

Effect of Marketing Strategies on Post-Harvest Loss of Fruits in Osun State, Nigeria



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ABSTRACT: Fruits are essential part of human diets but are highly perishable, and the post-harvest loss is on the rise in Nigeria, with consequent food insecurity. To achieve zero hunger (SDG II) and responsible consumption and production (SDG XII), a lot needs to be done to reduce the menace of post-harvest loss. One of such is the adoption of proper marketing strategies by fruit farmers and marketers. The study assessed the effect of various marketing strategies adopted by fruit farmers and marketers on post-harvest loss. Multistage sampling procedure was used to select 120 farmers and 60 marketers for this study. Data were collected through structured interview schedule.

Farmers had; mean income of ₦236,333±90,320.93, average fruit farm size of 1.51±0.58 hectares, while marketers had mean income of ₦497,200±266561.07, with some (48.4%) of them belonging to market association. Respondents had very little access to extension services, as their main sources of information were; fellow farmers marketers (\bar{x} = 0.81 for farmers and \bar{x} = 0.37 for marketers) and friends, families, Neighbours (\bar{x} = 0.62 for farmers and \bar{x} = 0.95 for marketers). Majority of the farmers (53.3%) and marketers (61.7%) recorded low fruit loss, and selling fruits by major roads (\bar{x} = 1.82) and selling on market days (\bar{x} = 1.82) were found to be very effective amongst fruit farmers, while Hawking (\bar{x} = 1.95) and Peeling and cutting of fruits (\bar{x} = 1.95) were the effective strategies among marketers. Effectiveness of marketing strategies ($r = 0.97$, $r = 0.55$, $p < 0.05$) was significantly related to level of postharvest loss of farmers and marketers.

The study concluded that the respondents made low income from fruits sales, they both used various marketing strategies thus, albeit, conventional ones, and recorded low level of fruit post-harvest loss. It is recommended that, extension workers should be empowered to train fruit farmers and marketers regularly on improved marketing strategies and value addition. Also, cottage fruit processing firms should be established across the federation to further reduce level of postharvest loss and achieve Sustainable Development Goals II & XII.

KEY WORDS: Post-harvest, Post-harvest Loss, Marketing strategies, Perishability of fruits, Effectiveness

1. INTRODUCTION

1.1 Background

Fruits form an important feature of Nigerians' diet that a traditional meal without it is usually assumed to be incomplete and they form part of meals at many traditional ceremonies all over the country (Agbarevo and Obinne, 2010). Fruits are known to be high in vitamins and essential minerals and eating adequate quantity and good quality of fruits gives lots of benefits to the body, from lowering blood pressure, to reducing risk of heart disease and prevention of some types of cancer. A wide variety of fruits are produced in Nigeria's diverse agro-ecological zones, which ranges from humid in the south, to sub-humid in the middle belt and semi-arid/arid in the north. Some of these fruits include; bananas, plantain, pineapples, Mangoes, Cashew, Oranges, etc.

Fresh fruits are inherently more liable to deterioration under tropical conditions which is usually characterized by high ambient temperatures and humidity and high incidence of pests and diseases. This is a big problem in a country like Nigeria and results in lots of wastages and post-harvest losses. The loss affects farmers' income and ultimately negatively affects food production and food security in the country. Busari, Idri-Adeniyi and Lawal (2015) reported that post-harvest losses of fruits are extremely high in Nigeria (30-50%). According to the authors, the situation is exacerbated by poor marketing, distribution (transportation),

