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ROLES OF FINANCIAL EMPOWERMENT ON CASSAVA OUTPUT: A CASE OF RURAL WOMEN IN DELTA STATE, NIGERIA

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ABSTRACT

The study investigated the relationship between financial empowerment and output among women cassava farmers in rural areas of Delta State. The specific objectives were to: assess the sources of financial empowerment and amount invested; ascertain sources of financial empowerment and output; classify women cassava farms; and disaggregate output according to number of cassava farms owned. Simple random and purposive sampling techniques were used to select 450 women cassava farmers. Percentage, mean, Chi square test, Contingency Coefficient and Analysis of Variance were used for data analysis. The major source of finance was personal savings. It was found that 80.9% of the farmers invested below or about ₦200,000 during the 2023 farming season. A significant relationship was found between the amount invested by the farmers and sources of finance (x^2 = 460.57, p = 0.00; r =0.71); sources of finance and output (x^2 = 903.79; p = 0.00, r = 0.82); and number of farms owned and dimensions (x^2 = 158.28, p = 0.00; r =0,51).Women cassava farms were classified into 3 hierarchical dimensions: small farms (0.50 – 1,99 ha), medium farms (2.00- 3.99 ha), and large farms (4.00 – 7.00 ha). A significant difference was found within disaggregated output according to number of farms owned (F = 52.35, p = 0.00). Farmers with one farm had higher output. Extension services and financial empowerment programmes should be geared towards making more land available to women cassava farmers in order to increase output.

Keywords: Empowerment; Cassava, Production; Output, Roles. Finance

INTRODUCTION

Cassava (*Manihot esculenta)* is one of the most popular crops in Nigeria. It is mostly cultivated by small scale women farmers. Virtually every rural household is engaged in cassava cultivation (Otekunrin & Sawicka, 2019; FAO, 2018; Iyasere, 2015). According to Adetunji (2022), Okoye, Okoye, & Umeh, (2021), Adetunji, Akeredolu, Arowolo, & Ogundoyin (2020), & FAO (2018) the major purposes of cassava production were to provide materials for food, pharmaceutical, and industrial uses. The authors established that cassava has been classified as a food security crop in Nigeria and other parts of Africa. The food products of cassava include garri, fufu akpu, tapioca, starch, cassava chips, cassava flour and lafun. Adetunji et.al, (2020); & Nwafor, Anosike, Adegbola, & Ogbonna (2016) stated that the pharmaceutical products include glucose and syrup while the industrial products are mainly ethanol, livestock feeds and adhesives.

Women farmers constitute the bulk of small-scale cassava farmers in rural areas of Nigeria to the extent that cassava production has become feminised. Empowerment of women in agriculture would foster their economic independence and sustainable development (Anderson, Reynolds, Biscaye, Patwardhan, & Schmidt, 2021; Mobarok, Skevas, & Thompson, 2021) Empowerment could be induced intrinsically (self help) or extrinsically (external help). Mishra and Sharma (2023) recognised four types of empowerments: economic social, political, and institutional. Economic empowerment which ramifies into financial refers to the ability of farmers to access finance and human capital required for production.

Statement of the Problem

In different parts of Nigeria particularly Delta State, women were seen transporting cassava and yams from farms to their homes by Motor Cycles, Bicycles and head porterage. These women produce the bulk of food in the state yet they remain poor and often denied access to agricultural production resources.

A critical investigation has shown that poverty is disproportionately feminised in the rural areas of the Niger Delta (British Council, 2012; Olonade, Oyibode, Idowu, George, Iwelumor, Ozoya, & Adetunde 2021). In Garbon poverty has driven most people from the rural areas to the cities (Abessolo, Ekanatsaga, Moupela, Berti, Burny, Lebailly, 2025). Similarly, most rural parts of the Niger Delta are ravaged by poverty and environmental despoliation. Francis *et.al* (2011) affirmed that only few regions in the world have been as unfortunate as Nigeria's oil-rich Niger Delta. The delta's abundant natural wealth stands in stark contrast to its palpable underdevelopment. The poverty statistics is of the Niger Delta is epitomized in Table 1.

