ANALYSIS OF RURAL WOMEN PARTICIPATION IN RICE PROCESSING UNDER IFAD-VCDP IN BIDA AND WUSHISHI LOCAL GOVERNMENT AREAS OF NIGER STATE, NIGERIA.

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ABSTRACT

This study was conducted to determine the economic analysis of women participation in rice processing under IFAD-VCDP in Bida and Wushishi LGAs of Niger State, Nigeria. The specific objectives were to describe the socio-economic characteristics of rice processors under IFAD-VCDP, determine the profitability of rice processors under IFAD-VCDP, determine the extent of women participation in rice processing under IFAD-VCDP, examine the factors influencing the extent of women participation in rice processing under IFAD-VCDP and examine the constraint associated with women participation in rice processing under IFAD-VCDP. One hundred twenty eight respondents were randomly selected from two (2) LGAs with IFAD-VCDP intervention which are (Wushishi and Bida LGAs). Descriptive statistics, farm budgeting tool and ordered probit regression model were used to analyze the data collected. Study showed that majority of the respondents were within the age bracket of 31-50 years with the mean of 46, The analysis further revealed that majority of them were married. About 46.9% of them had no formal education, while 53.1% have one form of education or the other. The results from cost and returns analysis revealed that The average variable cost, average fixed cost and average net farm income per processing cycle were ₦53,580.43, ₦41,059.05 and ₦633, 342.43, respectively which implies that rice processing under IFAD-VCDP was profitable in the study area. And the rate of return on investment is 12.59, implying that for every ₦1invested, there was a return of ₦59 kobo. The results from the Probit regression revealed that age, and access to training were significant at ($p \leq$ 0.05), while income, credit and member of cooperative household size, were significant at level ($p \leq 0.01$) with Pseudo R^2 value of 0.7296. Results from the study also showed that the constraint associated with respondent were found to be inadequate power supply, high cost of start-up capital, lack of technical knowledge and processing facilities for producing good quality milled rice grains, poor transportation system, the respondents also ascribed the situation of non-availability of loans due to their inability to provide collaterals as constraints to rice processing in the study area. Therefore, it was concluded that majority of the respondents were married, rice processing under IFAD-VCDP was profitable and extent of women participation was high based on the findings

therefore it is recommended for the Government to provide improved technologies for the processors, respondent should also be encouraged to go into rice processing in the study area.

INTRODUCTION

The contributions of agriculture towards Nigeria's domestic economy can never be over emphasized. Agricultural sector in Nigeria employs about two-thirds of Nigeria's total Labour force. It contributed 42.2% of gross domestic products (GDP) in 2007 and provides 89% of non-oil earnings (World Bank, 2013). However, subsistence farmers dominate in agricultural activities as 70% of her population still engage in agriculture and 90% of agricultural output is accounted for by small holder farmers with less than two hectares under cropping. It is also estimated that about 75% of the total land area has potential for agricultural activities with about 33 million hectares under cultivation (Food and Agriculture Organization (FAO, 2013)).

Rice is the world's most important staple food and will continue to be in the coming decades, be it in terms of food security, poverty alleviation, youth employment, use of scarce resources, or impact on climate. Rice is a staple food for some 4billion people worldwide, and it provides 27% of the calories in low-and middle-income countries. Based on expected population growth, and rice acreage decline, global demand for rice will continue to increase from 479 million tons milled rice in irrigation-except for some areas in Africa and South America (Mathew, 2016). Rice farming is associated with poverty in many areas. About 900 million of the world's poor depend on rice as producers or consumers, and of these, some 400 million poor and undernourished people are engaged in growing rice, mostly on land holdings of less than 20 hectares (Mathew, 2016). Rice processing simply refers to all activities involved in transforming raw paddy rice from whole grain after harvesting to the form or nature the consumer wants it, rice milling is the act of removing the husk and brand from rice and exposing the white layer as either polished or brown rice. White rice is referred to raw paddy polished without parboiling, parboiled rice is when the paddy rice is subjected to a thermal treatment making it to gelatinize before milling (NEST-FUNAI Conference, 2016). Rice processing in Nigeria are of two types; we have the Traditional Method of processing Rice Paddy and the Modern Methods of processing Rice Paddy.