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processing/packaging and storage facilities. A closer look at agriculture in Nigeria will reveal that Nigerian agriculture is still plagued with use of crude tools and implements, illiteracy, poor technical knowhow, inadequate and inefficient marketing. Similarly, other issues like; mechanical damage to produce as a result of impact bruising, compression and vibration during transportation, and poor transport conditions, including bad roads cause post-harvest loss. All these account for large proportion of post-harvest losses of fruits experienced in Nigeria. Marketing strategy refers to a business's overall game plan for reaching prospective consumers and turning them into customers of their products and services (Barone, 2022). It involves any process employed to create and render value through products or services, to a consumer, with the goal of making profit. Marketing strategies involve any approach which a producer or marketer can use to keep business going and this includes everything the business owner does to sell their products. In the context of this study, marketing strategies are those methods adopted by fruit farmers and marketers to sell fruits to consumers. Agricultural marketing, rather than production has great potential to drive the agricultural sector of Nigeria, if adequately looked into by governments at all levels, policy makers and all other stakeholders in the sector. Post-harvest loss can be described as the degradation of quality and quantity of a farm produce between the time of harvest and consumption. A report by FAO noted that the rate of fruit loss at post-harvest stages in some African countries is estimated at 50 percent (FAO, 2011). This shows that many of the existing marketing strategies being used for fruits are highly inefficient. Great losses are still recorded on daily basis across the country. The inefficiency of the marketing strategies may be in terms of: time taken before fruits are sold out, the extra cost incurred on the produce from harvest to point of sale; the state of freshness of the produce at the point of sale and the prices they attract during sales. Hence, there is a need for farmers and marketers to improve on the conventional marketing strategies and adopt new marketing strategies to reduce post-harvest loss. There is therefore need to investigate the effectiveness of these marketing strategies in reducing post-harvest loss.

1.2 Purpose of the study

The main objective of the study was to examine the effectiveness of different marketing strategies on post-harvest loss of fruits in Osun state, Nigeria. This is important as major researches on PHL have focused on the relationship between post-harvest handling, transportation, storage, etc. on PHL, and not many have considered the marketing strategies employed. The specific objectives were to: investigate the enterprise characteristics of fruit farmers and marketers in Osun State.

- i. identify respondents source of information on the marketing strategies
- ii. determine the effectiveness of marketing strategies used by respondents in the study area.
- iii. determine the level of post-harvest loss of fruits incurred in the study area.

1.3 Hypotheses of the study

HO1: There is no significant relationship between the effect of the marketing strategies and the level of post-harvest loss of fruits.

2. METHODOLOGY

The study was carried out in Osun state, Nigeria. The State is located in the rain forest zone of Southwestern Nigeria. It covers an area of 14,875 square kilometers and lies between latitude 70 30' 0" N and longitude 40 30' 0" E. The State is made up of 30 Local Government Areas (LGAs), with a population of 3,432,535 (2006, population census). A large majority of the people of Osun State engage in agriculture and produce food and cash crops like maize, cassava, yam, pepper, tomato, vegetables, oil palm, cocoa, cola nut, etc. for domestic consumption, as inputs for agro allied industries and for export.

The population of the study includes all fruits farmers and marketers in Osun state (using orange, pineapple, water melon and banana as case study). A multistage sampling procedure was used to select respondents. For farmers; the first stage involved randomly selecting 4 Local Governments Areas (LGAs) from each of the 3 federal senatorial districts of the State. Two rural communities were purposively selected from each of the LGAs based on their farming involvement fruit cultivation, in the second stage, making 12 communities. The third stage involved another purposive selection of ten (10) fruits farmers per community because of their involvement in fruit farming. Hence, a total of 120 farmers were selected. While for fruit marketers; 12 LGAs headquarters with large population were purposively selected in the first stage and the second stage involved random selection of 5 fruit marketers from each of the towns, to give 60 marketers.

Information from the respondents were elicited with the aid of interview schedules validated by experts in the field of agricultural extension, and contained both open and close-ended questions. To identify the sources of information on marketing strategies, respondents were provided with a list of various information sources to pick from the one applied to them. This was measured on a

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three-point scale of often (2), occasional (1) and never (0). The percentage score of the sources was computed. The effectiveness of the marketing strategies was determined by using the Likert type scale of very effective = 2, Effective = 1 and not effective = 0. The values obtained were added up and divided by three to get a mean value of 1, which was used to rank the strategies according to their effectiveness for reducing PHL amongst the respondents.

