



Assessment of Constraints to Cassava Commercialization in Ogbomoso Zone of Agricultural Development Programme of Oyo State, Nigeria

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Abstract

Cassava contributes immensely as a major staple food in rural areas. Achieving effective food security in cassava production sub-sector, calls for transforming subsistence cassava farming to commercial oriented one. This study assessed constraints to cassava commercialization in Ogbomoso Zone of Agricultural Development Programme of Oyo State. The study employed a multistage sampling procedure to select 161 respondents. A well-structured interview guide was used to collect primary data. Data were gathered on investment opportunities engaged in by cassava farmers, profitability of the cassava production, farmer's perception to increase cassava commercialization and constraints to cassava commercialization. Data were analyzed using descriptive statistical tools such as frequency count and percentages, weighted mean score (WMS). Results showed that respondents' mean age was 47 years, 49.5% were secondary school leavers with majority (83.2%) been males. The result further showed 19.1% had between 11-20 years farming experience. Activities on cassava value chain showed that majority (79.5%) of the respondents engaged in selling cassava to local processors, while more than half (61.5%) engaged in processing cassava. Almost all (90.1%) of the respondents had an average annual income of up to one million. Lack of finance (WMS=4.63) ranked the highest constraints faced by the cassava farmers in the study area. Farmers' perception on cassava commercialization was mainly linked to credit facility. Constraints to cassava commercialization included socio-economic/resources constraints such as land fragmentation (with loading of 0.824) and economic constraint such as lack of finance (0.504). The study recommends that government should formulate a policy on credit schemes to be made available to cassava farmers order to enable farmers increase their production and value addition.

Keywords: Cassava farmers; Commercialization; Food security; Perception

Introduction

The Global Cassava Development Strategy (GCDS) envisioned that: cassava will spur rural industrial development and raise incomes for producers, processors and traders. Cassava will contribute to the food security status of its producing and consuming households. Private and public investments are required to attain this vision (Abass, *et al.*, 2009; Carletto *et al.*, 2017). Investments in technologies that can alleviate the challenges of cassava sub-sector are critical to the upgrading of traditional subsistence operations to commercial operations. This will benefit a whole range of stakeholders and reduce the overwhelming poverty among smallholder producers (Otekunrin *et al.*, 2019). However, critical biotic and abiotic constraints have to be solved; production systems need to become more efficient to increase their competitiveness;

postharvest processing technologies for transforming cassava into high-grade foods, as well as industrial raw materials, need to be introduced. Effective marketing strategies and institutional innovations, such as standards, grades and branding are needed for the profitable marketing of cassava products. Public education is also required, to improve the image of cassava as a nutritious food because of the high protein content in the leaves, the high energy content of the roots, and its suitability for many industrial applications. The process of initiation on commercial operation of cassava value chain nationally and regionally, requires well-targeted research initiatives. The right technologies and appropriate approaches for developing the sector need been identified to deliver the desired benefits to smallholder farmers. Relevant technologies and market



innovations require testing at the pilot scale to learn the lessons of technology adaptation, the challenges, and other preconditions for success. Commercializing a value chain, as a rule, requires an understanding of the series of activities that link farmers to markets; these include the channels through which inputs and information reach farmers, and how commodities travel from farmers to consumers (APRA, 2018). There are many research and development initiatives with the primary objective of finding solutions to the constraints militating against the efficient operation of a cassava value chain. Therefore, this study assessed the constraints to cassava commercialization in Ogbomoso Zone of Agricultural Development Programme of Oyo State, Nigeria. The specific objectives were to; describe the socio-economic characteristics of cassava farmer, identify investment opportunities engaged in by cassava farmers, examine the profitability of the cassava produced, identify farmer's perception to increase commercialization of cassava production and to ascertain the constraints to cassava commercialization in the study area. The hypothesis of the study stated in null form; there is no significant association between socio-economic characteristics of cassava farmers and constraints to commercialization of cassava in the study area.

