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The economic analysis of rice and cassava stable food-crops processing in Ekiti State, Nigeria

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Abstract

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Cassava (roots and tubers) and rice (cereals) are common food-crops cultivated by small scaled farmers in developing countries like Nigeria. Farmers that engages in the processing of these food-crops have recorded an appreciable income increase and has economic advantages over farmers who did not process. Hence, this study examines economic analysis of these food-crops in Ekiti State, Nigeria, using two dominant local-government areas (Irepodun/Ifelodun and Ikole) and multi-stage random sampling to select 140 respondents that were useful for data analysis. Descriptive analysis indicated the mean age of respondents as 55 years. Experience and years of education in food processing are significant factors, the higher the experience, the higher the farm profit. Cross-tabulation analysis revealed that 31% of farmers who took decision to process farm outputs had tertiary education. Moreover, proportion of farmers that engages in processing are 95.7%. Also, 34.3% of those who processed farm inputs made N100.000 (273.22 Euros) and above annually as against 11% of farmers who did not. T-test statistics revealed a significant difference between farmers who processed and those who did not. Hence, processed farm-outputs are significant factors to income increase and welfare improvement among food-crops processors in Ekiti State. Hence, government should formulate and implement economically viable value addition reforms policy to motivate farmers' to process their farm outputs.

Keywords: economic analysis; rice; cassava; processing; profit and loss

Introduction

Staple food-crops refer to the food eaten routinely and are commonly available for majority in a defined environment (FAO, 2010). They constitute a dominant portion of a standard diet supplying a large portion of energy needs and generally forming a significant portion of the intake of other nutrients as well (FAO, 2012; African Food Staples, 2015). Staple food-crops are typically inexpensive, readily-available at various places and they supply the organic macronutrients (carbohydrates, fats and protein) needed for energy, survival and health (Saito et al., 2006; Foster, 2015). Common staple food-crops include roots and tubers (such as cassava, potato, and yam), cereal grains (such as rice, millet, maize, wheat), pulses (dried legumes) and other seeds are derived either from vegetables and animal products (FAO, 2010). Among the dominant ones are rice and cassava (Tewe and Lutaladio, 2004; Tran and Kajisa, 2006; Oriola, 2009).

Rice (*Oryza sativa* L.) is the most widely grown and cultivated staple food-crop. It is estimated that 3.5 billion people worldwide are into rice farming (IRRI, 2013). Rice provides up to 50% of the dietary caloric supply and a substantial part of the protein intake for about 520 million people living in Asia. In sub-Saharan Africa, rice consumption among urban

dwellers has steadily grown, with per-capita consumption that has doubled since 1970 (IRRI, 2013). Countries in Caribbean and Latin America regions are also reporting a steady rise in rice intake in their populations (IRRI stitute, 2013). Therefore, rice is of unique nutritional importance in Asia Pacific region, parts of Latin America and Caribbean and in sub-Saharan Africa (SSA) (Muthayya et al., 2014). It is also the primary source of income and employment for more than 200 million households across countries in the developing world (Emodi and Dimelu, 2011; Muthayya et al., 2014; Darsono, 2016).

Cassava (*Manihot esculenta*) is grown in many tropical countries of Asia, Africa and Latin America. Nigeria ranked as one of the largest producer of cassava, but most of the crop is consumed locally and exports are only a small portion of the total output (Akaeze, 2010; Yakasai, 2010). The crop is produced in 24 of the country's 36 states. Cassava is a major staple food-crop in Nigeria, cassava and its product are found in the daily meals of Nigerians (Onyenwoke and Simonyan, 2014). Nigeria currently produces about 54 million metric tonnes (MT) per annum (FAO, 2013), making it the highest cassava producer in the world, producing a third more than Brazil and almost double the production capacity of Thailand and Indonesia. However, Nigeria is not an active participant in cassava trade in the international markets because most of it cassava products consumed locally.

