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# Agricultural Cooperatives and Cassava Value Addition: A Descriptive Survey of Cooperative Members' Perceptions in Edo State, Nigeria

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## Abstract

Cassava value addition includes processing fresh roots into products such as gari, fufu, flour, starch, and chips, together with related activities such as packaging, storage, transport, and marketing. Agricultural cooperatives may assist members in obtaining services and information relevant to these activities. This study described cooperative members' perceptions of how cooperative membership and participation in cooperative activities support cassava value addition in Edo State, Nigeria. A cross-sectional descriptive survey was conducted among cassava-farming cooperative members. Of the 382 questionnaires distributed, 344 were usable, representing a 90.1% response rate. Data were summarised using frequencies, percentages, means, and standard deviations. The findings reveal a generally favourable perception of cooperative membership support for cassava value addition. Access to credit for processing activities and the adoption of new processing technologies (92.2% each) were perceived as the primary areas of cooperative membership contributions to cassava value addition. The study recommends that cooperative leaders prioritise credit access and technology support, while strengthening training linked to income generation and members' motivation to innovate.

**Keywords:** Agricultural Cooperatives; Cassava Processing; Cassava Value Addition; Member Perceptions; Participation; Edo State.

## Introduction

Cassava is important to Nigeria's food system and rural enterprise economy, but fresh roots are highly perishable. Converting cassava into gari, fufu, flour, starch, chips and other products can extend shelf life, widen market outlets and create income-generating opportunities in processing, packaging, storage, transport and marketing. Research in Nigeria identifies group processing, packaging, transportation, storage and product diversification as important forms of cassava value addition, while smallholder value-adding enterprises can generate positive returns over variable costs (Alufohai et al., 2018; Donkor et al., 2018; Oluwatayo et al., 2022). The issue is therefore not only how much cassava is produced, but also whether farmers can access the services and capabilities required to process and market it profitably.

In Edo State, evidence indicates that cassava farmers and processors face constraints relating to processing technology, finance, infrastructure, labour, technical capacity and the cost of equipment (Adeleye et al., 2021; Yusuf et al., 2022). Earlier work also documented constraints in cassava production and processing among Nigerian farmers (Akinnagbe, 2010), while more recent research on agro-processing enterprises in Edo State identifies financial, infrastructural, transport, market and institutional constraints (Akporawo et al., 2026). Agricultural cooperatives may provide a practical institutional channel for collective input purchase, processing, aggregation, storage, packaging, transport, marketing, training, savings and credit. However, the practical value of these functions depends on whether members experience the services as available, accessible and useful.

This makes member perceptions relevant even though perceptions do not constitute evidence of causal effects. Members can directly report whether they regard cooperative services as supporting processing resources, knowledge, technology, market access and income opportunities. Such evidence can help cooperative managers and extension actors identify service channels that members regard as useful and areas where delivery may require strengthening. The specific gap in the Edo State literature is that existing studies document cooperative activities or compare members and non-members, but provide less direct evidence on how cooperative members themselves perceive the adequacy and usefulness of membership-based services and active participation for cassava value addition.

In this study, membership refers to formal affiliation with an agricultural cooperative and the potential to access cooperative services, whereas participation refers to engagement in cooperative meetings, training, savings and credit activities, collective processing, aggregation or marketing. Because all respondents were cooperative members, the study does not compare members with non-members and does not estimate the causal effect of membership. Rather, it documents members' perceptions of how membership and participation relate to resources and activities relevant to cassava value addition.

**Statement of the Problem**

Cassava value addition offers opportunities to reduce the perishability of fresh roots, diversify products and expand farm income, but these opportunities depend on access to suitable processing technologies, finance, infrastructure, skills and markets. Edo State studies have reported difficulty in utilising cassava processing technologies because of cost and other operational constraints (Adeleye et al., 2021; Yusuf et al., 2022). Broader evidence from agro-processing enterprises in the state also points to limited finance, infrastructural deficits, high transport costs, weak institutional support and market constraints (Akporawo et al., 2026). Such conditions can restrict farmers' ability to move from primary production into more extensive value-added activities.

Agricultural cooperatives may help address some of these constraints through collective processing, bulk purchase, storage, transport, marketing, credit, training and information

services. In Orhionmwon Local Government Area of Edo State, Alufohai et al. (2018) documented cooperative involvement in group processing, packaging, transportation and storage of cassava products. In a related 2025 study, Akokhia and Obasanya compared cooperative members and non-members in Edo State and reported differences in cassava production and processing patterns. However, these studies do not directly answer a more specific question: whether cooperative members themselves perceive their membership and participation as providing adequate and useful support across the service channels needed for cassava value addition.