In determining the level of Post-Harvest Loss, the mean value of the PHL recorded by farmers and marketers were computed, using the formula;

For farmers; Loss (post-harvest) = $Q_p - (Q_s + Q_c + Q_g)$

For marketers; Loss (post-harvest) = $Q_b - (Q_s + Q_c + Q_g)$

And converted to percentage thus; Percentage loss (post-harvest) = $\frac{Q_L}{Q_{b/p}} * 100$

Where, Q_p = quantity produced, Q_b = quantity bought, Q_s = quantity sold,
 Q_c = quantity consumed, Q_g = quantity given out
 Q_L = quantity lost, $Q_{b/p}$ = quantity produced or quantity bought

The mean values were then used to categorise the levels of PHL into high and low. Data collected were subjected to both descriptive and inferential statistics.

The descriptive statistics include frequencies, percentages and means. The inferential statistics adopted for this study included Pearson Product Moment Correlation Coefficient (PPMC), t-test and Multiple regression analysis. The hypotheses were tested for significance at 0.05 level. The independent variables for the multiple regression analysis used to determine the effect of marketing strategies on post-harvest loss included the different strategies listed below, while the dependent variable was the level of PHL.

Multiple regression function used is expressed thus;

$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9, X_{10}, X_{11}, X_{12}, X_{13}, X_{14}, X_{15}, X_{16}, X_{17}, et)$

Where, Y is the level of postharvest loss of fruits. X_1 = selling before harvest,

X_2 = selling at farm market, X_3 = selling on market days, X_4 = selling by major roads,

X_5 = peeling and cutting of fruits, X_6 = hawking of fruits,

X_7 = selling on farm daily,

X_8 = selling to friends and family, X_9 = Selling to malls,

X_{10} = Selling to eateries, X_{11} = Selling to hospitals, X_{12} = Selling to schools, X_{13} = Making fruit salad,

X_{14} = Processing fruit juice,

X_{15} = Selling to food processing industries, X_{16} = Online marketing,

X_{17} = Exporting

et represents the stochastic error term

3. RESULTS AND DISCUSSIONS

3.1 Enterprise characteristics of the respondents

The result in Table 1 shows the distribution of the respondents according to their enterprise characteristics. The mean farm size and fruit farm size of the fruit farmers were 10 and 4 acres respectively; also the mean years of farming and marketing experience of the respondents were 33 and 16 years respectively, with a large majority (27.5%) of farmers having 31-40 years of experience. This result is in tandem with Muhammad, Hionu and Olayemi (2012), who reported that 30% of farmers in fruits and vegetables in Garun Mallam LGA of Kano state, Nigeria have 31-40 years of experience the farmers. This proves that the fruit farmers have good fruits farming experience, and as such, they would have developed and learnt various methods of reducing PHL.

The result further reveals that more marketers (48.4%) belong to fruit marketers' association than farmers (6.7%) belong to farmers' association. This implies that it is easier to engage marketers in trainings related to PHL than farmers. The result also shows that fruit marketers made more money annually with average income of ₦497,200.00 as against ₦236,333.00 made by the farmers annually. These are meager amounts to earn and wouldn't be able to sustain a normal family size in the country. The result however, agrees with Ladapo (2010), who reported that plantain wholesalers make more income than farmers in South west Nigeria.

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Table 1: Distribution of Respondents According to Their Enterprise Characteristics

Enterprise characteristics	Fruit Farmers			Fruit Markers		
	freq	%	Mean	freq	%	Mean
Total Farm size						
1-7	51	42.5		-	-	
8-14	42	35.0		-	-	
15-21	22	18.3	9.94 ±5.91	-	-	
22-28	4	3.3		-	-	
> 28	1	0.8		-	-	
Fruit farm size						
0.1-3	62	51.7		-	-	
04-Jul	49	40.8		-	-	
08-Nov	7	5.8	3.81± 2.58	-	-	
Dec-15	1	0.8		-	-	
> 15	1	0.8		-	-	
Farming/market experience						
<11	18	15		27	45.0	
11-20	19	15.8		19	31.7	
21-30	19	15.8	32.73±18.36	9	15.0	15.53±13.04
31-40	33	27.5		2	3.3	
41-50	13	10.8		1	1.7	
> 50	18	15		2	3.3	
Farmers/market association						
Non member	112	93.3		31	51.7	
Member	8	6.7		29	8.4	
Fruit annual income						
100000-200000	64	53.3		2	3.3	
200001-300000	38	31.7	236,333±90,32	10	16.7	497,200±266,561
300001-400000	11	9.2		16	26.7	
400001-500000	7	5.8		15	25.0	
> 500000	0	0		17	28.3	