Despite its economic advantages, very few farmers engage in processing of these food-crops. Past studies argued that cassava products enters international trade in different forms, such as chips, broken dried roots, meal, flour and tapioca starch. Dried cassava roots and meal are used as raw material for compound animal feed, while cassava starch is used for industrial purposes; grocery tapioca is used solely for human consumption. Despite the economic importance of these food-crops, the area cultivated still appears small in sub-Saharan Africa (SSA) unlike in Asia 25 million hectares of land devoted to cultivation (Gil and Buitrago, 2012; Erenstein et al., 2003; Laudan, 2010; Okpe et al., 2012). Often these food-crops are grown for home consumption or sold without further processing unlike in Asia where 90% processed (Onabolu et al., 1998; Kebbeh et al., 2003; Akande, 2008; Emodi and Madukwe, 2008). Nigeria has the potential to be self-sufficient in rice and cassava production and processing both for food and industrial raw materials (Westby, 2002; Ajala and Gana, 2015). Past studies indicated that the production methods are primarily subsistence in nature and therefore unable to support industrial level demands (IITA, 2010; FAO, 2013; CMPPF, 2015).

Processed rice and cassava have attracted international marketing. Where is the place of Nigeria in international marketing of cassava and rice? Consequently, the paper examines economic analysis of staple-foods processing among farming household also, investigate proportions of farmers that engages in processing and income differentials of these categories of farmers in Ekiti state, Nigeria.

Methodology

Area of study

IITA (2012) listed major cassava producing states of Nigeria as Imo, Anambra, Edo, Delta, Benue, Ekiti, Oyo, Cross River and Rivers, while for rice the major producing states are Ekiti, Kwara, Nassarawa, Kebbi (WARDA, 2003). Hence, Ekiti state was chosen due to the state involvement in production and processing of rice and cassava. Ekiti state was created on 6 July 1996 from the former old Ondo state. The state current poverty level is 45.7% and unemployment rate of 12.5% (NBS, 2012). The present Ekiti state has been regarded as landlocked areas and land fragmentation has been seriously influenced. The state is made up of 16 local government areas, with Ado-Ekiti as the state capital. The state lies entirely in the tropics. Agricultural practices and Timber/Saw millings are prominent livelihood in the state.

Sampling techniques and data collection

Multi-stage stratified random sampling technique was employed for data collection. In the first stage of the sampling process, Agricultural Development Project (ADP) Zone of Ekiti Central zone was considered. Second stage, two local-governments were selected on the basis of indices of food processing outlets in the state through past studies. Third stage, purposive towns were selected that is known for food processing. Two towns were identified from Ikole local-government and one from Irepodun/Ifelodun. In the final selection, seventy farmers were randomly selected from each local-governments through the list provided by ADP of farmers that had participated/benefitted from their past work/training. Final analyses of data collection were shown on Table 1. A total of 140 respondents (82.4% response rate) were good for further analysis.

Table 1 revealed that 85 questionnaire were distributed across the LGAS to give a total of 170 but 140 questionnaires were used for subsequent data analysis. Unused 30 questionnaires comprises of unreturned questionnaire, missing information and incomplete data in the questionnaire.

Method of data collection

Structured questionnaire was administered on identified 140 households' heads (respondents). Data were collected on the socio-economics characteristics of identified households such as age, sex, marital status, primary occupation, secondary occupation, educational level of household head, household size,

Table 1
Distribution of sample size and collection

Zone	Local government	Town	Questionnaire distributed	Questionnaire returned
ADP Central	Ikole	Umoru/Otunja	30	23
		Odo-oro	55	47
	Irepodun/Ifelodun	Igbimo	85	70
	Total		170	140

Source: Field survey, 2017

household income, number of household income earners, mode of farming operations and factors influencing same.

Method of data analysis

The study adopted the use of Multiple Regression Model to examine factors influencing food-processing or not among farming households in the identified study areas. Income status was regressed against selected variables. The model expressed as:

$$Y = b_o + b_1X_1 + b_2X_2 + b_3X_3 + ... + b_{12}X_{12} + u$$

where Y is the likelihood of presence of the characteristics of interest (the characteristics of interest is whether a farmer process further).

Y = Do you process food or not and income status of household/income increase

b = Constant

b_i = Coefficients

$X_1 – X_{12}$ = Independent variables

U = Error term assumed to have normal distribution with zero mean, and constant variance, i.e. $U \sim N (0\ \sigma_2)$ and $E (U_i, U_j) = 0_{ij}$

