia Agricultural Zone of Abia State, Nigeria. Specifically, the estimate of relationship reveals that marital status (2.837\*\*\*), household size (2.914\*\*\*), level of education (3.088\*\*\*), access to inputs (3.114\*\*\*) and farm size (2.413\*\*) had significant positive relationships with women participation in rice production activities at 1%, and 5% levels of probability. This implies that an increase in household size, level of education, farm size and access to inputs results in a corresponding increase in women participation in rice production activities in the study area. Education is expected to provide women farmers with the knowledge and skills required for effective engagement in rice production activities. Increased access to lands would also enhance women farmers' participation in rice production activities especially in traditional societies where socio-cultural barriers institute differences in access to production resources along gender lines (Umunakwe, Nnadi, Ozor, Aja and Ibe, 2021).

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Membership of cooperative (2.399\*\*) and extension contact (2.485\*\*) had significant positive relationships with women participation in rice production activities at 5% level of probability. This implies that an increase in extension contact and cooperative membership results in a corresponding increase in women participation in rice production activities in the study area. Women farmers belonging to cooperative societies can enable them pool their resources together in order to enhance their participation in rice production. It could also enhance their accessibility to credit facilities and serve as a medium for exchange of ideas that can improve their rice production activities (Okore, 2023). Increased extension contact assists in bringing to farmers the knowledge that will enable them farm more efficiently and increase their income and overall standard of living. Access to credit (4.083\*\*\*) also had significant positive relationship with women participation in rice production activities at 1% level of probability. This implies that an increase in access to credit results in a corresponding increase in women participation in rice production activities in Umuahia Agricultural Zone.

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