

## RURAL WOMEN FARMERS' PARTICIPATION IN MAIZE VALUE CHAIN AND SOCIO-ECONOMIC EMPOWERMENT IN SOUTH-WEST NIGERIA

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### ABSTRACT

In recent times, there has been increased participation of women in agricultural value chain, but their empowerment status is poor. Thus, evidence-based data revealing the socio-economic status of rural women participating in maize value chain is important to further strengthen women's participation in the agricultural value chain sector. The study aimed at examining participation in maize value chain and socio-economic empowerment among women in South-west Nigeria. A three-stage sampling procedure was employed in the selection of respondents for the study. The first stage involved proportionate random sampling of three states in South-west, Nigeria. Second stage involved the generation of a sample frame from the various associations of rural women farmers in MVC in the Agricultural Development Programme zones. Last stage, 20% of the total of rural women farmers involved in MVC was selected to give a sample size of 539 respondents. Data were collected through interviewer-administered questionnaire and analyzed using both descriptive and inferential statistics. The findings from the study were that the participation mean score of the respondents in marketing and processing were high (71.2%, 73.1%) respectively, the mean participation score in MVC was 67%; respondents' percentage mean score based on socio-economic empowerment status after participation in MVC was high (60%). Major constraints to participation in MVC activities were high cost of transportation to market ( $\bar{x}=1.27$ ) ranked 1st and inadequacy of extension service delivery ( $\bar{x}=1.22$ ) ranked 2nd; and participation in MVC activities had positive and significant relationship with the socio-economic empowerment status of the respondents ( $r=0.380$ ;  $p=0.000$ ). The study concluded that the level of rural women farmers' participation in MVC activities was high and impacted their socio-economic status positively. The study recommended that agricultural extension agency should focus on empowering the rural women by providing extension services needed for market linkage and bulk transportation of produce to target markets.

**Keywords:** Maize value chain; Participation; Rural women; Socio-economic empowerment services.

### INTRODUCTION

In emerging nations, agriculture is the cornerstone of economic growth, development, and the eradication of poverty (Askar, 2015; Uma *et al.*, 2013; Warr & Suphannachart, 2021). Agriculture has long been seen as both the driving force and the solution to economic growth (Awoyemi *et al.*, 2017). Particularly in developing nations like Nigeria, agriculture has played a critical part in the socio-economic growth of the nation.



In Africa, women make up to 40% of the agricultural labour force, particularly at the lowest levels of the value chain (Njiraini *et al.*, 2018). Women are becoming more active in the agricultural food value chain, which helps drive economic growth. Evidence of Nigeria's high degree of women participation in agricultural production and value-added industries is abundant in development literature (Ejike *et al.*, 2018). The agricultural value chain has the ability to spur growth, diversify sources of income, and create a wide range of job and business opportunities, particularly for women in rural regions (Bairwa *et al.*, 2014).

One of the primary food crops in Sub-Saharan Africa (SSA) is maize, which is also a staple meal in Nigeria (Gaya *et al.*, 2017). It is reportedly the most widespread and versatile multi-purpose grain crop compared to wheat and rice (Erenstein *et al.*, 2022). Maize is a common staple meal which could be for both human consumption and animal feed. In Nigeria, participation in maize value chain gives women a job and a means of subsistence, earning a living in both rural and urban areas (Omoare *et al.*, 2019).

Rural women in South-West Nigeria are proficient at transforming maize into products including corn balls, corn cakes, popcorn (guguru), Kokoro, corn starch (ogi), pap (Eko), egbo, abari, elekute, and aadun, according to Omoare *et al.* (2019). Women in Nigeria's rural and urban communities can find employment and a means of earning a living through participation in the maize value chain (Omoare *et al.*, 2019). However, rural women farmers have not experienced as much socio-economic empowerment as urban women farmers due to factors such as income and financial status, productivity and skills, capacity building, self-esteem and confidence, and their important roles in society and the agricultural economy. Women in rural areas are often seen as low-skilled, low-productivity workers and low-paid workers. In addition, female workers often experience poor working conditions and limited social protection (ILO, 2018). They bear a disproportionate burden of unpaid care and household work, including providing food, caring for children, the sick, and the elderly. Even in times of crisis, they are disproportionately thrown out of work and forced to stay at home (Hayder, 2022), not least in Africa.

