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Determinants of Enterprise Preference of Cassava-based farmers by Gender in Southeast, Nigeria

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ABSTRACT

The study aimed to assess the determinants of enterprise preference of cassava-based farmers by gender in southeast Nigeria. Multi-stage sampling technique involving purposive, random and proportionate to size sampling procedures was adopted in the selection of five hundred and twenty (520) value chain actors in the area out of which 480 questionnaire were found usable and hence used for further analysis. Primary data were collected using focus group discussion, questionnaire alongside personal observation and key informant interviews. Data collected were analyzed using descriptive statistical tools such as percentages, means, charts and frequency distribution and multinomial logistic regression technique. Result of the multinomial logistic regression analysis showed that for all the value chain actors (garri and fufu) the Likelihood ratio of the chi^2 value were significant at 1% statistical level, which implies that the slope coefficients of the parameter estimates were statistically different from zero. Also the pseudo R^2 value for all the actors in the study is an indication of good fit and the correctness of the estimated model. From the result, key determinants of the choice of enterprise in male garri value chain were marital status, educational attainment and experience in business while in female income from other sources determines the choice. Key determinants of the choice of enterprise in male fufu value chain were education attainment, experience in business and other income while in female it is other income.

Keywords: *Cassava-based farmers, Determinants, Enterprise, Gender, Preference, Southeast-Nigeria.*

INTRODUCTION

Cassava is the most preferred staple crop in Nigeria. It is the most important crop by production, and the second most important by consumption (FAO, 2014). Over 54% of the World's total cassava output is being produced by Africa and Nigeria ranks the highest with a production of about 54.8 million MT in 2014 (FAO, 2014). Cassava was introduced in Nigeria by the Portuguese traders from Brazil in the late 1600s (Maziya-Dixon et al., 2001).Cassava is a food security crop and generates employment and income (IITA, 2010). The crop is preferred by farmers due to its affordability, ease of cultivation, and high return on investment. Also the relevance of cassava is well-pronounced in the fact that it is widely grown in the country and plays essential role in the food security of the rural economy due to its ability to yield under marginal soil conditions and its resistant to drought (Ezedinma et al., 2006).

Gender according to Obasi (2004) refers to the many socially or culturally constructed characteristics, qualities, behavior and roles which different societies ascribe to females and males. Gender is often misunderstood as being about the promotion of women (Okoye,et al.2010). In Nigeria of about 140million people, men constitute about 50.4 percent and women 49.6 percent (NPC, 2006). Both sexes are responsible for producing the nation's food. Gender is not just all about women, it focuses on the relationship between men and women, their roles, access to and control over resources, division of labour and needs.

Despite the immense contributions of women in agriculture, reports show that women farmers in Nigeria, lack access to adequate productive resources and appropriate technology due to their socio-economic status (Nwachukwu, 2012).Gender consideration in Agricultural practices in general and value chain in particular suggests that roles should not be ascribed to the female alone or the male specifically since

sometimes the male seem to be projected over and above their female counter-parts. Issues of gender inequality, which do not favor the women in agricultural programme, which include differences in mechanization technology, agricultural inputs, limited access to land resources, decision-making power, education, technologies and credits, which may have serious implication for value chain services (Nwachukwu, 2005).

It is against this backdrop that the study intends to assess the Determinants of Enterprise Preference of Cassava-based farmers by Gender in Southeast, Nigeria. The specific objectives were to; examine the socio-economic characteristics of cassava producers, processors and marketers by gender and estimate the factors that influence the choice of enterprise of value chain actors by gender.

MATERIALS AND METHODS

This study was conducted in Southeast Nigeria, which is located between latitudes $4^{0}10^{1}$N and $7^{0}8^{1}$N and longitudes 5^{0} 30^{1}E and 9^{0} 27^{1}E. The population of the zone is 32,952,778 or 22.46% of the total population of Nigeria (NPC, 2006).The Nigerian climate is humid in the southeast with the annual rainfall between 2000 to 3000mm while the mean annual temperature is 28^{o}C (BNRCC, 2011). The zone experiences two seasons; the rainy and the dry seasons. The rainy season in this zone begins in February or March and sometimes in January; the beginning is usually marked by incidence of high wind while the dry season usually lasts from November to February.