Value Chain Development Programme (VCDP) is a six years' development initiative of the Federal Government of Nigeria (FGN) and International Fund for Agricultural Development (IFAD) Programme for improving rice and cassava value chain for small scale farmers in six states namely: Niger, Anambra, Ogun, Taraba, Ebonyi and Benue States while also addressing the constraints along the value chains. It is well anchored in Nigeria's government's vision for agricultural transformation through goods and services value chain approach, with emphasis on enhancing productivity and access to markets for rice and cassava smallholder farms. Some reasons for promoting value added production may consist in higher profits, more stable market condition, job creation, diversification of markets and products, and down-stream economic benefits through industry support sector (Naji, 2011).

Women play important roles in agriculture, undertaking a wide range of activities relating to food production, processing and marketing; and beyond farming they are also involved in land and water management: most often they are collectors of water, firewood and fodder. Women carryout most of the agricultural activities but have been regarded as a homogeneous group who are

distinguished by gender. Most studies on women showed that trading is the most important activity outside the home followed by farming (Banji and Okunade, 2005; Mybada 2010). Women are also known to be fully involved in all operations of farming including planting, thinning, weeding, fertilizer application, harvesting, storing, marketing and processing. According to FMARD (2013), women account for 75% of the farming population in Nigeria, being largely involved in the production, processing and trading of food crops such as sorghum, maize, rice, cassava, cowpea, melon, pepper, vegetables, yam and palm oil while men carry out the tedious tasks such as land clearing, felling of trees, gathering and burning of bush, and making ridges. Mgbada (2000) inferred that women contribute about 60-80 percent of agricultural labor force. They also contribute more than two-thirds of their produce towards household subsistence (Ayoola, 2004). One of the rationales for improving women participation in agriculture is that when a woman is educated, her children tend to be better fed and healthier. As a woman earns income, she is more likely than the man to spend it on improving the well-being of the family. This scenario can build women self-esteem and lead to more participatory role in both public and family decision making (FAO, 2011).

Agriculture, mainly rice processing is not gender specific. It is a rigorous and time consuming process that yields edible rice. It can be made easier and more efficient by the use of machines designed for those purposes. Both genders can engage in the processing of rice to yield good quality rice. However, that does not seem to be the case, as most of the processing is carried out by women. Research works by Adam *et al*. (2018) noted that the structural role of men and women in agricultural cycle reveal that women are more active specifically in processing and marketing of agricultural products in Nigeria. According to NBS (2014), in the northwest zone of Nigeria, 47% of women participate in the business of agricultural production, processing, and handling as against the 22.5% for men. An earlier survey conducted by the researcher shows that in Nigerian rice producing states, Men are more economically empowered than women because women are used as labour force in the rice value chain and this has led them to depend on their husbands for income, food as well as shelter despite their enormous efforts in the rice value chain (Kesse, 2016).

Also, there is a general agreement that gender disparities persist in ownership and access to useful resources such as education, extension, and health which have contributed to higher poverty and lower employment opportunities among women. Women matters in all aspect of value chain development which ranges from production, processing, handling and marketing. There have been established women considerations in agricultural value chain developments (Adam *et al*., 2018). Hence, there is need for vibrant understanding of the roles of women and their level of participation in rice processing value chain development activities among the beneficiaries of IFAD-VCDP in the study area. In response to these problems, this study attempts to examine the analysis of rural women participation in rice processing under IFAD-VCDP in Bida and Wushishi Local Government Areas of Niger state, Nigeria to provide achievable ends to the following objectives:

i.   describe the socio-economic characteristics of rice processors under IFAD-VCDP in the study area;
ii.   determine the profitability of rice processors under IFAD-VCDP;
iii.   determine the extent of women participation in rice processing under IFAD-VCDP;
iv.   examine the factors influencing the extent of women participation in rice processing under IFAD-VCDP and;

v.   examine the constraints associated with women participation in rice processing under IFAD-VCDP.

