Full Length Research

Factors affecting the marketing of perishables agricultural produce in Minna metropolis, Niger State, Nigeria

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ABSTRACT: The study examined some of the factors affecting the marketing of perishable agricultural crops in Minna. A simple random sampling was used to select 100 respondents from three major markets. Data were obtained through interview with the use of a structured questionnaire and analyzed using descriptive statistics. The results revealed that 70% of the marketers were within the ages of 31 to 50years and the marketing of these perishable crops is dominated by the female gender (69%). Analysis also show that 71% of the marketers had no contact with extension officers and consequently 73% had no access to credit facilities in the study area. Furthermore, majority of the marketers (61%) had marketing experience of between 6 to 15years. The marketers recorded most losses (58%) during transportation and 60% during loading and offloading. Using Tobit regression model, it was discovered that the t-value shows among other variables that four (4) were significant: education (X_3), credit (X_8), and cooperative (X_9) positively influences marketing, indicating that a unit increase in any of the variables will have a positive impact in agricultural production. While transportation cost (X_6) had a negative coefficient implying that the amount spent on transporting these crops creates a marketing margin. The sigma t-value = 14.142, implies that the overall model used is significant at 1%. The study concludes that small holder farmers are responsible for producing the nation's food, but are faced by various constraints in marketing of these produce, hence it is recommended that farm household should be encouraged to have access to education, favorable credit condition, increased investment in rural and market infrastructure by the government and sensitization of the importance of cooperative membership by NGO's among others.

Key words: Agriculture, food loss, inputs, marketing, vegetable.

INTRODUCTION

Agriculture is important to the society in terms of poverty alleviation, food security and economic growth. It is the backbone of many African economies (Balarane and Oladele, 2012). Many people depend on agriculture for their livelihoods, an estimated 86 percent of rural people rely on agriculture as a livelihood option and it provides jobs for 1.3 billion smallholders and landless workers (Tita, 2008/9). Since the mid-eighties, the Government of India identified horticulture (vegetable) crops as a means of diversification for making agriculture more profitable through efficient land use, optimum utilization of natural resources and creating skilled employment for rural

masses (Samantaray et al.,2009).

The sharp division between small scale and commercial farming further explains why unequal distribution of agricultural inputs such as land, farm assets, support services, market access, infrastructure and income persists in Nigeria. The subsistence sector involves small-scale production which is highly labour intensive with low farm capital investment and little division of labour (Antwi and Seahlodi, 2011). Also, majority of small-scale farmers lack access to adequate marketing facilities, which when exist are grossly underdeveloped and inefficient (Salami et al., 2010). Among commercial farmers, however, there is

high capital investment, high level of divisions of labour and patronage of both local and international markets. Agricultural development will not occur without engaging small scale farmers who account for the overwhelming majority of actors in this sector and engaging in profitable agriculture means, generating maximum returns from the resources expended and formal markets (Barham and Chitemi, 2009).

Production of tomatoes, pepper and vegetables has its own complexity. There perishability and hugeness makes them difficult to manage easily during postharvest period unlike that of dry grains. Because of such perishable nature of the produce and lack of knowledge as well as shortage of capital, horticulture industry in sub-Saharan Africa in general and Nigeria in particular still at its infant stage. The other reason is that most of these perishables are produced by small-scale farmers those who have limited knowledge and financially poor in this region.

But small-scale vegetable farms are based on low input – low output production systems (Olayemi et al., 2012). The use of improved seeds and agro-chemicals is not common in the small-scale sector. Technical training and extension services on improved crop husbandry techniques are not available. As a result, average productivity of the crops is low both in quality and quantity. Losses of agricultural products also occur at all stages in the postharvest chain in the small-scale farming sector of developing countries. Therefore, postharvest loss is very common both during pre- and post-harvest periods which have a negative impact on the food security program of the countries in the region. Gustavsson et al. (2011) stated that food loss and waste reduction is equally important to that of intensive and extensive farming to secure food for a nation. Losses cause less food to be available and therefore contribute to food insecurity. Producing food that will not be consumed also leads to unnecessary CO_2 emissions in addition to loss of economic value of the food produced. FAO (2012) roughly estimated that yearly global quantitative food losses and waste reached at 40 to 50% for fruits, vegetables and root crops. Olayemi et al. (2012) also estimated that as much as 25% and 40% fruits and vegetables, respectively, are lost after harvest and concluded that farmers experienced serious postharvest losses particularly due to poor postharvest handling measures in their study in Nigeria.

