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ECONOMIC ANALYSIS OF SOYBEANS MARKETING IN BILLIRI LOCAL GOVERNMENT AREA OF GOMBE STATE, NIGERIA

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Abstract

The study analyzes economics of soybeans marketing in Billiri local government area of Gombe State. The rationale behind it were to; describe the socio-economic characteristics of the soybeans marketers in Billiri; determine the profitability of soybeans marketing; determine the marketing efficiency of soybeans; describe the constraints associated with soybeans marketing in Billiri and to determine the relationship between the marketing variables. Data were elicited from 97 respondents spread across six prominent soybeans markets in the area with the aid of structured interview schedule. Respondents were selected using purposive and simple random sampling techniques. The data obtained were subjected to analysis using multiple regression and gross margin analysis. Majority of the marketers were aged between 21 and 60 years (89.7%), and were male (70.10%). 61.9% of the respondents were married, 84.51% had at least 10 years of marketing experience in the area, with a ME = 74.19% . more than half of the respondents (52.6%) had attended secondary school. Soybeans marketing in the area were profitable, which was evident from the gross margin of ₦ 4,123.88 per marketer on average every week. Major constraints encountered by the soybeans marketers include; lack of capital, scarcity and high price of soybeans at lean period, high cost of transportation, risk of buying low quality soybeans, poor packaging material, and high Interest rate charged on loans which narrow their profit.

Key words**:** *soybeans, marketing, Billiri, Gombe State, Nigeria*

INTRODUCTION

Although Nigeria is one of the largest soybeans producers in sub-Saharan Africa, the size of the crop is relatively, small-less than 500 thousand metric tons (TMT) compared to 8,000-10,000 for corn and 4,000-5,000 for (TMT) for sorghum. This is primarily due to lack of adequate market liquidity, providing a limited incentive to
farmer to grow this crop. The demand is constrained by inadequate soy crushing capacity, which in turn is limited by low demand from the animal feed industry, the primary user of soy in Nigeria [1]. Soybean (*Glycine max L.*) is one of the major leguminous crops cultivated all over the world today with Nigeria as the largest producer in both Western and Central Africa, since its introduction in the early twentieth century [2]. Soybean is widely known to be cheap, easily available and a good source of protein compared with expensive animal protein when purchased, as Soybeans is only about 10-20% of the cost of protein from meat, eggs, fish or milk. Soybean is now widely consumed and readily used in the production of crude vegetable oil, soymilk, soy yoghurt and *daddawa*. In addition to that, a local but good seasoning is also produced from soybean.

Agriculture is the principal source of food and livelihood in Nigeria, making it a critical component of programs that seek to reduce poverty and attain food security in Nigeria [7]. As a result, raising agricultural productivity is an important policy goal for concerned governments and development agencies. According to [6], expanding cultivated area is a feasible option for increasing production. However, understanding how producers make decisions to allocate land among crops and how decisions about land use are affected by changes in prices and their instability is

essential for predicting the supply of staple crops and, consequently, evaluating the global food supply situation [3]. Responsiveness of farmers to economic incentives such as price could influence contribution of agriculture to the economy [8]. This could be attributed to crucial roles played by agricultural prices in achieving efficient allocation of production resources [9].

Objectives of the Study

The specific objectives of the study were to:

(i)describe the socio-economic characteristics of the soybeans marketing in Billiri;

(ii)determine the profitability of soybeans marketing;

(iii)determine the marketing efficiency of soybeans;

(iv)describe the constraints of soybeans marketing in Billiri.

(v)determine the relationship between the marketing variables.

MATERIALS AND METHODS

Both primary and secondary sourced data were collected by administering well-structured questionnaires interview schedules. A total of ninety seven soybeans marketers were successfully elicited for information for the study.

Sample Size and Sampling Technique

The study covered six important markets where soybean marketing is mostly observed. These markets include; Billiri main market, Bore market in Tal village, Bangange market, Tudu kwaya market, Bacha market, Shela market all in Billiri local Government in Gombe state. A total number of one hundred and twenty marketers were selected via purposive and simple random sampling techniques. The questionnaire were distributed across the six selected markets in the study, but fifty percent of the questionnaire were distributed among the marketers of Billiri main market because its size.

Analytical Techniques

Descriptive statistics which include simple percentage and frequency distribution was used to describe the socio-economic characteristics of respondents and problems associated with soybean marketing. Inferential statistic such as Gross margin (GM) and regression analysis were used to determine the profitability, relationship of the soybeans marketing in the study area respectively. This is based on the assumption that fixed cost component of marketing is negligible as applied by [4] and [5]. The gross margin is expressed as:

$$GM = TR - TVC \quad \ldots\ldots (1)$$

where:

GM = Gross Margin in Naira per 80 kg bag of soybeans.

