

Effects of market infrastructure and poor access to markets on marketing of grains in selected states of Northern Nigeria, West Africa

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Keywords

Marketing, Infrastructure, Access, Grains

Abstract

This study investigated the effects of market infrastructure and poor access to markets on marketing of grains in selected states of northern Nigeria, West Africa. Data for this study was collected from a sample size of 300 farmers using the questionnaire. Each questionnaire response was captured by a computer software programme designed for the purpose of analysis. The product moment correlation coefficient and regression analysis were used to test hypothesis one and two respectively. It was found that, the correlation coefficient $r=0.914$ showed a strong positive relationship between market infrastructure and grains marketing. It was equally found that, a significant relationship existed between poor access to markets and marketing of grains as $r=0.791$, while $r^2=0.626$, implying that 62.6% of the variation in grains marketing is accounted for by poor access to markets. The study recommended that market infrastructure should be improved upon while markets in the northern states of Nigeria should be made more accessible if the objective of achieving effective and efficient marketing of grains in the northern states of Nigeria is to be contemplated.

1. Introduction

Improving the production and marketing of grains is essential to achieving sustainable development anywhere in the world and particularly in Nigeria. Nigeria is one of the largest countries in Africa, with a total geographical area of 923.768 square Kilometres and an estimated population of about 160 million (2003 census estimate). It lies wholly within the topics along the Gulf of Guinea and the Western coast of Africa. It has highly diversified ago-ecological conditions, which makes it possible for the production of wide range and variety of agricultural products. Agriculture constitutes are of the most important sectors of the Nigerian Economy. The agricultural sector is important in terms of its employment generation and its contribution to the gross domestic products and export earnings.

Marketing of agricultural products particularly grains by farmers who in most cases are also middlemen who are constrained by many problems, including those of poor infrastructure, and inadequate access to markets (World Bank, 1996). Most states of the north where grains are produced do not have appropriate or modern grains infrastructure like, grains silos lock up stores, barns storage of grains to meet the demand of consumers. The road network is bad; the roads are laced with potholes. The problem of poor market accessibility exists.

It is in light of the above that the researcher is set out to investigate the effects of market infrastructure and poor access to markets on marketing of grains in selected states of the north of Nigeria

2. Statement of the Problem

Farmers and markets are constrained with problems including those of poor infrastructure, inadequate access to markets, land and environmental degradation. It is constructive to note that when farmers who are producers of grains, who reside mostly in rural

areas, could not get their produce to the market at the right time, considerable post harvest losses will occur.

The Federal Government of Nigeria (FGN) recognises the promotion of agricultural activities, which will in turn bring about increases in grains production and marketing. Commercial banks are encouraged to advance loans to farmers, agricultural extension programmes are put in place to help grain production, and marketing, efforts are made by the government and in some cases the community members to improve on market accessibility. Despite all these efforts, the desired results have not been achieved. Most states in Northern Nigeria where grains are produced lack grain silos, lock up stores, good roads are lacking. All these constitute significant impediments to development, productivity and profitability.

3. Objectives of the Study

Specifically, the research is set out to:

1. To determine whether a significant relationship exist between market infrastructure and marketing of grains in northern Nigeria
2. To assess the extent to whole poor access to markets has affected marketing of grains in the selected states of Northern Nigeria

4. Research Questions

The following research questions are generated to provide direction and shape the focus of the study

1. Is there a significant relationship between market infrastructure and marketing of grains in the selected states of Northern Nigeria?
2. Is there a relationship between poor access to markets and marketing of grains in selected states of Northern Nigeria?

5. Research Hypotheses

Based on the specific objective above and the research questions, the following hypotheses and formulated

1. There is no significant relationship between market infrastructure and marketing of grains in selected states of Northern Nigeria
2. There is no significant relationship between poor access to markets and marketing of grains in selected states of Northern Nigeria

6. Literature Review

This section attempts to identify locate and review related literature previously conducted on the important variables of this research

The Concept of Marketing

Marketing according to Aaker et-al (2001) is the process of planning and executing the conception, pricing, promotion and distribution of ideas, goods and services to create exchanges that satisfy individual and organisational objectives. The marketing concept requires that customer satisfaction rather than profit maximization is the goal of an organization. In other words, according to Aaker *et al* (2001) and Onwuteaka (2006), the organisation should be consumer oriented and should try to understand consumer's requirements and satisfy them quickly and efficiently, in ways that are beneficial to both the consumer and the organizations. Onwuteaka (2006) observed that, not marketing efforts takes place in an air tight compartment. It is always concerned with the marketing of organization capabilities with the needs of live customer.