The inhabitants of Southeast Zone are mainly farmers, civil servants and artisans. The principal food crops grown are yam, cassava, cocoyam and maize while the cash crops grown are cocoa, oil palm, groundnuts, rubber and cotton (Okoye, 2010; Osuji et al. 2012).

Multi-stage sampling technique involving purposive, random and proportionate to size sampling procedures was adopted in the selection of respondents for the study. The respondents were major cassava producers, processors (garri and fufu) and marketers (garri and fufu). The first stage involved purposive selection of two states with the highest output of cassava out of the five states in the Southeast Nigeria, the two states were Enugu and Imo States (NBS 2007). The second stage involved random selection of two agricultural zones from each of the selected states. The third stage involved random selection of two Extension Blocks or Local Government Areas (LGAs) from each of the selected Agricultural Zones, giving a total of Eight Extension Blocks for the study. The fourth stage involved random selection of two (2) Extension Circles (autonomous communities) from each of the selected Extension Blocks giving a total of sixteen (16) communities for the study. The fifth stage was the random selection of one village from each of the 16 Extension circles to give a total of 16 villages for the study.

The sampling frame was the lists of male and female cassava producers, processors (garri and fufu) and marketers (garri and fufu) compiled with the assistance of community resident extension agents (CEA) and officials of garri and fufu processors and marketers association in the 16 selected villages in the study area. With the aid of a sampling frame of 867 value chain actors of 160 male and female cassava producers, 350 male and female processors (garri and fufu) and 357 marketers (garri and fufu), Proportionate sampling technique was employed to obtain 96 male and female cassava producers, 210 male and female processors and 214 male and female marketers (garri and fufu) to get a sample size of 520 value chain actors.Random sampling technique was employed to select 48 male and 48 female cassva producers, 52 male and 54 female garripocessors, 56 male and 53 female garri marketers, 50 male and 54 female fufu processors and 52 male and 53 female fufu marketers to get the 520 respondents for the study. However, out of the sample size of 520 respondents selected for the study, 480 questionnaire were found usable and hence used for further analysis. This is composed of 96 cassava producers (48 males and 48 females) 192 garri processors and marketers (48 males and 48 females garri processors) and (48 males and 48 female garri marketer) and 192 fufu processors and marketers (48 male and 48 female fufu processors) and (48 male and 48 female fufu marketers).

Primary data were collected using focus group discussion, questionnaire alongside personal observation and key informant interviews. Data collected were analyzed using descriptive statistical tools such as percentages, means, charts and frequency distribution and multinomial logistic regression technique. The ML model was specified as thus;

$$Y_i = f(X_i, U_i) \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots$$

$Y = \beta_0 + \beta_1 X_1 + \ldots + \beta_{14} X_{14} + U$ ……

$$P_r(Y_i = j) = \frac{e^{\beta_i x_{ij}}}{1 + \sum_{m=1}^{4} e^{\beta_i x_{ij}}}, J = 1, 2, 3, \quad \ldots\ldots$$

$$P_r(Y = 0) = \frac{1}{1 + e \sum e^{\beta_i x_{ij}}} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots$$

$$\frac{\delta P_j}{\delta X_i} = P_j(\beta_{ij} - \sum P_j \beta_{ij}) = marginal\ effect \quad \ldots\ldots\ldots$$

Where,

$P_r(Y_i = j)$ = Probability of cassava actors choosing any of the enterprise.

β_i or $\beta_0 - \beta_{11}$ = Vector of the estimated parameters.

j = Number of available enterprise options

m = level of the available enterprises (number)

X_i = Vector of the predictor (of the ith explanatory variable)

X_1 = Age (years)

X_2 = Marital Status (Dummy variable, married = 1, others = 0)

X_3 = Educational Level (Number of years spent in school)

X_4 = Household size (Number of persons)

X_5 = Experience in business (Number of years)

X_7 = Membership of cooperative (member =1,Non-member=0)

X_9 = Income from Other sources (petty trading, artisan, motor bike, civil service)

X_{10} = Access to credit (Dummy variable, Yes = 1, No= 0)

X_{11} = Access to Information (Dummy variable, access to formal sources = 1, informal sources = 0)

U_i = error term

Y_i = Choice of enterprise system; J = 1, 2, 3.

