



## ANALYSIS OF PRICE FLUCTUATION FOR CEREALS IN MAIDUGURI METROPOLITAN COUNCIL, BORNO STATE, NIGERIA

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### ABSTRACT

The study analyzed the price fluctuation of cereals in Maiduguri Metropolis of Borno State, Nigeria. The data were collected through the use of questionnaire administered to 120 respondents. Frequency distribution and percentages were used to analyze the data. The results of the study showed that 70.8% of the cereal marketers were male while 29.2% were female. The percentage of the marketers that were married was 6.6%, while 35% were single. The family size analysis revealed that 50% of the marketers had family size above 10 persons and 16.7% less than five. Findings on the source of initial capital outlay showed that 50% got their initial capital from friends and 20.8% from personal saving. The result also showed that 75% of the marketers were retailers and 25% were wholesaler. On the analysis of causes of price variation, the result revealed that annual variability in production and speculative activities of middlemen were indicated by 58.3% each of the respondents, while poor storage of cereal had 16.7%. It indicated that sorghum had degree of price fluctuation of 9.8% while millet had 8.6%. Analysis of the effect of price fluctuation showed that inflation was indicated by 62.5% of the respondent, while high cost of labour had 16.7%. About 54% of the marketers had their commodities for future sale at the time of harvest in order to cope with price fluctuation, while 20.8% used contract sale to processors and manufacturers as their coping strategies against price fluctuation. It was recommended that women should be supported financially by the government and private organizations through the administration of soft loans and other credit facilities. Also, farmers and marketers should be educated through the extension agents to adopt new methods of cereal production in order to increase the supply of cereal to meet up with the demand.

**Keywords:** Cereals, Descriptive Statistics, Maiduguri, Price Fluctuation, Processors.

### INTRODUCTION

According to According to Serna (2010), cereals belong to the grass, family-graminaceae. It formed the major source of food to millions of people in the world. Over 70% agricultural lands are used for the cultivation of cereals. Molden *et al.* (2007) observed that 0.81 t/ha of millet was produced in 1984. The production yield of millet dropped down to 0.5 t/ha that in 1985. It later increased to 0.73 t/ha in 1986 and decreased to 0.60t t/ha in 1987 in Asia. Cereals contain high calories of carbohydrates, protein, fiber and oil in small quantities. It is an annual crop grown widely in the drier parts of Nigeria, especially the Northern part of the country. According to Izge (2009), the cereals commonly grown in the northern eastern zone of Nigeria are mainly maize (*zea mays*), sorghum (*sorghum bicolor*), millet (*Pennis sectum Americanum*), rice (*Oriza satiua*) and wheat (*Triticum aestivum*). Cereals can be put into many uses depending on the type. It can be used to make *tuwo* or *akamu*. The dried stalks are used for fencing and roofing of huts. The residue can be used for feeding livestock or as organic matter to increase soil fertility.



Adamawa State Ministry of Agriculture, produce Department (2001) observed that the percentage variation in the price of sorghum in 1997 was 8.5%. It later fell to 7.3% in 1998. It then rose to 9.0% in 1999 and then decreased to 6.4% in the year 2000. Over the years, price fluctuation has been a major problem of cereal producers, decision makers and marketing firms. This manifests in short and long term changes in the prices of cereals relation to other prices, supply and demand. Measures taken to reduce price variation over years centered on price, output and contract policy formulation.

Despite all the efforts by the government to reduce price variation of cereals through provision of adequate information and creation of awareness on the possible measures to cope with it, the situation still persists. The main objective of the study was to analyze the fluctuation of cereals prices in Maiduguri Metropolis of Borno State, Nigeria. The specific objectives were to: determine the socio-economic characteristics of cereals marketers; determine the causes of price fluctuation for cereals; determine the degree of price fluctuation over time; examine the effect of price fluctuation; and examine measures to cope with price fluctuation

## **MATERIALS AND METHODS**

### **The Study Area**

The study was conducted in Maiduguri Metropolis of Borno State, Nigeria. Maiduguri is located in the North-eastern part of Borno State and is located between latitudes 11° 52' and 11° 48' longitudes 13° 06' and 13° 14' E. It has an area of 543km<sup>2</sup> with a population of about 634,492 (Census Figure, 2006). Maiduguri is made up of three districts namely; Yerwa District, Bolori Districts and Gwange District. It now has about 15 wards. The major occupations of the people in the Metropolis include trading, civil service and farming. The traders and civil servants are located in the town, while farmers are located mostly in the outskirts of the Metropolis. The area is characterized by a sandy-loam soil and the crops traded include various types of cereals such as maize, millet and sorghum.