Delivering the desired satisfaction to the customer cannot be achieved unless the needs of the customers are known. According to Kotler and Keller (2009), the term marketing concept holds that, achieving organization goals depends on knowing the needs and wants of target markets and delivering the desired satisfaction. A firm in a market economy survives by producing goods that persons are able to access and are willing and able to buy.

Grains on the other hand, are cereals that contain cereal germ, endosperm, and so on (commercial crop production guide series undated). Grains include food such as wheat, rice, oat, maize, millet and so on. Grains are high in carbohydrates, which provide energy to the brain and muscles.

Maize, wheat and rice together account for 87% of all grain production worldwide and about 43% of all food calories in 2003. The cultivation of grains is simple. Any well-drained sandy or loam or loamy soil can be used for planting grains (commercial crop production guide series undated). Land preparation is done using any method (i.e. mechanical, chemical and manual) that can be adequately removed and the soil kept for good seedbed for large scale planting. According to Clough (1985) and Aworh (2006), the technology adopted by farmers is crucial in increasing grains production and marketing in Nigeria. Grains for example are staple foods that supply more than 50% of the daily energy needs to the majority of the people of Nigerian and in the sub-Saharan Africa (SSA). According to Onu and Iliyasu (2008), Brandon et al (2009) and Abalu (1986) established that, over the last decade, the world has witnessed landslide movement towards market liberalization. Although the pace and depth of liberalization have varied from place to place, the movement has affected both national and international markets and no continent remains untouched.

Onu and Ilhyabu (2003) also observed that, the formation of a very strong food grains marketers cooperative society has helped to minimize the exploitative tendencies of middlemen. Nuhu *et al* (2009) and World Bank (2008) stated that poverty has indeed affected marketing of agriculture products as the poor cannot afford to buy them. Research notably by Aworh (2008) and Adeyemi (1987) on post harvest food losses arise largely from limited food preservation capacity, this is a major factor constraining food and nutrition security in developing countries of West Africa where seasonal food shortages and nutrition deficiency disease are still a major concern. It is estimated that about 30% of food grains including maize, sorghum, millet, rice and cowpea are lost after harvest in West Africa a result of inadequate or poor market infrastructure coupled with inaccessibility to markets (Global Trade, undated).

It was found that ineffective or inappropriate food processing technologies, careless harvesting and inefficient post-handling practices, bad roads, moribund rail system, bad market practices and inadequate or complete lack of storage facilities, packing losses and market infrastructure are source of the factors responsible for high post-harvest food losses in West Africa countries particularly Northern Nigeria, (Faajir and Nnabuko, 2013).

Improving grains marketing

On improving grains marketing Abalu (2005) revealed that maize grain is mostly produced in Northern Nigeria. Most producers of maize grains are rural households and uninformed traders are the most important link to whom farmers sell their produce. According to Brandon et al (2009) scientific research can improve grain marketing by providing information on such variation and its significance. The Nigeria grains board, which was responsible for coordinating marketing of grains, was scrapped and no other institutional arrangement was in place for grain marketing until 2003. This however created a gap of 17 years. In efforts to improve grains marketing, the Arable Crops Marketing and Development Company was

established (Manyong et-al, 2003). This brought about reactivation of the strategic grains reserve scheme.

The main role played by marketing boards were that of establishing marketing practices and procedures for raw or processed product, this is known as change agent. These roles could be established to improve grains marketing in northern Nigeria. The marketing boards could also be encouraged and repositioned to act effectively as watchdogs over agreed market practices and procedures especially in the areas of credit management, weights and measures, quality countries and so on. For now, this critical function is absent.

Marketing boards bring about more efficient marketing is most often made by policy makers in terms of modifying the market structure. That is trying to make what is perceived to be an imperfect market structure more advantages to producers. In recent years, this has never happened in grains marketing in the north (Wikipedia, 2012).

7. Research Methodology

The research study adapted the survey design; data was collected from 300 respondents using the questionnaire. The data collected was analyzed using the four point likert scale of strongly agreed=4, agreed = 3, disagreed = 2 and strongly disagreed = 1. Hypotheses formulated were tested using product moment correlation coefficient (r) and regression analysis respectively.