The producer enterprise was considered as the reference category against which the remaining outcomes were compared.The choice of enterprise systems adopted followed the modified classification of (Petrucci, 2009) and it is as follows:

1 = producer enterprise (Reference category)

2 = processor enterprise

3 = marketer enterprise

RESULT AND DISCUSSION

Socio-Economic Characteristics of Cassava Producers, Processors and Marketers

Cassava Producers

From the above table, the mean age of the two groups was found to be 54 years and 48 years for male and female producers respectively. This result indicates that the respondents are passing the productive age of their lives and therefore can't do the strenuous work on the farm. This result is in agreement with the findings of Ndubueze and Edema (2015) who reported aged populations for both male and female cassava farmers in Delta. The mean years of education was9 years for male and 8years for female producers of cassava root tubers implying that the producers attained at least primary level of education. This should be advantageous to them as they are better positioned to operate and manage their farms

efficiently. This result agrees with Ajieh (2014) who also reported that most of the cassava producer-processors in Delta State attained mostly between primary and secondary levels of education.Both male and female producers had average household size of about 9 persons. The large number of family labour will invariably lead to a reduction in the cost incurred in hiring labourers to work on the farms thereby increasing returns to the farmer. The mean farm size for male and female cassava roots producers are 1.91 and 1.62 hectares respectively. This shows that cassava roots producers have small farm hectares for cassava production.The table also showed that they are experienced enough about the enterprise.

Table1.*Distribution of socio-economic characteristics of producers, processors and marketers by Gender*