Studies that are now accessible concentrate on the production and business prowess of rural women in the maize value chain (Badmus *et al.*, 2015; Omoare *et al.*, 2019; Ogunwande & Akinrinola, 2020). Therefore, there are few empirical research on the impact of the maize value chain enterprise on rural women farmers' socio-economic empowerment status. However, it is crucial to close this research gap in order to produce empirical data that will aid the policy-making process. The study aimed at examining participation in maize value chain and socio-economic empowerment among women in South-west Nigeria. This study describes the socio-economic characteristics of the rural women farmers in Maize Value Chain (MVC). In addition, we examined the maize value added products, and identify constraints to MVC participation by rural women farmers.

## METHOD

The area of study is South-west Nigeria, specifically Ekiti, Ondo, Oyo, Ogun, Osun and Lagos States. The Southwest States are largely populated by Yoruba speaking people. However, immigrants from different parts of the country are found scattered all over the area. The major occupation of the inhabitants is farming. Agricultural practice is still largely traditional and is characterized by small landholdings (1.2 ha average holding). The use of simple tools such as hoe and cutlass, communal or family landholding and shifting cultivation is still predominant. Food crops cultivated include: yam, cassava, cocoyam, maize, rice, plantain, leafy and fruit vegetables, Cash crops include: cocoa, kolanut, oil palm, and rubber. Timber is also found in the forest region.

The rainfall pattern of South- west Nigeria varies from that of the derived savannah found in the northern part. The rainfall varies between 3000mm per annum in the coastal area to 2000mm per annum in the northern part and this occurs mainly between April and October. Harmattan is usually experienced in the area of December and February as a result of the North East trade winds blowing from the Sahara Desert southwards carrying with its dryness and dust. South – West Nigeria lies between latitude 4° 14' South, 6° 9' North and Longitudes 20° and 8° East. It is bounded on the South by the Atlantic Ocean, in the East by River Niger, in the West by the Republic of Benin and in the North by Kwara and Kogi States.

#### Sampling Procedure and Sample size

A three-stage sampling procedure was employed in the selection of rural women for the study. The first stage was proportionate random sampling of fifty percent (50%) of the state in south-west, Nigeria and the states were Oyo, Ekiti and Ogun. The second stage involved generation of a sample frame from groups of various associations involved by rural women in MVC in the ADP zones. The third stage involved a proportionate selection of 20% of rural women involved in maize value chain under the ADP zones in the selected states to give a sample size of Five hundred and thirty-nine (539).

## RESULTS AND DISCUSSION

### Socioeconomic characteristics of male and female farmers

Findings in Table 1 reveal that the average age of the rural women for the study was 42.4 years. This suggests that the rural women would be actively participating in their business while they are still in their prime earning years. About 42.2% are between the ages of 41 and 50 years, 40.8% were between 31 and 40 and only 12.6% were above 50 years of age. This demonstrates that the majority of rural women farmers are above 40 years of age but below 50 years. This result is similar with the findings of Olaleye *et al.* (2009) who discovered that few women farmers are older than 50 years and that the majority of women farmers are over 40 years. This further shows that women in the study area were in their active years, agile and vibrant to engage in farming activities. This result corroborated with the findings of Babatunde & Solomon (2019) who asserted that middle-aged people are the most active in agricultural production activities for increased productivity.

The results in Table 1 shows that majority (88.9%) of the respondents were married. This finding corroborates that of Dada & Fayomi (2015) that rural areas consist of a larger population of married people due to the fact that in Yoruba traditional society, married people especially the women are accorded greater value by members of the community and are well respected and regarded as responsible individuals.

