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Original Research Article

Risk Analysis and Market Participation among Women Cassava Marketers in Imo and Anambra States, Nigeria

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Abstract: This study evaluated risk analysis and market participation among women cassava marketers in Anambra and Imo States, Nigeria. The objectives were to describe the socio-economic characteristics of women cassava marketers, describe the level of market participation by women cassava marketers and analyze risk attitudes and management strategies adopted by women cassava marketers in the study area. A multi-stage random sampling technique was used to collect data from 368 respondents (182 in Imo and 186 in Anambra). Data were analyzed descriptive statistics, Likert scales, and participation index. Market participation showed Imo State had a participation index of 0.40 (moderate), Anambra 0.33 (low), and pooled 0.37 (low). Imo marketers (91.21%) had high participation, compared to 72.58% in Anambra. Key marketing activities, stakeholder decision-making (μ =4.2), value addition (μ =4.0), and cooperative sales management (μ =4.3) showed high participation. Regulatory activities and committee roles also highlighted Imo's more proactive market environment. Risk attitude result indicated Imo women marketers as more risk-taking (70.33% risk-takers) than Anambra (45.16%). Risk management strategies varied: Anambra favoured early production (μ =2.72) and selling at high prices (μ =2.59), while Imo primarily used early production (μ =3.0). Based on these findings, the study recommended the need to develop financial products and strengthen cooperative networks, improving transportation infrastructure and urban-rural linkages, tailoring extension services to risk management strategies, fostering mentorship programs within marketing associations, and promoting technology adoption and risk-smart interventions for women marketers, especially those with large households.

Keywords: Women Cassava Marketers, Market Participation, Risk Attitude, Risk Management Strategies, Participation Index, Anambra and Imo States Cassava Marketing.

INTRODUCTION

Globally, cassava (*Manihot spp*.) has witnessed a consistent annual growth rate exceeding 3%, making it one of the fastest-growing staple food crops in cassava-consuming countries and a rising star in industrial applications (Eze, Okoye, & Onyenweaku, 2023; Akaninyene, Obiekwe, Anunobi, Obot, & Udoh, 2023). Africa accounts for approximately 64% of global cassava production, with Nigeria contributing 19.4%, positioning the country as the largest producer of cassava worldwide. In 2022, Nigeria's estimated output stood at about 60.83 million tons (Akaninyene *et al*., 2023). Cassava production is widely spread across Nigeria, with about 24 of its 36 states actively cultivating over 40 recognized varieties (Akaninyene *et al*., 2023). Although cultivation predominates in the southern part of the country, cassava use spans across all households, reflecting its economic relevance and versatility.

Cassava's multifunctional value spans food, industrial, and nutritional uses, making it a key player in Nigeria's agricultural and economic development. Its derivatives fufu, gari, flour, tapioca, ethanol, starch, animal feed, and glucose serve multiple industries, while its leaves provide essential vitamins and minerals (Eguono, 2015). These diverse applications create sustained market demand and participation in various opportunities across the value chain.

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Despite these prospects, the cassava marketing sub-sector in Nigeria especially Anambra State and Imo State is underperforming relative to its potential, largely due to challenges such as marketing costs, price volatility, trader behavior, and market uncertainty (Ukeje, Ogbonna, Okonkwo, & Adiele-Ezekiel, 2014; Chijioke & Charles, 2018). Notably, women in cassava agribusiness who are central to the marketing function are disproportionately affected by risks and systemic barriers (Eerdewijk & Danielsen, 2015; Oparinde *et al*., 2018; Gebre *et al*., 2020). These include poor access to markets, finance, extension services, and logistics, as well as social and cultural constraints (Okezie & Joshua, 2016). Consequently, women tend to have limited participation in cassava markets, lower income, and increased vulnerability to agribusiness risks (Eerdewijk & Danielsen, 2015; Gebre *et al*., 2020).

Although the Nigerian government has implemented several initiatives to strengthen the cassava value chain, women cassava marketers continue to face compounded risks and limited access to viable market opportunities. Financial institutions often deem these women uncreditworthy due to lack of collateral and poor repayment records, thus worsening their exposure to financial and marketing risks (Ajah, Ofem, Effa, & Ubabuko, 2022). The marketing of cassava is susceptible to multiple forms of risk, including price fluctuations, inconsistent demand, infrastructural bottlenecks, and institutional failures (Osuagwu *et al*., 2017).