TR = Total Revenue/Income in Naira per 50 kg bag of soybeans.

TVC = Total Variable Cost

Marketing Efficiency (ME) estimate of soybeans were determined as opined by [10] and is expressed as:

$$ME = \text{Value added by marketing} \times 100\% \quad \ldots\ldots (2)$$

An enterprise is considered profitable, if its gross margin is positive and considered non-profitable if otherwise.

Regression (R) allows you examine how multiple independent variables are related to a dependent variable. Once you have identified how these multiple independent variable related to your dependent variable, you can take information about all of the independent variable and use it to make more powerful and accurate prediction about why things are.

$$L_nY = \beta_o + \beta_1 L_nX_1 + \beta_2 L_nX_2 + \beta_3 L_nX_3 + \beta_4 L_nX_4 + \beta_5 L_nX_5 + \beta_6 L_nX_6 + \beta_7 L_nX_7 + \beta_8 L_nX_8 + \beta_9 L_nX_9 + \beta_{10} L_nX_{10} + \beta_{11} L_nX_{11} \quad \ldots\ldots (3)$$

where:

Y = income, X_1 = buying price,

X_2 = selling price, X_3 = on-loading cost,

X_4 = off-loading cost

X_5 = storage cost, X_6 = telephone cost,

X_7 = transport cost, X_8 = commission fee

X_9 = packaging cost, X_{10} = cost of packaging materials, X_{11} = marketing experience.

RESULTS AND DISCUSSIONS

Age of the respondents

The result in Table 1 showed that 49.5% the marketers of soybeans in the study area were aged between 21 to 40 years, followed by 40.2% of those with ages 41 – 60years. The high percentage of young men indicated that greater proportion of the marketers' possess the vigour and can withstand marketing stress.

Table 1. Age distribution of the respondents

Age	Frequency	Percentage
<20	1	1.0
21-40	48	49.5
41-60	39	40.2
> 60	9	9.3
Total	**97**	**100**

Source: Field, Survey, 2018.

Sex of the respondent

The responses on sex in Table 2 revealed that more than half of the respondents (70.10%) were male and (29.9%) respondents were female. This implies that male is dominant over female in terms of marketing of soybeans in the study area. This may be due to the fact that marketing of this crop involve a lot of activities that required the use of energy and also due to the tradition of the people in the area that mostly men partake in such activities. This implies that the labor demands of soybeans marketing can be adequately met by the males thereby capturing the marketing management associated with such activities.

Table 2. Sex distribution of the respondents

Sex	Frequency	Percentage
Male	68	70.10
Female	29	29.9
Total:	**97**	**100**

Source: Field, Survey, 2018.

Marital Status of the Respondents

Table 3. Distribution of the respondents according to Marital Status

Marital Status	Frequency	Percentage
Single	28	28.9
Married	60	61.9
Widow	5	5.2
Divorce	4	4.1
Total	**97**	**100**

Source: Field Survey, 2018

The result of the Table 3 revealed that 61.9% of the respondents were married, and 28.9% were single, 5.2% were widows and 4.1% were divorced. Majority of them were married because it was a cultural practice.

Educational level of the respondents

The result on the educational level of the respondents is presented on the Table 4. The result revealed that 52.6% of the respondents had secondary education while 35.1% had primary education. This shows that most of the marketers were privileged to be literate and technical information can comprehend and adopt faster than their counterparts that are not educated [6]. The education attainment of the soybeans marketers showed that all the marketers had one form of education or the other. This implies that the marketers are educated and can read and comprehend agricultural information sent to them, due to the educational level attained.

Table 4. Educational Level Distribution of the Respondents

Educational Level	Frequency	Percentage
Primary	34	35.1
Secondary	51	52.6
Tertiary	6	6.2
Qur'anic	5	5.2
Adult education	1	1.0
Total	**97**	**100**

Source: Field, Survey, 2018.

Marketing Experience of the Respondents

Result in Table 5 revealed that 44.33% of the respondents had marketing experience of 10-20 years while 4.12% had more than 30years. This shows that majority of the respondents were experienced and can handle their marketing activities more efficiently in view of their vast experience in the business. Those who have spent more years in marketing are usually more convenient with the marketing system and are therefore more experienced.

