Direct Research Journal of Agriculture and Food Science
Vol. 9, Pp. 420-424, 2021
ISSN 2354-4147
DOI: https://doi.org/10.26765/DRJAFS165327564
Article Number: DRJAFS165327564

https://directresearchpublisher.org/drjafs/

Full-Length Research Paper

Analysis of Costs and Return on Watermelon Marketing in Selected Markets in Adamawa State, Nigeria

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Received 16 November 2021; Accepted 17 December 2021; Published 23 December 2021

ABSTRACT: The study looked at the costs and returns of watermelon marketing in Adamawa State, Nigeria. Respondents were chosen using multi-stage sampling techniques. Data for the study were gathered from primary sources via questionnaires distributed to a sample of 41 wholesalers and 149 retailers. The analytical tools used were descriptive statistics, net marketing return, and marketing efficient model. The average monthly sales recorded by wholesalers and retailers were ₦20,962,620 and ₦7,281,600, respectively. Their monthly net returns were ₦4,490,300 and ₦971,131.5. It also revealed that watermelon marketing was inefficient, with marketing scores of 27.3% for wholesalers and 15.4% for retailers, respectively. The return on investment (ROI) for wholesalers and retailers was ₦0.21 and ₦0.133, respectively. Low capital investment, insufficient transport facilities, price fluctuation, poor handling and processing, insufficient storage facilities, bulkiness and perishability of the fruits were identified as problems. According to the study, the government should expand its anchor borrowers and provide low-interest credit to marketers, and marketing associations should encourage their members to adopt strategies that will reduce losses from fruit spoilage.

Keywords: Costs and return, watermelon, marketing, markets

INTRODUCTION

Agriculture remains the largest sector of the Nigeria economy, where it plays an important role as food provider, employer of labour, earner foreign of exchange, key contributor to wealth and poverty alleviation (Onyishi, 2010). In Africa in 2017 watermelon accounted for 5.4% of harvested area devoted to vegetables. In addition, 5% of world vegetable production was committed to watermelon. Algeria is the leading watermelon producer in the content (1.87 million units per year), sixth in the world contributing 1.6% to worldwide production, followed by Egypt (1.7 million units per year), and eighth in the world (Dube *et al.,* 2020). Watermelon is a delicious and refreshing fruit that's also good for you. It has water content and fibre, contain 46 calories per cup and high in vitamins and health plant compound is a usual fruit source of the arytenoid lycopene and a rich source of phenolic antioxidants. Fruit marketing begins at the farm gate (Haruna *et al.,* 2012). They are transported from the farm to the nearest assembly market for the consumers or wholesalers who assemble them to a city market and sell to other wholesalers, retailers or consumers. The unique characteristics of agricultural products including watermelon pose some problems both to the farmers, marketers and final consumers. Its seasonality, bulkiness, storage and perishability exerts pressure on handling, packaging, transportation and sales with an attendant effect on the market price. Improper handling of watermelon after harvest lowers quality and cause losses. The high perishability of watermelon also discourages many farmers from going into large scale production, and the present growers from increasing their scale of production. An efficient marketing system

ensures that the supply of goods even those that are seasonal, is all year round, with little variation in prices, which can be attributed to high cost of storage; a situation which makes both the consumer and producer better off (Nwaru *et al.,* 2012). However, this not the case in Adamawa State, due to huge price differential exists between the consumer and producer price which could depict some in efficiencies. This study tried to find out; how profitable and efficient is marketing of watermelon and described problems militating against its marketing.

METHODOLOGY

Study area

Adamawa State is one of the states of Nigeria and occupies about 36,917 square kilometres. It lies between Latitude 7^0 and 11^0 North of equator and between Longitude 11^0 and 14^0 E of the GMT (Adebayo *et al.,* 2020). The study area falls within the Northern Guinea Savannah Zone of the Nigeria. The state has 21 Local Government Areas, these are Yola North, Yola South, Mubi North, Mubi South, Ganye, Toungo, Jada, Mayo-Belwa, Fufore, Numan, Demsa, Lamurde, Guyuk, Shelleng, Girei, Song, Gombi, Michika and Madagali and has a population of 3,168,101 (NPC, 2016). The State is sharing boundary with Taraba State to the South-West, Gombe to the West, Borno to the North-West and its eastern border forms the national border with Cameroun Republic. Topographically, Adamawa State can generally be grouped into valleys and troughs, upland plains, lowlands and hill/mountain ranges. The valleys or rivers and troughs punctuate the plains and mountain ranges into discrete blocks. The major valley is the Benue, running east to west bisects the state into almost two equal halves, having landform of striking similarity in outlook and percentage coverage (Adebayo *et al.,* 2020).

