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Cowpea Marketing and Consumption Preference in Potiskum Local Government Area of Yobe State, Nigeria

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

The article sought to examine cowpea marketing and consumption preference in Potiskum Local Government Area (LGA) in Yobe State, Nigeria. Yobe State is one of the major producers of Cowpea in Nigeria and there is a high level of marketing activity on Cowpea in the State. The objectives of this article are Identify the socio-economic characteristic of the respondent; determine the channels associated with cowpea marketing in the study area; examine the factors that determine the price of cowpea in Potiskum L.G.A; and determine the choice of the respondent in the use of cowpea types. Multi-stage sampling procedure was adopted to select 150 respondents. Descriptive statistics, OLS regression analysis and semantic differential scale were used as the analytical tools. Major results revealed that the market was mostly dominated by men (78. 66%), who are majorly singles (77.33%) in a household of 1 -10 persons (76. 67%) and (70%) had

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marketing experience of 1-10 years. The marketers are averagely educated and can read and write in Quranic and western Education. The marketing channel revealed that sales of cowpea start from the farm gate to the final consumer. The factors that affect cowpea retail price had an adjusted R^2 of 72.8% with household size, source of supply and sources of loan having a positive effect on the price of a 100kg bag of cowpea. While the factors that affect wholesale price had an adjusted R^2 of 66.4% with age, sources of supply, loading and offloading, sources of loan and storage having positive effects on the price of a 100 kg bag of cowpea. The Semantic Differential Scale revealed that brown cowpea was much preferred in the study area despite its high price. The article concluded that there was a free flow of information, adequate market intelligence among the market stakeholders and the business is profitable. It was recommended that an affordable storage facility should be made available to marketers, and market policy be made in the State to enhance the business profile through the improvement of transportation and market price information.

Keywords: Potiskum; Yobe State; marketing channel; cowpea marketing; consumption preference.

1. INTRODUCTION

"Agricultural production plays an important role in the economic development of Nigeria. An estimated 60 to 70% of Nigerians live in rural areas and the majority are engaged in small-scale agricultural production" (Okuneye, 2003; Adegboye, 2004). "The sustainability of agricultural activities is hinged on an effective price system. In the recent past, the market for agricultural commodities in Nigeria has shown a pattern of long-term price fall and short-term price instability" (IMF, 2000). "The volatility in the price of agricultural commodities in Nigeria has been attributed to various factors including variances in bargaining power among consumers, cyclical income fluctuation among sellers and consumers, seasonality of production, natural shocks such as floods, pests, diseases, and inappropriate response by farmers to price signals" [1], (Udoh & Sunday, 2007; Adebusuyi, 2004). "Short-run fluctuations in agricultural commodity prices occur between production seasons" (Cashin & Pattillo, 2000). "During harvesting periods, prices of farm produce are generally low due to surpluses; in the off-season, prices rise due to reduced production and seasonal changes" [2]. "Hence, agricultural commodity price is one of the major determinants of the quantity of commodities supplied by farmers and demanded by consumers. Product price instability among agricultural commodities is a regular phenomenon in markets across Nigeria" [3]. "Instability in commodity prices among markets could be detrimental to the marketing system and the economy as a whole. It could cause inefficiency in resource allocation among sellers and consumers depending on the source of variability (that is, whether it is induced by the supply or demand side or both). It could also increase the poverty level among low-income earners in society" [4]. On the order hand, a unified product price among markets is not a rational policy to pursue in a developing country like Nigeria. This is because of the deteriorating marketing infrastructures, the increase in cost of externalities and the nature of most agricultural products which often resulted in significant differences in the total variable costs incurred by sellers and consumers in these markets [5-16].

"Beans or cowpea (*Vigna unguiculata*) are among the staple grains whose prices are highly unstable between seasons in Yobe State of Northern, Nigeria" [17]. Consumers pay different amounts for the same product in different markets separated by a few kilometres. Price instability of agricultural commodities would be considered a normal phenomenon if it does not significantly differ from one market to another. On the contrary, if product prices are significantly different among markets it will distort resource flow, which might hurt the self-food sufficiency policy of the Federal Government of Nigeria. Over the years, there have been several studies on price transmission or market integration of foodstuffs in Nigeria's markets. Some of these studies employed methods like correlation analysis, trend and time series analysis. Comparison of results of various methods has been largely neglected by the majority of researchers in Nigeria.