Experience is shaped by the characteristics of the customer and those of the product, company or brand. [2] explain that "all *actions and processes* that are involved, such as physical actions and perceptual and cognitive processes (e.g. perceiving, exploring, using, remembering, comparing,

and understanding), will contribute to the experience".

Table 5. Distribution of Marketing Experience of the Respondents

Marketing experience	Frequency	Percentage
<10	11	11.34
10 – 20	43	44.33
21 – 30	39	40.21
>30	4	4.12
Total	**97**	**100**

Source: Field Survey, 2018.

Occupation of the Respondents

Table 6 showed the occupational distribution of the respondents in the study area. Majority of the respondents were found to be those whose occupations were business 50.5%, this followed by those who engage in farming activities 45.4%, while others were engaged in civil service in the study area 4.1%. The result indicated the way and manner in which business men/women and civil servant were engaged in soybeans marketing when compared with farmers whose ultimate goal was more of soybeans production marketing of soybeans.

Table 6. Occupation Distribution of the Respondents

Occupation	Frequency	Percentage
Business	49	50.5
Farming	44	45.4
Civil servant	4	4.1
Total	**97**	**100**

Source: Field Survey, 2018.

Cost and Return Associated with Soybeans Marketing in Billiri

GM = TR – TVC
= ₦20,877,800.00 – ₦76,950.00
GM = ₦20,800,850 (for the entire marketers).
GM = 20,800,850 ÷ 97 = ₦214, 441.75 (per marker/annum) or (₦214, 441.75 ÷ 52) =₦ 4, 123.88 per marketer/week

The estimated profitability level of soybeans marketing is presented in Table 7. The revenue from soybeans marketing (per 80kg bag) for the entire marketers (97) was estimated at ₦20,877,800, while the total variable cost was estimated at ₦76,950.00 Thus the average Gross Margin was found to be ₦20,800,850 or (per marker). Hence one can conclude that soybean marketing in the area was profitable since every single marketer stands to gain on the average, ₦214, 441.75. The total revenue was greater than the total variable cost of the product. The gross margin was then obtained by deducting the total variable cost from the total revenue of the, whole marketers in the study area.

Table 7. Cost and Return Associated with Soybeans Marketing in Billiri

Variables	Value (₦)/80kg
Total Variable cost(TVC)	76,950
Total Revenue(TR)	20,877,800
Gross Margin(GM)	20,800,850

Source: Field Survey, 2018.

Marketing Efficiency per Bag

ME = Input/output×100
ME = 11,500/15,500×100 = 74.19%

Table 8 showed the performance or the marketing efficiency. The higher the efficiency ratio the higher is the marketing efficiency, any change in marketing process which reduces the input cost of accomplishing a particular marketing services without reducing the consumer satisfaction will certainly lead to an improvement in marketing. Marketing of soybeans in this research was found to be efficient due to the positive value, and high marketing efficiency percentage obtained, which was in agreement with [10].

Table 8. Marketing Efficiency per Bag

Items (average)	Value(₦/80kg)
Gross revenue (GR) output	15,500
Total cost (TC) input	11,500
Marketing efficiency (M.E)	74.19

Source: Field Survey, 2018

Regression Analysis

The result of the regression analysis is presented in the Table 9. The result shows that buying price and revenue were inversely related in soybeans marketing in the study area. The result shows that the coefficient of the buying price was -.259 and was significant at 5% confidence interval. This implies that a

unit increase in buying price will result into decrease of revenue by ₦259.The coefficient of selling price was 159 and was insignificant at 5% confidence interval. This shows that a unit increase in selling price will result to increase of income in the marketing by₦159.The coefficient of the on-loading cost was -.033 and was insignificant at 10% confidence interval. This shows that a unit increase in on-loading cost will result to decrease of income in the marketing by ₦.033.The coefficient of off-loading cost was .058 and was insignificant at 5% confidence level. This implies that a unit increase in off-loading cost will result to increase of revenue by ₦.058.The coefficient of storage cost was -.027 and was insignificant at 5% confidence level. This implies that a unit increase in storage cost will result to decrease of revenue ₦.027.The coefficient of telephone cost was .178 and was significant at 10% confidence level. This shows that a unit increase in telephone cost will result to increase in income by ₦178.