The results in Table 1 show that above half (72.5%) of the respondents had between primary and secondary school education. It can be inferred that the literacy level is high and also implies that the education status in rural areas has greatly improved especially among female folks. The level of education of women in the study area will therefore help women to maintain a steady flow along the MVC activities and also maintain a good market linkage. The average household size of the rural women was 5 persons. Majority (86.5%) of the respondents were involved in farming activities while few (13.5%) were involved in non-farming activities such as trading and artisan. This implies that rural women are more actively involved in farming and also moving along the value chain. The average annual income of the respondent was ₦786,487; this implies that the respondent's average earning per annum in the MVC activities. Findings reveal that the average farm size of rural women was 3.3 hectares. This shows a relative small size of farm land and that respondents were mainly smallholder.

**Table 1.** Distribution of Respondents by Their Socio-Economic Characteristics (n=539)

Variables	Frequency	Percentage	Mean	SD
<b>Age</b>				
≤ 30	24	4.5	42.4	
31-40	220	40.8		
41-50	227	42.1		
> 50	68	12.6		
<b>Marital status</b>				
Single	6	1.1		
Married	479	88.9		
Separated	6	1.1		
Divorced	2	0.4		
Widowed	46	8.5		
<b>Level of Education</b>				
Non formal	57	10.6		
Adult	7	1.3		
Primary	101	18.7		
Secondary	290	53.8		
Tertiary	84	15.6		
<b>Household Size</b>				
≤ 3	19	3.5	5	1.26
4-6	448	83.1		
7-9	70	13.0		
>9	2	0.4		
<b>Occupation</b>				
Farming	466	86.5		
Non-farming	73	13.5		
<b>Annual Income (Naira)</b>				
≤ 500,000	383	71.1	786,487.94	1,261,774.57
500,001-1,000,000	67	12.4		
1,000,001-1,500,000	17	3.1		
>1,500,000	72	13.4		
<b>Size of Farm (Hectares)</b>				
≤ 2	228	42.3	3.27	2.01
2.01-5.00	259	48.1		
>5	52	9.6		

Source: Field Survey Data, 2022

The result in Table 2 shows the rural women's participation in various activities in the maize value chain. Under input supplies, more than half (61.6%) of the respondents participated in machinery (tools and equipment) supplies. About 65.5% of the respondents participated in input supplies of seed and materials while 71.4% of them majorly participated in fertilizer supplies. This implies that rural women farmers are also very active suppliers of input. They represent significant potential to upgrade value chain performance and build input markets.

In production, fertilizing (71.2%), harvesting (68.1%), weeding (64.7%), sowing (60.7%), were the most participated activities of the respondents. The least participated by the respondents was land preparation (59.7%), fencing (59.4%). This implies that these activities are laborious and were not usually carried out by the women as they may not have much vigour (like their men counterparts) to accomplish such tasks.

In processing, drying (76.3%) was highly participated activity. This means that the drying of farm produce was mostly done by the rural women in the maize value chain. Sorting/ grading (73.5%), bagging/packaging (69.9%), shelling (65.3%) of the respondents participated in the various activities of the MVC. The result indicates that there was high level partial level of participation of rural women farmers along the processing activities.

**Table 2.** Distribution of Rural Women Farmers' Participation in Maize Value Chain Activities

Maize value chain activities	Yes	
	Frequency	Percentage
<b>Input supply</b>		
Machinery	332	61.6
Seeds and materials	353	65.5
Fertilizer	385	71.4
<b>Production</b>		
Site selection	324	60.1
Land preparation	322	59.7
Tillage activities	324	60.1
Sowing	327	60.7
Fencing	320	59.4
Fertilizing	384	71.2
Weeding	349	64.7
Harvesting	367	68.1
<b>Processing</b>		
Drying	411	76.3
Shelling	352	65.3
Sorting/grading	394	73.5
Bagging/packing	377	69.9
<b>Marketing/distribution</b>		
Transportation (loading and offloading)	385	71.2
Retail sales(local markets)	413	76.6
Whole sales(bulk)	384	71.4