Socio-economic variables	Cassava producers		Garri processors		Garri marketers		Fufu processors		Fufu marketers	
	male	female	male	female	male	female	male	female	male	female
Age (years)										
30-39	1(2.1)	12(25.0)	-		2(4.2)	10(20.8)	-	-	3(6.3)	8(16.7)
40-49	12(25.0)	16(33.3)		12(25.0)	8(16.7)	14(29.2)	19(39.6)	15(31.3)	16(33.3)	10(20.8)
50-59	17(35.4)	14(29.2)	7(14.6)	2(4.2)	19(39.6)	17(35.4)	28(58.3)	25(52.1)	17(35.4)	14(29.2)
60-69	11(22.9)	2(4.2)	27(56.3)	28(58.3)	19(39.6)	7(14.6)	1(2.1)	5(10.4)	9(18.8)	16(33.3)
70-79	7(14.6)	4(8.3)	2(4.2)	6(12.5)	-	-	-		3(6.3)	-
Mean	54	48	12(25.0)	-	57	52.6		3(6.3)	52	53
			59	52			50	52		
Education (years)										
0	1(2.1)	11(22.9)	-	-	10(20.8)	8(16.7)	31(64.6)	3(6.3)	8(16.7)	6(12.5)
1-6	24(50.0)	15(31.3)	23(47.9)	28(58.3)	28(58.3)	12(25.0)	17(35.4)	25(52.1)	20(41.7)	18(37.5)
7-12	16(33.3)	16(33.3)	23(47.9)	20(41.7)	8(16.7)	23(47.9)	-	20(41.7)	19(39.6)	18(37.5)
13-18	7(14.6)	6(12.5)	2(4.2)	-	2(4.2)	5(10.4)	-	-	1(2.1)	6(12.5)
Mean	9	8	9	8	6	10	8	8	7	9
Household size										
1 – 4	5(10.4)	2(4.2)	-	-	1(2.1)	1(2.1)	-	-	15(31.3)	11(22.9)
5 – 8	20(41.7)	27(56.3)	16(33.3)	8(16.7)	19(39.6)	34(70.8)	23(47.9)	16(33.3)	16(33.3)	17(35.4)
9 – 12	19(39.6)	17(35.4)	31(64.6)	34(70.8	7(14.6)	10(20.8)	25(52.1)	29(60.4)	12(25.0)	15(31.3)
13 – 16	4(8.3)	2(4.2)	1(2.1)	6(12.5)	21(43.8)	3(6.3)	-	3(6.3)	5(10.4)	5(10.4)
Mean	9	9	11	10	12	9	10	9	10	10
Farm size (ha)/Scale of Operation*	16(33.3)	21(43.8)	28(58.3)	32(66.7)	32(66.7)	41(85.4)	7(14.6)	2(4.2)	14(29.2)	36(75.0)
0.40 – 1.39/Small Scale	21(43.8)	18(37.5)	9(18.8)	16(33.3)	14(29.2)	6(12.5)	27(56.3)	24(50.0)	25(52.1)	3(6.3)
1.40 – 2.39/Medium Scale	4(8.3)	5(10.4)	11(22.9)	-	2(4.2)	1(2.1)	3(29.2)	22(45.8)	9(18.8)	9(18.8)s
2.40 – 3.39/Large Scale	3(6.3)	3(6.3)								
3.40 – 4.39	4(8.3)	1(2.1)								
4.40 – 5.39	1.91									
Mean	1.62									
Experience (years)										
1 – 4	8(16.7)	7(14.6)	3(6.3)	13(27.1)	5(10.4)	24(50.0)	-	-	11(22.9)	7(14.6)
5 – 8	11(22.9)	8(16.7)	3(6.3)	20(41.7)	31(64.6)	12(25.0)	18(37.5)	18(37.5)	28(58.3)	28(58.3)
9 – 12	15(31.3)	23(47.9)	27(56.7)	9(18.8)	14(29.2)7(14.6)		23(47.9)	28(58.3)	7(14.6)	7(14.6)
13 – 16	14(29.2)	10(20.8)	15(31.3)	6(12.5)	3(6.3)	14.6	7(14.6)	2(4.2)	2(4.2)	6(12.5)
Mean	12.7	11.6	14.6	7.2	9.1		9.8	9.5	7.9	7.9
Cooperative										
Members	12(25.0)	19(39.6)	5(10.4)	19(39.6)	15(31.2)	9(18.7)	7(14.6)	5(10.4)	12(25.0)	9(18.7)
Non-members	36(75.0)	29(60.4)	43(89.6)	29(60.4)	33(68.7)	39(81.3)	41(85.4)	43(89.6)	36(75.0)	39(81.3)
Extension Visits/Training*	11(22.9)	13(27.1)	45(93.8)	26(54.2)	40(83.3)	43(89.6)	26(75.0)	26(75.0)	35(72.9)	
0/No	22(45.8)	20(41.7)	3(6.2)	22(45.8)	8(16.7)	5(10.4)	12(25.0)	12(25.0)	30(62.5)	
1 – 5/Yes	4(8.3)	5(10.4)							13(27.1)	
6 – 10	1(2.1)	4(8.3)							18(37.5)	
11 – 15	10(20.8)	6(12.5)								
16 – 20	5.0	5.0								
Mean										
Income (N)										
5,001 – 500,000	28(58.3)	25(52.08)	33(68.8)	25(52.0)	28(58.3)	25(52.1)	21(43.8)	26(54.2)	26(54.2)	29(60.4)
500,001 – 1,000,000	14(29.2)	14(29.2)	6(12.5)	15(31.3)	10(20.8)	11(22.9)	14(29.2)	14(29.2)	14(29.2)	14(29.2)
1,000,001 – 1,500,000	6(12.5)	9(18.75)	9(18.8)	8(16.7)	10(20.8)	12(25.0)	13(27.1)	8(16.7)	8(16.7)	5(10.4)
Mean	215,746.34		96,583.3		187,312.50		49,086.45		45,632.76	
	172,562.5		216,770.83		56,789.1		65,909.0		87,095.9	
Amount of Credit (N)										
0	23(47.9)	28(58.3)	-	20(41.6)	1(2.1)	15(31.2)	-	32(66.7)	15(31.3)	12(25.0)
1,000 – 50,000	16(33.6)	14(29.17)	41(85.4)	14(29.2)	46(95.8)	24(50.0)	42(87.5)	10(20.8)	18(37.5)	32(67.0)
50,001 – 100,000	4(8.1)	4(8.3)	7(14.5)	14(29.2)	1(2.1)	9(18.8)	-	6(12.5)	6(12.4)	2(4.0)
100,001 – 150,000	5(10.4)	2(4.2)	-	-	-	-	6(12.5)	-	9(18.8)	2(4.0)
Mean	31,868.1	41,541.7	27,439.8	19,975.8	22,006.25	32,283.3	22,006.25	6,587.9	32,283.3	22,006.3
Source of information										
Informal	23(47.9)	28(58.3)	20(41.7)	26(54.2)	11(22.9)	17(35.4)	12(25.0)	22(45.8)	22(45.8)	17(35.4)
Formal	25(52.1)	20(41.7)	28(58.3)	22(45.8)	37(77.1)	31(64.6)	36(75.0)	26(54.2)	26(54.2)	31(64.6)

Percentages are figures in parentheses n = 480

**Scale of Operation and Training are applicable to Processors and Marketers Only*

Source: Field Survey Data, 2017.