The unresolved issue is therefore member-perceived service adequacy rather than the existence of cooperative functions alone. Membership provides formal affiliation and potential access to cooperative services, while participation reflects actual engagement with meetings, training, savings and credit, processing, aggregation and marketing activities. Without member-level evidence on how these dimensions are perceived, cooperative managers and support agencies have limited descriptive evidence for identifying which value-addition services members regard as most useful and which require improvement. This study addresses that gap by documenting the perceptions of cassava-farming cooperative members in Edo State regarding the support associated with membership and participation for cassava value addition.

### Objectives of the study

The main objective of the study was to describe cooperative members' perceptions of the ways in which their cooperative membership and participation in cooperative activities support cassava value addition in Edo State. Specifically, the study sought to:

1. describe members' perceptions of how cooperative membership supports cassava value-addition activities and related resources; and
2. describe members' perceptions of how participation in cooperative activities relates to cassava value-addition activities and related resources.

### Research Questions

1. How do cooperative members perceive the relationship between membership and cassava value-addition activities and related resources?
2. How do cooperative members perceive the relationship between participation in cooperative activities and cassava value-addition activities and related resources?

## Literature Review

### Agricultural Cooperatives and Cassava Value Addition

Agricultural cooperatives are member-based organisations through which farmers can pursue collective services and market functions that may be difficult or costly to secure individually. In cassava production and processing, cooperative functions can include processing, packaging, storage, transportation, collective marketing, input purchase and training. Alufohai et al. (2018) documented cooperative activities involving bulk sales, value addition, bulk purchase of inputs and buying members' produce in Orhionmwon Local

Government Area of Edo State; value-addition activities included group processing, packaging, transport and storage. Donkor et al. (2018) examined participation in cassava value addition in Nigeria and identified farmer characteristics, human capital and institutional factors associated with the decision and extent of value-addition participation. Cassava value addition is multidimensional. It can be represented by the decision to process cassava, the range of products processed, the proportion of output processed, the extent of processing involvement, or the revenue and profitability generated from processed products (Donkor et al., 2018; Oluwatayo et al., 2022). Donkor et al. (2022) further showed that returns and income distribution vary across actors in the cassava value chain and highlighted the importance of market and value-chain structure. Studies in Edo State have also shown that processing technologies can be associated with livelihood and income outcomes, while cost and labour requirements can constrain utilisation (Adeleye et al., 2021; Yusuf et al., 2022). These strands of evidence agree that processing and related services matter to cassava value addition, but they differ in the outcomes measured and in the extent to which cooperative institutional support is explicitly examined.

More recent Nigerian evidence reinforces the potential relevance of cooperative institutions but also illustrates methodological differences. Akinola et al. (2023) examined cooperative membership and smallholder tomato yield with an endogenous treatment approach; Ogunnaike et al. (2023) studied cooperative membership and poverty status in Ogun State; and Okafor et al. (2024) examined cooperative membership in relation to farm-business sustainability and food security in Anambra State. These studies address realised outcomes and, in some cases, compare groups or use econometric identification. By contrast, the present study focuses specifically on cassava-farming cooperative members' perceptions of support channels relevant to value addition. This distinction is important because perception evidence identifies how members evaluate services but does not establish their causal or realised economic effects.

**Membership, Participation and Member Perceptions**

Formal cooperative membership creates access to an organisational platform, but membership alone does not imply equal use of or exposure to cooperative services. Participation reflects the extent to which members attend meetings, undertake training, use savings and credit services, engage in collective processing and participate in aggregation and marketing. Kolade and Harpham (2014) reported an association between cooperative membership and farmers' uptake of agricultural technologies in Southwest Nigeria, suggesting that cooperative structures can provide channels through which knowledge and innovations reach farmers. Grashuis (2025), using a meta-analysis of 168 studies and 924 effect estimates, likewise showed that the evidence on determinants of cooperative membership is broad but heterogeneous, with factors such as credit access, farm size, education, experience and demographic characteristics influencing the likelihood of collective action.