Source: Field Survey Data, 2022

In marketing, maize like most agricultural commodities can be marketed freshly harvested or processed. In SWN, local market places which are held at an interval of 4 to 5 days are the points of convergence of the farm produce, including maize. Maize processing would further enhance the chances of success in its marketing. Results in Table 2 shows that the respondents (76.6%) and (71.4%) participated more in retail and wholesale in the value chain respectively. This could be as a result of the rural women farmers wanting to make sales immediately harvesting their produce to get income to prepare another planting for the dry season.

**Table 3.** Individual Score Range of Participation in Maize Value Chain of Rural Women Farmers

Obtained score (Percentage score range)	Level	Input supply f (%)	Production f (%)	Processing f (%)	Marketing f (%)	Pool f (%)
00–4.5 (0.0 – 25.0%)	Very low	124 (23.0)	187 (34.7)	129 (23.9)	30 (5.6)	109 (20.2)
4.6–9.0 (26.0 – 50.0%)	Low	66 (12.2)	33 (6.1)	45 (8.3)	101 (18.7)	110 (20.4)
9.1–13.5 (51.0–75.0%)	High	43 (8.0)	5 (0.9)	55 (10.2)	143 (26.5)	23 (4.3)
13.6 –18.0 (76.0–100%)	Very high	306 (56.8)	314 (58.3)	310 (57.5)	265 (49.2)	297 (55.1)
Total		539 (100.0)	539 (100.0)	539 (100.0)	539 (100.0)	539 (100.0)
Mean ± SD		66.1 ± 42.36	63.0 ± 44.87	71.2 ± 38.84	73.1 ± 31.08	67.0 ± 35.3
Min.- Max.		0.0 - 100.0	0.0 - 100.0	0.0 - 100.0	0.0 - 100.0	0.0 - 100.0

Source: Field Survey Data, 2022

Note: Minimum to maximum possible obtained score = 0 – 18



The results in Table 3 show that the mean 66.1% of the respondents participated in input supply along the maize value chain. This implies that the respondents had high level of participation in the supply of inputs supply. Also there was relatively high (63.0%) mean participation level in production. This implies the rate at which the women participated in the production activities compared with other activities along the chain. The mean percentage score of respondents in production were not as high as those that had 71.2% and 73.1% in processing and marketing/distribution respectively. This implies a high rate of participation of the rural women farmers in the MVC. This could be attributed to the fact that processing entails various activities and other value added products that can be produced and reprocessed into other forms like corn ball, corn cake, pap, boiled maize, roasted corn etc. that could generate more income along the value chain. Women tend to be highly involved in processing activities especially in the MVC. The result is similar with the findings of Akaninyene *et al.* (2022) buttressed the fact that processing and marketing, was seen as a woman's job and therefore, women were more prominent in the oil palm activities. This result also concurred with the findings of Adesiji *et al.* (2022) that marketing and processing were the leading rice value chain activities involved by the respondents in the study area. The analysis of rural women farmers' participation in MVC in Table 3 reveals the total mean participation level to be 67.0%. This is an indication that rural women farmers in South-West Nigeria participated highly in the activities of MVC.