Risk attitudes among women vary widely ranging from risk-averse to risk-neutral or risk-loving, but these attitudes significantly shape their market behavior, decision-making, and income levels (Chijioke & Charles, 2018). Many women opt to sell at the farm gate to avoid uncertainties, forfeiting potentially higher returns available through broader market participation. In addition, women's socio-economic conditions, including limited access to land, education, and extension support, contribute to lower market engagement and unequal income distribution (Eerdewijk & Danielsen, 2015; Gebre *et al*., 2020).

Moreover, despite Nigeria's natural endowment and agricultural potential, income inequality and rural poverty persist, particularly in southeastern states such as Imo and Anambra (Ehirim, Chukwu, & Ehirim, 2012; Ehirim, Ehirim, & Emenyonu, 2017). This raises a critical concern: Why do many women cassava marketers, despite contributing significantly to agricultural output, remain marginalized in income gains and market access?

Several studies have individually addressed topics such as women's participation in agribusiness (Wajiha, 2016), risk attitudes and management strategies (Mohamad, 2014; Oparinde *et al*., 2018), and income distribution in farming households (Ehinmowo & Akinlade, 2017). However, no integrated study has combined these key dimensions risk attitude and market participation within the study of women cassava marketers, particularly in the cassava-rich states of Imo and Anambra. Furthermore, most existing literature fails to identify and quantify the specific factors influencing women's market participation and risk behavior, as well as how these factors shape income inequality. This study addresses this critical empirical gap by offering a comprehensive risk analysis framework that incorporates market dynamics, socio-economic indicators, and behavioral responses to risk. The findings are expected to contribute to evidence-based policy recommendations for empowering women in agribusiness. However, the study addressed the following specific objectives; describe the socio-economic characteristics of women cassava marketers; describe the level of market participation by women cassava marketers and ascertain the risk attitudes and risk management strategies adopted by the women cassava marketers in the study areas.

MATERIAL AND METHODS

The research was conducted in Imo and Anambra States, in the southeastern region of Nigeria. The south eastern region lies between Latitudes 04° 24'N and 07° 00'N, and Longitudes 05° 34'E and 09° 24'E, the region is located in Nigeria's humid tropical agro-ecological zone. The wet season runs from April to October, with a brief dry period in August, while the dry season runs from November to late March. Woodland savannah may be found in the northern part of the zone, while mangrove forests can be found in the deep Niger Delta. The region is made up of the states of Ebonyi, Enugu, Anambra, Imo, and Abia. It has a population of 21,955,414 people (National Bureau of Statistics, 2016). Anambra state has four (4) agricultural zones with twenty-one (21) Local Government Areas. The four agricultural zones are Awka, Anambra, Aguata, and Onitsha (LGAs) in Figure 3,2. Anambra State is located between the Longitudes of 6°36'E and 7°21'E and the Latitudes of 5°38'N and 6°47'N. It has a population of 5,527,809 people, with men making up 50.9 percent of the population and females making up 49.1 percent (National Bureau of Statistics, 2016). The state is bordered on the north by Kogi State, on the west by Delta State, on the south by Imo State, and on the east by Enugu State. It has a total area of 4,416km^2, with arable land accounting for 70% of that (Ebido *et al*., 2020). Imo State is located in the southeast of Nigeria (Figure 3.1). It has a population of 5,408,756 people (National Bureau of Statistics, 2016). The state is divided into twenty-seven Local Government Areas. Imo State is located between Longitudes 6°38 and 7°25 east of the Greenwich Meridian and Latitudes 5°12 and 5°56 north of the Equator. On the east, it is surrounded by Abia State, while on the west, it is bounded by the Niger River. The west is bordered by Anambra State on the north and River State on the south. The state is located in the rainforest zone, having rainy and dry seasons. Agriculture (farming) is the principal source of income in the area, which is primarily rural. Among the crops

grown are rice, yam, cassava, cocoyam, maize, melon, and vegetables.