### **Sampling Techniques**

Simply random sampling technique was used to select the respondents from three different markets namely Monday market, Custom market and Budum market. A total of 40 marketers were selected from each of the markets to obtain 120 respondents.

### **Data Collection**

The primary data were collected through the use of questionnaires administered to the respondents (cereals marketers). The primary data collected include the socio-economic characteristics of the respondents, causes of price fluctuation for cereals, effects of price fluctuation and the measures to cope with price fluctuation. Secondary data were also collected from the Department of planning research and, statistics and Federal Ministry of Agriculture, Maiduguri on the average price of cereal crops.

### **Data analysis**

The methods used to analyze the data were percentages and frequency distributing while the degree of price fluctuation was estimated as:

$$DP_d = \sum_n^i \frac{\Delta P}{P} \times 100 \quad \dots(1)$$

where;

I = 2005 - 2010

DP<sub>d</sub> = Degree of price fluctuation

ΔP = Change in price

P = Price of the produce.



## RESULTS AND DISCUSSION

### Socio-economic Characteristics of Cereal Marketers

The socio-economic characteristics of the marketers considered were sex, marital status, family size, source of income and type of marketing (Table 1). Analysis of the result in Table 1 shows that 70.8% of the cereal marketers were male and 29.2% were female. This shows that male had the largest proportion. This is because of the culture and religion of the people which does not allow women into such business. Analysis of the marital status indicates that the majority of the cereal marketers (65.0%) were married, while 35% were single. This shows that married people participate more in the business than the single. The family size analysis revealed that 16.7% had less than five family members, 33.3% fell between 6-10 and 50% had family size above 10. This shows that marketers with family size above 10 participated more in cereal marketing, perhaps to enable them earn income to cater for their family needs. This further implies a reduction in the cost of labor, hence, a reduction in the total cost of marketing. However, Minot *et al.* (2006) argued that a large household size means more mouth to feed, so that, large households could provide smaller marketed surplus.

**Table 1:** Socio-economic Characteristics of Cereal Marketers (n = 120)

Items	Frequency	Percentage
<b>Sex</b>		
Female	85	70.8
Male	35	29.2
<b>Marital status</b>		
Single	42	35.0
Married	78	65.0
<b>Family size</b>		
Less than 5	20	16.7
6-10	40	33.3
Above 10	60	50.0
<b>Sources of initial capital</b>		
Personal saving	25	20.8
Relations	35	29.2
Friends	60	50.0
<b>Types of market</b>		
Wholesalers	30	25.0
Retailers	90	75.0

Source: Field survey, 2018

On the source of initial capital outlay, 20.8% of the marketers got their capital from personal saving, 29.2 5% from relations and 50.0% from friends. This shows that the largest proportion of cereal marketers got their capital from friends (50.9%). This is because good friends are always willing to support each other financially. Again, since cereal marketing is done at a very small-scale level, it is difficult to make personal savings. Analysis of type of marketing indicates that 25.0% were wholesalers and 75.0% were retailers. Majority (75%) of the cereal marketers were retailers. This is because it is easier to raise fund to start retailing of cereals wholesale. Wholesale marketing of cereals require more capital outlay than retail, and this could not be raised from friends. This further implies that most of the cereal marketers are at the low economic level and thus, require financial support to help expand their business.



This result agrees with the findings of Damola (2010) that most of the cereal marketers in the developing countries are at the small scale level of marketing cereals, hence they require credit facilities for their business expansion.