Methodology

This study was carried out in Ogbomoso Zone of Oyo State Agricultural Development Programme (OYSADEP) structure. The area is made up of five local government areas which are Ogbomoso South, Ogbomoso North, Oriire, Surulere and Ogo Oluwa LGA. The vegetation of the area is largely savannah with pockets of rain forest belts, thus allowing for the cultivation of wide array of arable and perennial crops. The rainfall patterns in the study area follows a tropical pattern with an annual rainfall ranging from 1000m-143mm and fairly high temperature. The occupation of the people is largely farming predominantly subsistent with some pocket of commercial farming. The population of the study comprises of all cassava farmers in Ogbomoso Zone of Oyo State Agricultural Development Programme under the umbrella of Nigeria Cassava Growers Association (NCGA) Oyo State chapter. Multi-Stage sampling procedure was used to select 160 respondents. At the first Stage; purposive selection of Ogbomoso Zone of Oyo State Agricultural Development

Programme due to widespread cultivation of cassava in the area. There are five (5) local governments/blocks in the zone: Ogbomoso North local government/block, Ogbomoso south local government/block, Oriire local government/block Ogo-oluwa local government/block and Surulere local government /block respectively. At stage two, a simple random technique was used to draw 40 cassava farmers from each block according to those Farmers registered with Cassava Growers Association to get a total of 160 respondents. Data were analyzed using descriptive statistics such as frequency count and percentages, weighted mean score (WMS) and inferential tools. Respondents' socioeconomic characteristics such as age, sex, religion, educational level, farming experience, farm size, and household size were measured on both nominal and interval levels as the case dictates. Investment opportunities engaged in by cassava farmers were measured at nominal level, examine the profitability of the cassava produced was measured at nominal and interval level as the case dictates. farmer's perception to increase commercialization of cassava production was measured at interval level on a 15-point perceptual statements and constraints to cassava commercialization in the study area was measured at interval level on a 23 point constraints statements.

Result and Discussion

Socio-economic characteristics of respondents in the study area

The age distribution of the respondents as shown in Table 1 which indicates that more than half (56.3%) were between the ages of 41-60years with mean age of 47years. This result implies that majority of the respondents were in their active, middle, productive stage and are expected to be strong enough to withstand the rigour associated with cassava production. A high percentage (83.2) of the respondents was male. It implies there were more male involved in cassava production than female. This supports the findings of Adetarami *et al.* (2022), who revealed that cassava farmers were male dominated due to physical energy required for its activities. There exists the average farm size of 3hectare with 11 years of farming experience in the study area. This means the respondents were mainly small-scale size farmers and experience in cassava production. This is in line with the



findings of Okoruwa *et al.* (2020), who established that cassava farmers with 1-5 hectares were medium scale producers. The results on Table 1 further shows the cassava value-chain activities among the respondents, majority (79.5%) of the respondents engaged in

selling cassava tubers, while 20.5% engaged in processing cassava. In addition, (10.6%) sold cassava tubers to the consumers with 72.7% sold to the local processors. More than average (62.1%) processed cassava into garri among other local cassava derivatives.

Table 1: Socio-economic characteristics of the respondents

Characteristics	Frequency	Percentage	Mean
Age (years):			
<20	1	0.6	47
21-40	52	32.3	
41-60	91	56.3	
>60	17	10.5	
Sex:			
Male	134	83.2	
Female	27	16.8	
Farming Experience (years):			
<10	110	68.2	11
11-20	31	19.1	
21-30	8	4.9	
31-40	8	4.9	
>41	4	2.4	
Farm size (ha):			
<5	144	89.4	3
6-10:	14	8.7	
11-15	2	1.2	
16-20	1	0.6	
Cassava Utilities:			
Sold	128	79.5	
Processed	33	20.5	
Sold to:			
Consumers	17	10.6	
Local processors	117	72.7	
Industries	19	11.8	
Others	8	5.0	
Processed into:			
Garri	100	62.1	
Lafun	26	16.1	
Starch	10	6.2	
Others	25	15.5	

Field Survey, 2021

Profitability of cassava production by the respondents

The result in Table 2 indicates that 75.8% of the respondents were involved in planting of cassava, 5.6% were involved in processing of cassava, while 18.6% were involved in both planting and

processing of cassava. The result also indicates that 60.3% of the respondents had an average annual cost of about ₦1- ₦100,000 produce, 37.3% had about ₦100,001- ₦ 200,000, 1.8% had about ₦200,001 ₦300,000, while 0.6% had about ₦300,000 and above.