A multi-stage random sampling method. In the first stage, four (4) markets from each of the two States (Anambra and Imo States) were chosen at random from the list of major food market in the state, giving a total of eight (8) markets. In the second stage, all women cassava marketers in the eight (8) markets with two states (Imo and Anambra) were listed. In the third and final steps 40% equal-proportional random selection approach using Cochran (1977) (equation 3.1) was utilized to select a total sample size of 368 women cassava marketers from the sample frame (Table 3.1). Cochran (1977) for estimating sample size is given as:

$$n_0 = \frac{Z^2PQ}{e^2} = 368 \ (3.1)$$

n_0 = Sample Size (Units)
Z^2= Abscissa of the normal curve that cuts off an area α at the tails (1 - α equals the desired confidence level, e.g., 95%) = 1.96
P = Estimated Proportion of (40%)
Q = 1-P = 60%
e^2= Desired Level of Precision = 5%

Table 3.1: Sampling Frame and Sample Size of the Sampled Women Cassava Marketers in Anambra and Imo States

State	Market	Sample Frame	Proportion	Sample Size (40%)
Anambra	Eke Awka Market	121	0.1312	48.4
	Nkwo Nnewi Market	105	0.1139	42
	Nkwo Ogbe Market Ihiala	120	0.1302	48
	Eke Market Ekwulobia	120	0.1302	48
Imo	Ekeukwu Owerri	104	0.1128	41.6
	Eke Okigwe Market	130	0.1410	52
	Afor Ogbe Market	113	0.1226	45.2
	Ahiazu Mbaise International Market Orlu	109	0.1182	43.6
	Total	**922**	**1**	**368**
Source: Food Market Associations in Anambra and Imo States (2023)				

The data were analyzed using descriptive statistics (mean, frequency count, percentage), Likert scale and Participation Index.

Likert Scale

The level of market participation of women was determined using a four (4) Likert Scale. (1), infrequently involved, (2), involved, (3), and (4), heavily involved.

The degree of commitment was assessed using a three-point Likert Scale: passive (1). Active Stakeholder-ship Decision Makers (2), Stakeholder-ship Decision Makers (2), Stakeholder-ship Decision Makers (3). Marketers or players who fully/completely participate are anticipated to contribute a total of twelve (12) counts. The total score of the statements on the self-assessment scale shown women's views on women cassava marketers' risk. The women's risk attitude toward cassava marketing was assessed using a three-point Likert scale rating approach. Marketers were assessed based on market risk, operational risk, biological risk, climatic risk, credit risk, and pricing risk. The following scale was used: highly worried = 3, concerned = 2, and unconcerned = 1. The following formula was used to calculate the average score: (3 + 2 + 1)/3 = 2. Using the interval of 0.05, the upper limit cut-off point was 2.00 + 0.05 = 2.05, while the lower limit was 2.00 – 0.05 = 1.95. (a) Low-risk attitudes/risk-averse attitudes are defined as mean scores (MS) less than 1.95 (i.e. MS 1.95); (b) medium risk attitudes/risk indifferent attitudes are defined as mean scores between 1.95 and 2.05 (i.e. 1.95 MS 2.05), and (c) high-risk attitudes/risk-taking attitudes are defined as mean scores greater than 2.05 (i.e. MS > 2.05). To determine the respondents' risk management measures, a 3-point Likert scale evaluation technique of always used (3), rarely used (2), and not used (1) was employed. This was refined further using principal component analysis. The Likert Scale was used to attain parts of specific objectives two (ii), three (iii), four (iv), and seven (vii). This was based on the studies of Ahaneku *et al*., (2020) and Ibeawuchi *et al*., (2020). The formula for the Likert-type measurement instrument is as follows:

$$X = \frac{\sum FX}{n} \ \ldots Eq(1)$$

Where:
X = Mean Score,
Σ = Summation Sign,
F = Frequency, and
n = No of Responses.