Marketing is a business activity associated with the flow of goods and services from producers to consumers. Marketing of agricultural products begins on the farm with planning of production to meet specific demand and market prospects (Bothloko and Oladele, 2013). Marketing information and market prices guide the farmer in making informed decisions, and also assist farmers for planning at pre-planting stage and to sell the surpluses that have been produced. In the absence of marketing information, the retail end of the industry does not respond to supply and demand and the pricing is artificially static or unchanged (Xaba and Masuku, 2012). Marketing plays a critical role

in meeting the overall goals of economic development, food security, poverty alleviation and sustainable agriculture, especially among smallholder farmers in developing countries (Bothloko and Oladele, 2013). Marketing occupies a significant position in an exchange economy, especially in areas where increasing commercial activities and high rate of urbanization exist (Nwaneri et al., 2016). Onyenobi, et al. (2015) reported that the factors that determine the participation by male and female heads of households in agricultural marketing include socio-economic characteristics (age, marital status, educational level, household size, dependency ratio, membership of cooperative society, road conditions between markets, access to products traded, access to market information, and specific marketing factors (quantity of product traded, price of product, marketing cost and income from trade) that influence the supply of agricultural from the farmer to the final consumer.

Deficiencies in rural infrastructural services result in poor functioning domestic markets with little spatial and temporal integration, low price transmission and weak international competitiveness. Marketing constraints or challenges arise due to many factors such as limited knowledge and use of market information, lack of access to high-value reliable markets, high transactional costs, distance from the markets, poor quality of products, lack of storage facilities, low educational levels of small-scale farmers, poor agricultural extension services, lack of financial support, inadequate and inaccessible market infrastructure, lack of adequate access to finance, socio-economic factors of the farmer (training, farming experience, age, level of education and household size) lack of access to decent roads, price risk and uncertainty, electricity, poor communication, information regarding prices, inadequate local markets, lack of bargaining power, excess of intermediaries (Xaba and Masuku, 2012, Antwi and Seahlodi, 2011).

These marketing constraints constitute the greatest barrier for small-scale farmers when it comes to access high value markets, and these factors restrain farmers from making decisions to participate in the market. Access to markets is an essential requirement for the poor in rural areas. It may also be easy to access markets, but retaining one's position in the market is more difficult and participation of small-scale farmers in high-value markets is unsatisfactory (Baloyi, 2010), and the perishable nature of vegetables necessitate effective marketing channels. Therefore, overcoming marketing constraints is critical for small-scale farmers to access lucrative markets. Shifting the focus from production-oriented programmes to more market-oriented interventions will place a renew attention on institutions of collective action, such as farmer groups, as an efficient mechanism for enhancing market performance (Barham and Chitemi, 2009).

Agriculture and marketing are two words that go together. This is because the source of food and other economic products must be reasonably accessible in

distributing agricultural products to the markets and factories. Therefore, adequate marketing network and efficient distribution channels are necessary conditions affecting an efficient physical distribution of perishable crops in major part of the country. The marketing of perishable agricultural produce warrants special attention for several reasons. First, the marketers aim is to be able to bring his product directly or indirectly from the production centre into the hands of the final consumers at an affordable price and a reasonable level of profit, it suffices to say here that the marketers find it difficult to fully actualise this purpose because they are constrained by the nature of these produce and other marketing constraints in carrying out their marketing function. If agriculture is to respond to the growing demand of consumers, then it will be necessary to increase the production centers of these crops as well as to evolve a good progressive rural roads linking to major markets. Since most of the perishable crops are cultivated in rural areas, the need to link the markets and these rural areas is enormous hence it becomes a major problem in the marketing and distribution of these perishable crops in Niger state and Nigeria as a whole.