The general objective of this study is to examine the marketing of Cowpeas in Potiskum L.G.A, Yobe State, Nigeria.

The Specific objectives are to: (1) Identify the socio-economic characteristic of the respondent; (2) determine the profitability and marketing efficiency of cowpea marketers in the study area;

(3) determine the percent marketing margin and channels associated with cowpea marketing in the study area; (4) examine the factors that determine the price of cowpea in Potiskum L.G.A; and (5) determine the choice of the respondent in the use of cowpea types.

2. METHODOLOGY

Potiskum is a Local Government Area (L.G.A) in Yobe State, Nigeria, it lies between latitude 11°42′50.08′′N and longitude 11°04′59.89′′E. It has an estimated land area of 559 square kilometres (216 sq. ml) and a population estimated at 2,757,000 (NPC, 2011).

The State is made up of two agricultural zones, zone I and Zone II. Potiskum belongs to Zone II and has several wards, which are Dogo Nini, Dogo Tebo, Bolewa A, Bolewa B, Hausawa Asibiti, Yarimaram, Bareri Bauya Lailai, Mamudo, Danchua, Gwajin Dakasko.

Potiskum has been a thriving trade hegemony in Yobe State because of its strategic position as a centre of commerce, learning, and spiritual and cultural revival. People from neighbouring Borno, Jigawa, Kano, Bauchi and Gombe States, and numerous others from Niger, Chad, Cameroon, Benin and Central African Republic have stakes in the 'biggest cattle market in sub-Saharan Africa, which is situated in Potiskum. Close to the cattle market is the Potiskum grain market. In 2008 it was estimated to sell 5000 bags of grain on a market day.

"The local government falls within the northeastern State where cowpea production is prominent" [18]. Agriculture is the mainstay of the economy of the Potiskum local government with about 80% of the people actively engaged in farming. Cash and food crops are cultivated and the produce includes Sorghum, Groundnut, Maize, Cowpea, Guinea corn, Millet, etc.

"Cowpea is an important source of plant protein in Yobe and most especially in Potiskum; it is the most important economically and nutritionally indigenous legume crop, especially in Nigeria. Cowpea is rich in protein and is a staple food for people in both rural and urban areas" [19].

"Economically, cowpea has a great value in the internal trade in Nigeria, because it promotes trade between the production area and non-producing area. It also serves as a source of income for middlemen who embark on transportation from one place to another. The returns from cowpea marketing like any other business firm ensure the sustainability of the system through enhanced revenue generation for both marketers and producers. However, the challenge that marketers face is to satisfy consumers' wants at a reasonable profit level and in a socially acceptable manner" [20].

A multi-stage sampling technique was used for sample selection. The first stage involved the purposive selection of the Potiskum Agricultural Zone in Yobe State, because it has the largest grain market in the state. The second stage involved a purposive selection of three (3) wards from Potiskum L.G.A which includes Mamudo, Danchua and Dakasko.

One hundred and fifty (150) questionnaires were administered to the respondents in the study area with the help of research assistants. Sixty (60) respondents were selected from the grain market in Potiskum which are thirty (30) wholesalers and thirty (30) retailers, thirty (30) respondents each from Mamudo, Danchua and Dakasko markets, at random which are fifteen (15) wholesalers and fifteen retailers each from the three. This gave a total of one hundred and fifty (150) respondents.

2.1 Analytical Tools

2.1.1 Descriptive statistics

This involves the use of frequency distributions, percentages and charts. It is used to have summary statistics of socio-economics profiles and also summarize the constraints facing cowpea sellers. This was used to achieve specific objectives one (i).