**Table 4.** Distribution of Value Added Products Produced by Rural Women Farmers

S/N	Item	Yes	No
1.	Boiled Maize	499 (92.5%)	40 (7.5%)
2.	Roasted Maize	526 (97.5%)	13 (2.5%)
3.	Pap (Ekajije)	481 (89.2%)	58 (10.8%)
4.	Corn starch (Ogi)	400 (74.2%)	139 (25.8%)
5.	Roasted corn flour ( <i>Elekute</i> )	292 (54.2%)	247 (48.8%)
6.	Peppered cornmeal ( <i>Aadun</i> )	252 (46.7%)	287 (53.3%)
7.	Cooked cornmeal ( <i>Tuwo</i> )	220 (40.8%)	319 (59.2%)
8.	Corn pudding ( <i>Abari</i> )	58 (10.8%)	481 (89.2%)
9.	Corn chips ( <i>Kokoro</i> )	171 (31.7%)	368 (68.3%)
10.	Corn porridge ( <i>Egbo</i> )	305 (56.7%)	234 (43.3%)
11.	Maize dough ( <i>Massa</i> )	139 (25.8%)	400 (74.2%)
12.	Maize peanut balls ( <i>Donkwa</i> )	40 (7.5%)	499 (92.5%)

Source: Field Survey Data, 2022

The results in Table 4 show that the respondents majorly add value to their maize produce in form of roasted corn (97.5%) boiled maize (92.5%), pap (89.2%) and corn starch (74.2%). This implies that the women farmers in South-west Nigeria have great entrepreneurial skills in adding value to maize. They engage in processing activities that requires them transform their maize into other forms to eaten as snack and sold along the MVC. This may be as a result of them generating more income through their skills in the value added. This study agrees with the finding of Omoare *et al.* (2014), and Ater *et al.* (2018) who reported that rural women have great skill transforming maize into diverse products and can be consumed as snack.

Based on the socio-economic empowerment components of rural women farmers in the study area, Table 5 shows that the average component score is in the range of +400 to +800 with MS  $\pm 0.8$ -1.6. The average socio-economic indicators of rural female farmers in each component are high due to their active participation in Maize Value Chain activities.

**Table 5.** Distribution of Socio-Economic Empowerment of Rural Women Farmers' Participation in Maize Value Chain

<b>Components of Socio-economic Empowerment</b>	<b>None f (%)</b>	<b>Little f (%)</b>	<b>Much f (%)</b>	<b>Score</b>	<b>MS</b>
<b>Income and financial status</b>					
Increased profit	24 (4.5)	279 (51.8)	236 (43.8)	751	1.39
Improved savings	42 (7.8)	285 (52.9)	212 (39.3)	709	1.32
Enhanced access to credit	175 (32.5)	200 (37.1)	164 (30.4)	528	0.98
Increased financial independence	95 (17.6)	225 (41.7)	219 (40.6)	663	1.23
<b>Decision making status</b>					
Ability to recruit manpower and selection decision	149 (27.6)	253 (46.9)	137 (25.4)	527	0.98
Ability to identify consumer needs and improved selling decision	63 (11.7)	295 (54.7)	181 (33.6)	657	1.22
Involvement in the agricultural decisions and household decisions (e.g. purchase of car, house, household appliance etc.)	98 (18.2)	299 (55.5)	142 (26.3)	583	1.08
Proportion of income spent on oneself and children	51 (9.5)	213 (39.5)	275 (51.0)	763	1.42
<b>Productivity and Skills</b>					
Access to new processing technologies	181 (33.6)	161 (29.9)	197 (36.5)	555	1.03
Access to new markets	118 (21.9)	183 (34.0)	238 (44.1)	659	1.22
Diversity of products and new skills in business practice	119 (22.1)	239 (44.3)	181 (33.6)	601	1.12
Access to adult learning opportunities	159 (29.5)	236 (43.8)	144 (26.7)	524	0.97
<b>Control over assets</b>					
Ownership of productive assets (e.g. land, car, animals, machinery etc.)	167 (31.0)	252 (46.8)	120 (22.2)	492	0.91
Use of media, phone and technology	149 (27.6)	228 (42.3)	162 (30.1)	552	1.02
Control over how to spend cash and savings	53 (9.8)	288 (53.4)	198 (36.7)	684	1.27
Increased control over household resources	60 (11.1)	286 (53.1)	193 (35.8)	672	1.25
<b>Family support</b>					
Improved joint payment of children's school fees	95 (17.6)	182 (33.8)	262 (48.6)	706	1.31
Improved food availability and adequacy of the family	46 (8.5)	220 (40.8)	273 (50.7)	766	1.42
Job creation to family	147 (27.3)	243 (45.1)	149 (27.6)	541	1.00
Improved water quality of sources such bore holes	213 (39.5)	223 (41.4)	103 (19.1)	429	0.80
<b>Access to basic services</b>					
Access to medical care and child care services	55 (10.2)	285 (52.9)	199 (36.9)	683	1.27
Access to agricultural extension services	214 (39.7)	122 (22.6)	203 (37.7)	528	0.98
Access to basic amenities (e.g. food, shelter etc.)	34 (6.3)	248 (46.0)	257 (47.7)	762	1.41
Education available to and attained by girls and women	53 (9.8)	282 (52.3)	204 (37.8)	690	1.28
<b>Capacity building and Personal development</b>					
Being exposed to training has improved my participation in agri-business.	157 (29.1)	138 (25.6)	244 (45.3)	626	1.16
Improved agricultural value chain in production, processing and marketing.	101 (18.7)	259 (48.1)	179 (33.2)	617	1.15