Recent studies also indicate that cooperative membership can be linked to production, welfare and technology-related outcomes. Akinola et al. (2023) found cooperative membership to be associated with tomato yield in Nigeria after accounting for treatment selection, while Ogunnaike et al. (2023) linked cooperative experience and loan access to poverty status in Ogun State. Wang and Xu (2025) found that cooperative membership promoted technology adoption through technology cognition, while Kehinde et al. (2025) examined cooperative membership and poverty among Nigerian smallholder households. The consistency of these findings at the level of institutional relevance contrasts with variation in crops, locations, outcomes and identification strategies. The present study therefore occupies a narrower descriptive position: it asks how existing members perceive membership and participation as mechanisms for obtaining services that support cassava value addition.

The member perspective is also useful because cooperative services may be available in principle but inadequate in practice. A cooperative may have a processing machine, a credit scheme or market contacts without every member perceiving these services as accessible, reliable or sufficient. The present study consequently treats perception as a service-diagnostic construct rather than as a substitute for objective measures of equipment use, processing quantity, realised prices, costs or income. This approach also reduces the risk of overstating what can be inferred from cross-sectional self-reports.

**Theoretical Framework**

The study draws on collective action theory and transaction cost theory. Collective action theory explains why individuals may organise and contribute resources to pursue benefits that are difficult or costly to secure individually (Olson, 1965). In agricultural cooperatives, collective organisation can facilitate joint activities such as input procurement, processing, aggregation, training and marketing. Transaction cost theory complements this perspective by emphasising the costs of searching for information, negotiating exchanges, coordinating transactions and monitoring agreements (Coase, 1937). Valentinov (2007) applies an organisational-economics perspective to agricultural cooperatives and argues that cooperative forms can help farmers overcome some of the limitations associated with fragmented production and market exchange.

Taken together, the theories provide an interpretive basis for examining why members might perceive cooperative membership and participation as useful channels for access to credit, processing facilities, technology, information and markets. The framework is used here as an interpretive lens rather than as a causal model: the study does not estimate whether the mechanisms predicted by the theories actually cause improved processing outcomes.

For the present instrument, items concerning access to credit, shared processing facilities and technology support are mapped primarily to collective action because they concern the pooling of resources and collective access to services. Items concerning processing knowledge and skills, information and market access are mapped primarily to transaction-cost theory because they relate to information search, coordination and exchange. Income-

related items are treated as respondents' perceptions of possible outcomes of these service channels, not as causal tests of either theory.

The literature reviewed also reveals the specific contribution of the present study. Alufohai et al. (2018) documented cooperative involvement in cassava value-addition activities in an Edo State local government area; Donkor et al. (2018) examined determinants and extent of farmer participation in cassava value addition; and Oluwatayo et al. (2022) examined intensity and profitability of smallholder participation in cassava value addition. The present study complements these studies by focusing on the member-level perception of cooperative membership and participation as support mechanisms across credit, facilities, knowledge, technology, markets and income-related opportunities. It therefore contributes descriptive evidence on perceived service adequacy that is not supplied by those outcome- or determinant-focused studies.

## Methodology

The study used a cross-sectional descriptive survey design in Edo State, Nigeria. Data were collected at one point in time from cassava-farming cooperative members, and the analysis focused on the distribution and intensity of members' responses. The design was therefore appropriate for describing perceptions but not for establishing causal effects of membership or participation on processing outcomes. The target population comprised cassava farmers who were members of agricultural cooperatives in selected cassava-producing areas of Edo State. The population count of these farmers were 8,645. This population size was used in the Taro Yamane formula (Yamane, 1967) at a 5% significance level resulting to approximately 382 sample sizes. The study was conducted in the whole of Edo State's three senatorial district including Edo South Edo Central and Edo North with population size of 3315, 2012 and 3318 cooperative farmers respectively. The respondents were selected proportional to the size of each of the senatorial district. Specifically, 147, 89 and 146 respondents were selected from Edo South, Edo Central and Edo North senatorial districts respectively. Data were collected using a structured questionnaire. The questionnaire was designed by the researchers based on the study objectives but subjected to validity and reliability test. A pilot test with 20 cassava farmers was conducted in Neighboring Delta State community (Agbor). The Cronbach alpha estimate of the test was 0.742 which is considered acceptable for a newly developed questionnaire. Content or face validity was assessed through subject matter experts.

The substantive perception items used a five-point Likert response scale comprising Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D), and Strongly Disagree (SD). Responses were coded 5, 4, 3, 2 and 1, respectively. The instrument captured perceptions concerning cooperative membership and participation in activities relevant to cassava value addition. Internal consistency was assessed using Cronbach's alpha. Fieldwork was conducted during June-July, 2026. Questionnaires were administered using trained enumerators who were pre-trained by the researchers and subject area experts. Before data collection, respondents were informed about the study objectives, the voluntary nature of

participation, and their right to decline participation or withdraw at any time. They were assured that their responses would be treated confidentially. The questionnaire did not collect names or identity numbers, thereby supporting respondent anonymity.

