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Chapter

Market Performance and Structure of Cucumber in Ibadan, Oyo State

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Abstract

Cucumber is an important vegetable due to its numerous health benefits. There are a number of empirical studies on the economics of production of the commodity, but there is insufficient information on marketing of the commodity. The study was therefore carried out to examine market performance, structure and constraints in cucumber marketing. Primary data was collected from 70 randomly selected actors in the supply chain (54 Retailers and 16 wholesalers). Data collected was analyzed using descriptive statistics, net marketing margin, efficiency and Gini coefficient. Findings revealed that most of the retailers (70.4%) and wholesalers (81.3%) were male. Most of the retailers were within 31–40 years whereas majority of the wholesalers were within 41–50 years and all the marketers had secondary level of education (47.2%). Cucumber marketing was profitable at the wholesale and retail level both at the peak and lean season of cucumber production. Retailers sell an average of 159.8 kg and 83.8 kg weekly in the peak and lean season. Whereas wholesalers sell an average of 1,000 kg and 870 kg weekly in the peak and lean season respectively. Net margin at retail level was higher in the lean season (68.8/kg) compared to the peak season (46.6/kg). Similarly, at wholesale level, net marketing margin at the lean season was 17.5/kg and was higher than 6.3/kg obtained during the peak season. Marketing efficiency was greater than one for the wholesalers and retailers in both seasons. Gini coefficient of retailer was 0.32 and 0.36 for the peak and lean season indicating that the market was competitive. There was inequality in the wholesale market as indicated by the gini coefficient result. The most important constraint to cucumber marketing was perishability of the produce and price fluctuation. The study recommends improved sensitization on adequate post-harvest handling practices and storage to reduce the levels and consequences of the perishable nature of the commodity.

Keywords: Cucumber, market performance, market structure, constraints

1. Introduction

Cucumber is one of the most important exotic vegetables in Nigeria [1] and are valuable source of antioxidant nutrients including vitamin C, beta carotene and Manganese with about 95% water [2]. The crop is important in prevention of human constipation and improvement in digestion [3]. Aside the nutritional benefit of cucumber, production of the commodity is also profitable [2]. Marketing is crucial to link production and consumption and facilitate increased agricultural productivity and employment [4]. Thus, efficient marketing system is germane to improve market organization in order to satisfy consumers' needs and wants [4]. Market

performance is the ultimate result derived from the market which include outcome from various market activities [5]. Furthermore, profitability is a key elements of financial performance [6]. Market structure is the characteristics of the organization of the market that influence the nature of competition and pricing within the market [7]. Market structure for agricultural products in Nigeria is not perfectly competitive due to collusive tendencies of sellers [8]. It is worthy of note that analysis of market structure, efficiency of an agricultural product determines whether the market is a perfectly competitive, oligopolistic or monopolistic market [9].

Most socioeconomic research on cucumber in Nigeria have focused on economics of production [1, 2]. This includes analysis of profitability and major constraints of cucumber production in two local government areas of Rivers state [2]. They found that cucumber production was profitable and the major constraints in cucumber production in the study area were pest and disease attacks, poor funding and unfavorable climatic conditions. Profitability and efficiency of cucumber production in Iseyin Local Government area of Oyo State was also evaluated [1]. They found that cucumber production was profitable in the study area and they found that Age, Education status of farmers and access to credit were the factors affecting technical efficiency of the farmers in cucumber production in the study area. Factors affecting cucumber farmers' market participation were examined in Odukpani Local Government Area of Cross River State, Nigeria [10]. They found that distance to the market, market information and quantity of cucumber harvested were significant and important factors affecting the ability of the smallholder farmers to participate in the output market.

Past empirical studies on Market structure and performance of vegetables were on watermelon. Watermelon marketing was analyzed in Oyo State, Nigeria and the study revealed that watermelon marketing is profitable and efficient [11]. They also found that there was price discrimination and product differentiation in the market based on size and quality of the product. Structure and performance of pumpkin marketing was analyzed in Nassarawa State [4] and the study revealed that pumpkin marketing was profitable and the market was noncompetitive. Thus, there is dearth of information on market structure and performance of cucumber in Oyo state, Nigeria. The study intends to fill the above information gap.

2. Methodology

The study area was Ibadan ($7^o23^147^1$N $3^o55^10^1$E), capital of Oyo state. The city has a tropical wet and dry climate. There are eleven local government areas in Ibadan. The city is a major center for trade in horticultural commodities such as plantain, banana, cucumber, watermelon and arable crops [12].

Multistage sampling technique was employed in the selection of respondents. The first stage involved purposive selection of two local government areas (Ibadan North and Ibadan North West) with effective cucumber marketing while stage two involve selection of major markets noted for cucumber marketing in the local government while the third stage involve random selection of 54 retailers and 16 wholesalers in the selected markets.

