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Drivers of Marketing Behaviour among Smallholder Vegetable Farmers in Ondo State, Nigeria

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Abstract

Understanding the marketing behaviour of vegetable farmers is crucial for improving agricultural income, food supply, and livelihood sustainability in Nigeria. This study investigated the marketing behaviour of vegetable farmers in Ondo West Local Government Area of Ondo State, Nigeria. A multistage sampling procedure was used to select 120 respondents, and data were collected through a structured questionnaire. The data were analysed using descriptive statistics and inferential analyses such as chi-square tests and regression analysis. Results revealed that most of the vegetable farmers were within the active working age group, with most having secondary education and engaging in small-scale vegetable production primarily for income generation. The study identified farm-gate, open markets, and middlemen as dominant marketing channels, while poor transportation, price fluctuation, and lack of storage facilities were the major constraints faced by respondents. Regression analysis indicated that educational level, years of farming experience, and access to extension services significantly influenced farmers' marketing behaviour ($p < 0.05$). The study concludes that infrastructural challenges and limited market information hinder market efficiency among vegetable farmers. It recommends that the government and stakeholders should strengthen rural market infrastructure, facilitate farmer–market linkages, and promote cooperative marketing systems to enhance income and market performance.
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1. Introduction

Agricultural marketing plays a critical role in enhancing farm income, improving food distribution, and ensuring the sustainability of smallholder farming systems, particularly in sub-Saharan Africa. In Nigeria, vegetables such as tomato (*Solanum lycopersicum*), pepper (*Capsicum spp.),* okra (*Abelmoschus esculentus*), and fluted pumpkin (*Telfairia occidentalis*) are essential components of household diets and serve as important sources of income for rural farmers. The vegetable subsector has experienced increasing demand due to rapid urbanization, changing dietary preferences, and population growth, thereby creating opportunities for income generation among smallholder farmers (Liverpool-Tasie et al., 2023). Despite this potential, the efficiency of vegetable marketing systems remains constrained by infrastructural deficits, poor market coordination, and high postharvest losses.

Vegetable marketing in Nigeria is characterized by fragmented value chains, weak institutional support, and a high dependence on intermediaries. These challenges often result in price inefficiencies, reduced bargaining power for farmers, and significant postharvest losses due to the highly perishable nature of vegetables. Studies have shown that inadequate storage facilities, poor transportation networks, and lack of access to timely market information significantly hinder farmers' ability to participate effectively in markets and maximize returns (Ojo et al., 2023; Plaisier et al., 2019). Consequently, many smallholder farmers resort to selling their produce at farm-gate prices or through middlemen, often at lower margins.

Marketing behaviour refers to the decisions and actions taken by farmers in the process of selling their produce, including choice of market outlets, timing of sales, pricing strategies, and use of market information. These behaviours are influenced by a combination of socio-economic, institutional, and market-related factors. Empirical evidence suggests that factors such as transaction costs, access to market information, farm size, and infrastructure play a more significant role in shaping marketing decisions than individual demographic characteristics (Abdulai et al., 2024). In addition, the perishable nature of vegetables makes marketing decisions particularly sensitive to timing and location, as delays in sales can lead to rapid deterioration in quality and reduced market value.

In recent years, Nigeria's agricultural transformation efforts have emphasized market-oriented production and

value chain development as pathways to improving rural livelihoods. However, smallholder vegetable farmers continue to face challenges related to price volatility, exploitative intermediary practices, and limited access to structured markets. These constraints not only affect farmers' income but also influence their marketing behaviour and willingness to adopt improved production and marketing practices (Liverpool-Tasie et al., 2021). Furthermore, weak integration into formal markets and limited adoption of modern marketing strategies reduce farmers' competitiveness and restrict their ability to benefit from expanding urban food markets.

While several studies have examined agricultural marketing in Nigeria, much of the existing literature focuses on staple crops, with relatively limited attention given to vegetable marketing behaviour at the local level. Given the economic and nutritional importance of vegetables, there is a need for context-specific studies that examine how farmers make marketing decisions, the constraints they face, and the factors influencing their behaviour. In Ondo State, where vegetable production is widespread among smallholder farmers, empirical evidence on marketing behaviour remains scarce, particularly in Ondo West Local Government Area. Therefore, this study was conducted to:

1. describe the socio-economic characteristics of vegetable farmers in Ondo West Local Government Area of Ondo State;
2. identify their major marketing channels and practices;
3. examine the constraints affecting vegetable marketing; and
4. analyze the socio-economic factors influencing farmers' marketing behaviour.