The coefficient of transportation cost was 0.172 and was significant at 10% confidence level. This indicated that a unit increase in transportation cost will result to increase in revenue by ₦172.The coefficient of commission fee was -.030 and was insignificant at 10% confidence level. This shows that a unit increase in commission fee will lead to decrease in marketing income by ₦0.030.The coefficient of packaging cost was ₦-0.49 and was insignificant at 10% confidence level. This implies that a unit increase in packaging cost will result to decrease in income by ₦.049

The coefficient of packaging materials was -.071 and was insignificant at 10% confidence level. This shows that a unit increase in packaging materials cost will result to decrease in marketing income by ₦.071.The coefficient of marketing experience was .005 and was insignificant at 10% confidence level. This implies that a unit increase in marketing experience will result to increase in the marketing income.

The coefficient of determination (R^2) was 0.115, which shows that the influence of the all independent variables on dependent variables is 12% and this indicated that there is a weak relationship between the independent variable and dependent variables.

Table 9. Regression Analysis

Variables	**β**	**Std. Error**	***t-ratio***
(Constant)	767074.463	1627619.3	.471
Buying Price	-0.259	54.901	-2.071
Price Sold	0.159	55.277	1.195
On loading	-0.033	30581.472	-0.212
Off loading	.058	24007.248	382
Storage	-0.027	586.875	-0.216
Telephone	0.178*	550.140	1.609
Transport	0.172	1510.650	1.574
Commission	-0.030*	17006.958	-0.168
Packaging	-0.049*	26450.266	-0.274
Packaging materials	-0.071*	3948.106	-0.623
Marketing experience	0.005	10233.607	0.041
$R^2 = 0.115$			

Source: Output from SPSS, 2018 ***Sig.at 1% level; **=5% level; * =10%

Constraints Associated with Marketing of Soybeans in Billiri

Constraints associated with soybeans marketing in the study area are presented in Table 10. The result showed that lack of adequate capital at the disposal of the marketers was perceived as the most serious problem 39% of the marketers. The result revealed that lack of access to capital constituted the most serious constraint facing their business. This was followed by scarcity and high price of soybeans at lean period 20.6% which also contribute to the problems in marketing of soybeans in the area. Transportation was also another constraint facing the marketers in the study area.

About 17.5% of the respondents expressed that transportation is one of the problems encountered in the study area. According to [9] and [11] road transportation is the main avenue through which different parts of the society are linked together. Only 9.3% of the respondent also lamented that risk of buying poor quality soybeans is among their constraints in the study area.

Poor packaging materials 8.3% also cause damages to the soybeans in the store of the marketers, as such causes waste and reduction in the quantity of soybeans. The respondents

(5.2%) also expressed that; there was high interest rate during the lean period of soybeans marketing in the area which affected some of the marketers.

Table 10. Constraints Associated With Marketing of Soybeans in Billiri

Constraints	Percentage	Rank
Lack of capital	39	1
Scarcity and high price of soybeans at lean	20.6	2
Transportation	17.5	3
Risk of buying low quality soybeans	9.3	4
Poor packaging material	8.2	5
Interest rate	5.2	6
Total	**100**	

Source: Field Survey, 2018

The constraints associated with marketing of soybeans in Billiri are graphically illustrated in Fig.1.

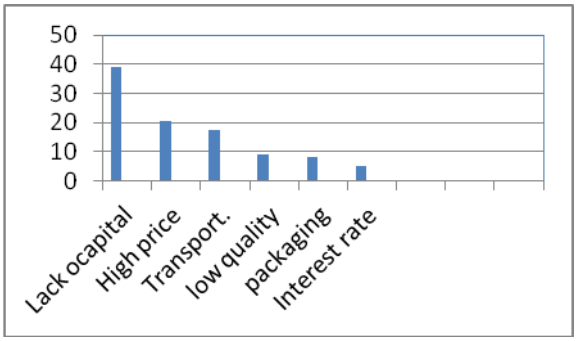

Fig.1. The order of the contraints associated with marketing of soybeans in Billiri

Regression equation = 767074.463 – $.259X_1 + .159X_2 – .033 X_3 + .058X_4 – .027X_5 + .17X_6 + .172X_7 –.030X_8 –.049X_9 –.071X_{10} +.005X_{11}$

CONCLUSIONS

The result of the study revealed that socio-economic characteristics of the respondents engaged in soybeans marketing in the study area are mostly male, aged between 21-40 years, and was also married. Soybean marketing was a profitable venture since the gross margin was greater than the total variable cost. Marketing of soybeans was also found to be efficient in view of the high marketing efficiency obtained. The survey also showed that marketing of soybeans was constraints by problems such as seasonality in price fluctuation, high cost of transport, lack of access to credit and inadequate storage facilities to continuously promote soybeans marketers in the study area.

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