Table 2
List of independent variables and measurements

S/N	Variables	Measurements and operationalization	Expected signs
1	Age (X_1)	Measured in terms of number of years of age	negative relationship
2	Gender/Sex (X_2)	Male or female (binary)	
3	Marital status (X_3)	This indicates whether respondents are married, unmarried, single, or widowed. This data was operationalized through scoring system labelled from questionnaire.	positive relationship among married respondents
4	Family size (X_4)	The size of the family of the respondent measured in terms of total number of members in the family including the elderly and children.	family size was assumed to have positive relation
5	Years of schooling (X_5)	Education refers to the level of formal and non-formal education and this was scored in terms of ability to read and write and enrolment in primary, secondary schools or post-secondary.	positive relationship
6	Farming experience (X_6)	Studies have identified experience greatly influences outcome.	variable was assumed to influence positive outcome
7	Acquisition of farmland (X_7)	Method in which farm is being acquired for farming purposes was captured.	variable was assumed to influence positive outcome
8	Land used for farming (X_8)	This refers to the area of cultivated land owned by the respondents or their families. It was assumed that the larger the farm size, the better access the farmer has to use combination of technological packages on the land.	Therefore, it was hypothesized that land size has a positive relationship
9	Agricultural practices (X_9)	This refers to method of agricultural operations carried out on the farm.	variable was assumed to influence positive outcome
10	Sources of farm inputs (X_{10})	Access to credit has impact on the level of utilization of recommended technological packages and this in turn will expose respondents to divergent information.	variable was assumed to have a positive relationship
11	Food processed or not (X_{11})	This refers to factors influences decision to process food further or not (binary).	variable was assumed to influence positive outcome
12	Cost of farm inputs (X_{12})	Operationally defined as the value of the products of the household after home consumption and income obtained from off-farm and non-farm activities that are expressed in Naira per year.	The income level was anticipated to have a positive relationship

The following variables were hypothesized as having significant influence on the income status of households, as well as factors influencing decision to process or not: age (X_1), gender/sex (X_2), marital status (X_3), family size (X_4), years of schooling (X_5), farming experience (X_6), acquisition of present farm (X_7), land used for agricultural purposes (X_8), agricultural practices (X_9), sources of farm finances (X_{10}), processing food or not (X_{11}) and cost of farm inputs (X_{12}). The selection of these variables was based on economic theory and suggestions of previous/similar studies. The ordinary least square (OLS) techniques were used to estimate the model.

Variables and their definitions

Dependent variable

The dependent variable used for this study follow 2 forms: 1) decision to process food further, and 2) income.

Independent variables

Twelve independent variables were identified and hypothesized to influence decisions to process food further and income (Table 2).

Results and Discussions

Description of socio-economic variables

Age distribution of household heads

Past studies have indicated that Nigeria's economy is predominantly agricultural, which implies that a large proportion of the populace derive their livelihoods from crop production, fishing and forestry. Consequently, there is need to review the age range which can cope with this labour-intensive and drudgery livelihood activities.

Table 3 shows the age distributions of household's heads.

Result from Table 3 shows that the modal age range is above 60 years. Mean age was 55.29. Implication of this finding suggests that the population is ageing and cannot contribute productively to agricultural productions. Hence, there is an urgent need to encourage young people particularly those in their active age groups to participate in food processing and other value addition activities.

Table 3
Age distribution of household heads

Age group	Frequency	Percentages (%)
21 -30	3	2.1
31 – 40	16	11.4
41 – 50	29	20.7
51 – 60	42	30.0
Above 60	50	35.7
Total	**140**	

Source: Field survey, 2017

Distribution of family size and sex of household heads

The size of household could provide important information on the income generation, food processing and livelihood activities because of its possible correlation to welfare. Grootaert (1997) and Ellis (1998) argued that large household size reduces the per capita expenditure of the family thereby aggravating poverty in the household. The distribution of the family by size is shown in the Table 4.

Table 4
Family size grouping * Gender Cross tabulation

		Gender		Total
		Male	Female	
Family size grouping	1-3	4	2	6
	4-6	30	18	48
	7-9	27	7	34
	10-12	16	1	17
	13-20	32	3	35
Total		**109**	**31**	**140**

Source: Field survey, 2017

The result from Table 4 shows that about 18.6% of the households fall between household sizes 7-9 with mean of 9.34. This outcome is large enough to attract high dependency burden in terms of many mouths to feed. Even though family size tends to reduce per capita expenditure, it can also enhance it. This has to do with the distribution of household between adult and children and also whether such adult is working. The implication of this finding is that the higher the dependency burdens the more the household consumed farm outputs, thus, reduces marketable farm outputs sold and reduction in household income.