Justification of the Study

Marketing of Agricultural outputs is important in Nigeria economy. This is because after production, every farmer is faced with the problem of selling the farm produce. Once the market has been found, the farmer sets into machinery what will enhance the movement of the farm outputs to the ultimate consumers. Therefore, the importance of this study is to examine the gainful and developmental contributions agriculture can make to the economy and most importantly to the tremendous influence of marketing infrastructure in Niger State, Nigeria and the world at large. This necessitates the need for the study of marketing perishable vegetables so as to make appropriate recommendation of the efficient marketing of the vegetables in order to improve the people's food security status, and enhance the marketing employment of the crop. Ikujebi (2017) also reported that adequate marketing network and efficient distributing channels are necessary conditions and efficient physical distribution of perishable crops in major parts of the country.

The research will also assist in identifying some of the problems leading to post-harvest food losses and recommend appropriate measures to tackle them. This in turn will help ensure food security which goes beyond food production to include distribution and marketing. In developing countries such as Nigeria, marketing of crops is faced with problems which increase seasonal price variations. This has negative influence on the efficiency of the marketing system of most agricultural commodities such as vegetables. Umeh et al. (2016) reported that despite all the marketing problems of the vegetables which affect its demand and price, the demand for vegetables continue to be high.

Objective of the study

The main objective of this study is to examine the socio economic factors affecting the marketing of perishable agricultural products in Minna metropolis. The specific objectives are:

i. to determine the socio-economic characteristics of the respondents.
ii. to determine some of the factors influencing the marketing of perishable produce.
iii. to determine the factors responsible for the losses of perishable produce.
iv. to investigate the constraints associated with the marketing of perishable produce.

RESEARCH METHODOLOGY

The study area

Minna is the state capital of Niger state, and it lies between the latitude of 3.20º East and longitude 8 and 11.3º North. It is bordered to the north by Sokoto state, west by Kebbi state, south by Kogi state and south-west by Kwara. Kaduna and federal capital territory border the state to both North-east and South-east respectively. The state has a common boundary with the Republic of Benin along New Bussa, Agwara and Wushishi local government area, giving rise to common inter border trade between the two countries. Minna has a geographical base of undifferentiated basement complex rock of mainly quartz and manganite situated at the base of prominent hills in an undulating plain. The areas are underlain by clay and loamy soil which are good for farming (NIGIS, 2014).

The study area is located in a savannah belt which is characterized by two major types of seasons in a year; the wet and dry season. The annual rainfall received within the region is about 1,334 mm (52 inches) and the highest mean monthly rainfall is received in the month of September with almost (117 inches). The raining season starts in April and last between one hundred and ninety to two hundred (190-200) days. The mean monthly temperature is highest in March at 30.5^{0}C (87^{0}F) and the lowest in August at 25.1^{0}C (77^{0}F) (NIMET Minna, 2014). The vegetation of Minna is the tropical savannah type, which changes in nature with the seasons annually. During the wet season the vegetation is evergreen while in the dry season it dries up with trees losing their leaves and the grasses dry up. The vegetation tends to be thick and greenish no matter the season along the river course, because along the river course the soil is frequently wet and this result to the occurrence of dark green vegetation within the area.

Sampling technique

The population of the study includes the marketers of tomatoes, pepper and vegetables in the three major selected markets. Kure ultra-Modern market, Tungan goro market and Tunga market. A research questionnaire was administered and distributed to a random sample of 100 respondents in 3 major different markets in Minna. The selection was based on the population of vegetable marketers in each case. The questionnaires were divided into three (3) sections, A, B and C. While section A addresses the socio economic background of the respondents, section B addresses cultivation pattern, price and distribution of perishable crops, section C addresses methods of storage, losses as well as other problems and the opinion of the marketers as regards better ways of marketing perishable agricultural produce.

Data analysis

The combination of analytical techniques was used to analyze the data. These include descriptive statistics (frequencies, percentage & means) to determine the constraints/factors among marketers and small scale farmers. The simple descriptive statistics was used to achieve objectives i, ii and iv. While multiple regression analysis using Tobit model was used to achieve objective iii. Multiple regression equation showing the variables used in the research.

RESULTS AND DISCUSSION

The result in Table 1 revealed that majority (70%) of the marketers were within the age bracket of 31 to 50 years with a mean age of 35 years. This implies that most of the marketers are still in their economically active years and physically capable of working and putting more efforts into marketing of perishable crops in order to increase their volume of sale as well as income. This also shows that most traders are strong, able men and women who are capable of performing the marketing activities. However, it implies that the youth involves in marketing of these crops are few in the study areas as most of them are usually assisting either their parents or guardians.