2. Research Methodology

The study adopted a descriptive survey design. This design was considered appropriate because it allows for the systematic collection of data from a representative sample to describe characteristics, patterns, and relationships among variables in the target population. It is particularly suitable for socio-economic studies where the aim is to analyse marketing behaviour, identify constraints, and determine factors influencing farmers' marketing decisions. The study was carried out in Ondo West Local Government Area of Ondo State, Nigeria. Ondo West is one of the eighteen Local Government Areas (LGAs) in Ondo State. The area lies within the tropical rainforest zone characterized by bimodal rainfall, which supports the cultivation of various crops including vegetables such as tomato (*Solanum lycopersicum*), pepper (*Capsicum spp.*), fluted pumpkin (*Telfairia occidentalis*), and okra (*Abelmoschus esculentus*). The inhabitants are predominantly smallholder farmers engaged in crop and livestock production. Vegetable farming serves as a major source of income and nutrition for rural households. The target population comprised all vegetable farmers in Ondo West Local Government Area. A multistage sampling procedure was used to select respondents.

- In the first stage, four communities with intensive vegetable production were purposively selected.
- In the second stage, thirty (30) vegetable farmers were randomly selected from each community using a list provided by agricultural extension agents, making a total of 120 respondents.

Primary data were collected using a structured questionnaire designed to capture information on:

1. Socio-economic characteristics of respondents (age, sex, education, household size, experience, farm size, income, etc.);
2. Marketing practices (information sources, marketing channels, timing of sales, packaging, and record keeping);
3. Constraints affecting vegetable marketing; and
4. Factors influencing overall marketing behaviour.

The questionnaire was validated by three experts in agricultural economics and extension, and pre-tested among 10 vegetable farmers in a neighbouring community. Necessary modifications were made before the actual data collection.

2.1. Measurement of Variables

2.1.1Dependent Variable: Marketing Behaviour

Marketing behaviour was measured using a composite index derived from responses to questions on marketing planning, pricing, information sourcing, negotiation, and market participation. Each variable was scored on a Likert-type scale (e.g., Always = 3, Sometimes = 2, Never = 1). The composite scores were used to categorize respondents into high, moderate, and low marketing behaviour levels.

2.1.2 Independent Variables: Socio-Economic Characteristics

Variable	**Measurement/Description**
Age (years)	Actual years as reported
Sex	Male = 1, Female = 0
Educational level	Years of formal schooling
Household size	Number of persons
Farming experience	Years in vegetable farming
Farm size	Hectares of land cultivated
Income	Monthly income (₦) from vegetable farming
Access to extension	Yes = 1, No = 0
Market distance	Kilometres from farm to main market

Data collected were coded and analyzed using Statistical Package for the Social Sciences (SPSS) version 25.0. Descriptive statistics such as frequency counts, percentages, means, and standard deviations were used to summarize socio-economic characteristics, marketing channels, and constraints. Inferential statistics were employed to test hypotheses:

Chi-square tests were used to determine associations between categorical variables (e.g., education level and marketing behaviour), while Multiple regression analysis was used to identify socio-economic variables that significantly influenced marketing behaviour among vegetable farmers.

The regression model was specified as follows:

3. Results and Discussion

3.1 Socio-economic Characteristics of the Farmers

The socio-economic profile of vegetable farmers in Ondo West Local Government Area provides insight into their marketing behaviour and resource access. The findings show that the mean age of respondents was 51 years, suggesting that vegetable farming is dominated by middle-aged individuals who are physically active and experienced in agricultural production. This age structure reflects a mature farming population capable of taking calculated marketing decisions.

Women constituted 87.5% of the respondents, confirming that vegetable production in the study area is largely a female enterprise. This supports the findings of Oladejo et al. (2011), who noted that vegetable production in southwestern Nigeria is often a livelihood strategy for women due to its short production cycle, low land requirement, and quick financial returns.

Most respondents were married (73.3%), indicating that vegetable farming contributes to household sustenance and income security. The predominance of farmers with primary (58.3%) and secondary (41.7%) education suggests a moderate level of literacy that can facilitate adoption of improved practices, though limited formal education may restrict access to market information systems and record-keeping efficiency.

Household composition reveals a child-dominated structure (70.8%), which may provide family labour for farming and marketing activities but also imply higher dependency burdens. Most farmers had extensive experience in vegetable farming, with an average of 22 years, signifying long-term involvement and accumulated marketing knowledge.

Income analysis shows that the average monthly earning from vegetable production was ₦18,208, reflecting the subsistence nature of the enterprise. The relatively low income levels could constrain farmers' investment in input procurement, storage, and transportation.

In terms of logistics, most farmers relied on lorries (53.3%) and buses (46.7%) for produce transport, while net or mesh bags (85.8%) were the most common packaging materials because they allow adequate aeration and minimize spoilage. Most farmers (57.5%) sold their produce in nearby markets, suggesting that vegetable marketing in Ondo West is predominantly local in scale, influenced by perishability, transportation cost, and quick turnover considerations.

