THE CONCEPT OF VALUE CHAINS IN AGRICULTURE, CLIMATE ACTION AND ENVIRONMENTAL RESOURCES

GLOBAL ISSUES & LOCAL PERSPECTIVES

Edited by

Ignatius Onimawo

Stephen Ibitoye

Zacharia Yaduma

Lucky Onyia

Femi Ajisafe

Eteyen Nyong

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Preface

This book adopts an exegetical approach as well as a pedagogic model, making it attractive agriculture and environmental economics teachers, professional practitioners and scholars. It is eschews pedantry and lays bars the issues in such clarity that conduces to learning. The book elaborates on contemporaneous ***The Concept of Value Chains in Agriculture, Climate Action and Environmental Resources*** issues of global significance and at the same time, is mindful of local or national perspectives making it appealing both to international and national interests. The book explores the ways in which climate change, food security, national security and environmental resources issues are and should be presented to increase the public's stock of knowledge, increase awareness about burning issues and empower the scholars and public to engage in the participatory dialogue climate change, food security, national security and environmental resources necessary in policy making process that will stimulate increase in food production and environmental sustainability.

The Concept of Value Chains in Agriculture, Climate Action and Environmental Resources: Global issues and Local Perspectives is organized in three parts. Part One deals with The Concept of Value Chains in Agriculture, Part Two is concerned with The Concept of Climate Actions and Part Three deals with the Concept of Value Chains and Environmental Resources.

Eteyen Nyong/ Ignatius Onimawo

April 2025

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Chapter Five

An Appraisal of Women Participation in Cassava Production and Processing in Ogbia Local Government Area, Bayelsa State, Nigeria

Tasie, C.M. and Wilcox, G. I.

Department of Agricultural Science, Faculty of Vocational and Technical Education
Ignatius Ajuru University of Education, Rumuolumeni, Port Harcourt, Rivers State, Nigeria

Corresponding author's Email: tasiechimezie@gmail.com

Introduction

Agriculture is an important sector of the economy with high potentials for employment generation, food security and poverty reduction. It is argued that women account for 70 – 80% of household food production in sub-Sahara Africa. Women farmers grow more than half of all the food in developing countries and up to 80% in parts of Africa, generally in the form of small-scale crops for household consumption (Obiora, 2013). Women provide the greatest proportion of household time spent on food processing and preparation and if these hours are added to that spent in agricultural activities, it then implies that women's labour share could well exceed 60 percent in many African countries (Odubo *et al*., 2019). In terms of agricultural time, women are predominantly involved in a large number of cultivation activities (planting, fertilizer application, weeding, harvesting) as well as post-harvest activities (storage, processing and marketing) with the exception of pre-planting activities such as ploughing which are often considered quite strenuous for women in most communities (Action Aid, 2015). Agriculture has not fulfilled its potential, suffering from a lack of investment to insufficient attention by policy makers.

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An in-depth understanding of women's contributions to cassava production and processing in rural households in Nigeria is very imperative. This will ensure effective allocation of production resources within the rural households. This was why SAHEL (2014) stated that women are almost entirely responsible for virtually all activities like hoeing, planting, weeding, harvesting, transporting, processing, marketing and domestic chores which provides them with additional income-earning opportunity and enhances their ability to contribute to household food security. In a similar development, Rahman (2004) also observed that women in Nigeria form an active and significant labour force in agriculture but they rarely own the means of productions. However, the position of women in meeting challenges of agricultural development cannot be over emphasized. Women make a significant contribution to food production and processing; they provide 60-80% of agricultural labour and are responsible for 80% of food production (Mgbada, 2002).

Doss (2011) found that rural women are involved in several socio-economic activities, which are summarised as productive, reproductive and community services. These roles included land preparation for farming, planting of crops and vegetables for household consumption, weeding, harvesting, processing of harvested crops and storage, transportation of farm produce, artisanal fishing, fish processing and marketing, processing and sale of dairy products, homestead livestock husbandry, small–scale trading, carrying concrete at building sites, fetchers of fire wood, pot making, weaving and dyeing of traditional clothing materials, sewing and beautification, religious activities and festivals community development, teaching, food preparation and home management, leadership and child care and reproduction of new members of the society.