Majority (69.0%) of the marketers in the study area were female, while 31.0% are male. This shows that the female gender is more into marketing of perishable crops which correlates with the work of Asoqwe et al. (2013), who stated that the dominance of the females in the marketing business is as a result of the fact that males have to go to offices, farms and other places in order to ensure the production of these crops as well as provision of the capital (money) required for the family, while the females are engaged in the marketing of these perishable crops.

Findings also show that 44.0% of the marketers had secondary school education, 22.0% had primary school education, while 18.0% had non-formal education and 16.0% had tertiary education. This suggests that the marketers are averagely educated which gives room for effective communication in carrying out their marketing activities. This is in line with Usman et al. (2008), who stated that educational status of any trader does not only raise his/her profitability, but also it increases his/her ability to understand, evaluate and apply new methods, techniques and processes for better marketing of his goods.

Results further shows that majority (58.0%) of the marketers were basically into trading (marketing of perishable produce), while 38.0% of the marketers were both farmers and traders implying that they are into production of perishable crops and marketing of their produce in the study area. 63.0% of the marketers who are both farmers and traders have between 0.1 to 2 hectares of farmland, 17% had between 2 to 4 hectares, 12% had between 4 to 6 hectares, while only 8% of them had more than 6 hectares of farm size. The mean farm size was 2.36 hectares implying that the marketers are small-scale farmers producing perishable crops.

Findings also revealed that 40.0% of the marketers had 6 to 10 years of marketing experience, 24.0% had less than 5 years and 21.0% had 11 to 15 years of experience, while 8.0% had 16 to 20 years of marketing experience. The mean years of marketing experience was 13 years. This implies that most of the marketers have adequate knowledge with regards to marketing perishable crops; fluctuation in prices, in-season and off-season periods. This result is in corroboration with that of Adesina and Kehinde (2008), who expressed that marketing experience enables proper utilization of some resources, decision making as well as planning and timely assessment of alternatives. Majority (69.0%) of the marketers source of labour is family, 22% of the marketers use both family and hired labour, while only 9.0% of the marketers used hired labour in the marketing of perishable products in the study area. This, however, indicates that most of the marketers of these perishable crops in the study area take it as a family business where all individuals participate in one function or the other.

The results further revealed that majority (73.0%) of the marketers do not have access to credit facilities, while only 27% had access to credit. This is in line with Odoemenem and Obinne (2010), who stated that agriculture is a major contributor to Nigeria's GDP and that small-scale farmers/marketers play major roles in the contribution to agricultural production, but their productivity and growth are hindered by lack of and limited access to credit facilities. Furthermore 73.0% of the marketers does not have any source of credit, 20.0% had their credit source from commercial institutions, 46.0% from family and friends, while 3.0% from cooperative and money lenders. This corroborates with Effiong (2008), who noted that 23% of the adult population in Nigeria has access to formal

Table 1. Socio-economic characteristics of the marketers.

Variables	Frequency	Percentage
Age (years)		
21-30	15	15.0
31-40	40	40.0
41-50	30	30.0
>50	15	15.0
Total	100	100.0
Gender		
Male	31	31.0
Female	69	69.0
Total	100	100.0
Marital status		
Single	16	16.0
Married	73	73.0
Widowed	11	11.0
Total	100	100.0
Educational Background		
Non-formal	18	18.0
Primary	22	22.0
Secondary	44	44.0
Tertiary	16	16.0
Total	100	100.0
Occupation		
Trader	58	58.0
Farmer	4	4.0
Both	38	38.0
Total	100	100.0
Household size (No. of Individuals)		
1-5	27	27.0
6-10	49	49.0
11-15	19	19.0
16-20	5	5.0
Total	100	100.0
Farm size (ha)		
0.1-20	63	63.0
2.1-40	17	17.0
4.1-60	12	12.0
>6	8	8.0
Total	100	100.0
Labour usage		
Family	69	69.0
Hired	9	9.0
Both	22	22.0
Total	100	100.0

Table 1. Contd.