Table 1: Socio-Economic Characteristics of Respondents (N = 120)

Variable	Category	Frequency	Percentage (%)	Mean / Remark
Age (years)	24–34	5	4.2	
	35–45	23	19.3	
	46–56	65	60.8	
	57 and above	27	22.5	Mean = 51 years
Gender	Male	15	12.5	
	Female	105	87.5	Female-dominated
Marital Status	Married	88	73.3	
	Widowed	32	26.7	
Educational Attainment	Primary	70	58.3	
	Secondary	50	41.7	Basic literacy level
Religion	Christianity	89	74.2	
	Islam	31	25.8	
Household Composition	Male adults	17	14.2	
	Female adults	18	15.0	
	Children	85	70.8	Child-dominated households
Farming Experience (years)	1–5	10	8.3	
	6–10	3	2.5	
	Above 10	107	89.2	Mean = 22 years
Monthly Income (₦)	11,000–20,000	80	66.7	
	21,000–30,000	40	33.3	Mean = ₦18,208
Mode of Transportation	Bus	56	46.7	
	Lorry	64	53.3	Bulk transport preference
Mode of Packing	Net/Mesh bags	103	85.8	Preferred for ventilation
	Plastic bags	17	14.2	
Place of Sale	Nearby market	69	57.5	
	Faraway market	51	42.5	Local marketing dominant

Source: Field Survey, 2025.

3.2 Perception and Attitudes of Vegetable Farmers toward Production and Marketing Practices

Most respondents were married (73.3%), indicating that vegetable farming contributes to household sustenance and income security. The predominance of farmers with primary (58.3%) and secondary (41.7%) education suggests a moderate Table 2 presents the mean responses on factors influencing the marketing behaviour of vegetable farmers. The results indicate that respondents generally agreed that planning inputs such as seed variety, fertilizer, and cultural practices before cultivation (Mean = 4.50) is crucial to achieving profitable production and marketing outcomes. Similarly, most farmers agreed that choosing crops with good market demand (Mean = 4.43) and timely planting (Mean = 4.23) strongly influence sales success and profitability. These findings highlight the market-oriented nature of farmers in the area, emphasising production decisions driven by consumer preferences and seasonal price dynamics.

The farmers also recognized the importance of soil testing (Mean = 3.93) and proper cultural operations (Mean = 4.00) as determinants of produce quality which is a critical factor in attracting buyers and sustaining market reputation. However, they noted that vegetable cultivation is labour-intensive (Mean = 3.85), reflecting the heavy manual labour involved in land preparation, watering, and post-harvest handling.

Interestingly, while most respondents were willing to adopt simple and easy-to-use technologies (Mean = 3.30), many expressed reluctance to try new or risky innovations (Mean = 2.86). This suggests a conservative marketing culture and risk aversion that may limit productivity gains and competitiveness.

The mean score of 3.48 suggests that the marketing behaviour of vegetable farmers in Ondo West is moderately influenced by production planning, market awareness, and quality management practices. However, the low enthusiasm for technological innovation underscores the need for targeted extension education and participatory training that build farmers' confidence in adopting improved technologies and market strategies.

Table 2: Behavioural Disposition of Vegetable Farmers toward Production and Marketing Practices

Statement	**Mean**	**Rank**
It is better to plan on the variety, seed rate, fertilizer, and other inputs before going for vegetable cultivation.	4.50	1st
Generally, I choose crops that have good market demand.	4.43	2nd
Timely planting of crops will give a good yield	4.23	3rd
Cultural operations have to be done properly to get quality produce.	4.00	4th
Soil testing helps the application of the right amount of fertilizer.	3.93	5th
Vegetable cultivation requires too much labour.	3.85	6th
Fertilizers can be applied as one likes	3.59	7th
Knowing different market prices make no difference.	3.45	8th
Farmers should carry out grading themselves.	3.43	9th
Pesticide can be applied before harvesting.	3.38	10th
Biological control of pests is more effective for vegetables.	3.30	11th
I prefer technologies that are easy to adopt.	3.30	11th
Fixing the place of sale before crop cultivation is an efficient way.	3.28	13th
I feel very enthusiastic about trying new technologies.	2.92	14th
All grades of produce will get marketed, so going for high quality is not very essential.	2.88	15th
Trying out new technologies involves risks which I cannot bear.	2.86	16th
The time of cultivation has no importance in vegetable cultivation.	1.83	17th

Grand Mean = 3.48; Source: Field Survey, 2025.