Garri Processors

The mean age of garri processors was 59 years for male processors and 52 years for female processors. Here indications arise of an aging processor population. These will invariably affect the profitability of the venture.The average number of years of formal education was about 9 and 8 years for males and female garri processors respectively. Ajieh (2014) and Lawal, Omotesho and Oyedemi (2013) posited that educational levels influence the level of technology adoption of cassava processors and this may invariably affect their output.The average household size for male and female garri processors was 11 persons and 10 persons respectively. This large household size may be an advantage for these households as members of household may provide labour for the strenuous and very demanding activity of processing cassava roots into garri. Majority of garri processors male 58 percent and female 67 percent are small scale processors. The mean years of processing experience was about 15 and 7 years for male and female garri processors. According to Ikwuakam (2013), a long year of experience in processing is an indication that the activity is not just an occupation but a way of life.

Garri Marketers

The mean age of both male and female garri marketers was about 57 years and 53 years respectively. The distribution of the educational status of the marketers shows that male garri marketers had an average of 6 years of formal education while females had an average of 10 years of formal education. The average household size was 12 persons for males and 9 persons for female marketers. This large household size may certainly be of immense advantage to the marketers since these household members will assist in their marketing activities. Majority 67 percent of male marketers and 85 percent of female marketers belong to the small scale marketers. The mean years of marketing experience were 15 years and 9 years for male and female garri marketers respectively. According to Okutue (2013) the more experience the marketer, the more skills he has to cope with the intricacies and complexity of the market. The business of marketing as it is operated in the study area is one that thrives on the ability of the marketer to develop these special skills.

Fufu Processors

The mean age was 50 and 52 years for male and female fufu processors respectively. Here again, there is indication of a relatively aging population of processors. This result is consistent with Lawal, Omotesho and Oyedemi (2013) who reported similar ages for processors of cassava products in Kwara State. The mean years of education of male and female fufu processors were 7 years and 6 years respectively. The mean household size for both male and female processors was 18 persons and 13 persons respectively. The large household size may also be an advantage to the head households in their processing as is the case for the fufu processors. According to Lawal et al, (2013) household size influences the amount of hired labour that can be employed in processing activities. 15 percent and 42 percent of male and female respectively belong to the small scale fufu processors. The average for years of experience for fufu processors was 10 years and 12 years for male and female fufu processors respectively. It could be inferred that the fufu processors are not very experienced and may therefore need some training on fufu processing enterprise.

Fufu Marketers

The mean age of male and female fufu marketers was about 52 years and 53 years respectively. Male fufu marketers had an average of about 7 years of formal education while females had an average of about 9 years of formal education. The implication of this result is that majority of the marketers had just rudimentary level of education and may be considered barely literate. The low level of education of these marketers may influence negatively their ability to perform their marketing functions efficiently and be able to make reasonable net return. Asogwa et al (2013) posit that higher literacy levels are necessary for effective communication by the marketers while carrying out their marketing activities.The average household size for the fufu marketers was about 10 persons for male and female fufu marketers respectively. 29 percent of male marketers belong to small scale processors and majority 75 percent of female fufu marketers belong to small scale processors.

The mean years of marketing experience for both male and female marketers was 8 years respectively. Here again, some business training may be needed to equip these marketers with the necessary skills they will need for their marketing activity.