The data were analysed using descriptive statistics, including frequencies, percentages, means and standard deviations. Frequencies and percentages were used to summarise respondent characteristics and response distributions, while item means and standard deviations were used to describe the direction and dispersion of Likert-scale responses. The neutral midpoint was 3.00; mean scores of 3.50 or above were interpreted as indicating favourable perceptions, while means below 3.50 were treated as not meeting the study's threshold for favourable perceptions. No inferential test or causal model was used.

## Results

### Respondent Profile

The respondents were predominantly female (66.0%), while males accounted for 34.0%. The largest age group was 31-40 years (29.7%), followed by 18-30 years (23.3%) and 41-50 years (22.7%). Most respondents had secondary education (55.2%), 64.0% were married, and the most common household-size category was 3-5 members (43.6%). In terms of farm size, 40.1% cultivated 1.1-2.0 hectares. Regarding cassava-processing income, 40.1% reported income of ₦50,001-₦100,000, while 23.3% reported ₦0-₦50,000.

**Table 1: Socioeconomic characteristics of cooperative-member respondents (n = 344)**

| Variable | Category | Frequency | Percentage (%) |
|---|---|---|---|
| Sex | Male | 117 | 34.0 |
| | Female | 227 | 66.0 |
| Age | 18-30 years | 80 | 23.3 |
| | 31-40 years | 102 | 29.7 |
| | 41-50 years | 78 | 22.7 |
| | 51-60 years | 52 | 15.1 |
| | 61 years and above | 32 | 9.3 |
| Educational background | Primary | 57 | 16.6 |
| | Secondary | 190 | 55.2 |
| | Tertiary | 97 | 28.2 |
| Marital status | Married | 220 | 64.0 |
| | Single | 70 | 20.3 |
| | Divorced | 25 | 7.3 |
| | Widow/widower | 29 | 8.4 |
| Household size | 1-2 members | 98 | 28.5 |
| | 3-5 members | 150 | 43.6 |
| | 6-8 members | 70 | 20.3 |
| | 9 and above | 26 | 7.6 |
| Farm size (hectares) | 0.5-1.0 | 112 | 32.6 |
| | 1.1-2.0 | 138 | 40.1 |
| | 2.1-3.0 | 64 | 18.6 |

| Variable | Category | Frequency | Percentage (%) |
|---|---|---|---|
| | Above 3.0 | 30 | 8.7 |
| Cassava-processing income (₦) | 0-50,000 | 80 | 23.3 |
| | 50,001-100,000 | 138 | 40.1 |
| | 100,001-150,000 | 70 | 20.3 |
| | Above 150,000 | 56 | 16.3 |
| Years of cooperative membership | <5 | 67 | 19.5 |
| | 5-9 | 79 | 23.0 |
| | 10-14 | 122 | 35.5 |
| | 15-19 | 43 | 12.5 |
| | >20 | 33 | 9.5 |

**Source:** Field Survey, 2026

**Members' Perceptions of Cooperative Membership and Cassava Value Addition**

The results on Table 2 reveal a generally favourable perceptions of the contribution of cooperative membership to cassava value addition as indicated by the grand mean of 4.09. The respondents rated more highly access to credit for processing activities (92.2%; M = 4.46) and adoption of new processing technologies (92.2%; M = 4.42). Access to better processing facilities also received favourable ratings, with 89.2% agreement (M = 4.29). Although still positive and favourable, the perceived contribution of membership to income from cassava value addition (77.6%; M = 3.92) was rated lower than access to credit and better processing facilities. The lowest levels of agreement were recorded for motivation to innovate in cassava processing (71.2%; M = 3.75) and training that enhances processing income (71.5%; M = 3.62). Although the means for these two items exceeded the neutral midpoint of 3.00, their relatively lower ratings might be indicative that respondents were less positive about the contribution of membership to innovation and income-enhancing training.