Marketing experience(years)		
1-5	24	24.0
6-10	40	40.0
11-16	21	21.0
16-20	8	8.0
>20	7	7.0
Total	100	100.0
Extension Contact		
Yes	71	71.0
No	29	29.0
Total	100	100.0
Access to credit		
No	73	73.0
Yes	27	27.0
Total	100	100.0
Source of credit		
None	73	73.0
Agric banks	20	20.0
Cooperatives	4	4.0
Riends/family	3	3.0
Total	100	100.0
Cooperative membership		
No	30	30.0
Yes	70	70.0
Total	100	100.0

Source: Field survey, 2017.

financial institutions, 24% to informal institutions while 53% are financially excluded.

Table 2 revealed the result of Tobit regression of the factors influencing marketing of perishable products by the marketers. The t-value revealed that out of the ten (10) independent variables included in the Tobit model, four (4) variables were significant at 1%, 5% and 10% probability level. Also, the sigma t-value = 14.142 implying that the overall model is significant at 1%. However, education (X_3), credit (X_8) and cooperative (X_9) had positive coefficients and directly influences marketing of perishable products. This implies that a unit increase in any of the variable will increase marketing of perishable products in the study area. Being quite educated may facilitate the gathering of information on marketing activities by the respondents. This result agrees with the view of Obasi (2008), who observed that better education of the marketers had advantages as it enlightens them on how best to strategize and adapt to better marketing conditions. Also, earlier research reports by Nwaru and Iwuji (2005), showed that education has positive relationship with

Table 2. Regression coefficients of factors influencing marketing of perishable produce.

Variables	Coefficient	Standard error	t – value
Constant	0.2196	0.0891	2.465**
Age (X_1)	0.0029	0.0026	1.107^{NS}
Marital Status (X_2)	0.0074	0.0403	0.184^{NS}
Education (X_3)	0.0079	0.0044	1.805*
Household (X_4)	-0.0016	0.0062	-0.263^{NS}
Experience (X_5)	-0.0015	0.0042	-0.348^{NS}
Transportation cost (X_6)	-0.6798D-05	0.2964	-2.294**
Distance (X_7)	-0.0022	0.0031	-0.714^{NS}
Credit (X_8)	0.0956	0.0371	2.520***
Cooperative (X_9)	0.0756	0.0379	2.038**
Marketing Cost (X_{10})	0.0049	0.0359	0.136^{NS}
Sigma	-0.1400	0.0099	14.142*
Log likelihood	54.69597		

NS = Not Significant, ***Statistically significance at 10% levels, **Statistically significance at 5% levels, *Statistically significance at 1% levels.

Table 3. Distribution of the Marketers based on Losses of Perishable Produce.

Losses Recorded	Frequency *	Percentage
Harvesting	15	15.0
Transportation	58	58.0
Loading/offloading	60	60.0
Low patronage	50	50.0

Source: Field survey, 2017, * Multiple Response.

marketing margin because of its training advantages which help the marketers to be informed, innovating and averse to marketing risks. Cooperative membership has been identified to be a better way/channel of credit delivery to farmers as well as marketers of agricultural produce than directly from the government and other NGOs (Alufohai, 2006). Credit facilities help to increase the marketing margin as well as efficiency of the marketers.

The analysis further revealed that transportation cost (X_6) had negative coefficients and inversely influences marketing of perishable products. This implies that a unit increase in the transportation cost of the respondents will definitely decrease marketing of perishable products. The situation of poor road conditions and distance from markets leads to higher transportation costs to crop outputs market, thereby increase transaction costs affecting market participation for perishable produce because the higher the transportation cost, the more difficult and costly it would be to get the produce to the market thereby reducing the quantity taken to the market by the farmers as the results indicated. These results concur with the findings of Mukundi et al. (2013), that increased distance to the market will lower the level of market participation as a result increase marketing costs.