Table 1: Poverty statistics in the Niger Delta

State	Poverty Incidence (%)[12]	Core Poor(%) (Quintile 1) [13]	Self Assessed Poverty level[14]	Very Poor (%) Self Assessed	Gini
Akwa Ibom	35	27	66	17	0.50
Bayelsa	20	22	95	62	0.47
Cross River	42	33	77	22	0.50
Delta	45	23	81	25	0.47
Edo	33	16	79	35	0.46
Rivers	29	19	67	15	0.48
South South	35	23	77	29	0.51
North East	72	35.4	81	26.5	0.46
Nigeria	54	21.3	76	21.37	0.49

Source: Francis, P., Lapin, P. & Rossiasco, P. A (2011). *Securing Development and Peace in the Niger Delta: A Social and Conflict Analysis for Change*

Though women accounts for significant proportion of agricultural production, farmers were generally perceived as males by policy makers (Adedayo & Tunde, 2013). Olawoye (1989) as cited by Jiggins, Samanta, & Olawoye, (1997), Ikuemonisan, Mafimisebi, Ajibefun, Adenegan (2020)) stated that the constraints affecting rural women's ability to improve yield, profit, and efficiency in agriculture include women's legal and cultural status in the Nigeria societies. These in turn affect the degree of control over production resources, such as credit, inputs, labour and machineries. The present study draws insight from the prevailing poverty among women cassava farmers in the Niger Delta.

Objectives of the Study

The broad objective of the study is to investigate the roles of financial empowerment on output among women cassava farmers in Delta State. The specific objectives are to:

1. assess the relationship between sources of financial empowerment and amount of money invested;
2. ascertain sources of financial empowerment and output;
3. classify women cassava farms; and
4. disaggregate output according to number of cassava farms owned.

METHODOLOGY

Study Area

The study was Delta State, Nigeria. Delta State is located between latitudes $5^0$00'N – $5^0$45'N and Longitudes $5^0$30'E and $6^0$00'E of the Equator. It is bounded to the north by Edo State, to the east by Anambra State, to south by Bayelsa and Rivers State, and to the north west by Ondo State. The southern boundary is the Bight of Benin which measures about 160 Kilometers of the states' Coastline. The state is made up of three Agricultural Zones (South, Central and North) and a total of twenty-five Agricultural Extension Blocks. The blocks are equivalents to the Local Governments Areas of the state. The projected Population as at 2022 put the population of Delta State at 5,663,362 persons.

Sampling Technique and Sample Size

Purposive and simple random sampling techniques were used to select the sample size. The simple random sampling involved the use of balloting. The rural towns and villages in each Agricultural Zones were purposively selected. Towns with only one or no government owned primary school, and where the major occupation was farming were purposively selected as rural areas for the study. Sixty (60) percent of the rural towns in each Agricultural Zone corresponding to Delta Central (30), Delta North (21) and Delta South (15) were selected by simple random sampling technique. Twenty (20 percent of women cassava farmers was also selected by random sampling from the rural towns. Thus, the numbers of women cassava farmers selected in each agricultural zone were Delta Central (162), Delta North (150), and Delta South (138). The sample, therefore amounted to 450 women cassava farmers (Table 2).

Table 2: Sample size distribution of respondents

S/N	Agricultural Zones	60% of Towns/ Villages	Total No of Cassava women farmers	20% Selected
1	Delta Central	30	810	162
2	Delta North	21	750	150
3	Delta South	15	690	138
		66	2,2250	450

Instrument for Collection

Structured interview schedule and Focus Group Discussion were used to elicit information. One Focus Group consisting of fifteen (15) women cassava farmers was constituted in each Agricultural Zone to discuss issues of farm ownership and sources of finance. The interview schedule was divided into: socioeconomic characteristics; farm size and purpose of production; sources of financial empowerment and amount invested. Content validity was achieved by three experts in agricultural extension and economics. Criterion and construct reliability tests were achieved by Test – Retest – Test. Fifteen respondents were used for the reliability test at two weeks interval. Two coefficients (r = 0.92) and (r = 0.89) were obtained for the criterion and construct reliability tests respectively. These results showed that the instrument was reliable.