Cassava is an important crop produced by almost every farm family. Ovwigho (2010) reported that 92% and 80% of farm families in Delta State and Shell Petroleum Development Company areas of operation in Delta State grew cassava as a major crop. Cassava is a major crop because of the suitable productive factors and ease of cultivation coupled with the fact that the crop constitutes a major staple food crop which is processed into garri, fufu and starch. Garri made into eba is the most popular food eaten by adults and children in the study area. The foregoing underscores the importance of cassava production in the study area.

Considering the importance of cassava and the role women play in cassava production and processing in Nigeria, Bayelsa State inclusive, one would have expected a high production out-put of cassava for house-hold consumption and exportation in the study area; because the reverse is the case and it calls for the evaluation of women participation in cassava production and processing in Ogbia Local Government Area of Bayelsa State. The objectives of this study were to: describe the socioeconomic characteristics of women participation in cassava production and processing in Ogbia Local Government Area of Bayelsa State; determine the level of women participation in cassava production and processing; determine the factors that affect women participation in cassava production processing; identify the constraint faced by women in cassava production and processing in Ogbia LGA and identify the end products of cassava processing in Ogbia LGA.

Methodology

The study was conducted in Ogbia Local Government Area of Bayelsa State in Niger Delta region of Nigeria. Its headquarters is Ogbia town. A survey research design was used for the study. The population of this study consisted of all female cassava farmers in Ogbia Local Government Area of Bayelsa State. A multistage sampling technique was used to samples for the study. Ten communities were purposely selected from the list of thirty two communities. Their selection was due to their significant involvement in cassava production and processing in the area of study. Twenty female cassava farmers and processors were randomly selected from each of the communities to give a total sample size of 200 respondents. The table below shows the selected communities and respondents:

SN	TOWNS	No. of women
1	Ogbia	20
2	Imiringi	20
3	Anyama	20
4	Otuokpoti	20
5	Otuasega	20
6	Idema	20
7	Emakalakala	20
8	Kolo	20
9	Otuoke	20
10	Emeyal 1	20 women
	TOTAL	**200 RESPONDENTS**

Data were collected through questionnaire and interview schedule for respondents who are not literate. Data were collected on the socioeconomic characteristics of the sampled farmers as well as the type and unit of their factor inputs. Data were also collected on the cassava production and processing activities undertaken by the respondents in the area.

Descriptive statistics such as mean, frequency counts, percentages, participation index and multiple regression analysis were used to achieve the objectives of the study. The participation index was constructed using a 3 point Likert scale as used by Onyemauwa (2012). Participation was measured on a scale of 1 - 4 in order of importance from; never involved = 1 - 1.99, rarely involved = 2 - 2.99, always involved = 3 - 3.99. The respondents were asked to indicate their level of participation in 14 practices involved in cassava production and processing. The mean score for each of the practices/activities was calculated and the grand mean score of

all the practices was divided by the number of activities to determine the level of participation of women in cassava production and processing in the area. Participation index was used as the dependent variable in the regression model.

The model was specified in its explicit form thus;

$$Y = b_0 + b_1\chi_1 + b_2\chi_2 + b_3\chi_3 + b_4\chi_4 + b_5\chi_5 + b_6\chi_6 + b_7\chi_7 + u$$

Where,

Y = Participation index of the respondents

χ_1 = Age of the respondents (years)

χ_2 = Experience in cassava production and processing (years)

χ_3 = Level of education (number of years spent in formal schooling)

χ_4 = Extension contact (number of visits in a year)

χ_5 = Access to credit (Dummy: 1=yes; 0=otherwise)

χ_6 = Farm income (naira)

χ_7 = Cooperative participation (Dummy: 1=yes; 0=otherwise)

$b_1 - b_7$ = Regression coefficients

U = error term

Four functional forms, linear, exponential, double-log, and semi-log, were fitted into the model above and the form that best fits the regression line, according to economic, statistical, and econometric criteria, was chosen and used for analysis.