Table2. *Multinomial logistic Regression of the Choice of Enterprise of Males in Garri value chain*

			Male processors				Male marketers	
Variables	Coeff.	dy/dx	Std. Err.	Z	Coeff.	dy/dx	Std. Err.	Z
Age	-0.170	-0.784e-2	0.399e-2	(-1.96)**	1.489e-2	7.338e-3	4.840e-3	1.52
Marital Status	4.770	0.253	0.124	2.04**	-1.963	-0.590	0.155	(-3.81)***
Educational attainment	-0.270	-1.469e-2	0.737e-2	(-1.99)**	0.131	3.841e-2	1.103e-2	3.48***
Household size	0.751	3.416e-2	1.863e-2	(1.83)	-4.247	-0.267	2.003e-2	-1.33
Experience in business	0.191	10.906e-3	4.270e-3	2.555**	2.610	0.495	0.713	3.65***
Cooperative membership	2.328	9.849e-2	5.237e-2	1.88	0.218	4.123e-3	9.824e-2	0.04
Other income	-0.022e-3	-9.720e-7	0.000	(-2.00)**	-0.065e-5	3.160e-7	0.000	0.81
Access to credit	-0.043e-5	4.880e-9	0.000	0.01	-0.117	-0.311	4.92e-2	-2.374**
Access to information	-2.230	3.912e-2	1.051e-2	3.72***	-0.865	-0.138	0.329	-2.62**
LR $chi^2(18)$	49.97***							
Log likelihood	-92.564							
Pseudo R^2	0.3061							

dy/dx = Marginal effects

**** = Significant at 1%, ** = Significant at 5%*

Source: Field Data, 2017

Male Cassava producers is the reference/base category

The Log-likelihood value was -92.564 and Likelihood ratio of the chi^2 value was 49.97 which is significant at 1% statistical level, these show that the slope coefficients of the parameter estimates were statistically different from zero. The pseudo R^2 value of 0.3061 in this study is indicative of good fit and the correctness of the estimated model. This shows the robustness of the model as it means that slope coefficients of the explanatory variables were not equal to zero and they collectively determine the factors responsible for the choice of enterprises by male in garri value chain.

Table 3. *Multinomial logistic Regression of the Choice of Enterprise of Females in Garri value chain*

			Female processors				Female marketers	
Variables	Coeff.	dy/dx	Std. Err.	Z	Coeff.	dy/dx	Std. Err.	Z
Age	-2.039e-2	0.869e-3	0.152e-2	0.57	-4.935e-2	-1.107e-2	0.341e-2	(-3.24)***
Marital Status	-1.670	-0.161	0.759e-1	(-2.12)**	-0.287	3.150e-2	0.127	0.25
Educational attainment	8.517e-2	4.959e-3	0.428e-2	1.16	6.730e-2	1.156e-2	0.876e-2	1.32
Household size	0.219	1.202e-2	0.839e-2	1.43	0.186	3.284e-2	1.736e-2	(1.89)
Experience in business	0.132	4.509e-3	0.639e-2	0.71	0.155	3.061e-2	1.525e-2	(2.01)**
Cooperativemembership	0.247	4.876e-3	5.186e-2	0.09	0.353	7.324e-2	0.112	0.65
Other income	-2.260e-5	-2.420e-6	0.000	-5.12***	0.200e-7	1.400e-6	0.000	(3.60)***
Access to credit	-0.828e-5	-2.970e-7	0.000	-0.83	-0.953e-5	-1.870e-6	0.000	(-2.18)**
Access to information	1.227	0.104	5.394e-2	(1.92)**	0.250	-0.453e-2	0.111	-0.04
LR $chi^2(18)$		52.50***						
Log likelihood		-108.371						
Pseudo R^2		0.4357						

dy/dx = Marginal effects

**** = Significant at 1%, ** = Significant at 5%*

Source: Field Survey Data, 2017.

Female Cassava producers is the reference/base category

The Log-likelihood value was -108.371 and Likelihood ratio of the chi^2 value was 52.50 which is significant at 1% statistical level, these show that the slope coefficients of the parameter estimates were statistically different from zero. The pseudo R^2 value of 0.4357 in this study is indicative of good fit and the correctness of the estimated model. This shows the robustness of the model as it means that slope coefficients of the explanatory variables were not equal to zero and they collectively determine the factors responsible for the choice of enterprises by female in garri value chain. The Log-likelihood value was -92.676 and Likelihood ratio of the chi^2 value was 52.14 which is significant at 1% statistical level, these show that the slope

coefficients of the parameter estimates were statistically different from zero. The pseudo R^2 value of 0.414 in this study is indicative of good fit and the correctness of the estimated model. This shows the robustness of the model as it means that slope coefficients of the explanatory variables were not equal to zero and they collectively determine the factors responsible for the choice of enterprises by female in garri value chain.