Participation Index (PI)

The level of participation of women cassava marketers in the marketing of cassava is stated thus:

$$P = I_i \times C_j \ \ldots Eq(2)$$

Where;
P = Level of Participation by women cassava marketers (Index score)
IL_i = Level of Involvement (Index score)
CL_j = Level of Commitment (Index score)

Participation Index is expressed as the ratio of actual participation to the total participation level and can be expressed as;

$$P_i = \frac{ACP_i}{TOP_i} \ldots Eq(3)$$

Where;
PI_i = Participation Index (Score)
ACP_i = Actual Participation (Score)
TOP = Total Participatory Level Obtainable (Score).

RESULTS AND DISCUSSION

Socio-Economic Characteristics of Women Cassava Marketers

The socio-economic characteristics of women cassava marketers in Imo and Anambra States were analyzed using descriptive statistics including frequency distribution, percentages, and mean values. The detailed results are presented in Table 1.

The age distribution revealed that the majority of women cassava marketers were in their early forties, with a mean age of 45 years in Imo, 47.7 in Anambra, and 49.5 for the pooled data. This supports the assertion that women in the study area are still in their economically productive years. Active participation at this stage of life aligns with increased physical capacity, entrepreneurial risk attitude, and willingness to innovate (Obinna-Nwandikom *et al*., 2024). The marginal age gap between the two states could reflect different life cycle dynamics or socioeconomic conditions influencing women's early or late entry into agricultural marketing.

This age bracket also implies a relatively balanced experience energy equation: the women are old enough to have accumulated market knowledge, yet young enough to adapt and remain agile. This is crucial for coping with volatile cassava prices, navigating market competition, and adopting digital innovations like mobile transactions or price intelligence platforms.

Education plays a non-negotiable role in improving women's market literacy. Findings showed that 58.8% (Imo) and 67.7% (Anambra) of women had 12–18 years of education attainment, and the pooled mean was 20 years, suggesting that many respondents had post-secondary education. This contrasts earlier claims that rural women are typically low-literate (Obinna-Nwandikom *et al.*, 2021), indicating that cassava marketing in Southeastern Nigeria is becoming more formalized and knowledge-intensive.

Educated women are more likely to understand pricing trends, engage in record-keeping, negotiate better deals, and access financial services. As Nnadi *et al*., (2018) rightly noted, education enhances women's ability to participate in decision-making, especially in male-dominated value chains.

The dominance of married women (81.3% in Imo, 78.5% in Anambra) reaffirms cassava's role as a family-sustaining crop, particularly in Southern Nigeria's rural economies. Married women often take on dual economic roles, managing households while supporting family income through marketing (Okeke *et al*., 2020; Ezeibe *et al*., 2019). The slightly higher proportion in Imo State may be a reflection of localized social networks, cultural expectations, or policy supports aimed at empowering women traders.

These findings also align earlier studies (Obinna-Nwandikom *et al*., 2021), which showed that marital status influences market participation, as married women may have better access to household labour, credit support from spouses, and cooperative networks.

Experience is a key intangible asset in agricultural marketing. The findings show that most women had 10–14 years of experience, with a mean of 13 years in Imo, 12.6 in Anambra, and 12.8 years pooled. Such levels of exposure grant marketers the ability to predict seasonal market shifts, build supplier-buyer trust, and navigate crises such as price drops or transportation issues. This contrasts the work of Obinna-Nwandikom *et al*., (2024), who reported only 6 years of average experience, possibly due to regional disparities in cassava commercialization.

Experienced marketers often serve as informal mentors within their communities, perpetuating indigenous knowledge and risk-averse strategies that help sustain cassava markets over generations.

A strong 64.9% of marketers were affiliated with marketing associations, which plays a crucial role in social capital formation, group lending, bulk bargaining, and price-setting leverage. Associations also serve as platforms for accessing agricultural extension, market information, and training programs. The slightly higher affiliation rate in Imo (67%) suggests a more structured marketing environment, possibly linked to better NGO/government engagement or higher trust in cooperatives. These associations also help to amplify women's voices in markets traditionally controlled by intermediaries or male traders (Ezeibe *et al*., 2019).