Components of Socio-economic Empowerment	None f (%)	Little f (%)	Much f (%)	Score	MS
Improved family respect due to achievements.	54 (10.0)	203 (37.7)	282 (52.3)	767	1.42
Ability to mentor other women in agri-business	88 (16.3)	283 (52.5)	168 (31.2)	619	1.15
<b>Self-esteem and Confidence</b>					
Being proud of one-self	33 (6.1)	164 (30.4)	342 (63.5)	848	1.57
Taking positive attitude towards one-self	30 (5.6)	178 (33.0)	331 (61.4)	840	1.56
Being satisfied with one-self	28 (5.2)	206 (38.2)	305 (56.6)	816	1.51
Taking a leadership role in community groups and speaking confidently with authorities	138 (25.6)	237 (44.0)	164 (30.4)	565	1.05

Source: Field Survey Data, 2022

**Table 6.** Percentage Score of Respondents Based on Socio-Economic Empowerment Status After Participation in MVC

Obtained scores range (Percentage score range)	Level	Income and finance	Decision making	Productivity	Control over assets	Family support	Access to basic amenities	Capacity building	Self-esteem and confidence	Total
0 – 16 (0 – 25%)	Very low	68 (12.6)	78 (14.5)	166 (30.8)	90 (16.7)	122 (22.6)	52 (9.6)	78 (14.5)	33 (6.1)	37 (6.7)
17 – 32 (26 – 50%)	Low	216 (40.1)	189 (35.1)	124 (23.0)	235 (43.6)	129 (23.9)	190 (35.3)	162 (30.1)	147 (27.3)	170 (31.5)
33 – 48 (51 – 75%)	High	65 (12.1)	146 (27.1)	89 (16.5)	93 (17.3)	181 (33.6)	142 (26.3)	147 (27.3)	126 (23.4)	201 (37.5)
49 – 64 (76–100%)	Very high	190 (35.3)	126 (23.4)	160 (29.7)	121 (22.4)	107 (19.9)	155 (28.8)	152 (28.2)	233 (43.4)	131 (24.3)
Total		539(100.0)	539(100.0)	539(100.0)	539(100.0)	539(100.0)	539(100.0)	539(100.0)	539(100.0)	539(100.0)
Mean ± SD		61.6 ± 29.09	58.8 ± 27.74	54.4 ± 33.53	55.8 ± 28.67	56.8 ± 28.12	62.0 ± 27.64	61.1 ± 29.95	71.3 ± 26.10	60.0 ± 24.66

Source: Field Survey Data, 2022

The summary of result in Table 6 shows the total mean percentage score and more than half (60%) of the respondents had high socio-economic empowerment status through their participation in MVC. This implies a significant improvement in the status of rural women farmers in maize value chain activities in the study area.