Hypothesis: Ho: The socio-economic factors of farmers do not significantly affect the participation of women in rice processing under IFAD-VCDP.

METHODOLOGY

The Study Area

The study was conducted in Wushishi and Bida Local Government Areas of Niger State. Wushishi Local Government Area is located at about 77km away from the capital of Niger State, Minna. It has an area of 1,879km^2 and a population of 81,783 at the 2003 census with a projected population of 98,796 as at 2012. The local government area lies on latitude 9.7221^0N and longitude 6.113^0E. It is bordered by Gbako local government to the south, Rafi and Bosso local government areas to the east, Mariga local government to the north, Mashegu an Lavun local government areas to west. Wushishi local government of Niger State is made up of two districts namely: Wushishi and Zungeru districts. The major indigenous ethnic groups that make up the area are Hausa, Edo, Igbo, Yoruba, and Fulani. Christianiaty and Islam are the main religions. The major occupations of the people in this area are the subsistence farming, fishing and trading. The water bodies Found in the area are running water & surface water. The inhabitants mostly depend on this water source for domestic use and activities.

Bida Local Government Area is the second largest city in Niger State with land area of 51km^2 and a population of 188,181 as at the 2006 census (World Gazether, 2007). It is located at the south west of Minna and it is a dry, arid town. Districts include Katcha, Lapai, Mokwa, Enagi, Baddeggi, Agaie, Patigi, Lemu, Kutigi and others. The town is known for its production of traditional crafts notably glass, bronze art crafts and brass wares. Bida is also known for its durbar festival. It is also the home of to the Federal Polytechnic, Bida, Federal Medical Center and Niger State School of Nursing. The major ethnic group is Nupe and Bida is the headquarters of the Nupe kingdom. Other tribes include Igbo, Yoruba, Hausa, Igala, Gbagyi, Ibira. Niger State is located between longitudes 4^0302'E and 7^0202'E and latitudes 80112'N and 11^0202'N (NSBS, 2012). The State is located in the North central zone along the middle Belt region of Nigeria. The state is also bordered to the Northwest by Kebbi State, to the South by Kwara State, to the North by Zamfara and the Federal Capital Territory and Kaduna border the state to the South east and Northwest respectively. The State has a population of about 5,556,200 individuals as projected by the Niger State Bureau of Statistics (NSBS, 2016). Furthermore, the State shares a common international boundary with the republic of Benin at Babana in Borgu Local Government Area of the State. It remained a leading contributor to Agricultural productivity in the country at the regional and state levels as stated by the Federal Ministry of Agriculture and Rural development and National Bureau of Statistics (NBS, 2012).

Sampling procedure, sample size and data collection

The target population for the study were the rice processors in the rice processing zones of Niger State under IFAD-VCDP mandate LGAs which are Bida, Katcha, Shiroro, Kontagora and Wushishi of which two LGAs were chosen because of the concentration of rice processors in the

LGAs. In order to obtain a representative sample of the study area, a three-stage sampling procedure was adopted to select respondents for this study. The first stage involved the purposive selection of two (2) LGAs out of the five LGAs with IFAD-VCDP intervention which were Bida and Wushishi Local Government areas. The second stage involved the selection of five communities from each LGA and totaling ten (10) communities for the study. The condition guiding the selection of the communities is the availability of the project activities. The third stage involved the sampling of 10% of the total population of the beneficiaries which was 1280 (the sample frame) and therefore, a total of 128 respondents were selected as the sample size of the study. Primary data was collected with the aid of structured interview schedule.