Table 1: Socio-Economic Characteristics of Women Cassava Marketers in Imo and Anambra States, Nigeria

Variable	Category	Imo State (%)	Anambra State (%)	Pooled (%)	Mean (Years)
Age	40–44 years	39.6	41.9	40.8	Imo: 45 Anambra: 47.7 Pooled: 49.5

Education	12–16years (Imo) 12–18years (Anambra)	58.8	67.7	52.7	Imo: 15.6 Anambra: 12 Pooled: 20
Marital Status	Married	81.3	78.5	79.9	
Marketing Experience	10–14 years	64.3	79.6	72.3	Imo: 13 Anambra: 12.6 Pooled: 12.8
Membership in Associations	Yes	67.0	62.9	64.9	

Source: Computed from Field Survey Data (2025)

Market Participation and Level of Participation by Women Cassava Marketers in Imo and Anambra States

The results of market participation and the level of participation by women cassava marketers in Imo and Anambra States, and marketing activities participated in by women cassava marketers are presented in Table 2 and 3. The results of Table 2 showed that women cassava marketers in Imo State display had a participation Index (PI) of 0.40, showing a fairly or moderate level of participation in cassava marketing activities. Anambra State marketers showed a lower participation level (PI = 0.33), and the pooled PI of 0.37 suggested an overall low participation rate among the study population.

Table 2 further revealed that in Imo State, 91.21% of the women had a high level of market participation, while only 8.79% showed a moderate level. Anambra State revealed a slightly different distribution, where 72.58% had high participation and 25.27% had moderate engagement. The pooled results showed that 82.64% of the marketers had high participation levels, with 16.32% showing moderate participation. These results suggested a more vibrant cassava marketing environment in Imo State, possibly due to more proactive extension services, better cooperative structures, and closer proximity to urban markets. The relatively lower participation in Anambra may reflect infrastructural challenges, limited access to information, and lesser exposure to organized marketing activities. These findings are consistent with the studies conducted by Obot *et al.,* (2023), who reported that active participation in value chains among women is influenced by institutional support and cooperative involvement. Similarly, the finding aligned with the work investigated by Nwaobiala (2024) who emphasized the need for capacity building in Abia State to enhance women's involvement in post-harvest operations and marketing strategies. The results further corroborated with the findings of Udemezue (2023), who reported that some factors such as poor infrastructure, access to market information, were responsible for low participation among women marketers in Delta State, Nigeria.

Table 3 presents the levels of participation of women cassava marketers across 15 marketing-related activities in Imo and Anambra states. The analysis reveals a mixed yet insightful pattern of engagement that points to structural, institutional, and individual-level dynamics affecting women's integration in cassava markets.

Women in Imo State reported heavier participation in regulatory and leadership-focused activities, such as Cassava Product Regulation (Mean = 4.5), Product Standardization (4.3), and Marketing Committees (4.5). In contrast, their counterparts in Anambra generally participated fairly or infrequently in these same activities, recording lower means of 3.5, 3.8, and 3.6, respectively.

This disparity suggests that Imo's women marketers are more empowered or better organized to assume leadership and regulatory roles. It could also reflect the presence of stronger cooperative structures or local policies supporting women's involvement in market governance. This finding aligns with Obinna-Nwandikom *et al*., (2024), who observed that women's group cohesion often translates into increased regulatory participation and better product quality assurance.

Interestingly, both states showed equal levels of participation in Stakeholder Decision Making (Mean = 4.2), pointing to a shared recognition of women's voices in collective market strategies. This parity is significant in a patriarchal context where women are often excluded from decision-making spaces (Ezeibe *et al*., 2019). It implies that women cassava marketers are increasingly taking frontline roles in shaping market outcomes, possibly due to their economic contributions and sustained presence in the cassava value chain.

In Value Addition Practices, participation was again high for both Imo (4.3) and Anambra (4.0). This reflects a paradigm shift from mere trade to entrepreneurship, where women are transforming cassava into flour, starch, fufu, and chips for higher returns. As Ifeanyi-Obi *et al.,* (2022) highlighted, women's engagement in value addition is a survival and growth strategy in the face of fluctuating farmgate prices.