Table 2: Examine the profitability of cassava production by the respondents

Cassava Production	Frequency	Percentage
Production Stage:		
Planting	122	45.8
Processing	9	5.6
Both	30	18.8
Average annual cost of production:		
< ₦100,000	60.3	60.3
₦100,000- ₦ 200,000	37.3	37.3
₦200,001 – ₦300,000	1.8	1.8
>₦300,000	0.6	0.6
Average tone of cassava produced per hectare:		



< ₦500,000	154	95.7
₦500,001- ₦1,000,000	6	3.7
> ₦1,000,000	1	0.6
Average annual income on cassava produce:		
< ₦1,000,000	145	90.1
₦1,000,001- ₦2,000,000	9	5.4
₦2,000,001- ₦3,000,000	5	3.0
> ₦3,000,000	2	1.2

Source: Field Survey, 2021

Constraints to cassava commercialization in the study area

Table 3 reveals the analysis of constraint to cassava commercialization. The table shows that the greatest constraints to cassava commercialization were lack of finance, scarcity of planting materials and marketing program with mean scores of 4.63, 4.59 and 4.40, respectively. This corroborates with the finding of Achem

(2011) who indicated that lack of funds and scarcity of cassava planting materials were major constraints to cassava value addition in the study. In addition, high cost of labour (4.40), lack of infrastructural facility (4.36) and difficulty in obtaining credit facility (4.39) respectively, were also constraint encountered by the cassava farmers in the study area.

Table 3: Constraints to cassava commercialization in the study area

Factors	SA	A	U	D	SD	WMS
Lack of finance	96(59.6)	64(39.8)	1(0.6)	—	—	4.63
Scarcity of planting materials	70(43.5)	86(53.4)	5(3.1)	6(3.7)	—	4.59
Difficulty in obtaining credit facility	74(46.0)	78(48.4)	7(4.3)	2(1.2)	—	4.39
Scarcity of tubers	58(36.0)	79(49.1)	17(10.6)	5(3.1)	2(1.3)	4.16
Land fragmentation	82(32.3)	67(41.6)	—	2(1.2)	10(6.2)	4.29
Inadequate knowledge about improved technology	52(36.0)	92(57.1)	6(3.7)	1(0.6)	10(6.2)	4.08
High cost of improved management practices	60(37.3)	80(49.7)	11(6.8)	10(6.2)	—	3.99
High interest rate on loan	44(27.3)	98(60.9)	18(11.2)	1(0.6)	—	4.16
Soil degradation/infertility	64(39.8)	71(44.1)	9(5.6)	16(9.9)	1(0.6)	4.12
Poor road network	61(37.9)	85(52.8)	14(8.7)	1(0.6)	—	4.27
Lack of improved management practices	53(32.9)	75(46.6)	23(14.3)	10(6.2)	—	4.04
Incidence of pest and disease	60(37.3)	82(50.9)	8(5.0)	11(6.8)	—	4.19
Unavailability of fertilizer	66(41.6)	55(34.2)	14(8.7)	24(14.9)	2(1.2)	3.98
Unavailability of input as at when due	53(32.9)	84(52.2)	16(9.9)	3(1.9)	5(3.1)	3.06
High cost of agrochemicals	58(36.0)	94(58.4)	9(5.6)	—	—	4.30
Unavailability of labour	67(41.6)	85(52.8)	9(5.6)	—	—	4.36
Unavailability of extension engaged	58(36.0)	91(56.5)	11(6.8)	—	1(0.6)	4.27
Government policy	46(28.6)	94(58.4)	12(7.5)	3(1.9)	—	4.06
Market/marketing program	75(46.6)	78(48.4)	7(4.3)	—	1(0.6)	4.40
Lack of infrastructural facility	72(44.7)	78(48.4)	9(5.6)	1(0.6)	1(0.6)	4.36
High cost of labour	74(46.0)	77(47.8)	9(5.6)	—	1(0.6)	4.40
Unavailability of improved processing facility	61(37.9)	89(55.3)	10(6.2)	1(0.6)	—	4.30
High cost of processing equipment	72(44.7)	71(44.1)	7(4.3)	3(1.9)	8(5.0)	4.22

Source: Field Survey, 2021

Farmers' perception to commercialization of cassava in the study area.