**Table 2: Perceived relationship between cooperative membership and cassava value addition (n = 344)**

| Item | SA | A | U | D | SD | Mean | SD |
|---|---|---|---|---|---|---|---|
| Membership provides access to better processing facilities | 177 (51.5%) | 130 (37.8%) | 16 (4.7%) | 2 (0.6%) | 19 (5.5%) | 4.29 | 1.00 |
| Membership increases knowledge of cassava-processing techniques | 166 (48.3%) | 128 (37.2%) | 14 (4.1%) | 22 (6.4%) | 14 (4.1%) | 4.19 | 1.05 |
| Membership helps secure credit for processing activities | 206 (59.9%) | 111 (32.3%) | 14 (4.1%) | 5 (1.5%) | 8 (2.3%) | 4.46 | 0.84 |
| Membership enables profitable cassava-processing ventures | 175 (50.9%) | 122 (35.5%) | 27 (7.8%) | 7 (2.0%) | 13 (3.8%) | 4.28 | 0.97 |

| Item | SA | A | U | D | SD | Mean | SD |
|---|---|---|---|---|---|---|---|
| Membership motivates innovation in cassava processing | 126 (36.6%) | 119 (34.6%) | 9 (2.6%) | 66 (19.2%) | 24 (7.0%) | 3.75 | 1.31 |
| Members receive training that enhances processing income | 127 (36.9%) | 119 (34.6%) | 0 (0.0%) | 37 (10.8%) | 61 (17.7%) | 3.62 | 1.50 |
| Membership improves access to markets for processed cassava | 147 (42.7%) | 143 (41.6%) | 25 (7.3%) | 17 (4.9%) | 12 (3.5%) | 4.15 | 1.00 |
| Membership increases confidence in processing cassava | 116 (33.7%) | 148 (43.0%) | 24 (7.0%) | 32 (9.3%) | 24 (7.0%) | 3.87 | 1.18 |
| Membership helps adopt technology for cassava value addition | 196 (57.0%) | 121 (35.2%) | 10 (2.9%) | 9 (2.6%) | 8 (2.3%) | 4.42 | 0.86 |
| Membership has positively affected income from cassava value addition | 125 (36.3%) | 142 (41.3%) | 37 (10.8%) | 4 (1.2%) | 36 (10.5%) | 3.92 | 1.21 |
| **Grand mean** | | | | | | **4.09** | |

**Source:** Field Survey, 2026

**Members' Perceptions of Participation in Cooperative Activities and Cassava Value Addition**

Results in Table 3 also show that the respondents also generally expressed favourable perceptions of the relationship between participation in cooperative activities and cassava value addition. This position is supported by the grand mean of 4.16. Increased participation in technology adoption recorded 92.2% agreement (M = 4.42), followed by access to processing resources (89.2%; M = 4.29), learning about profitable processing (86.3%; M = 4.28), and improvement in processing skills (85.5%; M = 4.19). These findings suggest that respondents associated participation in cooperative activities with improved access to processing resources, technology, knowledge and skills. The perceived relationships between participation and processing efficiency, market access and income were also positive. The statement that active participation in meetings increasing processing efficiency recorded 71.2% combined agreement (M = 3.75), greater involvement leading to higher income from processing recorded 71.5% (M = 3.62). Participation was also found to improve access to better markets (65.4%; M = 3.60) and positively influenced income (67.4%; M = 3.56).

**Table 3: Perceived relationship between participation in cooperative activities and cassava value addition (n = 344)**

| Item | SA | A | U | D | SD | Mean | SD |
|---|---|---|---|---|---|---|---|
| Active participation in meetings increases processing efficiency | 126 (36.6%) | 119 (34.6%) | 9 (2.6%) | 66 (19.2%) | 24 (7.0%) | 3.75 | 1.31 |
| Greater involvement leads to higher income from processing | 127 (36.9%) | 119 (34.6%) | 0 (0.0%) | 37 (10.8%) | 61 (17.7%) | 3.62 | 1.50 |
| Participation determines access to processing resources | 177 (51.5%) | 130 (37.8%) | 16 (4.7%) | 2 (0.6%) | 19 (5.5%) | 4.29 | 1.00 |
| Regular participation enhances processing skills | 166 (48.3%) | 128 (37.2%) | 14 (4.1%) | 22 (6.4%) | 14 (4.1%) | 4.19 | 1.05 |
| Increased participation motivates technology adoption | 196 (57.0%) | 121 (35.2%) | 10 (2.9%) | 9 (2.6%) | 8 (2.3%) | 4.42 | 0.86 |
| More participation increases learning about profitable processing | 175 (50.9%) | 122 (35.5%) | 27 (7.8%) | 7 (2.0%) | 13 (3.8%) | 4.28 | 0.97 |
| Higher participation enables access to better markets | 106 (30.8%) | 119 (34.6%) | 29 (8.4%) | 56 (16.3%) | 34 (9.9%) | 3.60 | 1.33 |
| Participation positively influences income | 117 (34.0%) | 115 (33.4%) | 10 (2.9%) | 47 (13.7%) | 55 (16.0%) | 3.56 | 1.47 |
| Participation in training improves income | 299 (86.9%) | 45 (13.1%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 4.87 | 0.34 |
| Participation has substantially increased processing income | 344 (100.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 5.00 | 0.00 |
| **Grand mean** | | | | | | **4.16** | |