Source: Field Survey, 2018

3.2 Sources of information about marketing strategies

Table 2 below shows that farmers got information on marketing strategies mostly through their fellow farmers ($\bar{x} = 0.81$), friends, families, Neighbours ($\bar{x} = 0.62$) and through farmers corporative ($\bar{x} = 0.24$) which rank 1st, 2nd and 3rd respectively. This implies that information about how to market their products mainly comes from the interactions with people within their communities, which means they have very little access to information from outside the community which may include innovations on improved seeds, methods of packaging and better marketing strategies. Information from Extension agents ($\bar{x} = 0.12$) was ranked 5th. Extension agents have the responsibility of informing farmers about innovations and new developments which include improved market.

Table 2 also reveals result for sources of information on fruit marketing strategies by marketers. Friends, family members, neighbours ($\bar{x} = 0.95$) were the first source of marketing information available to fruit marketers. Fellow marketers ($\bar{x} = 0.37$) and

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market corporative/association ($\bar{x}=0.20$) were the 2nd, and 3rd marketing information sources respectively. This indicates that fruit marketers also got information from their circle and therefore are not exposed to up to date relevant information on marketing strategies. This may hamper their sales and increase fruit loss.

This result agrees Akinagbe and Ipinmoye (2022) with who reported that a large majority of farmers have not had contact with an extension agent. This will have severe impacts on the level of PHL incurred by respondents

Table 2: Distribution of Farmers and Marketers According to Sources of Information on Fruit Marketing

Marketing strategy	Oft	O	N	μ	R	Oft	O	N	μ	R	
Farmer (n=120)						Marketers (n=60)					
Radio	0%	22.5%	77.5%	0.23	4 th	0%	16.7%	83.3%	0.17	4 th	
Television	0%	5.0%	95%	0.05	6 th	0%	1.7%	98.3%	0.02	3 rd	
Fellow farmers/marketer	21.7%	37.5%	40.8%	0.81	1 st	5.0%	26.7%	68.3%	0.37	2 nd	
Cooperative	6.7	10.8%	82.5%	0.24	3 rd	3.3%	13.3%	83.3%	0.20	3 rd	
Extension Agents	0%	11.7%	88.3%	0.12	5 th	0%	0%	0%	0	-	
Research Institutions	0%	0%	100%	0	-	0%	0%	100%	0	-	
Newspaper/Magazine	0%	0.8%	99.2%	0.02	9 th	0%	0%	100%	0	.h	
Friends & Families	5.8%	50.8%	43.3%	0.62	2 nd	21.7	38.3	26.7%	0.95	1 st	
Mobile phones	0.8%	3.3%	95.8%	0.05	6 th	0%	0%	100%	0	-	
Internet	0.8%	2.5%	96.7%	0.04	8 th	0%	1.7%	98.3%	0.02	5 th	

Source: Field Survey, 2018

* Multiple responses

3.3 Effectiveness of the marketing strategies

Table 3 reveals the effectiveness of marketing strategies used by the respondents. Among the marketing strategies used, selling fruits by major roads ($\bar{x} = 1.82$), selling on market days ($\bar{x} = 1.82$), selling of fruits before harvest ($\bar{x} = 1.80$) and selling on farm daily ($\bar{x} = 1.76$) were found to be effective marketing strategies amongst fruit farmers; while hawking ($\bar{x} = 1.95$) and peeling and cutting of fruits ($\bar{x} = 1.95$), Selling by major roads ($\bar{x} = 1.75$), selling of fruits in stalls & malls ($\bar{x} = 1.73$) and selling on market days ($\bar{x} = 1.68$) were the effective strategies among marketers. This indicates that only the conventional marketing strategies were seen as more effective by the farmers. It is therefore necessary to encourage farmers to try new methods of marketing, so that they can identify the difference in loss reduction by the various methods.