Sampling method

Multi-stage sampling technique involving purposive and random sampling, stratification was used in selecting both the wholesalers and retailers. A total of 201 respondents were administered questionnaire but only 190 were retrieved comprising 41 wholesalers and 149 retailers which were used for the study. Data for the study was obtained from primary sources through the use of questionnaire with the help of trained enumerators under the supervision of the researcher.

Analytical techniques

Net marketing return, marketing efficiency model and return on investment were employed for the analysis as used by Abdullahi *et al.* (2014); Zorinah (2016) and Abdulazeez *et al.* (2018). Descriptive statistics was used to describe the problems associated with marketing watermelon. It involves the use of mean, frequency distribution and percentages. Marketing efficiency was estimated using Shepherd Furtrell model as used by Adebayo *et al.* (2006). It is expressed as:

$$\text{Marketing Efficiency} = \frac{total\ revenue}{marketing\ total\ cost} \times 100$$

Where
ME = marketing efficiency
MTC = marketing total cost
Return on Investment was used to estimate the returns on every Naira invested in the watermelon business. It is expressed as:

$$\text{Return On Investment} = \frac{total\ revenue - total\ cost}{total\ cost} \times 100$$

Where
TR = total revenue
TC = total cost

RESULTS AND DISCUSSION

Net marketing Returns for Marketers

This is obtained by subtracting the total marketing cost (TMC) from the total revenue (TR). Entries in (Table 1) reveals that the computed total revenue (TR) was ₦20,962, 620 and the estimated total marketing cost incurred during the marketing process was ₦16,472,290 while the net marketing returns was ₦4,490,300 for the wholesalers. While for the retailers, the calculated total revenue was ₦7,281,600 and the total marketing cost was ₦6,310,462.5. The net marketing returns estimated at ₦971,173.5. This implies that returns in watermelon marketing is high indicating that the enterprise is profitable and worth investing in and promotion especially as a poverty alleviation programme that could if well packaged will help in creating job opportunity.

Return on Investment

The result revealed that the ROI in watermelon marketing for wholesalers and retailers were ₦0.21 and ₦0.133.

Table 1: Monthly watermelon market performance for wholesalers and retailers.

Variables	Naira / Month (₦)	Total value kg	Naira/Month (₦)	Total value kg
Average quantity sold	57,828		12,136	
Average selling price per kg	362.5		600	
Total revenue (A)		20,962,620		7,281,600
Market variable cost				
Transportation		2,947,200		217,420
Loading		277,200		67,210
Off loading		261,500		67,300
Market /ticket fees		145,000		138,000
Storage		189,500		42,590
Packing / handling		256,000		151,890
Value lost (Damages)		1,577,000		599,850
Other cost		120000		30,400
Feeding /telephones		101,890		5,200
Quantity purchased		63450		13713
Average purchased price (kg)	165.00	10,469,290	362.5	4,970,962.5
Total variable cost (B)		16,344,540		6,290,822.5
Fixed costs				
Rent		102,750		10,190
Depreciation of marketing Equipment's / tools		25,600		9,450
Total fixed cost (C)		128,350		19,640
Total market cost (D)		16,472,290		6,310,462.5
Gross Margin **(E)**		4,618,080		990,777.5
Average gross margin (F)		112,636.09		2,622.66
Net return (G)		4,490,330		971,137.5
Profitability ratio (GM/TMC)		0.28		0.15
Benefit cost ratio (TR/TMC)		1.27		1.15

Source: Field survey, 2019.

This indicates that for every one naira invested by the wholesalers in watermelon marketing, the wholesaler gets a return of ₦0.21, while the retailers got a return of ₦0.133 on every naira invested. This result further implies that marketing performed relatively better in wholesaling than retailing in the study area. Meaning that for every naira invested in watermelon marketing by the wholesalers and retailers ₦0.21 and ₦0.133 will be received as returns on investment.