Table 5 presents the causal relationship between profit earned or losses as a result of farmers engaging in food processing and the experience. Literature has documented that experienced influences efficiency (Grootaert, 1997; Ellis 1998). Table 5 results indicated that farmers that made losses were 37.9% out of which 15.1% did not processed farm outputs. In addition, 28.6% made over N150.000 (Nigerian naira). This category of farmers who made such amounts did processed farm outputs. The relationship between years of experience in food processing and profit earned revealed a decisive link. The higher the experience, the higher the farm profit. The evidence from Table 5 revealed that 48.6% of farmers who processed farm outputs made N50.000 and above annually. This finding thus confirms that value addition of food processing is significant.

Years of schooling of household heads

Education is vital for boosting the productivity of the human factor of production and making people aware of op-

Table 5
Income earning grouping * Farm size grouping Cross tabulation

		Food processing experience (yrs)					Total
		4-6	7-9	10-12	13-15	16+	
Profit/Loss (Naira)	1-10000	0	0	0	0	3	3
	10001-25000	0	2	0	1	8	11
	25001-50000	0	1	0	1	4	6
	50001-75000	0	1	1	0	8	10
	75001-100000	0	1	1	1	5	8
	100001-150000	0	1	2	1	6	10
	150001-1000000	0	0	4	2	33	40
Loss (-1 - -150000)		1	1	4	12	35	53
Total		1	7	12	18	102	140

Note: 1 Euro = 366 Nigerian Naira

portunities for earning a living. It has been found that a one-year increase in the average length of schooling could push up GDP by 3% (Grootaert, 1997). The income of a household is a function of the number of persons working in the household and sometimes the level of educational attainment (Montagnac et al., 2009; Apata, et al., 2010). Therefore, the level of education in the study area varied from non-formal education to tertiary institutions. Thus, the number of years spent in school varies from 0-17 years.

Table 6
Years of educational attainment of household heads

Educational attainment	Frequency	Percentage (%)
No formal education	13	9.3
Primary school	29	20.7
Secondary school	41	24.3
Post-secondary school	14	10.0
Tertiary institution	43	30.7
Total	140	

Source: Field survey, 2017

Result from Table 6 revealed that those that attended tertiary institution (like polytechnic, colleges of education, university among others) are in modal class of 43%. This suggests a fairly literate populace. The higher the educational level, the more the individual is expected to recognize opportunities for earning a living. Also, this can help in determining the type of non-farm livelihood sources to be engaged in to augment household income. Finding suggests that most households' heads will recognize opportunities for earning an extra income. Also, dissemination of new ideas and methods can easily be influenced and received. Thus, there is a call for adequate and more representation of extension personnel in the area of study. Moreover, cross tab revealed that 31% of farmers who took decision to process farm outputs had tertiary education as against 1% who had similar education and do not to process farm outputs. Hence, this findings supports past studies that education influences opportunities to add value to farm outputs and earning an extra income.

Table 7 revealed that 95.7% of the respondents process their farm outputs out which cassava processing took 43.6% (Table 8). Also rice took 26.4% and both cassava and rice took 25.7%, respectively (Table 8). Knowledge of processing the agricultural produce and availability of processing machine and to attract more gain are some of the factors that motivates food processing (Table 9). Moreover, the cross tabulation analysis of food processors and otherwise in terms of profit/loss generation revealed that 34.3% of those who processed their farm inputs made N100.000 and above annually as against 11% of farmers who did not processed. In addition, farmers who did not process and accounted for losses are 4.3% (Table 10). This evidence suggests that value addition is a significant factor to income increase and welfare improvement among food processors in Ekiti State.

Table 7
Do you process your farm outputs?

Do you process farm outputs?	Frequency	Percent
Yes	134	95.7
No	6	4.3
Total	**140**	**100.0**

Table 8
Processed farm outputs

Processed farm outputs	Frequency	Percent
Cassava	61	43.6
Rice	37	26.4
Cassava and rice	36	25.7
Did not processed	6	4.3
Total	**140**	**100.0**

Table 9
Reasons for processing farm outputs

Why do you process farm outputs?	Frequency	Percent
Availability of processing machine	23	16.4
Knowledge of processing the agricultural produce	62	44.3
To add value to the agricultural produce to make more money	27	19.3
To attract more profit/gain	18	12.9
Assurance of market	4	2.9
Total	**134**	**95.7**

The paper examined income of those categories of farmers who processed foods as against those who did not in addition too, the study evaluated the significance difference between farmers who processed food as against who did not. Hence, this helps to provide answer to the hypothesis of the study. Evidence from Table 11 revealed that 25% of those farmers that processed food made significant profit (N200.001-N750.000) as against zero profit for farmers who did not processed food further.