Table 3: Distribution of Respondents Based on the Effectiveness of Fruits Marketing Strategies (%)

Marketing strategy	VE	E	NE	μ	R	VE	E	NE	μ	R
Farmer (n=120)						Marketers (n=60)				
Selling on market days	80.8	19.2	0	1.81	2 nd	70.0	28.3	1.7	1.68	5 th
Selling by major roads	81.7	18.3	0	1.82	1 st	76.7	21.7	1.7	1.75	3 rd
Peeling and cutting offruits	43.3	56.7	0	1.43	7 th	95.0	5.0	0	1.95	1 st

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Hawking	46.7	53.3	0	1.47	6 th	95.0	5.0	0	1.95	1 st
Selling to malls	22.5	72.5	5.0	1.17	11 th	15.0	80.0	5.0	1.10	14 th
Selling to eateries	25.0	70.8	4.2	1.21	10 th	30.0	66.7	3.3	1.27	10 th
Selling to hospitals	17.5	75.0	7.5	1.10	13 th	30.0	63.3	6.7	1.23	11 th
Selling to schools	42.2	53.3	4.2	1.38	8 th	56.7	38.3	5.0	1.52	7 th
Making fruits salad	32.5	60.0	7.5	1.25	9 th	46.7	50.0	3.3	1.43	8 th
Making fruit juice	15.0	76.7	8.3	1.07	14 th	11.7	83.3	5.0	1.07	14 th
Selling to food processing industries	81.7	17.5	0.8	1.81	2 nd	41.7	58.3	0	1.42	9 th
Online marketing	32.5	55.8	11.7	1.21	10 th	40.0	38.3	21.7	1.18	12 th
Exporting	83.3	13.3	3.3	1.80	3 rd	70.0	26.7	3.3	1.67	6 th
Selling of fruits before harvest	82.5	15.0	2.5	1.80	3 rd	-	-	-	-	-
Selling at farmers market	51.7	47.5	0.8	1.51	5 th	-	-	-	-	-
Selling on farm daily	5.8	24.2	0	1.76	4 th	-	-	-	-	-
Selling to friends and family	19.2	73.3	7.5	1.12	12 th	-	-	-	-	-
Home delivery	-	-	-	-	-	33.3	46.7	20.0	1.13	13 th
Selling in fruits stalls	-	-	-	-	-	73.3	26.7	0	1.73	4 th

Source: Field Survey, 2018

*Multiple responses VE = Very effective E = effective NE = not effective R = Rank

3.4 Level of post-harvest loss of respondents

Table 4 revealed that, 40 percent of the fruit farmers recorded loss less than 100 kg, while only 2.5 percent had losses above 500 kg. Some (36.7%) of the fruit marketers recorded fruit loss between 20.0 and 30 kilograms, and only 3.3 percent of the fruit marketers had more than 50 kg loss. The mean loss of fruit farmers and marketers in kg was 163.2 kg and 26.74 kg respectively. The result also shows that the level of PHL incurred by farmers (53.3%) and marketers (61.7%) in the study area was low. The result is in agreement with Adebooye and Farinde (2015), who estimated the postharvest loss of fruits and leafy vegetables between 20 and 40%. However, this finding might also be as a result of the inability of respondents to adequately quantify their losses, similar to Porata, Licgter, Terry, Harker and Buzby (2018)'s assertion that, consumer surveys in the United Kingdom indicated that majority of consumers are not conscious of the amounts of food they waste.

Table 4 below also shows the percentage loss of fruits incurred by respondents. The result also reveals that majority (61.7%) of fruit farmers and more than half (53.3%) of fruit marketers recorded low percentage of fruit loss. The result is also similar to the findings of Yigzaw *et al* (2016), who reported that the postharvest loss of pineapple, sweet orange, and guava were below the overall average loss in Ethiopia. This implies that fruit respondents were either able to sell large part of their produce/product or were able to preserve them for longer period, despite the challenges associated with post-harvest handling. Despite this, it is still very important to bring the loss to a barest minimum.