### Causes of Price Variation

The causes of price variation shown in Table 2 include the difference between the planned quantity of cereal to be purchased and the actual quantity of cereal purchased, annual variability in production, poor storage of cereal, speculative activities of middlemen, improper planning by producers, low demand and supply of cereals, and the change in climatic conditions.

**Table 2:** Causes of Cereal Price Fluctuation (n = 120).

Causes	Frequency	Percentage
Low demand	50	41.7
Low supply	60	50.0
Annual variability	70	58.0
Poor storage of Cereals	20	16.7
speculative activities of middle men	70	58.3
Improper planning by producers	30	25.0

Multiple responses existed, here >100%.

Sources: Field survey, 2018

On the causes of price variation, the result revealed that annual variability in production and speculative activities of middlemen were indicated by 58.3% while poor storage of cereal 16.7%, This could be as a result of increase in the prices of cereals during scarcity and a decrease in prices during harvest, variability in production also results from poor climatic and ecological conditions as well as outbreak of pest and diseases that reduce the productivity of these cereal crops in some years. This implies that the price of cereals is largely affected by the level of production. Also middlemen buy cereal crops at harvest time when they are cheap, store them and supply them to the market when prices rise. The hoarding and speculative activities of these middlemen also cause price fluctuation of the cereal crops. Poor storage of cereal had least effect on price fluctuation. This could be because marketers and farmers do not have proper knowledge of cereal crops storage and cannot afford the cost of storage facilities. This agrees with the result of Happiness *et al.* (2001) that technological development (in terms of storage facilities) among small scale cereal farmers and marketers is still poor and this affects production and marketing of these products in terms of high cost of marketing and long incubation period.

### Degree of Price Fluctuation

The degree of price fluctuation for cereals was examined from 2005 to 2010 (Table 3). It was estimated by obtaining the sum of price change for the six years for each of the cereal crops, divided by the sum of the prices for six years and multiplied by 100%. Analysis of the result in Table 3 shows that 9.5% change in price of maize was obtained over the years, 8.7% for millet and the percentage change for sorghum over the years was 9.8%. This indicates that sorghum has the highest percentage change in price which is as a result of low supply of sorghum in some years and high demand in other years. This also implies high instability in the supply and demand for sorghum in the study area. This is in accordance with the findings



of Mchopa (2012) that price fluctuation of cereals in the market is due to a slight change in demand and supply of these commodities in the market.

**Table 3:** Price Fluctuation for Cereal Crops from 2005-2010 (Price/₦)

Cereal crop	2005	2006	2007	2008	2009	2010	Percentage change
Maize	3,000	3,500	3,950	5,200	5,240	5,500	9.5
Millet	3,200	3,650	3,833	4,800	5,320	5,540	8.6
Sorghum	3,800	4,000	4,416	5,333	6,667	6,850	9.8

Source: Ministry of Agriculture and Natural Resources, Planning Division Borno State, 2012

### Effects of Price Fluctuation

The effects of price fluctuation were identified as inflation, low investment and saving, high cost of storage, unstable rate of profit, instability in supply of cereal and high cost of labour (Table 4). The result shows that inflation was indicated by 62.5% of the respondents as the major effect of price fluctuation, low investment and saving 50.0%, unstable rate of profit (37.5%), instability in supply of cereal 32.5% and high cost of labour 16.7%. This indicates that inflation is the major effect of price fluctuation for cereal crops. This is because when the general Price level rises, each unit of currency buys fewer goods and services (a reduction in the purchasing power of money). This could cause a decrease in the net income of the marketers, hence reducing their living standard. This is in accordance with the result of Oxfam and IDS13 that high inputs costs have squeezed people’s purchasing power, which means that profit from selling cereals remain low for those with least scope to diversify and spread risk.