**Source:** Field survey, 2026

## Discussion

The reported membership responses suggest that members generally perceive their cooperatives as supporting cassava value-addition activities. The highest reported agreement concerned access to credit for processing and adoption of new processing technologies (92.2% each), followed by access to processing facilities and processed-cassava markets (about 89% each). Agreement was lower for motivation to innovate (71.2%) and training perceived to enhance processing income (71.5%). This pattern may mean that credit and technology services are more visible or immediately useful to members than training and innovation support; alternatively, training may not consistently translate into short-term income gains. These are possible explanations rather than

established mechanisms, because the survey records perceptions rather than independently verified service use or income.

The contribution of this study is more specific than a general claim that cooperatives improve farm outcomes. Donkor et al. (2018) examined determinants and the extent of farmer participation in cassava value addition in Nigeria, while Oluwatayo et al. (2022) examined the intensity and profitability of smallholder participation in Oyo State. Those studies focus on participation behaviour and realised economic outcomes. The present study instead concerns Edo State members' perceptions of whether membership and participation support credit, processing facilities, knowledge, technology, markets and income-related opportunities. It complements rather than reproduces the earlier studies and does not estimate the magnitude of a cooperative effect on processing or income.

The pattern is compatible with the theoretical framework when interpreted cautiously. From a collective-action perspective, favourable perceptions of credit, shared processing facilities and technology support are plausible where cooperative organisation enables members to pool resources and obtain services that may be difficult to secure individually (Olson, 1965). From a transaction-cost perspective, support for processing resources, information and markets may reduce search, bargaining, coordination and exchange frictions (Coase, 1937; Valentinov, 2007). Wang and Xu (2025) provide international evidence on cooperative membership and adoption of water-saving irrigation technology through technology cognition; their study is not Nigerian evidence and concerns a different technology and context. The present results remain descriptive and do not constitute a causal test of either theory.

The participation results, as currently reported, also require attention. Respondents rated the perceived links between participation and technology adoption (92.2%), processing resources (89.3%) and processing skills (85.5%) more favourably than participation in meetings or access to better markets (71.2%) and greater involvement or income from processing (71.5%). One interpretation is that cooperative activities may improve access to resources without necessarily removing the cost, labour, transport and market barriers that influence how effectively those resources are used. This is consistent with evidence from Edo State that the cost of processing equipment and high labour requirements can constrain utilisation (Adeleye et al., 2021; Yusuf et al., 2022). The apparent ceiling responses for training-related income and substantially increased processing income should not be read as proof of actual income gains. They also contrast with the lower rating for the related training item in Table 2. Because many response distributions are repeated across distinct items, this discussion must be revisited after every table statistic has been regenerated from the raw data.

**Study Limitations**

The study has several limitations. First, the cross-sectional descriptive design does not provide a counterfactual and therefore cannot establish whether membership or participation caused changes in processing performance or income. The study should be taken as a mere perception of the cooperative farmers which is also important. Second, all

respondents were cooperative members, so the study cannot estimate differences between members and non-members. Third, outcome-related measures are based on respondents' perceptions rather than independently verified processing volumes, revenues, profitability or technology-adoption records. The findings therefore concern perceptions of participation, not measured participation intensity. Fifth, self-reporting may be affected by recall error and social desirability bias (Krumpal, 2013).

## Conclusion

The cooperative farmers in the study area perceived membership as useful for obtaining credit, processing facilities, technology support and market access. Members perceive participation in cooperatives as useful for technology adoption, access to processing resources and skills development.

### Recommendations

Because access to credit for processing and technology support received the highest reported ratings, cooperative leaders should prioritise affordable processing credit and practical support for appropriate cassava-processing technologies. Given the comparatively lower ratings for motivation to innovate and training linked to processing income, cooperative leaders and extension agencies should strengthen hands-on training, follow-up mentoring and support for members to test suitable innovations and connect processed products with credible buyers.

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