Table 4.*Multinomial logistic Regression of the Choice of Enterprise of Males in Fufu Value Chain*

			Male processors				Male marketers	
Variables	Coeff.	dy/dx	Std. Err.	z	Coeff.	dy/dx	Std. Err.	z
Age	-0.123	-1.179e-2	0.487e-2	-2.42**	-4.566e-2	-0.434e-2	0.643e-2	-0.67
Marital Status	0.711	8.7361e-2	6.295e-2	1.39	-0.238	-9.341e-2	0.120	-0.78
Educational attainment	0.0251	1.344e-2	0.645e-2	2.09**	-0.194	-4.801e-2	0.015	-3.13***
Household size	0.115	1.238e-2	0.357e-2	3.47***	1.827e-2	-0.184e-2	0.917e-2	-0.2
Experience in business	0.265	4.211e-2	1.913e-2	2.2**	-0.208	-0.064	0.022	-2.98***
Cooperativemembership	0.061	-2.482e-2	6.025e-2	-0.41	0.587	0.138	0.123	1.12
Other income	-0.251e-4	-2.843e-6	0.000	-4.31***	-0.162e-5	9.746e-7	0.000	2.63***
Access to credit	-0.119e-4	-5.042e-7	0.000	-0.72	-1.620e-5	-3.264e-6	0.000	-3.10***
Access to information	-0.591	-0.533e-2	6.778e-2	-0.08	-1.105	-0.231	0.116	-1.99**
LR $chi^2(18)$		52.14***						
Log likelihood		-92.676						
Pseudo R^2		0.414						

dy/dx = Marginal effects

**** = Significant at 1%, ** = Significant at 5%*

Male Cassava producers is the reference/base category

Source: Field Survey Data, 2017.

Table 5.*Multinomial logistic Regression of the Choice of Enterprise ofFemales in Fufu Value Chain.*

			Female processors				Female marketers	
Variables	Coeff.	dy/dx	Std. Err.	z	Coeff.	dy/dx	Std. Err.	z
Age	3.021e-2	2.336e-3	0.005	-0.42	8.249e-2	1.327e-2	0.516e-2	2.57***
Marital Status	1.353	0.129	0.155	0.83	1.694	0.187	0.127	1.47
Educational attainment	0.150	0.015	0.014	1.14	0.178	1.875e-2	1.101e-2	1.7*
Household size	0.170	0.041	0.0178	2.32**	0.160e-2	-1.955e-2	1.454e-2	-1.34
Experience in business	-0.226	-0.014	0.016	-0.86	-0.349	-4.469e-2	1.443e-2	-3.1***
Cooperative membership	1.879	0.266	0.110	2.42**	1.663	0.143	0.096	1.49
Other income	-0.200e-4	-2.18e-6	0.134e-8	-2.21**	-0.200e-4	-2.003e-06	0.324e-9	-2.57***
Access to credit	0.6780e-7	-1.33e-8	0.000	-0.1	0.254e-6	4.381e-08	0.434e-7	0.46
Access to information	-0.309	-0.098	0.115	-0.85	0.19727	7.518e-2	8.973e-2	0.84
LR $chi^2(18)$		110.94***						
Log likelihood		-102.709						
Pseudo R^2		0.351						

dy/dx = Marginal effects

**** = Significant at 1%, ** = Significant at 5%, * = Significant at 10%.*

Cassava root producers was taken as reference category

Source: Field Survey Data, 2017.

Female Cassava Producers is the Reference/Base Category

The Log-likelihood value was -102.709 and Likelihood ratio of the chi^2 value was 110.94 which is significant at 1% statistical level, these show that the slope coefficients of the parameter estimates were statistically different from zero. The pseudo R^2 value of 0.351 in this study is indicative of good fit and the correctness of the estimated model. This shows the robustness of the model as it means that slope coefficients of the explanatory variables were not equal to zero and they collectively determine the factors responsible for the choice of enterprises by female in garri value chain.

Conclusion

We can conclude that key factors influencing the choice of enterprise in male garri value chain were marital status, educational attainment and experience in business while that of female is income from other sources that determines the choice of the enterprise. In fufu value chain, the key determinant of choice in

male are education attainment, experience in business and other income while in female the key determinant are other income and those peculiar to the chain actors.