Measurement of variables and methods of data analysis

Output of cassava was the dependent variable while sources of financial empowerment and amount were the independent variables. Sources of financial empowerment encapsulate personal savings (Esusu, previous savings and remittances); Commercial Banks; Micro Finance Banks; Fadama/Delta State Government Youth Agricultural Entrepreneurial Projects YAGEP/Delta Agricultural and Rural Development Agency DARDA; and NGOs. Output was measured in tonnes per hectare. Twenty of Fifty (50 kg) bags of cassava tubers were equivalent to one (1) tonne. Roles played by the various sources of empowerment were measured by use of nominal values of yes (1) and no (0).

Farmers were required to state the amount of money expended on their cassava farming enterprise as last year (2023). Some farmers reported that they did not spend money but their labour and resources were quantified into financial values. The expenditure were grouped according to the field reports as follows: ₦1,000 – 20,000 (10000), ₦20,000-50,000 (35,000), ₦50,000-75,000 (63,000), ₦75,000-100,000(88,000), ₦100,000-300,000 (200000), ₦300,000-500,000(400,000), ₦500,000-800,000(650,000), ₦800,000-1,000,000(900,000), ₦1,000,000-1,500,000(1,250,000), ₦1,500,000-2,000,000 (1,750,000). The values in parenthesis were the mid-points of the groups. The upper and lower limits of groups were not exclusively differentiated. An expense which occurred at the upper limit of a group was taken to the next mid-point value as a rule. Data were collected from May to October 2024. Data were analysed by the use of percentage, frequency counts, Contingency Coefficient, Chisquare test, and Analysis of Variance.

RESULTS AND DISCUSSIONS

Sources and Amount of Financial Empowerment

The sources of finance and amount invested were presented in Table 3. The findings depict personal savings (79.3%) as the major source of financial empowerment among the women cassava farmers in the study area. Personal savings included incomes from previous farming seasons, remittances and Esusu. Other sources of financial empowerment were Commercial Banks (0.4%), Micro Finance Banks (7.3%), Delta Government Youth Agricultural Entrepreneurial Projects/Fadama/DARDA (7.3%) and NGOs/ (5.7%). The percentage and average amount invested by the women cassava farmers were 8.2% (₦10,000), 42.2%(₦35,000), 28.0%(₦63,000), 0.9%(₦88.000),1.6%(₦200,000), 2.9%(₦400,000), 5.8%(₦650,000), 5.3%(₦900,000), 3.6%(₦1,250,000) and 1.8%(₦1,750,000) The results showed a significant relationship between the amount invested by the women cassava farmers and sources of finance (x^2 = 460.57, p = 0.00; r =0.71). Women farmers whose sources of finance were from commercial Banks invested higher amount compared to personal savings.

The cumulative percentage column showed that 80.9% of the women cassava farmers invested below or about an average of ₦200,000 on their cassava farm enterprises. This amount is rather low to sustain increased output and family livelihood**.** The findings support Jeffrey, Lin, Hu, Yu, Fabian & Tingting (2022) & FAO (2017) that women cassava farmers in Nigeria lacked credit, production resources and technologies as well as marketing intelligence that could expand and boost cassava production. The United Nations Conference on Trade and Development (UNCTAD) Commodities and Development report (2015) affirmed that addressing food security in developing countries should entail recognising the place of the smallholder farmers in reducing hunger and poverty. This proposition engineered the fundamental drive for

food security research in Nigeria and other developing countries.

Table 3: Distribution of respondents according to sources of financial empowerment and Amount

S/N	Range/Average Amount (₦)	Personal Savings	Comercial Banks	Micro Finance Bank	YAGEP/ Fadama/ DARDA	NGOs	Total	Cum. %
1	1,000 – 20000 (10,000)	37	0	0	0	0	8.2	8.2
2	20,000-50000 (35,000)	185	0	4	0	0	42.2	50.4
3	50,000-75,000 (63,000)	123	0	1	0	0	28.0	78.4
4	75,000-100,00 (88,000)	4	0	0	0	0	0.9	79.3
5	100,000-300,000 (200,000)	2	0	2	1	1	1.6	80.9
6	300,000-500,000 (400,000)	5	1	2	0	0	2.9	83.8
7	500,000-800,000 (650,000)	0	0	8	9	9	5.8	89.6
8	800,000-1,000,000 (900,000)	1	0	5	8	8	5.3	94.9
9	1,000,000-1,500,000 (1,250,000)	0	0	8	6	6	3.6	98.4
10	1,500,000-2,000,000 (1,750,000)	0	1	3	1	1	1.8	100
	Row Total	357 (79.3%)	2 (0.4%)	33(7.3%)	25(5.7%)	25 (5.7%)	100.0	