Primary data was collected with the aid of well-structured questionnaire. Socio economics characteristics of marketers was analyzed using descriptive statistics such as frequency and percentages. Market performance was analyzed using the net marketing margin and efficiency while the market structure was estimated using Gini coefficient. Gini coefficient is used to measure statistical dispersion and is a concentration indices and it utilizes market shares to determine the extent of

market concentration [13]. The close the value of Gini coefficient is to unity, the greater the degree of inequality [14]. The net marketing margin is the difference between gross return and total cost involved in marketing while the marketing efficiency is used to compare return per unit cost.

3. Results and discussion

3.1 Socioeconomic characteristics of marketers

Findings revealed that most of the retailers (70.37%) and wholesalers (81.25%) were male indicating dominance of male folks in cucumber marketing in the study area. Most of the retailers (42.59%) were within 31–40 years age group whereas majority of the wholesalers (43.75%) were within the age group of 41–50 years indicating that the wholesalers were older than the retailers in the study area. Most of watermelon marketers which is also a curcubit like cucumber were also within the age group of 31–40 years indicating that the marketers were young and agile [11]. All the wholesalers were married while 66.67% of the retailers were married. Most of the retailers (74.0%) and wholesalers (68.8%) were educated at the primary and secondary level. Whereas most of the watermelon marketers in Oyo state (54.4%) had no formal education [11]. Most of the retailers had up to 6–10 years' (44.44%) experience in cucumber marketing whereas the wholesalers had more years of experience in the marketing 11–15 years (31.25%). Most of the retailers (87%) and wholesalers (75%) had 1–5 members in their respective household. All the wholesalers had marketing of vegetable as their main occupation while 98.1% of the retailers had marketing as their main occupation and the major source of capital was from personal savings. Only 22% of the retailers were members of association while majority of the wholesalers (75%) were members of association such as cooperative society. Majority of the retailers (88.9%) and Wholesalers (56.3%) have not received training on vegetable marketing. The marketers had poor extension contact in the study area. Majority of the retailers (98.1%) and wholesalers (93.8%) had no contact with extension agents in their marketing activities (**Table 1**).

Characteristics		Retailers	Wholesalers	Average %
Sex	Male	70.37	81.25	75.81
	Female	29.63	18.75	24.19
Age	Below 20			
	21–30	25.93		12.97
	31–40	42.59	18.75	30.67
	41–50	20.37	43.75	32.06
	51–60	3.70	31.25	17.48
	61–70	3.70	6.25	4.98
	Choose not to say	3.70		1.85
Marital Status	Single	31.48		15.74
	Married	66.67	100	83.34
	Divorced	1.85		0.93
Educational level	No formal	25.9	31.3	28.6
	Primary	29.6	18.8	24.2

Characteristics		Retailers	Wholesalers	Average %
	Secondary	44.4	50	47.2
	Tertiary			
Years of Experience	1–5	12.96	18.75	15.86
	6–10	44.44	6.25	25.35
	11–15	16.67	31.25	23.96
	16–20	11.11	25.0	18.06
	21–25	11.11	12.50	11.81
	Above 26	3.7	6.25	4.98
Household Size	1–5	87.0	75	81.0
	6–10	13.0	25	19.0
	11–15			
	16–20			
Main occupation	Marketing of vegetables	98.1	100	99.1
	Farming	1.9		1.9
	Civil Servants			
Major Source of capital				
	Personal savings	94.4	100	97.2
	Friends and relatives	5.6		2.8
	Cooperatives			
	Bank loans			
Members of Association				
	Yes	22.2	75	48.6
	No	77.8	25	51.4
Vegetable training	Yes	11.11	43.75	27.43
	No	88.89	56.25	72.57
Receive Agricultural Extension visit				
	Yes	1.9	6.3	4.1
	No	98.1	93.8	95.9

Source: Field Survey, 2020.

Table 1.
Socioeconomic characteristics of the marketers.

4. Market performance of cucumber

Although there are peak and lean season of marketing the commodity. Cucumber marketing is throughout the year. Market performance of cucumber was evaluated using net marketing margin and efficiency. Average quantity sold by retailers weekly in the peak and lean season were 159.8 kg and 83.8 kg respectively. This indicates that more quantity were sold in the peak season compared to the lean

Variable	Retail level	
	Peak period Cost/kg	Lean period Cost/Kg
Average quantity sold (kg) weekly	**159.8**	**83.8**
Average cost price/kg	N64.3	162.5
Average marketing cost/kg	18.68	18.68
Total cost	82.98	181.18
Average selling price/kg	129.6	250
Net margin/Kg	46.6	68.82
Marketing Efficiency	1.6	1.4
	Wholesale level	
Average quantity sold (kg) weekly	**1,000**	**870**
Average cost price N/kg	43	130
Average marketing cost/kg	15	15
Total cost	58	145
Average selling price/kg	64.3	162.5
Net margin/Kg	6.3	17.5
Marketing Efficiency	1.1	1.1

1 $ = 395.22 Nigerian naira.
Source: Field Survey, 2020.