Returns on Investment for Wholesalers $= \frac{20,962,620 - 16,472,290}{20,962,620} = 0.21$

Return on Investment for retailers = $\frac{7,281,600 - 6,310,462.5}{7,281,600} = 0.13$

Marketing Efficiency

Marketing efficiency is the ratio of total value of goods marketed to the total marketing cost (Shepherd, 1993). The marketing efficiencies for wholesalers and retailers in the study area were calculated as follow:

Marketing Efficiency for wholesalers = $\frac{20,962,620}{16,472,290} - 1 \times 100$ = 27.3%

Marketing Efficiency for retailers = $\frac{7,281,600}{6,310,462.5} - 1 \times 100$ =15.4%

The result revealed that wholesalers had an efficiency of 27.3% meaning it will cost them ₦0.273 to generate ₦1.00 revenue. Similarly, retailers had an efficiency of

Table 2: Problems of watermelon marketing.

Problems	Wholesalers Mean Value	Standard Deviation	Retailers Mean Value	Standard Deviation
Low capital /initial investment	3.88	0.333	3.24	0.767
Inadequate transport	3.17	0.865	1.82	0.821
Price fluctuation	3.31	0.732	2.32	1.031
Lack of market information	2.17	0.827	2.41	1.025
Poor handling	1.53	0.739	3.34	0.765
Lack of storage facilities	2.67	0.977	3.24	0.677
Lack of standardization	2.45	0.967	2.43	1.032
Irregular supply	2.96	0.916	2.00	0.880
Bulkiness	3.45	0.615	3.22	0.836
Perishability (spoilage)	3.84	0.366	3.90	0.307

Source: Field survey, 2019.

15.4% meaning it will cost them ₦0.154 to generate ₦1.00. This implies that watermelon marketing was inefficient in the study area with efficiency score of less than 50%. This study corroborated with the study of Onyemauwa (2010) who reported that watermelon marketing was inefficient in Niger Delta area of Nigeria. Although it contradicted the study of Chogou and Achiga-Dako (2019) who revealed watermelon marketing in the Benin Republic was efficient.

Problems militating against watermelon marketing

The problems militating against watermelon marketing were identified and presented in (Table 2). The findings revealed that, low capital investment, inadequate transport, price fluctuation, poor handling and processing, storage facilities, bulkiness and perishability (fruits spoilage) were the major challenges faced by marketers in Adamawa State. Transportation was the most severe problem encountered in watermelon marketing according to the wholesalers. This was attributed to bad roads network and risk involved in travelling outside the state to buy the commodity. This finding correspond with that of Obasi and Kalu (2019) and Ozor *et al.* (2018) who observed that, high transportation cost is the most critical factor affecting marketers and their performance in many developing countries. Ocholi *et al.* (2017) observed from study of onion marketing in Benue state that most wholesalers complained of bad network road as major problem in shifting goods from farm to market. Adeleke *et al.* (2010) stated that, road systems are the most serious infrastructural bottleneck facing agricultural development. Similarly, this result is in line with the findings of Ukwuaba *et al*. (2018) in his study on Socio-economic and Institutional Determinants of Watermelon Marketing in Enugu State of Nigeria who reported that High perishability (fruit spoilage), lack of credit facilities, price fluctuations, seasonality and the bulky nature of the commodity were the major challenges that confronted marketers in Enugu state. Furthermore, Yimer (2015) found out from the various factor affecting fruits supply in markets, perishability was one of the major fruits production challenge in his study in Ethopia.

Recommendations

Based on the findings of the study, the following were recommends:

(i) Government should expand its anchor borrowers and other related schemes to marketers in order to innovate and expand their business.
(ii) Good road network linking distribution centres to markets should be constructed/rehabilitated with adequate transport facilities to facilitate easy movement of commodities thereby reducing cost of transportation.
(iii) Marketers should be trained by relevant agencies on new skills, techniques and ways of obtaining information on prevailing prices, handling, processing and storage of watermelon.
(iv) Marketing associations should encourage their members to adopt strategies that will reduce losses from fruits spoilage.

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