2.1.2 Gross margin analysis

The formula used for calculating profitability in this study is shown as

$$GM = GI - TVC$$

Where:

GM = Gross Margin
GI = Gross Income (Total Revenue)
TVC = Total Variable Cost
GI = yield × price
$TVC = VC_1 + VC_2 + VC_3 + VC_4$
VC_1 = (Variable Cost 1) = Seed (Kg)
VC_2 = (Variable Cost 2) = Fertilizer (Kg)
VC_3 = (Variable Cost 3) = Labour (Man-day)
VC_4 = (Variable Cost 4) = 100 kg sack (number)

2.1.3 Marketing margin

The marketing margin analysis by Tiku et al. [21] was employed to achieve the objective (iii) as an indicator of market performance. The model is as shown below:

$$MM = SP\text{-}CP/SP \times 100$$

Where:

MM = Marketing margin
SP = Selling price of cowpea
CP = supply price of cowpea.

2.1.4 Regression analysis

The OLS regression analysis was used to achieve the objective (iv) that is, to determine the factors that influence the level of economic efficiency of cowpea farmers and to test hypotheses i and ii. The regression model specification is:

$$Y_i = \beta 0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + e \quad \ldots\ldots\ldots\ldots\ldots\ldots \text{(i)}$$

Where;

Y_i = selling price
X_1 = Age (Years).
X_2 = Education (years of schooling)
X_3 = Household size (number of persons)
X_4 = Farming experience (years)
X_5 = Co-operative association (years of membership).
X_6 = Extension contact (number of contacts).
X_7 =Farm size (ha).
X_8 = Source of credit (Naira).
X_9 = Amount of credit (Naira)
β_i = the coefficients for the respective variables

2.1.5 Semantic differential scale

Semantic Differential Scale was used to achieve the objective (v), which is a survey or a questionnaire rating scale that asks people to rate between their preferences of the white and brown cowpea available in the study area.

3. RESULTS AND DISCUSSION

3.1 Age Distribution of Cowpea Respondents

Of the age distribution of the respondents in the study area, 40.67% of the respondent were between the ages of 20-35 years, those between the age of 36-50 years accounted for 39.33%., and those between 51-65 years accounted for 20.00%. This shows that about 40% of the respondents were their active age.

3.2 Gender Distribution of Respondents

From Table 1, the result shows that 78. 66% of the respondents were male marketers, and only 21.33% were female, indicating that male respondents had more access to market cowpea in the study area.

3.3 Marital Status of Respondents

About 21.33% of the respondents were single, 77.33% were married and 1.33% were divorced. This shows that more than half of respondents were married and had families to carter for and most have a source of livelihood, which eventually makes them to be responsible [22-25].

3.4 Level of Education of Respondents

Academic qualification of the respondent in the study area shows that 24.67% of the respondents had primary school learning certificates, 26.67% of the respondent had secondary certificates, 6.00% had tertiary certificates, and 41.33% had Qur'anic certificates with 1.33% not attending any school at all. This indicates that the majority of the respondent (98%) had one form of formal education or the other, hence are expected to have the required basic knowledge and skills to enhance their marketing strategy and other related activities. This will also help them to adopt policies to improve their marketing skills [26-32].

3.5 Marketing Experience of Respondents

The findings showed that about 70% of the respondent had been in cowpea marketing for 0-10 years, 22% had been in the marketing of cowpea for 11-20 years and 8% involved in the marketing of cowpea for 21-30 years. This is an indication that the marketers have different experiences in cowpea marketing and they will be able to tackle any emergency in cowpea marketing and take care of any risk or losses in their marketing system [33-35].

3.6 Marketing Channel in the Study Area

Fig. 1 shows the marketing channel of cowpea in the study area. Cowpea marketing starts at the farm gate where farmers sell to commissioning agents who take them to the village markets for

sale. Wholesalers come to buy cowpea in 100 kg sacks from the village markets. The wholesalers are of two different types, intermediate wholesalers (those who buy one to fifty sacks) and large-scale wholesalers (those who buy above fifty bags to over one thousand bags).