Table 4 reveals the respondent's cassava perception to commercialization of cassava by responding to a list of perception statements. The result revealed larger percentage of the respondents perceived cassava

commercialization was based on access to credit facility (WMS = 4.51) followed by high demand of product (WMS = 4.50) and availability of transport facilities had (WMS=4.48). This indicates the cassava placed high premium on credit facility for a successful cassava value addition.



Table 4: Farmers' perception to commercialization of cassava in the study area.

Perception Statement	SA	A	U	D	SD	WMS
Availability of cheap labour	76(47.2)	77(47.8)	8 (5.0)	–	–	4.42
High demand of product	83(57.6)	75(46.6)	3(1.9)	–	–	4.50
Availability of raw materials	78(48.4)	74(46.0)	9(5.6)	–	–	4.43
Availability of transport facility	88(54.7)	63(39.1)	10(6.2)	–	–	4.48
Access to credit facility	81(54.0)	69(42.9)	5(3.1)	–	–	4.51
Availability of transportation facilities	69(42.9)	80(49.7)	12(7.5)	–	–	4.35
Access to good economic policy	81(50.3)	73(45.3)	7(4.3)	–	–	4.46
Availability of grants	75(46.6)	72(44.7)	11(6.8)	3(1.9)	–	4.36
Restriction of locally produced goods	74(46.0)	67(41.6)	10(6.2)	–	1(0.6)	4.26
Fair producer price	82(50.9)	75(46.6)	4(2.5)	–	–	4.48
Input farming practices	93(57.8)	64(39.8)	4(2.5)	–	–	4.44
Reduction in input price	72(44.7)	78(48.4)	10(6.2)	–	–	4.37
Availability of skilled man power	78(48.4)	68(42.2)	14(8.7)	–	–	4.38
Favorable agro climatic environment	81(50.3)	68(42.2)	12(7.5)	–	–	4.43
Declaring state of emergency	57(35.4)	78(48.4)	23(14.3)	1(0.6)	2(1.2)	4.16

Source: Field Survey, 2021

Test of Hypotheses

Test of relationship among the possible factors identified by cassava farmers that hindered the commercialization of cassava production in the study area.

Exploratory factor analysis was used to group the variables into possible constraint factors for policy relevance. It is used to decompose a correlation matrix when strong assumptions are made about the nature of variation in the variables of the data set by summarizing and uncovering any patterns in a set of multivariate data, essentially by reducing the complexity of the data. The Exploratory factor analysis procedure using the principal factor model with varimax rotation was employed in grouping the constraint variables into major constraint factors. In factor analysis, the factor loading under each constraint (beta weight) represents a correlation of variables

(constant area) to the identified constraint factor and has the same interpretation as any correlation coefficient. However, only variables with loading of 0.40 and above (10% overlapping variance) were used in naming the factors (Camrey, in Chukwuone et al., 2006). The result of the rotated component matrix showing the extracted factors, based on the response of cassava farmers on factor militating against cassava commercialization, is shown in Table 5. Eight constraint factors were extracted based on the responses of the respondents. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy shows enough items are predicted by each factor with 0.771 measure of accuracy, while the significant value of Bartlett test of the study shows enough correlation to provide a reasonable basis for the factor analysis as shown in table 5.

Table 5: KMO and Bartlett's test showing accuracy and correlation of variables/items factored

KMO and Bartlett's Test			
Kaiser-Meyer-Olkin Measure of Sampling Adequacy			
Approx. Chi-Square			0.771
			1397.531
Bartlett's Test of Sphericity		df	300
		Sig.	0.000

Factors 1 to 8 were generated and named depending on the items loaded on each factor and the weight of the items. They are Socio-economic/Resource Constraints, Agronomic Constraints, Economic/Infrastructure Constraints, Educational Needs Constraints,

Technical Constraints, Demand Constraints and Institutional Constraints respectively.

Socio-economic/resource constraints were dominated by land fragmentation (0.824), knowledge on improved technology (0.851), availability of improved planting material (0.758), strict criteria for loan acquisition (0.448), problem



of improved management practices (0.732) and government policy (0.776). The loadings under agronomic constraints include the followings: scarcity of tubers (0.750), soil degradation/infertility (0.816), Incidence of pests and diseases (0.765) and incidence of pest and diseases (0.661).