(x^2 = 460.57, p = 0.00; r =0.71)

Sources of Finance and Output

Sources of finance were compared to output of the women cassava farmers by subjecting data obtained to Chi square test (Table 4). A significant and positive relationship between sources of finance and output (x^2 = 903.79; p = 0.00, r = 0.82) was found. The output varied from the sources of finance available to the women cassava farmers in the study area. The output obtained from personal savings, Commercial Banks, Micro Finance Bank, Delta State YAGEP/Fadama/DARDA, and NGOs differed in the range of (1.50 – 40. tonnes/ha), (58 - 70 tonnes/h), (8 – 68 tonnes/ha), (18 – 60 tonnes/ha) and (25 – 65 tonnes/ha) respectively. This finding indicated that farmers who sourced their finance from Commercial Banks had higher output followed by Micro Finance Banks, NGOs, YAGEP/Fadama/DARDA, and Personal Savings. Additional source of investment appears coterminous with increased output among women cassava farmers. Women who obtained loan from Commercial Banks were supervised and monitored by Extension Agents to ensure improved yield and timely pay-back of loan.

In a similar study, the sources of financial empowerment for women cassava farmers found in Kuje Area of Abuja by Makcit, Olayemi, & Emeana (2021) were Agricultural Development Programme, Non-Governmental Organizations, Religious Organizations, Nigeria Incentive-Based Risk Sharing System for Agricultural Lending (NIRSAL), and Private Organisations. However, their study did not investigate the sources of empowerment and output. Majority of the women cassava farmers produce low yield because of inadequate finance and land area cultivated. Alhamuddin, Adwiyah, Fatwa, Hamdani,& Irwansyah (2019) noted that women farmers carried the biggest burden of poverty compared to men hence the need for sincere financial empowerment.

Table 4: Observed distribution of sources of finance and output

Output (Tonnes/ha	Savings	Commercial Banks	Micro Finance Bank	YAGEP/ Fadama/ DARDA	NGOs	Total
1.50	1	0	0	0	0	1
5.00	10	0	0	0	0	10
7.00	1	0	0	0	0	1
8.00	61	0	3	0	0	64
10.00	76	0	0	0	0	76
12.00	42	0	1	0	0	43
14.00	2	0	0	0	0	2
15.00	56	0	0	0	0	56
16.00	8	0	0	0	0	8
18.00	86	0	0	1	0	87
19.00	5	0	0	0	0	5
20.00	1	0	0	0	0	1
25.00	4	0	5	1	2	12
28.00	0	0	1	0	0	1
29.00	1	0	0	0	1	2
30.00	1	0	4	11	0	16
32.00	0	0	0	0	1	1
33.00	0	0	0	0	1	1
34.00	0	0	1	0	1	2
35.00	0	0	4	8	4	16
36.00	0	0	0	1	1	2
37.00	0	0	1	1	0	2
38.00	1	0	1	0	2	4
39.00	0	0	0	1	0	1
40.00	1	0	1	1	2	5
42.00	0	0	4	0	0	4
45.00	0	0	0	1	0	1
50.00	0	0	0	3	2	5
55.00	0	0	1	0	1	2
58.00	0	1	1	1	1	4
60.00	0	0	1	1	4	6
65.00	0	0	3	2	2	7
68.00	0	0	1	0	0	1
70.00	0	1	0	0	0	1
	357	2	33	33	25	450

(x^2 = 903.79; p = 0.00, r = 0.82)

Dimensions of Women Cassava Farms

The women cassava farms were classified into 3 dimensions based on the areas cultivated (Table 5). These sizes were small farms (0.50 – 1,99 ha), medium size (2.00- 3.99 ha), and large farms (4.00 – 7.00 ha) with frequency and percentage composition of 355(78.9%), 63(14.0%) and 32(7.1%) respectively. Thus, women cassava farms could be visualised as a hierarchy dominated by small farms, followed by medium scale farms and large-scale farms. The largest cassava farm among the women was 7 hectares. The findings agreed with Jeffrey et. al., (2022) that in Nigeria Small holder farmers were in majority and cultivated 2 hectares or less. They reported further that in Bangladesh the average farm size was 0.5 hectares. In Latin America and Brazil, the average farm sizes were 20 and 50 hectares respectively. These results established a large difference between farm sizes in Nigeria and many countries around the World.