The intermediate wholesalers sell off their purchase the same day to retailers who sell in small different measures. The large-scale wholesaler takes the cowpea purchased to major cities for sale, sells to small scale wholesaler (who buys from five to ten bags at once) and also store some for the period when there is no surplus, they sell to retailers, export to neighbouring countries such as Chad, Niger, Benin Republic and Cameroon. The retailers sell to the final consumers [36-38].

Table 1. Socio-economic profiles of cowpea marketers in the study area

Socio-economic characteristics	Frequency	Percentage
Age (Years)		
20-35	61	40. 67
36-50	59	39.33
51-65	30	20.00
Gender		
Male	118	78. 66
Female	32	21.33
Marital Status		
Married	32	21.33
Single	116	77.33
Divorced	2	1.33
Household Size		
1-10	112	76. 67
11-20	30	20.00
21-30	6	4.00
31-40	2	1.33
Level of Education		
Primary	37	24. 67
Secondary	40	26. 67
Tertiary	9	6.00
Qur'anic	62	41.33
Non educated	2	1.33
Marketing Experience		
1-10	105	70.00
11-20	33	22.00
21-30	12	8.00
Total	150	100

Source: Field survey, 2021

Table 2. Factors that affect cowpea retail price (₦)

Variables	Coefficient	Std. error	t-statistic	Sign.
C	13.737	3.990	3.443	0.01
Buying price	-0.235	0.314	-0.749	0.457
Age	-0.407	0.563	-0.722	0.475
Educational qualification	-0.449	0.153	-2.932	0.005
Household size	0.380	0.134	2.840	0.006
Farming experience	-0.283	0.131	-2.155	0.035
Source of supply	3.46	0.245	1.414	0.162
Loading & offloading	0.006	0.090	0.734	0.466
Sources of loan	0.362	0.175	2.068	0.043
R-square	0.811			
Adjusted R-square	0.728	F-statistics	3.729	
Durbin-Watson stat	2.167	Prob. (F-statistic)	.001	