The result in Table 3 revealed that majority (60.0%) of

the losses in marketing of perishable produce is during loading and off-loading of the crops which could be due to rough handling, 58.0% of the losses occur during transportation. The resulting long distance from rural areas to urban markets, the bad nature of the roads and spatial nature of markets across cities constitutes reasons why great losses occurs in this stages of marketing of perishable crops. However, 50.0% of the marketers recorded losses due to low patronage from customers. Since those perishable crops are best consumed in their fresh stage and are susceptible to deterioration either though physical or machinery, or biological causes, the unavailability of customers pose a great treat to customers since storage and processing facilities are not readily available. This result corroborates with that of Kader (2005), who posited that the more a perishable produce stays in the market, exceeding its time of purchase, its deterioration time also increase as possible to minimize mechanical injury such as scratches and bruises to the crop even when storage facilities are available.

Table 4 shows the constraints faced by the marketers of perishable crops in the study area. Majority (80.0%) of the marketers indicated poor transportation facilities, 77.0% of the marketers indicated problem of market location, 74.0% indicated poor road network linking the farms and the

Table 4. Constraints Associated with Marketing Perishable Produce.

Constraints	Frequency *	Percentage
Lack of capital	34	34.0
Poor road network	74	74.0
Poor customer attitude	72	72.0
Perishable nature of the produce	59	59.0
Problem of market location	77	77.0
Poor transportation facilities	80	80.0
Inadequate processing facilities	37	37.0
Price fluctuation	43	43.0
Climatic condition	14	14.0

Source: Field survey, 2017, *Multiple Response.

markets. This finding is in agreement with the work of Izekor and Abiola (2011), which revealed that poor transportation and road network are major constraints to post harvest losses in perishable crop marketing. Furthermore, 72.0% of the marketers indicated poor customer attitudes, 59.0% indicated perishable nature of the produce and 37.0% indicated inadequate processing facilities. This corroborates with the results of Oladejo and Oladiran (2014), in their work of the analysis of consumption pattern and marketing of perishable crop, stating that major challenge is rapid deterioration in tomatoes, pepper and vegetable is due to their perishable nature.

Conclusion and recommendation

The study examined the factors affecting the marketing of perishable agricultural crops in Minna. The combination of analytical techniques was used in the study. Descriptive statistics (percentage and means) were used to determine the major constraints while multiple regression analysis using tobit-models were used to achieve the objectives of the study. The study revealed that 70.0% of the marketers were within the age of 31 to 50 years showing that majority of the marketers are still active. Perishable agricultural crops marketing was dominated by the female gender (69.0%). Findings also revealed that about 61.0% of the marketers had marketing experience of between 6 to 15 years implying that majority of the marketers have adequate knowledge about perishable crops marketing, 69.0% of the marketers use family members as their source of labour, 71.0% of the marketers had no contact with extension agents, implying that information with regards to new innovations hardly reach them. The research further shows that 73.0% of the marketers do not have any source or access to credits facility within the study area, however 70.0% of the marketers were members of cooperatives or association. Tobit regression was used to determine the factors influencing marketing of perishable agricultural products, it was discovered that the t-value shows that out of the ten (10) independent variables, four (4) variables were significant. Education (X_3), credit (X_8) and cooperative (X_9) had positive coefficient and directly influences marketing of perishable produce in the study area. Also transportation cost (X_6) had negative coefficient and inversely influences marketing of perishable products. Findings also revealed that deterioration of quality, price fluctuation, availability of the produce and distance were major challenges faced by the marketers. The study therefore examines some of the constraints faced by the marketers of perishable crops that leads to losses; the socio economic characteristics, mode and cost of transportation, years of marketing experiences, distance as well as other control variables were also included. Based on the research findings, the following recommendations were made;

1. Farm household should be encouraged and empowered through NGO's to access educational institutions around them in order to develop their skills.
2. Policies that guide the federal, state and local governments towards increased investment in rural infrastructure should be strictly implemented. This will help reduce transaction costs and thereby improve participation of small holder farmers in marketing activities.
3. The Ministry of Agriculture through Agricultural Development Programme (ADP) should sensitize the small holder farmers on the need to form cluster cooperatives as this will help in accessing credits from the government and other financial institutions.
4. Market opportunities should be fully developed through provision of adequate infrastructure; such development will boost domestic market transaction in perishable produce.
   Better storage and processing facilities should be established through the NGO's and cooperative associations so as to simplify the processing of these perishable crops.
5. The small holder farmers in the study area should ensure timely harvest of these perishable crops.

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