Analytical Techniques

The socio-economic characteristics of the respondents, the extent of women participation in rice processing under IFAD-VCDP and the constraints associated with women participation in rice processing under IFAD-VCDP in the study area were analyzed using descriptive statistics. Farm Budgetary Tool was used to determine the profitability of rice processing under IFAD-VCDP while the factors influencing the extent of women participation in rice processing under IFAD-VCDP was analyzed using Ordered Probit Regression Analysis (Peter McCullagh, 1980). The model is specified as follows:

$Y = B_o + B_1 X_1 + B_2 X_2 + B_3 X_3 + B_4 X_4 + B_5 X_5 + B_6 X_6 + B_7 X_7 + B_8 X_8 + B_9 X_9 + e$

Y = Extent of women participation (High=3, Moderate=2 and Low=1)

X_1 = Age of the rice processors (year)

X_2 = Household size (Number of members in the family)

X_3 = Number of years spent in formal education (years)

X_4 = Access to training (Number of times training received)

X_5 = Annual income (Naira)

X_6 = Rice processing experience in VCDP (years)

X_7 = Access to extension services (Number of contact)

X_8 = Access to credit (Yes=1, N0=2)

X_9 = Co-operative membership (Number of co-operative)

B_o = Constant

e = Error term

RESULTS AND DISCUSSION

Socio-economic Characteristics of the Respondents

The results presented in Table 1 show the distribution of the respondents by their age. The table revealed that most of the respondents (56.6%) falls within the age range of 31 – 50 years with a mean age of 46 years. This means that rice processing under IFAD-VCDP is relatively dominated by the youths who are more active and stronger. Young farmers tend to be stronger, more capable of making good decisions and have more potential for greater productivity than old farmers. Hence, they are likely to be more efficient in the use of inputs than older farmers. This is in consonance with the findings of Ibitoye *et al.* (2012) who asserted that young people are more agile and prone to risk taking compared with the old. Hence they are innovative. Marital status as indicated in Table 1 shows that majority (75.0%) of the sampled rice processors under IFAD-VCDP were married, while 13.3% and11.7% of the respondents were widowed and divorced respectively. This implies that married processors with large household size will use family labour

for processing activities. The enterprise will also serve as source of income for the various families. This result agrees with Adebo (2014) who reported that high proportion of married people enhance the supply of labour and commitment in working to enhance their productivity. Table 1 also shows that majority (96.1%) of the respondents had household size of 6 persons and above with a mean of 10 people. A household refers to a group of people living under the same roof and eating from the same pot and therefore share common resources. This implies that large family size enables processors to use family labour especially when labour intensive is required. This agrees with the findings of Abdullahi and Tsowa (2012) and Izekor and Olumese (2010) who reported that households in Nigeria are characterized by large family size.

Table 1:   Socio-economic characteristics of the respondents

Variable	Frequency	Percentage	Mean
Age (Years)			
< 30	13	10.2	
31-40	36	28.1	
41-50	36	28.1	
51-60	32	25.0	46
>60	11	8.6	
Marital Status			
Married	96	75.0	
Divorced	15	11.7	
Widow	17	13.3	
Household size (No)			
1-5	5	3.91	
6-10	58	45.3	
Above 10	65	50.8	10
Educational level			
Non formal	60	46.9	
Primary education	4	3.1	
Secondary education	42	32.8	
Tertiary education	22	17.2	
Years of processing (Years)			
1-5	9	7.0	

	Frequency	Percentage	
6-10	61	47.7	
11-15	33	25.8	12
>15	25	19.5	
Type of processor			
Full time	85	66.4	
Part time	43	33.6	
Cooperative society			
Yes	107	83.6	
No	21	16.4	
Access to credit			
Yes	62	48.4	
No	66	51.6	
Extension contact			
Yes	82	64.1	
No	46	35.9	
Source of capital			
Personal savings	52	40.6	
Friends and relative	15	11.7	
Cooperative society	55	43.0	
Commercial bank	6	4.7	
Total	128	100.0	