Invariably, percentage loss amongst fruit marketers is a bit higher than that of farmers, this may be because farmers get to sell their produce in bulk and faster (cheaper) unlike marketers who intent to make some margin on sales and wouldn't sell unless the price is good.

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Table 4: Distribution of Respondents by Level of Post-Harvest Loss Incurred

Loss incurred (kg)	Freq	%	Loss incurred (kg)	Freq	%
Farmers			Marketers		
All					
<100	48	40.0	<10	1	1.7
100.01-200	28	23.3	10-20	17	28.3
200.01-300	29	24.2	20.01-30	22	36.7
300.01-400	7	5.8	30.01-40	13	21.7
400.01-500	5	4.2	40.01-50	5	8.3
>500	3	2.5	>50	2	3.3
Mean	163.21±23.90		26.7±11.0		
<163.1812	64	53.3	<26.7378	37	61.7
>163.1812	56	46.7	>26.7378	23	38.3
Loss incurred in percentage					
5.0-10.0	73	60.8		8	13.3
10.1-15.0	37	30.8		38	63.3
15.1-20.0	5	4.2		14	23.4
>20.0	5	4.2		0	0
Level					
Low (< mean)	74	61.7		32	53.3
High (> mean)	46	38.3		28	46.7
Minimum	4.30			5.68	
Maximum	23.69			19.16	
Mean	9.6671			12.8955	
Std Dev.	3.16483			3.08992	

Source: Field Survey, 2018

3.5 Hypothesis testing

Table 5 reveals the relationship between effectiveness of marketing strategies and level of post-harvest loss of fruits (PPMC). The effectiveness of marketing strategies ($r = 0.97, p < 0.05$) was significantly related to level of post-harvest loss of farmers. Similarly, there was significant relationship between effectiveness of marketing strategies ($r = 0.55, p < 0.05$) and level of post-harvest loss of fruits by marketers. The result means that the effectiveness of marketing strategies adopted by the respondents had a direct impact on reducing post-harvest loss.

Table 5: Relationship between Perceived Effectiveness of Marketing Strategies and Post-Harvest Loss

Variables	r-value	p-value	Decision
Effectiveness of the marketing strategies used by farmers against level PHL	0.97	0.004	Significant
Effectiveness of the marketing strategies used by marketers against level PHL	0.55	0.08	Significant

Source: Field Survey, 2018

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3.6 Effect of marketing strategies on post-harvest loss

Table 7 and 8 below shows multiple regression analysis of the effect which various marketing strategies had on post-harvest loss incurred by farmers and marketers. The Marketing strategies used by farmers which had effect on post-harvest loss were, selling on market days (0.015), hawking of fruits (0.057), selling on farm daily (0.024) and online marketing (0.074), while hawking of fruits (0.038), exporting of fruits (0.099) and home delivery (0.083) for fruit marketers. This implies that these marketing strategies best helped farmers and marketers in the study area reduce fruit loss when they are used. Invariably, hawking of fruits, online marketing, exporting, home delivery selling on farm daily and on market days were the strategies that sold more fruits, hence, caused more fruit loss reduction. Farmers and marketers should therefore be encouraged to make use of these strategies and trained on improved marketing strategies in order to reduce fruit loss and make more income.

The R^2 values for farmers (0.17) and marketers (0.23) means that 17% and 23% of the variability in the level of post-harvest loss is explained by the perceived effectiveness of marketing strategies by farmers and marketers respectively.

Table 7: Multiple Regression Analysis of the Effect of Marketing Strategies of Fruit Farmers on Post-Harvest Losses