Source: Field survey, 2021

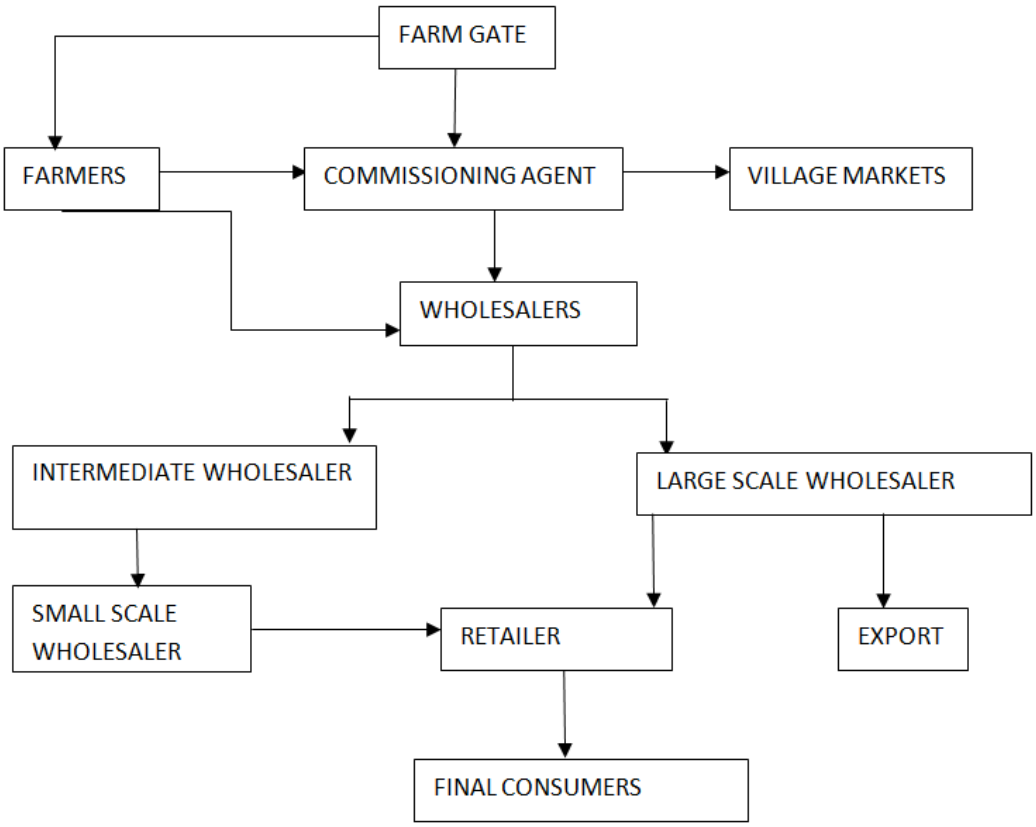


Fig. 1. Showing the marketing channel of cowpea sellers in the study area
Source: Field Survey, 2021

3.7 Retail Price Level of Cowpea

Table 2 above shows the R-square value of 0.811, indicating that 81.10% of the changes in income of cowpea marketers are accounted for by the changes in the nine included variables put together. The adjusted R-square (R^2) supported the claim with a value of 0.728 or 72.80%. This implies that the independent variable explains the behaviour of the dependent variable (income) at an 81% level of confidence. The calculated F-Statistics value of 3.729 which is greater than any value in the F-table implies that there is a significant impact between the dependent variables and independent variables. The Durbin-Watson (DW) Statistic of 2.167 which is approximately 2.2, implies the absence of multicollinearity.

The above model tested the effect of nine variables namely buying price, age, educational qualification, household size, farming experience, loading and offloading costs and sources of loan. The regression result reveals a positive and significant effect that household size is elastic to the income (Y) with a coefficient of 0.380. Hence household size is elastic to the income. Sources of credit supply, loading and offloading and source of loan have a positive effect on the selling price, while buying price, age, educational qualification and farming experience harms the income with a coefficient value of -0.235,-0.407,-0.449,-0.283 respectively. From the result of the t-statistic, the coefficient of the nine explanatory variables were all significant and the probability of rejecting any of them was less than 2%. The standard errors for the nine explanatory variables were also partially low. Hence, all the coefficients of the coefficient of the explanatory variable were all significant.

3.8 Cowpea Wholesale Price

In Table 3, the R square value of 0.830 shows that 83% of the changes in income of cowpea marketers are accounted for by the changes in the nine included variables put together. The adjusted R square supports the claim with a value of 0.664 or 66.4%. This implies that the independent variable explains the behaviour of the dependent variable (income) at an 83% level of confidence. The calculated F-Statistics value

of 0.8009 which is greater than any value in the F-table implies that there is the significant impact between the dependent variables and independent variables. The Durbin-Watson (DW) Statistic is 2.439 which is approximately 2.4. implying the absence of multicollinearity.

The above model tested the effect of nine variables namely buying price, Age, Educational qualification, Household size, Farming experience, Sources of credit, loading and offloading and sources of loan. The regression result reveals a positive and significant effect of the source of the loan on the income (Y) with a coefficient of 3464.004. Hence the source of the loan is elastic to the income. Age, household size, source of credit, loading & offloading, and storage cost has a positive effect on income.