Table 2.
Marketing margin and efficiency of cucumber.

season of production of the commodity. Average cost price per kg of cucumber in the peak season was N64.3 against N150/kg that was obtained in the lean season. The total cost incurred per kilogram was N82.98 while the total revenue was N129.6 in the peak season. The marketing margin and efficiency obtained during the peak season were N46.6/kg with the marketing efficiency of 1.6. This indicated that cucumber marketing is profitable (**Table 2**).

Similarly in the lean season of cucumber production, average cost incurred in the retail marketing was N181.18/kg with the total revenue of N250/kg. The marketing margin obtained in the lean season was N68.82/kg with the marketing efficiency of 1.4 indicating profitability of marketing cucumber in the study area. Although marketing efficiency was higher in the peak season compared to the lean, may be attributable to the lower marketing cost in the peak season (**Table 2**).

For the wholesalers, average quantity of cucumber sold during the peak season of cucumber production was 1,000 kg while average of 870 kg was sold during the lean season. Average cost incurred during marketing of cucumber per kilogram was N58 in peak season against N148 that was obtained in the lean season. Marketing margin and efficiency of cucumber in the peak season were N6.3k per kg and 1.1 indicating that cucumber marketing at wholesale was profitable. Marketing margin and efficiency during lean period was N17.5/kg while the marketing efficiency was 1.1 indicating efficient marketing system (**Table 2**).

4.1 Market structure of cucumber (retail)

Cucumber market structure was estimated using Gini coefficient. Results revealed that marketers within the sale ranges of N5001- N25, 000 constituted

Sales N	Peak season						
	Frequency	% of retailer $\sum X$	Cumulative % of retailer	Total value of sales	% of total sales	Cumulative Y	$\sum XY$
<5,000	0						
5,001 – 25,000	34	63	63	533,952	49.5	49.5	0.31
25,001 – 45,000	20	37	100	544,320	50.5	100	0.37
Total							**0.68**
Gini Coefficient	**0.32**						
	Lean season						
<5,000	2	3.7	3.7	9,100	0.91	0.91	0.0
5,001 – 25,000	35	64.8	68.5	527,800	53.2	54.11	0.35
25,001 – 45,000	15	27.8	96.3	364,000	36.7	90.81	0.25
45,001 – 65,000	2	3.7	100	91,000	9.2	100	0.037
Total	54	100		991,900			**0.64**
Gini Coefficient	**0.36**						

Source: Field Survey, 2020.

Table 3.
Gini coefficient of retail cucumber marketing.

63% of retailers and this accounted for 49.5% of total sales of cucumber during the peak season (**Table 3**). Similar trend was obtained in the lean season, marketers within the sale range of 5,001–25,000 also constituted 64.8% of retailers and this accounted for 53.2% of cucumber total sales in the lean season. Gini coefficients for the peak and lean season were 0.32 and 0.36 respectively. This indicated that cucumber marketing at retail level in the peak and lean season was competitive. This indicated that there are many retailers in the market and they will not be able to influence price by increasing or decreasing quantity supplied to the market. This also indicate adequate equality in the market.

4.2 Market structure of cucumber (wholesale)

Findings revealed that wholesale within the sales range of 25,001–45,000 and 45,001–65,000 constituted the greatest percentage of the wholesaler and this accounted for 13.8 and 25% of total sales. Gini coefficient for the wholesaler during the peak and lean season were 0.5 and 0.57 respectively. This implied inequality in quantity of cucumber sold among the wholesaler and sales is concentrated in the hand of few marketers and cucumber marketing at wholesale level was noncompetitive in the study area. Similarly, high inefficiency was also observed in the market structure of watermelon at Akure [14], where it was found that the Gini coefficient of watermelon was 0.7318 indicating inequality in the market (**Table 4**).