Marketing strategies	Unstandardised		Standard	t	Sig
	Coefficient		Coefficient		
	B	Std. Error	Beta		
Constant	-94.022	112.594		-0.835	0.406
Selling before harvest	4.190	26.681	0.016	0.157	0.876
Selling at farm market	-42.554	26.900	-0.178	-1.582	0.117
Selling on market days	83.880	33.912	0.268	2.473	0.015*
Selling by major roads	7.227	35.049	0.023	0.206	0.837
Peeling and cutting of fruits	44.790	30.318	0.180	1.477	0.143
Hawking of fruits	-56.842	29.515	-0.230	-1.926	0.057*
Selling on farm daily	73.248	31.980	0.254	2.290	0.024*
Selling to friends and family	35.342	29.041	0.144	1.217	0.226
Selling to malls	-19.771	41.075	-0.079	-0.481	0.631
Selling to eateries	-45.167	37.308	-0.182	-1.211	0.229
Selling to hospitals	59.385	44.759	0.236	1.327	0.188
Selling to schools	24.694	29.927	0.113	0.825	0.411
Making fruit salad	-10.063	35.485	-0.047	-0.284	0.777
Processing fruit juice	-34.561	50.712	-0.134	-0.682	0.497
Selling to processing industries	8.491	35.808	0.029	0.237	0.813
Online marketing	-44.654	24.738	-.228	-1.805	0.074*
Exporting	36.840	28.060	0.142	1.313	0.192

ANOVA^a

Model	Sum of squares	df	Mean square	Sig.
Regression	312128.660	17	18360.509	0.251 ^b
Residual Total	1514654.314	102	14849.552	
	1826782.974	119		

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Table 8: Multiple Regression Analysis of the Effect of Marketing Strategies of Fruit Marketerson Post-Harvest Losses

Marketing strategies	Unstandardised		Standard	t	Sig.
	Coefficient		Coefficient		
	B	Std. Error	Beta		
Constant	6.075	5.095		1.192	0.240
Selling of fruits in stalls	-0.501	1.523	-0.072	-.329	0.744
Selling on market days	0.138	1.999	0.022	0.69	0.945
Hawking of fruits	6.848	3.204	0.487	2.137	0.038*
Peeling and cutting of fruits	-3.368	3.342	-0.240	-	0.319
Selling by major roads	1.589	1.473	0.244	1.079	0.287
Selling to Malls	0.242	1.535	0.034	0.158	0.875
Selling to Hotels and Eateries	-0.622	1.541	-0.104	-	0.689
Selling at Hospitals	-0.033	1.583	-0.006	-	0.983
Selling at Schools	-1.078	1.112	-0.208	-	0.338
Making fruits salad	0.110	1.153	0.020	0.095	0.924
Making fruit juice	0.811	1.473	0.107	0.551	0.585
Selling to food processing industries	0.284	1.034	0.046	0.274	0.785
Online marketing	-0.259	1.121	-0.064	-.231	0.819
Exporting	-1.836	1.089	-0.322	-	0.099*
Home delivery	1.791	1.011	0.420	1.773	0.083*

* = Significant variables

Source: Field Survey, 2018

ANOVA^a

Model	Sum of squares	Df	Mean square	Sig.
Regression	134.762	15	8.984	0.547 ^b
Residual Total	428.547	44	9.740	
	563.309	59		

4. CONCLUSION AND RECOMMENDATION

The study concluded that, average annual income of fruit farmers and marketers was little and respondents were not exposed to relevant sources of information on improved marketing strategies. The level of post-harvest loss experienced by both farmers and marketers was low, however, efforts should be made to lower the level of PHL. It is also concluded that there was a significant relationship between the effectiveness of marketing strategies and the level of post-harvest loss of fruits, and further concluded that selling on market days, hawking of fruits, selling on farm daily and online marketing were found to have effect on post-harvest loss incurred by fruit farmers while hawking of fruits, exporting of fruits and home delivery had effect on post-harvest loss of fruit marketers.

Based on the findings of this study, it is recommended that; Extension service in Osun state and Nigeria in general should be revamped, so as to allow employment of qualified extension workers and adequate provision of needed resources, which will lead to better

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service delivery that will be of benefit in empowering relevant stakeholders about curtailing losses. Individuals, corporate bodies and government at various levels should be encouraged to establish cottage fruits processing factories to ensure fruits are converted to various forms which will reduce PHL. Also, trainings on value addition should also be introduced to farmers and marketers, where new and improved marketing strategies will be identified and learnt. These will significantly reduce PHL and put the state and nation on the track to achieving; no poverty, zero hunger and good health & well-being for all.

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