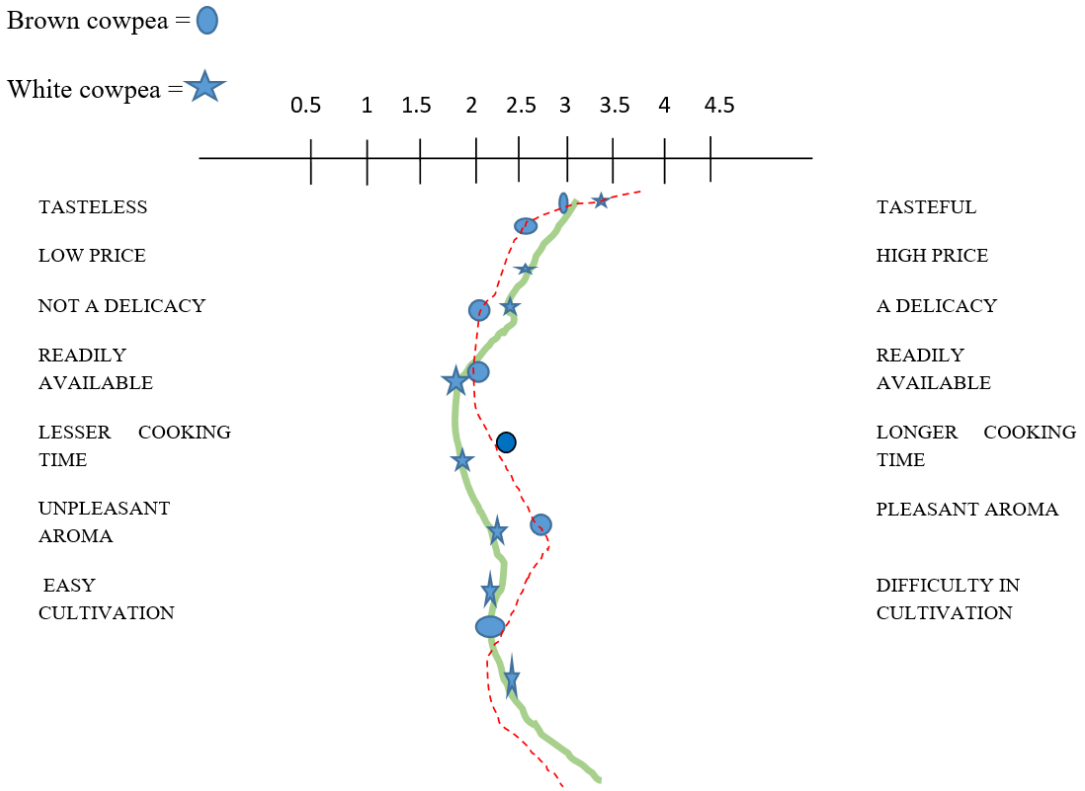
Table 3. Factors that affect cowpea wholesale price (₦)

Variables	Coefficient	Std. error	t-statistic	Sign.
C	56221.335	16955.704	3.316	0.002
Buying price	-1.838	0 .433	-4.241	0.000
Age	448.465	162.531	2.759	0.008
Educational qualification	-200.290	768.440	-0.261	0.795
Household size	231.449	305.499	0.758	0.451
Farming experience	-1073.188	282.529	-3.799	0.000
Source of supply	2996.293	1803.328	1.662	0.010
Loading & offloading	19.1233	6.053	3.159	0.002
Sources of loan	3464.004	1843.139	1.879	0.065
Storage Cost	11.721	6.073	1.930	0.058
R-square R^2	0.830			
Adjusted R-square	0.664			
Durbin-Watson stat	2.439	Prob. (F-statistic)	.000	

Source: Field survey, 2021

Table 4. Showing a preference for brown and white cowpea by respondents

The star symbol Represents the white cowpea while the 0 represents the brown cowpea.



While buying price, educational qualification and farming experience hurts income with a coefficient value of -1.838, -200.290 and 1073.188 respectively. From the result of the t-statistic, the coefficient of the nine explanatory variables were all significant and the probability of rejecting any of them was less than 2%. The standard errors for the nine explanatory variables were also partially low. Hence, all the coefficients of the coefficient of the explanatory variable were all significant.

3.9 Semantic Differential Scale

A comparison between white and brown cowpea in terms of their taste, price, delicacy, readily available, cooking time, aroma, easy cultivation and quality. However both the white and brown cowpea receive the same number aggregate. Even though both are favourable. Brown cowpea is more advantageous than white in terms of taste, price, delicacy, readily available, and aroma. In terms of cooking time and easy cultivation, the white was preferred. While in terms of quality brown cowpea are more advantageous than white cowpea.

4. CONCLUSION

Due to the article's conclusion, there is a free flow of information among market parties, there is an appropriate market intelligence, and the firm is lucrative. Marketers should have access to reasonably priced storage facilities, and the State should create market policies to raise the company profile by improving transportation and market pricing information.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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