Source: Field Survey, 2019

The distribution of respondents by their educational level is also presented in Table 1 which indicates that majority (46.9%) of the rice processors under IFAD-VCDP had no formal education, 32.8% had secondary education, and 17.2% of the respondents had tertiary education while 3.1% had primary education. This implies that majority (53.1%) of the respondents are literate. The level of education affects the type of decision processors take in rice processing and determines the level of opportunities available to improve livelihood strategies and managerial capacity (Sabo, 2011). The finding of this study agrees with the findings of Amaza and Maurice (2015) who reported that education enhances productivity among households. The distribution of respondents by their processing experience as indicated in Table 1 showed that most (47.7%) of rice processors under IFAD-VCDP had spent between 6-10 years in rice processing. 25.8% had spent between 11-15 years in rice processing, and 15.5% had spent over 15 years in rice processing. Average farming experience was 12 years. This indicates that most of the processors in the study area have adequate

experience in rice processing and know how to use resources efficiently. This corroborates the findings of Adam and Bidoli. (2017) who asserted that high experience in rice processing enhance the processors to use resources efficiently. Furthermore, Table 1 revealed that majority (66.4%) of the respondents under IFAD-VCDP are full-time rice processors while 33.6% are part time rice processors. This implies that the agricultural sector such as rice processing enterprise serves as source of employment opportunities to the rural areas. This finding is consistent with Daramola (2004) that the agricultural sector of Nigeria economy contributes significantly to rural employment, food security, provision of industrial and raw materials. Majority (64.1%) of rice processor under IFAD-VCDP have contact with extension agent while 35.9% of the processor had no contact with extension agent. This implies that majority of the respondents have contact with extension agent are likely to have a better output because they will be informed on new method of rice processing and improved technologies to increase output thus having an increased in income.

The result shown in Table 1 reveals that greater number (83.6%) of the respondents belong to cooperative society while 16.4% do not belong to cooperative society. This implies that most of the respondents in the study area belong to one cooperative society or other which could enhance procurement of input and access to new information. This result is in consonance with the report of Ezeano (2015) who asserted that cooperative society play a significant role in input procurement. Table 1 shows the distribution of respondents according to their access to credit, from the Table; majority (51.6%) of the respondents does not have access to credit while 48.4% of the respondents have access to credit. This is in consonance with the findings of Ogah (2014) who asserted that majority of rice processors does have access to credit to enhance them in adopting improved technologies to increase their income. Table 1 shows the distribution of respondents according to their source of capital. From the Table, about (43.0%) of the respondents' source their capital from cooperative society, while 40.6% of the respondents source their capital through personal savings.

Profitability of Rice Processing under IFAD-VCDP

Table 2 shows the cost and return analysis of rice processing under IFAD-VCDP in the study area. The result revealed that the average gross margin was ₦ 674,402 per processing cycle, the total Variable Cost was ₦53,580.47 per processing cycle while the Total Revenue is ₦727,982.4 per processing cycle. This implies that the total revenue is greater than the total variable cost which implies that rice processing under IFAD-VCDP was profitable in the study area. The total cost of processing, as indicated in Table 2 was N94, 639.97. The table further reveals that variable costs accounted for 56.42% of the cost of production, while the fixed cost accounted for 43.58 %. This finding agrees with that of Abdullahi *et al.* (2012) who observed that variable costs accounted for 90.12% of the total cost. Evidence that fixed costs accounted for such a small proportion of the total cost confirms that fixed capital investment in the study area was low. The result also shows that cost of milling machine accounted for 32.8% of the total cost of rice processing in the study area. This shows that the processors spent more on acquisition of milling machine than other inputs. The net farm income in the study area was ₦ 633, 342.43 per rice processing per year, with the rate of return on investment of ₦ 12.59, implying that for every N1invested, there was a return of ₦ 59 kobo. This result shows that rice processing under IFAD-VCDP is profitable in the study area. This finding is similar to that of Inuwa *et al.* (2011) on the profitability of rice processing and marketing in Kano State who reported that rice processing was profitable in the study area. The gross ratio and operating ratio were 0.06, and 0.07 respectively. All these ratios were less than 1 indicating that rice processing under IFAD-VCDP was profitable and has the potential to

increasing rural income. The NFI recorded in the area was not only because of effective exploitation of available human and material resources, but also because of better marketing prospects of rice with the federal government's closure of border. This finding is in line with those of Abdullahi, *et al.* (2012), Ayoola *et al.* (2011) who recorded high positive financial returns to rice production.