Results and Discussion

Socioeconomic characteristics of women participation in cassava production and processing in Ogbia Local Government Area of Bayelsa State

Age of Respondents

Table 1: Distribution of respondents according to their Age

Age (years)	Frequency	Percentage
20 - 29	11	5.5
30 – 39	61	30.5
40 – 49	75	37.5
50 – 59	45	22.5
60 - Above	8	4.0
Total	**200**	**100**

Source: Field Survey, 2021

Survey result presented in Table 1 show that the modal class of the respondents was between 40 and 49 years. This represents about 37.5 % of the respondents and is an indication that majority of the respondents were in their middle and active age of life. This is closely followed by the respondents whose age range between 30 and 39 years. This is consistent with the finding of Onyemauwa (2012) that women in their 30s and 50s take active part in food crop production.

Marital Status

Table 2: Distribution of respondents according to their Marital Status

Marital Status	Frequency	Percentage
Single	15	7.5
Married	130	65.0
Divorced	30	15.0
Widowed	18	9.0
Separated	7	3.5
Total	**200**	**100**

Source: Field Survey, 2021

The result in Table 2 showed that 15(7.5%) of the respondents are single, 130(65.0%) are married, 30(15.0%) are divorced, 18(9.0%) are widowed and 7(3.5) are separated. This implies that majority of the respondents are married.

Educational Status

Table 3: Distribution of respondents according to their Educational Status

Educational Status	Frequency	Percentage
Primary Education	69	34.5

Secondary Education	96	48.0
Tertiary Education	35	17.5
Total	**200**	**100**

Source: Field Survey, 2021

The survey result in Table 3 showed that 69(34.5%) of the respondents went through Primary Education, 96(48.0%) finished Secondary Education, 35(17.5%) got Tertiary Education. This implies that majority of the respondents have Secondary Education and based on this, they need more enlightenment from extension agents on the usage of modern technologies in cassava production and processing.

Household Size

Table 4: Distribution of respondents according to their Household Size

Household Size	Frequency	Percentage
1 – 3	20	10.0
4 – 6	63	31.5
7 – 9	95	47.5
10 and above	22	11.0
Total	**200**	**100**

Source: Field Survey, 2021.

Table 4 showed that 20(10.0%) of the respondents had household size between 1 – 3persons. 63 (31.5%) had household size between 4 – 6 persons, 95(47.5%) had household size between 7 – 9 persons and 22(11.0%) had household size of 10 and above. This implies that majority of the respondents had household size 7 – 9 members.

Processing Experience

Table 5: Distribution of respondents according to their processing experience

Processing Experience (years)	Frequency	Percentage
1 – 5	24	12.0
6 – 10	28	14.0
11 – 15	89	44.5
16 and above	59	29.5
Total	**200**	**100**

Source: Field Survey, 2021.

Table 4.5 showed that 24(12.0%) of the respondents had processing experience between 1 -5 years, 28(14.0%) had processing experience between 6 – 10 years, 89(44.5%) had processing experience between 11 – 15 years and 59(29.5%) had processing experience of 16 years and above. This implies that majority of the respondents were well experienced in processing.

Extension Visit

Table 6: Distribution of respondents according to Access to Visit from Extension Agents

Visit from Extension Agents	Frequency	Percentage
Visited	4	2.0%
No visit	196	98.0%
Visit to Extension Agents		
Visited	2	1.0%
Not visited	198	99.0%

Source: Field Survey, 2021.

Table 6 showed that 4(2.0%) of the respondents were visited by extension agents and 196(98.0%) of the respondents said no visit. This implies that almost all the sampled respondents were not visited by extension agents. Also, the table showed that 2(1.0%) of the respondents visited extension agents and 2(99.0%) did not visit extension agents. This implies that almost all of the sampled respondents did not have extension contact.

Access to Credit

Table 7: Distribution of respondents according to Access to credit

Access to credit	Frequency	Percentage
Obtained credit	29	14.5
Did not obtain credit	171	85.5
Total	**200**	**100**

Source: Field Survey, 2021.