Further test was carried out using t-test statistics to test whether there is a significant difference from those that processed food and those who did not. Hence, the study develops the null and alternative hypothesis to test the linear relationship between farmers who processed food further as against those who did not.

H_0 = 05: There is no significance difference between those that processed staple foods and those that did not processed staple foods.

$H_1 \neq 0$ There is significance difference between those that processed staple foods and those that did not processed staple foods.

(j) At the .05 level of significance, the paper determines whether food processed and income increase are linearly related.

Table 10
Income earning grouping * Product processed

		Product processed			Total
		Cassava	Rice	Cassava and Rice	
Profit/Loss (Naira)	1-10000	3	0	0	3
	10001-25000	2	4	5	11
	25001-50000	4	2	0	6
	50001-75000	3	3	0	6
	75001-100000	4	3	0	7
	100001-150000	6	1	2	9
	150001-1000000	13	12	14	39
Loss (-1 - -150000)		22	12	9	43
Did not processed		3	5	8	16
Total		**63**	**37**	**40**	**140**

Note: 1 Euro = 366 Nigeria Naira

Table 11
Profit and loss grouping * Do you process your agricultural outputs Cross tabulation

Count		Do you process your agricultural outputs		Total
		Yes	No	
Profit and loss grouping	1-10 000	3	0	3
	10 001-25 000	11	0	11
	25 001-50 000	6	0	6
	5 110 001-75 000	6	4	10
	75 001-100 000	7	1	8
	100 001-150 000	9	1	10
	150 001-200 000	8	0	8
	200 001-750 000	31	0	31
	-500 000 - -1	43	0	43
Total		**124**	**6**	**130**

Source: Computer print out
Note: 1 Euro = 366 Nigeria Naira

$$t = \frac{r\sqrt{n-k}}{\sqrt{1-r^2}},$$

where k = numbers of parameter which is β_0 β_1 = 2;

n = numbers of pairs of values = 10;

r = correlation value

$t_{cal} = 0.923\sqrt{10-2} / \sqrt{1-0.923^2}$

$t_{cal} = 6.7845$

$t_{tab} = t_{\alpha/2\,(n-k)} = t_{0.025\,8} = 2.312$

Hence t_{cal} (6.7845) > t_{tab} = 2.312.

Therefore, there is a significance difference between those that processed staple foods and those that did not processed staple foods. Those people that processed food had income increase than those who did not.

The above analysis indicated that there are income differentials between farmers who processed food further and those who did not.

What are the factors influencing processing or not of these identified staple foods farmers?

Multiple regression analysis was done for two dependent variables – decision to process farming outputs and income increase. Results of the regression estimates of the factors motivating decision to process farm inputs and the significant outcome are present in Table 12.

The multiple regression model was conducted to investigate factors that influence farmers' decision to processed farm outputs and income increase and estimated via ordinary last square (OLS) method. Tables 12 and 13 present the estimated results of the regression model. Overall the multiple regression model successfully predicts the possibility of farmers' decision to processed farm outputs (72%) and income increase (74%). This suggests that 72 and 74 per cent of the explanatory variables explained the dependent variables (that is farmers' decision to processed farm outputs and income increase), respectively. Based on the estimated results, 6 variables were found to have significant influence on farmers' decision to processed farm outputs further and 5 variables had significant influence on income increase. These were family size, years of education, farming experience, agricultural practices, sources of finance and cost of farming inputs, respectively. The significant positive signs on years of education and farming experience variables can be explained from the perspective of capital requirement. Fairly literate farmers tend to have more investment opportunities, influencing the decision to process farm outputs. Literate farmers tend to have more income earning potentials for improving farm sizes and/or production, compared to uneducated farmers. Significant but negative relationship was found between variable family size and farmers' accessibility to land for agricultural purposes, suggesting that the larger-size households are less likely to engage in processing farm outputs thus, prefer to sell farm outputs at the farm gates. One possible explanation for this unexpected relationship is that households with higher family size and dependency ratios have fewer family members taking up in-

Table 12
Multiple regression estimates for decision to process farming outputs further