Table 2: **Cost and return analysis of rice processing under IFAD-VCDP Per Cycle**

Variable	Average cost (₦)	Percentage (%)
Variable cost		
Cost of firewood (bundle)	5,241.09	5.54
Cost of milling	10,015.75	10.58
Cost of winnowing	6,136.85	6.48
Cost of sorting	9,170	9.69
Cost of destining	9,013.13	9.52
Labour (man-day)	4,123.44	4.36
Cost of packaging	4,115.66	4.35
Transportation cost (₦)	5,584.55	5.90
Total variable cost	**53,580.47**	
Fixed cost		
Depreciation on flat bottom pot	1,650.19	1.74
Depreciation on threshing machine	5,395.70	5.70
Depreciation on sorting machine	5,553.80	5.87
Depreciation on destining machine	9,799	10.35
Depreciation on milling machine	15,350.47	16.22
Depreciation on winnowing tray	3,97.66	0.42
Depreciation on drying facilities	2,912.68	3.10
Total fixed cost	**41,059.5**	100.0
Total cost	**94,639.97**	
Return(₦)	**727,982.4**	
Gross margin= TR-TVC	**674,402**	
Net farm income= TR-TC	**633,342.43**	

Gross ratio= TFE/GI	0.06	
Operating ratio= TOC/GI	0.07	
Return on capital invested=GM/TVC	12.59	

Extent of Women Participation in Rice Processing Activities under IFAD-VCDP

Table 3 shows the extent of women participation in rice processing activities under IFAD-VCDP. This was achieved using a 5-point likert scale with a mean score of 3.0 as the decision rule. Table 3 revealed that the respondents extent of participation was high in drying ($\bar{X}$ = 4.63), milling ($\bar{X}$ = 3.90), destoning ($\bar{X}$ = 4.28), packaging ($\bar{X}$ = 4.24), winnowing ($\bar{X}$ = 4.29), and parboiling ($\bar{X}$ = 4.30). This implies that women participation in rice processing under IFAD-VCDP is highly recommendable This agrees with the findings of Oladejo *et al.* (2011) who reported that women are directly involved in all operations relating to rice processing such as milling, winnowing, and parboiling. However, their extent of participation in the use of equipment was found to be low. The implication is that there is need for the Government support for provision of improved technologies as these will not only go a long way to facilitate their participation, but also exposed respondents to improved processing system. This corroborates the findings of Ayodele, (2016) who reported that the use of improved technologies for rice processing enhances respondent's participation as well exposed them to modern processing techniques.

Table 3: Distribution of the respondents based on extent of participation in rice processing (n= 128)

Processing activities	HP (5)	MP (4)	IP (3)	LP (2)	NP (1)	Weighted sum	Weighted mean	Remark
Drying	91	28	8	1	-	593	4.63	High
Milling	18	90	9	11		499	3.90	High
Destoning	66	41	12	9	-	548	4.28	High
Use of equipment	12	30	15	65	6	361	2.82	Low
Packaging	56	48	23	1	-	543	4.24	High
Marketing	51	64	9	4	-	546	4.27	High
Winnowing	59	54`	9	5	1	549	4.29	High
Parboiling	60	53	9	5	1	550	4.30	High

Note: HP = High Participation (5), MP = Moderate Participation (4), IP = Indifferent Participation (3), LP = Low Participation (2), NP = No Participation (1)

Keys: WS = Weighted sum, WM = Weighted mean, mean score of< 3.00 = Low participation mean score of ≥ 3.00 = High participation

Factors Influencing the Extent of Women Participation in Rice Processing under IFAD-VCDP