Table 7 showed that 29(14.5%) of the respondents obtained credit and 171(85.5%) did not obtain credit. This implies that majority of the sampled respondents did not obtained credit in the past two years.

4.8 Membership of cooperative Society

Table 8: Distribution of respondents according to Membership of Co-operative Society

Membership of co-operative	Frequency	Percentage
Belonged to co-operative	75	37.5
Do not belong to co-operative	125	62.5
Years spent in co-operative		
1 – 5	55	27.5
6 – 10	106	53.0
11 – 15	39	19.5

Source: Field Survey, 2021

Table 8 showed that 75(37.5%) of the respondents belonged to co-operative while 125(62.5%) do not belong to co-operative. Also, the table showed that 55(27.5%) of the respondents have spent between 1 – 5 years in co-operative, 106(53.0%) have spent 6 – 10 years in co-operative and

39(19.5%) have spent 11 – 15 years in co-operative. This implies that majority of the respondents have spent between 6 – 10 years in co-operative societies.

Enterprise motive

Table 9: Distribution of respondents according to Enterprise motive

Enterprise Motive	Frequency	Percentage
Consumption	74	37.0
Commercial	39	19.5
Both	87	43.5

Source: Field Survey, 2021

Table 9 shows that 37.0% of the respondents have household consumption as their enterprise motive, 19.5% have commercial as enterprise motive and 43.5% have both family consumption and commercial as enterprise motive. Enterprise objective of producing and processing mainly for household sustenance has continued to affect the commercialization of agriculture in developing countries. Osugiri (2007) attributes the dominance of subsistence agriculture to the effects of land tenure system in Nigeria.

Level of women participation in cassava production and processing

Table 10 Participation index result of women in Cassava production and processing

Cultivation/Processing activities	Mean Score
Land Preparation	1.45

Cutting of cassava stems	3.79
Planting	3.89
Fertilizer/manure application	3.56
Weeding	3.87
Harvesting	3.83
Peeling the cassava roots	3.76
Washing/cleaning cassava roots	3.58
Grinding/Grating/crushing to mash	1.75
Bagging in a porous bag	2.57
Pressing on stakes or machine to remove excess water	1.62
Sieving/sifting the wet cake into grits	3.75
Fire preparation	3.83
Frying/roasting the grits to edible garri	3.88
Grand mean	**3.22**

Note: Never participated = 1.00 – 1.99; rarely participated = 2.00 – 2.99; always participated = 3.00 – 3.99

Source: Field Survey, 2021

Survey result presented in Table 10 showed that women are majorly and actively involved in most of the cassava production and processing activities in the study area. The Table show that their most significant participation in the cultural practices was in planting, weeding and harvesting with mean of 3.89 and 3.87 and 3.83 respectively. Fire preparation (using fire wood) (mean=3.83) and frying the cassava into edible garri (mean=3.88) were the major cassava processing practices.

Factors that affect women participation in cassava production processing

Table 11: Socioeconomic Factors Affecting Women Participation in Cassava Production and Processing

Explanatory Variables	Linear funct.	Exponential function	Double-Log	Semi-Log
Intercept	1245.12	11.39	5.67	7853996.
	(0.43)	(42.26)	(2.86)	(-2.73)
X_1	-0.07	2.67	0.023	- 00675
	(-0.24)	(0.65)	(0.03)	(-0.87)
X_2	0.67	0.06	0.29	3.07
	(0.50)	(0.05)	(2.75)*	(2.78)*
X_3	5.63	0.01	2.07	7.5456
	(4.60)*	(4.71)*	(4.69)*	(0.99)
X_4	1.82	0.53	1.06	7.6295
	(2.76)*	(2.45)*	(3.48)*	(2.57)*
X_5	-0.72	-1.48	-1.26	-2.0346
	(-2.80)*	(-2.64)*	(-3.23)*	(-4.54)*
X_6	236.50	0.045	10.17	3.7435
	(1.31)	(3.28)*	(2.36)*	(3.371)*
X_7	3.76	1.10	0.15	4546.40
	(3.44)*	(2.73)*	(2.72)*	(2.93)*
R^2	0.8681	0.8642	0.7835	0.8656
F-value	43.84	8.82	7.77	12.46
N	200	200	200	200