8. Data Presentation

Data collected for this work have been presented below

Table 1: Mean rating of respondents on grain transportation problems

S/No. Items	Mean	Rank Order	Remarks \bar{X}
i. Transportation facilities are grossly inadequate	3.5	4 th	S
ii. Motorable roads are lacking	3.9	1 st	S
iii. Few road networks are laced with potholes	3.9	1 st	S
iv. Evacuation of grains from the farm becomes difficult	3.9	1 st	S
v. Post-harvest losses are high	3.8	2 nd	S
vi. Transportation costs are high	3.8	2 nd	S
vii. Road accidents are high	3.8	2 nd	S
viii. Armed robbers attack on the high way is another factor in grain loss	3.6	3 rd	S

Source: Research Survey 2013

Data contained in table 1 show the highest mean rating on items (ii), (iii) and (iv) (\bar{X} = 3.9). The result showed that most of the road net works are laced with potholes, motorable roads are lacking and evacuating grains from the farm becomes difficult. It is instructive to note that this as a matter of fact affect grain marketing.

Table 2: mean rating of respondents on market infrastructure

S/No.	Items	Mean	Rank Order	Remarks \bar{X}
i.	Good storage facilities like lock-up stores, silos, barns are lacking	3.75	1 st	S
ii.	Insufficient storage facilities often lead to grain losses	3.71	2 nd	S
iii.	Market information is lacking	3.75	1 st	S
iv.	Lack of information reduces potential efficiency in the market	3.0	6 th	S
v.	Clean market environment is lacking	2.9	7 th	S
vi.	Communication facilities are lacking	3.2	5 th	S
vii.	Health facilities are lacking	3.6	4 th	S
viii.	Security facilities are lacking	3.6	4 th	S
ix.	Water supply, good toilets which contribute to efficient grain marketing are lacking	3.7	3 rd	S
	another factor in grain loss	3.6	3 rd	S

Overall mean = 3.46

Source: Research Survey 2013

The result contained in table 2 show an overall mean rating of 3.46. This overall result show that market infrastructure are grossly lacking in our markets. On the basis of individual items, items (i) and (iii) received the highest mean rating of 3.75. These scores are significant. This implies that good storage facilities are lacking as well as market information. Item (ii) received a mean score of 3.71 and is ranked 2nd. Clean market environment is lacking, health facilities lacking as well as security facilities. Water supply, good toilets which contribute to efficient grain marketing are lacking. These items all received a mean score of above 2.0 and are remarked significant.

9. Hypotheses Testing

Hypothesis one

H_{01} : There is no significant relationship between market infrastructure and marketing of grains in the selected states of northern of Nigeria.

A simple linear regression model involving one dependent and independent variable was used in testing this hypothesis. Marketing of grains as stated above is used as dependent variable while market infrastructure is used as the independent variable.

The regression technique is used to determine the existence or non existence of a relationship between market infrastructure and marketing of grains. The estimated equation for this hypothesis is:

$$y = a + bx$$

where y = market infrastructure

x = marketing of grains

a and b are parameters to be estimated from the equation stated above.

Question one was used in generating data for the purpose of testing hypothesis six

Table 4: Regression statistics for hypothesis one
Regression - Hypothesis one
Variables Entered/Removed^b

Model	Variables Entered	Variables Removed	Method
	Marketing Infrastructure ^a		Enter

a. All requested variables entered.

b. Dependent Variable: Marketing of grains

Model Summary^b

Model		Square	Adjusted R Square	Std. Error of the Estimate
	914 ^a	836	.835	.86542

a. Predictors: (Constant), Marketing Infrastructure

b. Dependent Variable: Marketing of grains

The correlation coefficient (r) shows that a strong positive relationship exists between market infrastructure and grains marketing. At 0.05 level of significance, there is 0.914 ($r = 0.914$). From this value, it indicates that the two variables are strongly related in a positive sense. The coefficient of determination (r^2) is 0.836 that is 83.6% of the variation in grains marketing is accounted for by market infrastructure.

The ANOVA table above shows that the resulting model with Anova statistics ($F = 1513.845, 0.05$) $\beta = .914, t = 38.908, p = 0.000 < \alpha = 0.05$). This statistics shows that the relationship between market infrastructure and grains marketing is highly significant.