Table 4 reveals factors influencing the extent of women participation in rice processing under IFAD-VCDP. This was achieved using Ordered Probit Regression Model. As revealed in the table, the pseudo R^2 is 0.7296, indicating that about 72.96% of the variation in extent of women participation in rice processing under IFAD-VCDP was explained by the specified explanatory variables in the model, while unaccounted 27.04% could be due to non-inclusion of some important explanatory variables and errors in estimation. From the z – values of the regression, five independent variables out of the nine variables included in the model were found to be statistically significant. Age and access to training were significant at 5% level of probability, while extension contact, credit and member of cooperative were significant at 10% level of probability. The coefficient of age (-0.0414079) was negative, connoting inverse relationship with the extent of respondent's participation in rice processing and implies that a unit increase in age of the respondents will lead to a successive decrease in their extent of participation as farmers tend to be less stronger with increase in age thus, less efficient in the use of inputs which in turn affect productivity. This is supported by the findings of Kesse (2016) who reported that age is expected to decrease the ability of farmer's participation in agricultural activities such as rice processing. Extension contact and training are also significant variables to farmer's participation in rice processing. These variables positively affect farmer's participation in rice processing under IFAD-VCDP hence has positive coefficient respectively. As compared to farmer who has no access to extension contact and training respectively, the probability of participating in rice processing increases for those who have access to this service keeping other things at their respective mean. Cooperative membership had positive and significant relationship with farmers' participation in rice processing under IFAD-VCDP at 10% level of probability. This implies that membership of social organization was an important factor inducing women participation in rice processing while the coefficient of income is positive and statistically significant at 10% probability level. This means that as the income of the respondent's increase, their participation in rice processing, as they will have the capacity to procure more (mechanized) inputs to facilitate processing thus enhancing productivity.

Table 4: Ordered probit estimates on factors influencing the extent of women participation in rice processing under IFAD-VCDP

Variables	Coefficients	Standard Error	z – value
Constant	.7852515	.773696	1.01
Age	-.0414079	.0184939	-2.24**
Household	-.0044944	.0588168	-0.08
Years of education	.0347101	.1368694	0.25
Access to training	.4207493	.1784621	2.36**
Income	4.00e-06	2.38e-06	1.68*
Processing experience	-.012747	.0325433	-0.39

Extension contact	.194726	.1083956	1.80*
Credit	-.5169001	.3258435	-1.59
Cooperative member	.4300272	.2311992	1.86*
Pseudo R-squared	0.7296		
Chi-squared	37.96***		
Log likelihood function	-116.99012		

Source: Field Survey, 2019

* implies significance at 10%; ** implies significance at 5%.

Constraints Associated with Women Participation in Rice Processing under IFAD-VCDP

Table 5 shows the constraints to rice processing under IFAD-VCDP. The constraints as identified by the respondents include: inadequate power supply ($\bar{X}$ = 3.80), high cost of start-up capital ($\bar{X}$ = 2.98), intensive labour ($\bar{X}$ = 3.14). The respondents also reported that they lacked adequate technical knowledge/skills ($\bar{X}$ = 2.96) and processing facilities ($\bar{X}$ = 2.97) for producing good quality milled rice grains, thus, limiting their capacity to compete and maximize profit from rice processing enterprise. Respondents also ascribed the situation of non-availability of loans ($\bar{X}$ = 2.76) due their inability to provide collaterals as constraints to rice processing in the study area. Other constraints to rice processing are inadequate proper marketing facilities ($\bar{X}$ = 2.90), lack of extension service ($\bar{X}$ = 3.04), high cost of inputs ($\bar{X}$ = 2.82), poor transportation system ($\bar{X}$ = 3.18), and high interest rate ($\bar{X}$ = 2.63). This is in consonance with the findings of Kesse (2016) which revealed that the major constraints to rice processing are high cost of start-up capital, inadequate processing facilities, lack of technical knowhow and intensive labour.