Similarly, Cooperative Sales Management drew strong participation (4.5 in Imo, 4.3 in Anambra), suggesting that collective bargaining remains a cornerstone of market resilience for these women. Cooperatives provide not just market access but also training, credit, and visibility.

There the low participation in Financial and Digital Platforms, with mean scores of 2.3 (Imo) and 2.2 (Anambra). This indicates that women are largely excluded from digital financial services, mobile money platforms, and e-commerce tools. This gap limits their ability to track payments, access loans, or price-check products in real-time, critical components of a modern agribusiness ecosystem. This digital divide aligns with the findings of Okeke *et al*., (2020), who argued that despite high ownership of phones, women farmers face barriers such as low digital literacy, lack of infrastructure, and gendered financial exclusion. Bridging this gap could unlock new efficiencies and reduce transaction costs for women marketers.

Lower participation in activities like Use of Standard Measurement and Quality Assurance Monitoring was also observed, especially in Anambra (2.7 and 2.6 respectively). This could lead to inconsistent pricing, customer distrust, and underpricing by middlemen. Imo, while slightly better in these areas, still hovered around the "fair" mark (3.2 for both indicators). This suggests that more training and enforcement mechanisms are needed to ensure product uniformity and fair market practices.

Encouragingly, Imo women were highly involved in Market Price Advocacy (4.5) and Market Survey & Exploration (3.2), showing that they are proactive in setting favorable price conditions and understanding market trends. Anambra showed slightly lower but still moderate involvement (3.7 and 3.1), which may reflect lesser access to market information networks or advocacy training.

This active engagement in advocacy supports findings by Nnadi *et al*., (2018), who emphasized that market intelligence empowers women to resist exploitative pricing and negotiate better terms.

Cassava marketing committee participation was heavy in Imo and fair in Anambra. At the same time, the Committee on the use of standard measurement showed fair and infrequent participation in Imo and Anambra, respectively.

Azeez *et al*., (2021) highlighted the role of community and institutional frameworks in shaping marketing behaviours. They suggested a stronger cooperative and policy framework to enhance participation and regulatory compliance among women in cassava value chains.

Table 2: Distribution according to market participation and level of women's participation

State	Mean Actual participation	Mean Total participation	Participation Index
Imo	6	15	0.40
Anambra	5	15	0.33
Pooled	11	30	0.37

Categorization of Level of Participation

	Participation Index Range	Participation Level	Freq	%
Imo	0.00 – 0.39	Low Participation	0	0.00
	0.40 – 0.69	Moderate Participation	16	8.79
	0.70 – 1.00	High Participation	166	91.21
Total			**182**	
Anambra	0.00 – 0.39	Low Participation	4	2.15
	0.40 – 0.69	Moderate Participation	47	25.27
	0.70 – 1.00	High Participation	135	72.58
Total			**186**	
Pooled	0.00 – 0.39	Low Participation	4	1.04
	0.40 – 0.69	Moderate Participation	63	16.32
	0.70 – 1.00	High Participation	301	82.64
Total			**368**	

Source: Computed from Field Survey Data Analysis, 2025

Table 3: Marketing Activities Participation by Women Cassava Farmers in Imo and Anambra States

S/N	Marketing Activity Name	Imo State Participation Level	Mean Participation	Anambra State Participation Level	Mean Participation
1	Cassava Product Regulation	Heavily Participated	4.5	Fairly Participated	3.5
2	Cassava Quantity Regulation	Fairly Participated	3.8	Infrequently Participated	2.5
3	Cassava Product Standardization	Heavily Participated	4.3	Fairly Participated	3.8
4	Price Violator Taskforce Committee	Fairly Participated	3.8	Fairly Participated	3.0

5	Stakeholder Decision Making	Heavily Participated	4.2	Heavily Participated	4.2
6	Cassava Marketing Committee	Heavily Participated	4.5	Fairly Participated	3.6
7	Committee on Use of Standard Measurement	Fairly Participated	3.2	Infrequently Participated	2.7
8	Value Addition Practices	Heavily Participated	4.3	Heavily Participated	4.0
9	Market Access Coordination	Fairly Participated	3.0	Fairly Participated	3.0
10	Financial and Digital Platforms	Infrequently Participated	2.3	Infrequently Participated	2.2
11	Market Survey and Exploration	Fairly Participated	3.2	Fairly Participated	3.1
12	Cooperative Sales Management	Heavily Participated	4.5	Heavily Participated	4.3
13	Transport and Packaging Management	Fairly Participated	3.2	Fairly Participated	3.0
14	Market Price Advocacy	Heavily Participated	4.5	Fairly Participated	3.7
15	Quality Assurance Monitoring	Fairly Participated	3.2	Infrequently Participated	2.6