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Std E	39843.35	0.65	0.58	77925.53

*=Significant @ 0.05 level of significance

Figures in parentheses are the t-ratios

The result of ordinary least squares multiple regression as presented in Table 11 show that the exponential functional form provided the lead equation of the factors that affect women participation in cassava production and processing in Imo State. Though its coefficient of multiple determination (R^2) is not as high as those of the linear and the semi-log forms, the double log form was chosen because it has the least standard error as well as one of the highest number of statistically significant ($p<0.05$) exogenous variables, it also satisfied the a priori expectations. The linear and the semi-log forms were not considered also due to their very high standard error. Accordingly, the analysis is based on the result of the double log functional form. The result show that about 78.35% of the variation in the factors affecting women involvement in cassava production and processing in the state was explained by the exogenous variables included in the model. The study show that there was significant ($p<0.05$) and positive relationship between women involvement in cassava production and processing in the state and level of education, number of extension visits, farm income, and cooperative participation. It can be adduced from the above results that as the women attain more education they are better prepared to involve in cassava production and processing. Similarly, as women get more contact with extension agents they are likely to learn modern techniques of cassava production and processing and thus their involvement in them. Production and processing activities require money. Accordingly, increased farm income will increase the tendency of the women to be involved in the activities. The benefits inherent in

cooperative membership enable the farmers to have their inputs at reduced price due to bulk purchase and subsidy given by various institutional bodies from time to time. Expectedly, cooperative membership as shown in Table 11 increased the tendency of the farmers to be involved in cassava production and processing activities in the state. Access to credit had a significant ($p<0.05$) but negative relationship with women participation in cassava production and processing in the state. This implies that with more credit available to the women there is a less tendency to involve in cassava production and processing in the state. This is contrary to a priori expectation. The reason for this might be that with available credit the women may venture into less risky non-farm activities with faster returns on investment.

The constraints faced by women in cassava production and processing

Table 12: Constraints faced by women in cassava production and processing

Constraints	Frequency	%	Rank
Inadequate farm land	151	75.5	2nd
Difficult in input procurement	123	61.5	5th
Non – ownership of farm land	164	82.0	1st
Inadequate capital	97	48.5	7th
High cost of cassava production	93	46.5	8th
High cost of processing	134	67.0	4th

High labour requirement in production and processing	146	73.0	3rd
Domestic chores/concerns	122	61.0	6th

Multiple responses recorded

Source: Field Survey, 2021

The major factors constraining the involvement of women in cassava production and processing in the state as presented in Table 12 are ranked in order of their importance. They include non-ownership of farm land by women, Inadequate farmland in the study area, high labour requirement in production and processing, high cost of processing, difficulty in input procurement, domestic chores, inadequate capital and high cost of cassava production.

The end products of cassava processing

Table 13: Distribution of respondents according to end product of their cassava processing

End product	Frequency	Percentage
Garri	200	100
Fufu	105	52.5
Starch	37	18.5

Multiple responses recorded **Source: Field Survey, 2021**

Survey result presented in Table 13 shows that most of the cassava processors in the study area end up producing garri, which is followed by fufu. This implies that garri is the major end product of cassava processing in the study area.

Conclusion and Recommendation

Women are actively involved cassava production and processing activities in the study area. Most of the cassava processors in the study area end up producing garri. This implies that garri is the major end product of cassava processing in the study area. The major factors constraining the involvement of women in cassava production and processing in the study area are: non-ownership of farm land by women, Inadequate farmland in the study area, high labour requirement in production and processing, high cost of processing, difficulty in input procurement, domestic chores, inadequate capital and high cost of cassava production.

It is therefore recommended that women cassava farmers and processors should join cooperative societies and form alliance with other farmers to avail themselves the opportunity of adopting new technologies disseminated by the extension agents in order to ensure agricultural productivity and increase household food security. Also, Women farmers should be given the opportunity of gaining access to physical and natural resources so as to increase agricultural productivity and gender specific policies and services tailored to women in the value chains should be developed.

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