The prevailing land tenure system in Nigeria and many sub-Haran African countries permits availability of only small farm land to women farmers, and are usually characterised by intensive manual labour (Jeffrey et al 2022; and Ikuemonisan et. al 2020).

Table 5: Classification of women cassava farms

S/N	Dimension	Size	Freq	Percentage
1	Small Farms	0.50 -1.99 hectares	355	78.9
2	Medium Farms	2.0 - 3.99 hectares	63	14.0
3	Large Farms	4.0 – 7.00 hectares	32	7.1
	Total		450	100.0

Disaggregated output according to Number of Cassava Farms

Most of the rural women farmers in Southern Nigeria own more than one farm across their farming communities. The farm dimension versus number of farms owned and outputs were subjected to Chi square test and Analysis of Variance (Table 6). There was a significant relationship between number of farms and dimensions (x^2 = 158.28, p = 0.00; r =0.51). Women cassava farmers who cultivated small farms in separate parts of the farming communities were 264 while those who had one small farm in only one location were 91. The large farms (32) were found in one location. These data showed that small farmers had more scattered plots than large scale farmers. During the Focus Group Discussion and ensuing triangulation it was recorded that communal land tenure and land fragmentation, culture, challenges of insecurity/communal crisis and vision to secure more land for children were the factors responsible for having more than 2 farm lands in the study area. A significant difference was found between output of cassava and number of farms owned (F = 52.35, p = 0.00). The average output from the disaggregated farms were: 1 farm (25.31 tonnes/ha), 2 farms (13.60 tonnes/ha), and 3 farms (16.94 tonnes/ha).

The average output from the women cassava farms was 18.62 tonnes per hectare. These findings aligned with Srivastava, Ewert, Akinwumiju, Zeng, Ceglar, Ezui, Adelodun, Adebayo, Sobamowo, Singh, Rahimi, & Gaiser (2022) who projected an average yield of 18.2 tonnes/ha and mean yields which ranged between 17.4 and 34.7 tonnes across 30 states of Nigeria. Ikuemonisan et. al. (2020) found that Cassava yield in Nigeria was about 60 million tonnes produced from close to 6.5 million hectares at the rate (yield) of 9.1 tonnes/ha compared to Ghana's 20 tonnes/ha and Indonesia' 24 tonnes/ha.

Table 6: Disaggregated output dimensions and number of plot owned

Number of Farms owned	Small Farms	Medium Farms	Large Farms	Total Number	Mean Tonnes/ha	Std deviation
1 Farm Plot	91	60	32	183(40.7%)	25.31	18.25
2 Farm Plots	180	0	0	180(40.0%)	13.60	3.34
3 Farm Plots	84	3	0	87(19.3%)	16.94	3.45
Total Plots	355	63	32	450	18.62	
Groups/Yield		**Sum of Squares**	**Df**	**Mean Squares**	**F**	**Sig Level**
Between Groups		14890.30	2	7445.15	52.35	0.000
Within Groups		63574.83	447	142.23		
Total		78465.13				

(x^2 = 158.28, p = 0.00; r =0,51) (F = 52.35, p = 0.00)

CONCLUSION

Personal savings play a major role in the financial empowerment of women cassava farmers in the study area. Financial investment was low among the smallholder women cassava farmers. Output and amount of money invested were higher among the women cassava farmers whose sources of finance were from commercial and micro finance Banks. Women cassava farms were classified into three hierarchical dimensions of small, medium and large. Cassava output of women farmers who cultivated one farm was higher than those separated farms within the farming communities. Land tenure system, cultural norms, propensity to preserve land for future generation as well as insecurity and communal land

crisis compelled women cassava farmers to separate their farm holdings. It is recommended that extension services and financial empowerment programmes should be geared towards making more land available to women cassava farmers in order to improve output and rural livelihoods.

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