Constraints with high loading under economic/infrastructure constraints were highlighted under factor 3 & 4; lack of finance (0.504), scarcity of planting material (0.700), lack of infrastructure facilities (0.685), high cost of labour (0.567), high cost of agrochemicals

(0.587), market/marketing problem (0.577) and High cost of processing equipment (0.478). Also, Educational needs as a constraint factored was presented with problem of extension linkage (0.665). Technical constraint was presented as Poor/limited processing facilities (0.851) and poor road network (0.521). Also, demand as a constraint factored with unavailability of inputs as at when due as its variable underline. While Organization constraints was presented with unavailability of improved processing facilities (0.875).

Table 6: Rotated component matrix based on the responses of cassava farmers on Possible constraints to cassava commercialization in the study area

Possible constraints		Factors							
		1	2	3	4	5	6	7	8
1	Lack of finance	-0.102	-0.378	0.504	-0.017	-0.022	0.285	0.124	0.003
2	Scarcity of planting material	-0.111	0.147	0.7	0.145	-0.184	-0.062	-0.082	0.032
3	Difficulty in obtaining credit facility	0.123	-0.318	-0.038	0.346	0.154	0.347	0.201	-0.492
4	Scarcity of tubers	0.138	0.75	-0.016	0.221	0.033	0.116	0.173	-0.21
5	Land fragmentation	0.824	-0.087	-0.134	0.06	-0.067	-0.006	0.006	-0.016
6	Inadequate knowledge about improve technology	0.851	0.041	-0.075	0.267	-0.005	-0.106	0.067	0
7	Availability of improved planting material	0.758	0.167	-0.107	0.052	0.006	0.003	-0.004	-0.078
8	High interest rate on loan	0.214	0.06	-0.032	0.719	0.016	-0.054	-0.101	0.046
9	Soil degradation/infertility	-0.88	0.816	0.085	0.07	0.157	0.088	-0.022	0.157
10	Strict criteria for loan acquisition	0.448	-0.291	-0.123	0.193	0.236	0.016	-0.519	-0.029
11	Poor/limited processing facilities	-0.001	-0.025	0.008	0.044	-0.035	0.851	0.047	0.064
12	Poor road network	-0.113	0.21	0.301	-0.003	0.159	0.521	-0.306	-0.008
13	Problem of improved management practices	0.732	0.039	-0.019	-0.123	0.079	0.078	-0.298	0.112
14	Incidence of pest and diseases	0.105	0.765	0.035	-0.007	-6.24E005	0.019	0.12	-0.145
15	Unavailability of fertilizer	0.502	0.661	-0.013	-0.022	0.077	-0.213	0.074	0.022
16	Unavailability of inputs as at when due	0.321	0.066	-0.111	0.019	0.126	-0.019	0.718	0.001
17	High cost of Agrochemicals	-0.158	0.222	0.065	0.587	0.343	0.005	-0.09	0.202
18	unavailability of labour	-0.1	0.165	0.126	-0.071	0.716	0.236	0.103	-0.027
19	Poor extension linkage	0.223	0.021	-0.037	0.236	0.665	-0.258	-0.012	0.095
20	Government policy	0.776	-0.041	-0.051	-0.174	0.004	0.027	0.158	0.08
21	Market/marketing problem	-0.013	0.068	0.319	0.577	-0.101	0.237	0.286	-0.107
22	lack of infrastructure facilities	-0.023	-0.038	0.685	-0.025	0.265	0.079	0.034	0.112
23	High cost of labour	-0.91	0.094	0.567	0.396	0.004	0.024	-0.241	-0.027
24	unavailability of improved processing facilities	-0.39	-0.059	0.098	0.156	0.09	0.119	0.054	0.875
25	High cost of processing equipment	0.783	0.024	-0.011	0.478	0.012	-0.156	0.151	-0.08

Extraction method: principal component analysis. PI **Rotation method:** varimax with Kaiser, normalization

Source: Field Survey, 2021



Conclusion and Recommendation

Farmers' perception on cassava commercialization was mainly linked to credit facility. Constraints to cassava commercialization included socio-economic/resources constraints such as land fragmentation and economic constraint such as lack of finance. The study recommends that government should enact the policy that would make credit schemes readily accessible should to cassava farmers to enable increased productivity and value addition.

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