Source: Computed from Field Survey (2025) Heavily Participated = 4.0 – 5.0, Fairly Participated = 3.0 – 3.9, Infrequently Participated = 1.0 – 2.9 μ= Mean Value

Risk Attitudes and the Risk Management Strategies Adopted by the Women Cassava Marketers in Imo and Anambra States

The results of the risk attitude and the risk management strategies adopted by the women cassava marketers in Imo and Anambra States are presented in Table 4. Table 4 showed the risk attitudes and risk management strategies of women cassava marketers in Anambra and Imo States. The results reveal a clear difference in risk attitudes and a general underutilization of risk management strategies, with important implications for the economic sustainability and profitability of cassava marketing in these areas.

In Anambra State, 45.16% of the women marketers were risk-takers, 18.28% were risk-neutral, and 36.59% were risk-averse. The mean scores showed a mixed risk category, with both low and high risk behaviours represented. In Imo State, 70.33% of the marketers were risk takers, while only 8.79% were risk-averse. This suggests that women marketers in Imo State are more willing to take risks, likely influenced by competitive market environments and higher profit opportunities (Nwachukwu *et al*., 2021).

The pooled data across the two States showed that 57.61% of marketers were risk takers, 19.57% were risk neutral, and 22.83% were risk averse. This overall inclination towards risk-taking behaviour suggests a proactive, though potentially volatile, approach to cassava marketing (Asante *et al*., 2020).

The risk management strategies results show that both State were experiencing a trend of underutilization. In Anambra State, out of the 14 listed strategies, 9 were rarely used, 2 were always used, and 3 were not used. Strategies always used included early production (MS = 2.72) and selling at high prices (MS = 2.59), reflecting proactive efforts to mitigate price volatility and seasonal fluctuations (Agwu *et al*., 2021). However, insurance (MS = 1.23), online marketing (MS = 1.42), and integration (MS = 1.46) were not used, highlighting gaps in risk mitigation.

In Imo State, only early production (MS = 3.00) was always used, strongly focusing on early market entry to secure favourable prices. This aligns with Asante *et al.,* (2020), who reported that early production enables marketers to secure a favourable product price. Six strategies were rarely used, while seven were not used at all, including insurance (MS = 1.02), late production (MS = 1.19), and online marketing (MS = 1.07). The near-complete absence of insurance and online marketing strategies in Imo State is particularly concerning, as it suggests a high vulnerability to market shocks and price volatility (Oloruntoba and Adewumi, 2018; Ajani *et al*., 2022).

Table 4: Risk Attitudes and Risk Management Strategies of Women Cassava Marketers in Imo and Anambra States