**Table 7.** Distribution of Respondents Based on Constraints to MVC Activities

Constraints	Not a Constraint	Severe	Very Severe	Score	MS	Rank
Inadequate knowledge and skill in the line of business	199 (36.9)	258 (47.9)	82 (15.2)	422	0.78	15 <sup>th</sup>
Limited access to credit and loans	171 (31.7)	290 (53.8)	78 (14.5)	446	0.83	13 <sup>th</sup>
Inadequacy of extension service delivery	123 (22.8)	174 (32.3)	242 (44.9)	658	1.22	2 <sup>nd</sup>
Inadequate storage/processing facilities	204 (37.9)	171 (31.7)	164 (30.4)	499	0.93	7 <sup>th</sup>
Inadequate financial support	198 (36.7)	186 (34.5)	155 (28.8)	496	0.92	8 <sup>th</sup>
The high cost of transportation to the market	109 (20.2)	175 (32.5)	255 (47.3)	685	1.27	1 <sup>st</sup>
Unfavourable govt policy support for rural women farmers	317 (58.8)	187 (34.7)	35 (6.5)	257	0.48	20 <sup>th</sup>
Weak or non-existence of women farmers' group	361 (67.0)	141 (26.2)	37 (6.9)	215	0.40	21 <sup>st</sup>
Inadequate training in agribusiness value addition activities	178 (33.0)	270 (50.1)	91 (16.9)	452	0.84	12 <sup>th</sup>
Inadequate access to labour-saving equipment for production and processing	186 (34.5)	228 (42.3)	125 (23.2)	478	0.89	11 <sup>th</sup>
Poor Knowledge on improved processing techniques	121 (22.4)	351 (65.1)	67 (12.4)	485	0.90	9 <sup>th</sup>
Lack of access to ready market	218 (40.4)	248 (46.0)	73 (13.5)	394	0.73	17 <sup>th</sup>
Glut in the market	131 (24.3)	305 (56.6)	103 (19.1)	511	0.95	6 <sup>th</sup>
Pest and diseases infestation of products	203 (37.7)	219 (40.6)	117 (21.7)	437	0.81	14 <sup>th</sup>
Inadequate access to labour-saving equipment for production and processing	186 (34.5)	228 (42.3)	125 (23.2)	478	0.89	11 <sup>th</sup>
Limited access to land	93 (17.3)	311 (57.7)	135 (25.0)	581	1.08	4 <sup>th</sup>
Poor branding techniques	184 (34.1)	290 (53.8)	65 (12.1)	420	0.78	15 <sup>th</sup>
Unpredictable rising cost of input	84 (15.6)	305 (56.6)	150 (27.8)	605	1.12	3 <sup>rd</sup>
Fluctuation in sales of product	105 (19.5)	310 (57.5)	124 (23.0)	558	1.04	5 <sup>th</sup>
It promotes aging	280 (51.9)	231 (42.9)	28 (5.2)	287	0.53	19 <sup>th</sup>
Limited improved technologies	223 (41.4)	266 (49.4)	50 (9.3)	366	0.68	18 <sup>th</sup>
Little profit with much stress is involve in maize value chain	142 (26.3)	309 (57.3)	88 (16.3)	485	0.90	9 <sup>th</sup>

Source: Field Survey Data, 2022

Note: Scale: Not a constraint=0, Severe constraint=1, Very severe constraint=2; Threshold=1.0  
WS= Weighted Score, WMS=Weighted Mean Score

Results in Table 7 reveal that high cost of transportation to the market, inadequate access to relevant information and the unpredictable rising cost of inputs ranked 1st, 2nd and 3rd respectively as most severe and major constraints experienced by the rural women farmers in maize value chain activities. This is in tandem with the report of Omoare *et al.* (2014) that major constraint to maize value addition are high cost of inputs, lack of modern facilities, inadequate financial support. Limited access to land was ranked 4th. This implies that rural women are still limited in having access to productive resources such as land, thereby limiting their level of involvement in MVC. Furthermore, pest and diseases infestation, limited access to credit and loans,

inadequate knowledge and skill, lack of access to ready market, and limited improved technologies were identified severe constraints to their involvement in MVC. While more than half of the respondents (51.9%, 58.8% and 67.0%) did not see promotes aging, unfavourable government policy and weak or non-existence of farmers' group as a constraints respectively to their involvement in MVC.