Table 5: Distribution of the respondents according to constraints to rice processing (n= 128)

Constraints	VS (4)	S(3)	SS (2)	NS (1)	Weighted sum	Weighted mean	Remark
Inadequate power supply	108	14	6	-	486	3.80	Severe
High cost of start-up capital	15	95	18	-	381	2.98	Severe
Labour intensive/shortage	29	71	20	8	377	3.14	Severe
Inadequate proper marketing facilities	24	71	25	8	367	2.90	Severe
Lack of extension service	51	35	38	4	389	3.04	Severe
Non availability of loans	14	71	41	2	353	2.76	Severe
Inadequate processing facilities	35	54	39	-	380	2.97	Severe
High cost of inputs	24	59	43	2	361	2.82	Severe
Poor transportation system	57	44	20	7	407	3.18	Severe
Lack of technical knowledge and skills	40	51	29	8	379	2.96	Severe

Complains of improper destoning	18	60	43	7	345	2.70	Severe
High interest rate	18	57	41	12	337	2.63	Severe

Source: Field Survey, 2019

Note: VS = Very Severe (4), S = Severe (4), SS = Slightly Severe (3), NS = Not Severe (1)

Keys: WS = Weighted sum, WM = Weighted mean, mean score of < 2.50 = Not severe, mean score of ≥ 2.50 = Severe

Test of hypothesis

The z-value from Ordered probit regression analysis was used to test the null hypothesis that the participation of women in rice processing under Value Chain Development Programme is not determined by certain personal, social and economic factors, which is shown in Table 4.7. However, the result reveals that age (-2.24), access to training (2.36), income (1.68), extension contact (1.80), and cooperative member (1.86) were significant and statistically related to the factors influencing women participation in rice processing in the study area. Since the variables show significant relationship, we thereby reject the null hypothesis and accept the alternative hypothesis.

Table 6: Relationship between the personal, social and economic characteristics of respondents and the factors influencing extent of participation in rice processing.

Variables	z-value	Remark
Age	-2.24	Reject null hypothesis
Household size	-0.08	Accept null hypothesis
Years of education	0.25	Accept null hypothesis
Access to training	2.036	Reject null hypothesis
Income	1.68	Reject null hypothesis
Processing experience	-0.39	Accept null hypothesis
Credit	-1.59	Accept null hypothesis
Cooperative member	1.86	Reject null hypothesis

Source: Field Survey, 2019

CONCLUSION AND RECOMMENDATIONS

Conclusively, the findings of this study revealed that majority of the respondents were married and within their active workforce age. Rice processing under IFAD-VCDP in the study area was profitable and contributed significantly to the household income of the respondents. Extent of women participation in rice processing was high. However, factors such as age, access to training, income, credit and membership of cooperative were found to significantly influence the extent of women participation in rice processing under IFAD-VCDP in the study area. The identified major constraints associated with rice processing in the study area included inadequate power supply, high cost of start-up capital and intensive labour.

Most socio-economic attributes of the rice processors investigated had meaningful bearings on the processors' ability to procure and use the processing inputs. Hence, government agencies should distribute inputs timely and at affordable prices so as to enhance productivity in rice processing under IFAD-VCDP. The study also revealed that for every naira spent in rice processing under IFAD-VCDP, a gain of ₦12.59 kobo was made; it is therefore recommended that respondents should be encouraged to go into rice processing in the study area in order to generate more income. This can be done by direct intervention through empowerment programmes and training by government agencies and donor organization that will stimulate and sustain farmers' interest in rice processing in the study area.

Women are directly involved in all operations relating to rice processing such as milling, winnowing, and parboiling. However, their extent of participation in the use of equipment was found to be low. Hence, Government should make provision of improved technologies as these will not only go a long way to facilitate their participation, but also expose respondents to improve processing system. High cost of start-up capital was found to impede rice processing in the area. Hence, government and concern organization should effectively link rice processors to available financial institutions for the provision of on-lending short and long term credit facilities. These financial institutions can also provide advisory role to the processors to ensure prudent management of such facilities.

Finally, Education contributes in increasing economic efficiencies in rice processing. Therefore, all policy measures that build the educational capacities of the rice processors and strengthen their managerial capacities will enhance greater performance of the rice processors. For example, adult education could be introduced in rural part of the study area.

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