RECOMMENDATION

Findings call for policies designed to increase access to credit, educationand infrastructures in order to increase and improve profitability of the cassava value chain in the area thereby encouraging people to enter the enterprise.

REFERENCES

[1] Ajieh, P. C. (2014). Adoption of Improved Cassava Production and Processing Technologies in Oshimili North Local Government Area of Delta State, Nigeria.

[2] Asogwa, E.U., Otuonye, A.H., Oluyole K.A., Ndubuaku T. C.N., and Uwagboe E.O. (2012).Kolanut Production, Processing and Marketing in the South Eastern State of Nigeria: American Eurasian J. Agric and Environ Science, 12(4) 463-418 2012. IDOSI Publication available at http://www.Idosi.org/aejaes/jaes12/0284%2912/8.pdf

[3] BNRCC, (2011).Project Climate Change Scenero For Nigeria: Understanding Biophysical Impacts Climate Systems Analysis group. A Report Published by the Building Nigeria Response to Climate Change, University of Cape Town Rondebosch, South Africa.

[4] Ezedinma, C.L.C., Okafor, G.N., Asumngha. and Nweke. (2006). Trends in form of Labour Productivity and Implication for Cassava Industrialization in Nigeria Proceedings of The 40th Annual Conference of the ASN held at NRCI Umuahia, Abia State, October 16th-20th, 2006. Pp 109-115.

[5] Food and Agriculture Organization Statistics (2014). Statistics blue print 2014. Food and Agriculture Organization Cooperate Document Repository.

[6] International Institute for Tropical Agriculture IITA (2010). Post cassava technology annual reportpp.62-80.

[7] Lawal, O. A. Omotesho and F.AOyedemi (2013). An Assessment of the Economics of Cassava Processing in Kwara State, Nigeria.4th ICAAAE 2013 September 22-25 Hammamet Tunisia. 4th International Conference of the African Association of Agricultural Economics aaae. Africa.org.

[8] Maziya-Dixon B, Nokoe S, Manyong V, Harris E, Akinyele IO, Oguntona EB, Sanusi RA,2001. Report on Survey Design and Operation: Nigeria Food Consumption and Nutrition Survey 2001–2003. International Institute of Tropical Agriculture, Ibadan, Nigeria; 2001.

[9] National Population Commission (NPC, (2006). Census Publication.

[10] Ndubueze-ogaraku, M.E and Edema, O.I (2015) Cassava value addition chain analysis in Ughelli North Local government area of delta state, Nigeria.Nigeria journal of agriculture, food and environment 11(1):23-28.

[11] Nwachukwu, .S. (2005) .The Need For Value Adding Activities: A Micro and Small Business Perspective for Africa, Paper Presented at Makerere University Business School Second Annual Entrepreneurship Conference, Kamapala Uganda.

[12] Nwachukwu, I. (2012). Gender Studies In Nigeria, Understanding the Gaps And Setting Forth An Agenda. A Paper Presented at The Opening Ceremony Of Centre for Women Gender Development Studies (CWGDS) Federal University of Technology Owerri (FUTO), Imo State; 17th December.

[13] Obasi, V.A.C. (2004). Curriculum of Gender Neutral EducationWorecJournal of Gender Studies, 1 (2), 65-73.

[14] Okoye B.C (2010). Analysis of Market Participation AmongSmallHolder Cassava Farmers In Response To Transportation Costs In South East Nigeria.Unpublished Ph. D–Thesis Agricultural Economics Department, MOUA, Umudike.

[15] OkutueNgozi (2012). Thesis Submitted to the Department of Agricultural Economics Michael Okpara University of Agriculture, Umudike. Analysis of Structure and performance of Yam Market in Federal Capital Teratary Nigeria.

[16] Osuji, M.N., Ohajianya, D.O., Lemchi, J. I., Eze, C. C.,Henri-Ukoha, A., and Onwuagba, I.J. (2012). Determinants of revenue among Small Holder irrigation Vegetable Farmers in Imo state of Nigeria. International Journal of Agriculture and Rural Development,15(3),1212-1215.

[17] Petrucci, C. J. (2009). A primer for Social Worker Researchers on How to conduct a Multinomial Logistic Regression Journal of Social Service Research, 35: 193 – 205.

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