### Relationship Between Level of Participation and The Socio-Economic Empowerment Status of Rural Women Farmers

**Table 8.** Correlation Between Participation in Maize Value Chain and Socio-Economic Empowerment Status of Rural Women Farmers

Socio-Economic Empowerment	Pearson correlation (r-value)	Significance (p-value)
Participation in input supply	0.342**	0.000
Participation in production	0.325**	0.000
Participation in processing	0.401**	0.000
Participation in marketing and distribution	0.208**	0.000
Total	0.380**	0.000

Source: Primary Data Processed, 2022

Note: \*\*Correlation is significant at the 0.01 level (2-tailed)

The result in Table 8 reveals that there is a significant relationship between the participation in input supply and socio-economic empowerment status ( $r=0.342$ ;  $p=0.000$ ) at 1%. Rural women's participation in various activities in the corn value chain has a fairly strong relationship to their socio-economic empowerment status. Their active participation in providing inputs such as providing agricultural equipment and supplies, providing seeds and materials and fertilizer reached more than 60%-70%, indicating that there is significant potential in improving value chain performance. This finding is in line with the results of Didana (2019); Ani *et al.* (2018) which proves that participation in economic activities enables an increase in socio-economic status, especially for those who work and belong to low-income groups.

Furthermore, participation in production and SES is significant at 0.01 ( $r=0.325$ ;  $p=0.000$ ). The activities they carry out mostly range from sowing, fertilizing, weeding, to harvesting, showing the level of active participation of rural women and their desire to improve their socio-economic status. Their involvement in production activities shows that women can play an effective role in economic activities. This is in line with research by Khan & Bibi (2011) which states that women who have no income/low income are willing to take part in economic activities so that they can improve their family's economic status.

In processing activities, there is a significant relationship with SES at 0.01 ( $r=0.401$ ;  $p=0.000$ ). In this research, agricultural product drying, sorting, packaging and shelling activities were the highest participation carried out by rural women in the corn value chain. Özsayin & Korkmaz (2021) stated the high level of partial participation of rural women farmers in processing activities. Likewise, participation in marketing and distribution has a significant relationship with SES at 0.01 ( $r=0.208$ ;  $p=0.000$ ). Like most agricultural commodities, corn can be marketed fresh, harvested, or processed. Corn processing will further increase the chances of marketing success. However, the level of participation of rural women is higher in marketing and distribution of products at retail and wholesale. The reason is that the desire of women farmers in rural areas is to make sales by immediately harvesting their crops in order to earn income in preparation for replanting in the dry season.

The overall result shows that there is a positive significant relationship between participation and socio-economic empowerment status ( $r=0.380$ ;  $p=0.000$ ). The result implies that the more participation of rural women in the maize value chain activities,

the better their empowerment status. This is expected as it brings about positive changes in their standard of living.

## CONCLUSION

In conclusion, this study has contributed to the knowledge on rural women farmers' participation in maize value chain and socio-economic empowerment in South-west, Nigeria. Based on the finding of this study, it is concluded that the level of rural women participation in maize value chain activities was high. The study therefore concluded that rural women maize farmers in the study area are socio-economically empowered through their participation majorly in the marketing and processing in the MVC.

Based on the findings of this study, Government policy and extension programmes aimed at improving the welfare and livelihood of the rural women should focus on empowering them by providing necessary financial assistance, subsidy for input and increase access to land. In addition, credit facilities should be made accessible to rural women for their expansion of business in maize value chain. Rural women should be encouraged to organise and join cooperative societies in their community so as to save and also have access to credit. Rural women should be sensitized and encouraged to form social groups that will enable them have access to loan, market linkage that will boost their business enterprise along the MVC.

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