Risk Behaviour	**Anambra State**		**Imo State**		**Pooled**	**Mean Score Anambra**	**Mean Score Imo**	**Category**		
	Frequency	%	Frequency	%	Frequency	%				
Risk-Averse	68	36.59	16	8.79	84	22.83	2.05	2.65	High Risk	
Risk-Neutral	34	18.28	38	20.88	72	19.57	2.03	3.02	High Risk	
Risk-Taker	84	45.16	128	70.33	212	57.61	1.85	1.32	Low Risk	
Total	**186**	**100**	**182**	**100**	**368**	**100**				
Risk Management Strategy	**Always used (3)**	**Rarely used (2)**	**Not used (1)**	**Mean score (Anambra)**	**Remark**	**Always used (3)**	**Rarely used (2)**	**Not used (1)**	**Mean score (Imo State)**	**Remark**
Insurance	21(11.29%)	6(3.23 %)	161(86.56 %)	1.23	Not used	2 (1.10%)	0 (0.00%)	180 (98.90%)	1.02	Not used
Early Production	157 (84.41%)	10 (5.38 %)	21 (11.29%)	2.72	Always used	182 (100.00%)	0 (0.00%)	0 (0.00%)	3.00	Always used
Late Production	126 (67.74%)	25 (13.44 %)	37 (19.89%)	2.47	Rarely used	0 (0.00%)	35 (19.23%)	147 (80.77%)	1.19	Not used
Foreign Exchange Hedging	61 (32.80%)	9 (4.84 %)	124 (66.67%)	1.59	Rarely used	0 (0.00%)	0 (0.00%)	182 (100.00%)	1.00	Not used
Selling at high prices	142 (76.34%)	12 (6.45 %)	34 (18.28%)	2.59	Always used	0 (0.00%)	137 (75.24%)	45 (24.73%)	1.75	Rarely used
Store and sell during scarcity	82 (44.09%)	34 (18.28 %)	70 (37.63%)	2.05	Rarely used	2 (1.10%)	145 (79.67%)	35 (19.23%)	1.82	Rarely used
Savings	105 (56.45%)	35 (18.82 %)	46 (24.73%)	2.31	Rarely used	0 (0.00%)	82 (45.05%)	100 (54.95%)	1.45	Not used
Store and sell when the price are high	63 (33.87%)	38 (20.43 %)	85 (45.70%)	1.87	Rarely used	4 (2.20%)	96 (52.75%)	82 (45.05%)	1.57	Rarely used
Diversification	53 (28.49%)	19 (10.22 %)	114 (61.29%)	1.66	Rarely used	50 (27.47%)	130 (71.23%)	2(1.10%)	2.26	Rarely used
Processing	83 (44.62%)	32 (17.20 %)	71 (38.17%)	2.05	Rarely used	8 (4.40%)	153 (84.07%)	19 (10.44%)	1.94	Rarely used
Cooperative marketing	57 (30.65%)	46 (24.73 %)	83 (44.62%)	1.85	Rarely used	0 (0.00%)	44 (24.18%)	138 (75.82%)	1.24	Not used
Use of waybill	56 (30.11%)	55 (29.57 %)	75 (40.32%)	1.89	Rarely used	0 (0.00%)	6 (3.30%)	176 (96.70%)	1.24	Not used
Online marketing	31 (16.67%)	20 (10.75 %)	135 (72.58%)	1.42	Not used	104 (57.14%)	50 (27.47%)	28 (15.38%)	1.07	Not used
Integration	30 (16.13%)	29 (15.59 %)	127 (68.28%)	1.46	Not used	0 (0.00%)	69 (37.91%)	113 (62.09%)	2.42	Rarely used
Contract labour	52 (27.96%)	10 (5.38 %)	124 (66.67%)	1.60	Rarely used	0 (0.00%)	15 (8.24%)	167 (91.76%)	1.38	

Source: Field Survey Data Analysis, 2025 > 2.05 (High Risk/Risk Taker), 1.95- 2.05 (Medium Risk/ Risk Neutral), < 1.95 (Low Risk/Risk Averse), Always used (2.50 – 3.00), rarely used (1.5 -2.49), Not used (1.0 – 1.49)

CONCLUSION

This study provided valuable insights into the market participation dynamics and risk behavior of women cassava marketers in Imo and Anambra States, Nigeria. The findings revealed that women in Imo State exhibited higher market participation levels and a greater

tendency toward risk-taking compared to their Anambra counterparts. High engagement in cooperative sales, value addition, and stakeholder decision-making suggests a more structured and inclusive marketing environment in Imo. Conversely, Anambra women marketers demonstrated more risk-averse behavior, relying predominantly on early production and price timing strategies.

These variations underscore the influence of local institutional arrangements, socio-economic context, and individual agency in shaping women's participation and resilience strategies within cassava markets. To enhance their economic empowerment, the study recommends designing targeted financial instruments, improving access to extension services with a focus on risk-smart agriculture, strengthening cooperative and mentorship structures, and upgrading transport and digital infrastructure. Such interventions are essential for promoting inclusive and sustainable market engagement among women in the cassava value chain.

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