3.3 Constraints Influencing Marketing Behaviour of Vegetable Farmers

The results in Table 3 identify the major market-related constraints faced by vegetable farmers in Ondo West Local Government Area. The most severe challenge was high commission charges (Mean = 2.74) often levied by middlemen or market agents, followed by illegal deductions in produce weight (Mean = 2.48) and inadequate market infrastructure (Mean = 2.43) such as stalls, loading points, and sanitation facilities. These problems reflect structural inefficiencies in local market systems that erode farmers' profitability and bargaining power.

Other notable constraints include absence of storage facilities (Mean = 2.41) and prolonged transaction times (Mean = 2.37), which expose perishable vegetables to spoilage and post-harvest losses. Although price fluctuation (Mean = 1.10) and transport charges (Mean = 1.27) were not perceived as major constraints, they still contribute to income instability.

Table 3: Major Constraints Affecting Market Behaviour among Vegetable Farmers

Constraint	Mean	Rank
High commission charges	2.74	1st
Illegal deduction in weight	2.48	2nd
Inadequate physical facilities in the market	2.43	3rd
Absence of storage facilities	2.41	4th
Prolonged transaction time	2.37	5th
High market charges	2.24	6th
Untimely availability of transportation	2.14	7th
Insufficient space for keeping produce	2.00	8th
High transport charges	1.27	9th
Price fluctuation	1.10	10th

Grand Mean = 2.12; Source: Field Survey, 2025

3.4 Determinants of Marketing Behaviour among Vegetable Farmers

Regression analysis revealed that household size, farming experience, income level, place of sale, and time of sale were significant predictors of farmers' marketing behaviour at the 5% level. Larger household sizes positively influenced marketing behaviour, possibly due to greater access to family labour for harvesting, packaging, and sales activities. Conversely, longer years of farming experience and higher income were associated with more cautious marketing decisions, perhaps due to accumulated experience and risk management tendencies.

The significance of place of sale and time of sale suggests that location and timing are crucial determinants of farmers' marketing outcomes. Farmers who sell at nearby markets or immediately after harvest tend to have faster turnover and reduced spoilage, though often at lower prices. Non-significant variables such as gender, education, and religion imply that these demographic attributes do not strongly predict marketing behaviour among vegetable farmers in the study area. The findings underscore that economic and operational factor more influence marketing strategies than by personal characteristics.

Table 4: Regression Analysis of Factors Influencing Marketing Behaviour of Vegetable Farmers

Variable	**B**	**Std. Error**	**T-value**	**Sig.**	**Decision**
Age	0.043	0.041	1.061	0.291	NS
Gender	-0.034	0.052	-0.651	0.512	NS
Marital Status	0.023	0.012	1.951	0.054	NS
Educational Attainment	0.084	0.085	0.979	0.329	NS
Religion	0.140	0.084	1.671	0.098	NS
Household Size	0.090	0.042	2.164	**0.033**	*Significant*
Years of Farming Experience	-0.870	0.054	-16.161	**0.000**	*Significant*
Income	-0.110	0.044	-2.524	**0.013**	*Significant*
Mode of Transportation	0.018	0.038	0.484	0.629	NS
Mode of Packing	0.102	0.074	1.367	0.174	NS
Place of Sale	-0.215	0.017	-12.512	**0.000**	*Significant*
Time of Sale	-0.336	0.149	-2.258	**0.026**	*Significant*

Variable	B	Std. Error	T-value	Sig.	Decision
Source of Market Information	-0.115	0.122	-0.940	0.349	NS

Source: Field Survey, 2025. P ≤ 0.05 indicates significance. NS: Not Significant

4 Conclusion and Recommendations

The study examined the marketing behaviour of vegetable farmers in Ondo West Local Government Area, Ondo State, with particular attention to socio-economic characteristics, factors influencing marketing behaviour, and major marketing constraints. The findings revealed that most vegetable farmers were middle-aged, married, moderately educated, and operated on a small-scale basis. Their marketing behaviour was shaped primarily by production planning, choice of crops with good market demand, timely planting, and quality management practices. These behavioural tendencies reflect a growing market orientation among smallholder vegetable producers. The Regression analysis showed that household size, farming experience, income, place of sale, and time of sale significantly influenced marketing behaviour, underscoring the economic and operational dimensions of marketing decisions rather than purely demographic attributes.

It is recommended that the government and relevant stakeholders strengthen market infrastructure to reduce postharvest losses, regulate the activities of intermediaries to prevent farmer exploitation, and promote cooperative marketing systems to enhance collective bargaining and reduce transaction costs. Furthermore, extension services should be intensified to build farmers' capacity in market-oriented production and risk management, while access to credit and transportation should be improved to facilitate efficient market participation. In addition, farmers should be encouraged to adopt ICT-based market information systems and value addition practices to improve product quality, extend shelf life, and increase profitability.

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