**Table 4:** Effects of Price Fluctuation. (n = 120)

Effects	Frequency	Percentage
Inflation	75	62.5
Low investment and saving	60	50.0
Unstable rate of profit	50	41.7
High cost of storage	45	37.5
Instability in supply of cereals	39	32.5
High cost of labour	20	16.7

Multiple responses existed, here >1000%

Source: Field survey, 2018

### Coping Strategies against Price Fluctuation

The measures taking by cereal marketers to cope with price fluctuation were examined (Table 5) and include contract sale to processors and manufacturers, adjustment of supply according to demand, fixing of maximum and minimum price by government, store for future sale and buy in small quantity during price change. The result shows that storing for future sale was practiced by 54.2% of the sellers, buying in small quantity during price change 50.0%, contact sale to processors and manufacturers 20.8%, fixing of maximum and minimum price by government 25.0% and adjustment of supply according to demand 33.3%. The result indicates that most of the cereal marketers store theft commodity for future sale. This is because most of the cereal marketers have their personal storage facilities. They also have adequate knowledge of the various methods of storing cereal crops. Contract sale to processors and manufacturers had the smallest proportion (20.8%) of sellers practicing them. This is because



there are no enough industries and business enterprises in the rural areas that require cereal crops as raw materials for their processing and manufacturing and also further implied a low level of cereal crops processing in the study area.

**Table 5:** Coping Measures for Price Fluctuation

<b>Cropping measures</b>	<b>Frequency</b>	<b>Percentage</b>
Store for future sale	65	54.2
Buy in small quantity during price change	60	50.0
Contract sale to processors and manufactures	25	20.8
Fixing of maximum and minimum price by government	30	25.0
Adjustment of supply according to demand	40	33.3

Multiple responses existed here, >100%

Source: Field survey 2018

### CONCLUSION AND RECOMMENDATIONS

In Maiduguri Metropolitan Council, fluctuation in the price of cereal cps is common, and results to instability in supply of cereal, inflation, low investment and saving, unstable rate of profit and high cost of storage. Economic theory suggests that in a perfectly competitive market, demand equals supply. In Maiduguri metropolis, however, demand for cereal crops in greater than the supply. This imperfection in the marketing of cereal crops arises from the problem of poor and inadequate storage infrastructures, change in climatic conditions which results in the actual harvest being greater or less than normal (expected) harvest; the activities of speculative middlemen which result in seasonal price fluctuation; and also the ease and degree of substitutability of one product for another. Unless these problems are addressed, the supply deficit and price variations in cereal crops will persist. Based on the findings of the study, the following recommendations were made:

1. Cereal marketers should be supported financially by the government and private organizations through the administration of soft loans and other credit facilities.
2. Government should adopt the buffer stock price control mechanism in order to reduce the speculative activities of middlemen.
3. The farmers and cereal marketers should be educated through the extension workers to adopt new method of cereal production in order to increase supply that can meet up with the demand for cereal crops.
4. Researchers should be encouraged to embark on a research with the aim of advancing more coping strategies against price fluctuation.

### REFERENCES

Adamawa State Ministry of Agriculture, Produce Department (2001). *Percentage Prices variation for cereal crops from 2005-2010*.

Damola, A. A. (2010). *Sector strategies and policies related to rice development in Nigeria*.

Happiness, H. Cecilia, R. and Alban, M. (2001). Price Fluctuation of Agricultural Products and Its Impacts on Small Scale Farmers Development: Case Analysis from Kilimanjaro Tanzania. *European journal of business and management*, 6(36): 23-28.

Izge, A. U. (2009). *Arable crop production*. DA’A press limited, Nigeria.

Mchopa, A., Kazungu, I. and Ndiege, B. (2012). *Pricing issues and Perspective*, 1<sup>st</sup> edition, Internal Printers Itd Moshi



- Ministry of Agriculture and Natural Resources, Planning Division (2012). *Bormo State, Nigeria*. National Population Commission, 1999, Maiduguri, Bormo State, Nigeria.
- Minot, N., Epprecht, M., Anh, T. T. T. and Trung, L. Q. (2006). *Income Diversification in the North Upland of Vietnam research 145*. International Food Policy Research Institute Washington D. C.
- Molden, D. J. (2007). *Cereal crop production*. Apple Academic Press. Pp219-226.
- Serna, S. S. (2010). *Cereal grain: properties, process and nutritional attribute*. ISBN 978-1-4398-82092. Pp. 529-535.