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.942	.148		6.383	.000
Age	.001	.002	.042	.248	.004
Gender	.014	.047	.029	.305	.761
Marital Status	-.023	.021	-.102	-1.105	.271
Family size	-.002	.005	-.059	-.456	.009
Highest level of education	.014	.016	.095	.897	.001
Farming experience	.002	.002	.152	1.016	.312
How do you acquire your present farm	.015	.022	.066	.675	.501
Cost of agricultural inputs	-6.786E-8	.000	-.007	-.067	.946
Hired labour cost	-4.966E-7	.000	-.140	-1.388	.007
Cost of processing machine	1.094E-6	.000	.167	1.906	.059
Sold outputs revenue	-1.473E-8	.000	-.043	-.464	.643

Source: Field Survey, 2017

Dependent variable: Decision to process farm outputs further

Marginal effect is at the mean value; * 10% significant level; ** 5% significant level; *** 1% significant level

R-squared R^2 = 0.72 Durbin Watson DW: 1.963

Table 13
Multiple regression estimates for profit and loss account as a result of processing

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	25874.805	55888.228		.463	.644
Age	-403.098	862.013	-.010	-.468	.641
Gender	14894.053	17320.584	.011	.860	.392
Marital Status	12192.806	7688.377	.019	1.586	.115
Family size	1482.441	1797.377	.014	.825	.411
Highest level of education	-165.053	6060.551	.000	-.027	.978
Farming experience	-257.976	585.366	-.008	-.441	.660
How do you acquire your present farm	-2336.053	8092.693	-.004	-.289	.773
Cost of agricultural inputs	-2.195	.375	-.084	-5.860	.000
Hired labour cost	-1.698	.140	-.166	-12.115	.000
Cost of processing machine	-1.436	.216	-.075	-6.640	.000
Sold outputs revenue	1.003	.012	1.035	85.499	.000
Product processed	-29195.189	9446.013	-.041	-3.091	.002

Source: Field Survey, 2017
Dependent variable: Profit and loss account
Marginal effect is at the mean value; * 10% significant level; ** 5% significant level; *** 1% significant level R-squared $R^2 = 0.74$ Durbin Watson DW: 1.963

come-generating activities and thus are more inclined not to process farm outputs further and prefer to sell farm outputs at the farm gate.

The estimated coefficients of variables agricultural practices and sources of fund are all negative and significantly different from zero at the one per cent level (for profit and loss regression model). Agricultural practices adopted had a lower probability to improve income compared to those that adopted effective land management practices and good management programme in their farming operations. In addition, sources of fund influences likelihood to process farm outputs, this is because most credit were sourced from friends and family, fund from these sources were inadequate and untimely thus making used of credit not effective.

Estimated coefficient of cost of farming inputs is positive, implying farmers that uses relevant and timely farming operation and also adopting good management program in farming are likely to process farm outputs and hence generate more income. The marginal effects are also calculated for the regressors of the multiple regression model to provide a direct economic interpretation on the influence of these variables on decision to process farm outputs and income increase. For example, the marginal effect of family size indicates that an additional member increase in the family would decrease the probability of decision to process farm outputs and income increase by 2.36% on average. In addition, the probability of engaging in effective agricultural practices would increase by 0.55% with every 1% increase in dependent ratio.

Conclusions

Evidence from the study revealed that 25% of those farmers that processed food made significant profit. T-test statistics also testified that there is a significant difference. Moreover, cross tab revealed that 31% of farmers who took decision to process farm outputs had tertiary education as against 1% of category of farmers who had similar education took decision not to process farm outputs. This evidence suggests that value addition is a significant factor to income increase and welfare improvement among food processors in Ekiti State.

Factors that influences decisions to processed farm outputs further and income increase were predicted by multiple regression model results and estimated via ordinary last square method, 6 variables are found to have significant influence on farmers' decision to processed farm outputs further and 5 variables are found to have significant influence on income increase. These are family size, years of education, farming experience, agricultural practices, sources of finance and cost of farming. While, a significant but negative relationship is found between variable family size and farmers' accessibility to land for agricultural purposes, suggesting that the larger-size households are less likely to engage in processing farm outputs thus, prefer to sell farm outputs at the farm gates.

The paper also identified that value addition indeed had a significant influence on income increase, hence, policies to encourage and motivate value addition among food farmers be put in place such as creation and boosting of economically viable food processing centers that will inspire food processing.

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