Decision rule at significance level of 0.05 or 95% confidence limit

- (i) Accept the null hypothesis (H_0) if the calculated p-value is greater than the adopted level of significance ($\alpha = 0.05$), which indicate that the relationship is insignificant
- (ii) Reject the null hypothesis (H_0) if the calculated p-value is less than the adopted level of significance ($\alpha = 0.05$) which indicate that the relationship is significant.

Based on the above results, the null hypothesis is rejected and the alternative hypothesis accepted. From the results above, the null hypothesis is rejected and the alternative hypothesis accepted that market infrastructure has a significant relationship with grains marketing. Thus the research objective one has been satisfied and this has also answered research question one as stated in chapter one.

H_{02} : There is no significant relationship between poor access to markets and grains marketing in the selected states of northern of Nigeria.

To test this hypothesis, question two was used and the regression analysis was used in testing this hypothesis.

Table 5: Regression statistics for hypothesis two
Variables Entered/Removed^b

Model	Variables Entered	Variables Removed	Method
	Poor Access ^a	.	Enter

a. All requested variables entered.

Variables Entered/Removed^b

Model	Variables Entered	Variables Removed	Method
	Poor Access ^a	.	Enter

a. All requested variables entered.

Model Summary^b

Model		Square	Adjusted R Square	Std. Error of the Estimate
	791 ^a	626	.62	1.30550

a. Predictors: (Constant), Poor Access

b. Dependent Variable: Marketing of grains

b. Dependent Variable: Marketing of grains

Analysis in the table above shows that, the correlation coefficient is significant, that is a strong positive relationship that exists between poor access to markets and grains marketing.

At 0.05 level of significance, $F = 498.190$, $\beta = 0.159$, $t = 0.245$, $r = 0.791$. This indicates that the relationship is significant. This analysis is contained in the table above.

Decision rule at significance level of 0.05 or 95% confidence limit

- (i). Accept the null hypothesis (H_0) if the calculated p-value is greater than the adopted level of significance ($\alpha = 0.05$), which indicate that the relationship is insignificant
- (ii) Reject the null hypothesis (H_0) if the calculated p-value is less than the adopted level of significance ($\alpha = 0.05$) which indicate that the relationship is significant.

Based on the above results, the null hypothesis is rejected and the alternative hypothesis accepted. From the results therefore, the null hypothesis is rejected for the alternative that poor access to markets has significant relationship with grains marketing. With a coefficient of determination $R^2 = 0.626$, it can be seen that 62.6% of the variability in grains marketing can be explained by the effects of poor access to markets.

10. Discussion of findings

Research objective one seeks to access improvements that have been made in market infrastructure in northern states of Nigeria. Hypothesis one is stated thus: there is no significant relationship between market infrastructure and marketing of grains in the selected states of northern Nigeria.

The regression result in this analysis showed that $\beta = 0.914$, $t = 38.908$, $p = 0.000 < \alpha = 0.05$). This result suggests that, the relationship is significant. This is consistent with studies conducted by Philip and Stephen (1994). Research objective two assessed the extent to which poor access to markets has affected farmers in selected states of northern States Nigeria. Hypothesis two is restated thus: there is no significant relationship between poor access to markets and marketing of grains in the states of the north of Nigeria. The regression results in our analysis suggest that a significant relationship exist between poor access to markets and marketing of grains in the states of the north of Nigeria. From this findings using regression model, the result indicates a significant relationship between the dependent and independent variables, which warranted the rejection of our null hypothesis. Findings here support the

empirical evidence that poor access to markets do hinder effective and efficient marketing of grains in our markets. This finding is also consistent with Francesco and Christian (2006).

The study found that there is a significant relationship between poor access to markets and marketing of grain in selected state of northern Nigeria. The study concluded that, market infrastructure like, stores, telecommunication facilities, hospitals and so on were completely lacking. Prices of grains were not uniform even within the same markets.

The study also concluded that lack of market information also affected grains marketing negatively.

11. Recommendations

On the basis of the findings of this study, the following recommendations are made:

- (i) Market infrastructure should be improved upon. More grain silos should be constructed, telephone service facilities be improved upon, lock up stores be built and hospitals atleast in major markets be constructed. This will go a long way in improving grain marketing in Nigeria.
- (ii) Poor access to markets does hinder effective and efficient marketing of grains in almost all market. Conscious efforts should be made by Government in the respective states to remove these obstacles if the desired objective of increased access to markets is to be achieved.

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