4.3 Constraints in cucumber marketing

The most important constraint to cucumber marketing was perishability of the commodity. Vegetables are highly perishable and sensitive to harvest and post-harvest handling systems. It was observed during the survey that most of the marketers use bags in packaging of the crop with attendant physical damages and

Sales N	Peak season						
	Frequency	% of wholesaler ∑X	Cumulative % of wholesaler	Total value of sales	% of total sales	Cumulative Y	∑XY
25,001 – 45,000	5	31.3	31.3	141,460	13.8	13.8	0.043
45,001 – 65,000	5	31.3	62.6	257,200	25.0	38.8	0.12
65,001 – 85,000	1	6.3	68.9	77,160	7.5	46.3	0.03
85,001 – 105,000	3	18.8	87.7	308,640	30.0	76.3	0.14
105,001-125,000	1	6.3	94.0	115,740	11.3	87.6	0.06
125,001-145,000	1	6.3	100	128,600	12.5	100	0.1
Total				1,028,800			0.5
Gini Coefficient	0.5						
	LEAN SEASON						
25,001 – 45,000	2	12.5	12.5	71,500	3.2	3.2	0.004
45,001 – 65,000	4	25	37.5	240,500	10.6	13.8	0.0345
65,001 – 85,000	0	0	37.5	0	0	13.8	0
85,001 – 105,000	2	12.5	50	195,000	8.6	22.4	0.028
105,001-125,000	0	0	50	0	0	22.4	0
125,001-145,000	0	0	50	0	0	22.4	0
145,001-165,000	0	0	50	0	0	22.4	0
165,001-185,000	0	0	50	0	0	22.4	0
185,001-205,000	4	25	75	780,000	34.5	56.9	0.14225
205,001-225,000	0	0	75	0	0	56.9	0
225,001-245,000	2	12.5	87.5	455,000	20.1	77.0	0.096
245,001-265,000	2	12.5	100	520,000	23.0	100	0.125
Total				2,262,000			0.43
265,001-285,000	GINNI COEFFICIENT	0.57					

Table 4.
Gini coefficient of wholesale cucumber marketing.

	Yes	No
Perishability	69(98.6)	1(1.4)
High cost of transportation	64(91.4)	6(8.6)
Price fluctuation	67(95.7)	3(4.3)
Inadequate capital	67(95.7)	3(4.3)
Storage Problem	67(95.7)	3(4.3)
Poor marketing information	49(70.0)	21(30.0)

Source: Field survey, 2020.

Table 5.
Constraints in cucumber marketing.

losses. Similarly, high perishability is one of the constraints in cucumber production in Southeast Nigeria [15]. Price fluctuation is rampant and is always due to fluctuation in the supply of the commodity. Other constraints were inadequate capital and storage problem, high cost of transportation and poor marketing information (**Table 5**).

5. Conclusion

Cucumber marketing was dominated by the male folks at both retail and wholesale level. Most of the retailers were within the age group of 31–40 years and were younger than the wholesaler. Cucumber marketing at both retail and wholesale was profitable in both the peak and lean season. The analysis of the market structure at the retail level showed adequate equality while market structure at the wholesale level reflect inequality among the actors. The major constraints in cucumber marketing were perishable nature of the produce, price fluctuation and storage problem. The study advocates for the use of improved packaging in the marketing of the commodity and enhanced sensitization on the importance of adequate post-harvest handling and proper storage to reduce the problem of perishability encountered in the commodity supply chain.

Acknowledgements

Questionnaire

Market Performance and Structure of Cucumber in Ibadan, Oyo State

Questionnaire code _____ Date of interview:_____
Phone no ....

a. State..

b. Local Government Area...

c. Name of Market ....

Section A: Socioeconomic characteristics of the Marketers

1. Sex 1. Male 2. Female

2. Age (Years): ....

3. Marital status 1. Single 2. Married 3. Divorced 4. Others please specify

4. Educational level 1. No formal 2. Primary 3. Secondary 4. Tertiary 5. Others please specify

5. Years of experience in marketing ....

6. Type of marketer a. Wholesaler Yes...... No..............

   b. Retailer Yes......   No.............

7. Household size ....

8. What is your main occupation 1. Trading of cucumber 2. Farming 3. Civil servants 4. Others please specify.

9. Major source of capital i. Personal savings ii. Friends and relatives iii. Cooperative loansiv. Bank loans

10. Are you a member of any association 1 Yes... 2. No

11. Have you ever attended any training on vegetable marketing 1. Yes 2. no

12. Do you receive agricultural extension services? 1. Yes 2. No

Section B: Market performance and structure of Cucumber

13. How many bags (40 kg weight) do you buy in a week: i. peak season .... ii. Lean season ....

14. Cost price/bag: i. Peak season .... ii. Lean season ....

15. Loading cost per bag in i. Peak season .... ii. Lean season ....

16. Transport cost/bag i. Peak season .... ii. Lean season ....

17. Average cost of stall per month ....

18. Selling price per bag i. Peak season .... ii. Lean season ....

Section C: Constraints in marketing cucumber

S/N	Constraints	Yes	No
1	Perishability		
2	High cost of transportation		
3	Price fluctuation (seasonality)		
4	Inadequate capital		
5	Storage problem		
6	Poor marketing information		

Any comment ....

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