



ASSESSMENT OF FACTORS OF SOYBEAN DISTRIBUTION BY PRODUCERS IN NIGER STATE, NIGERIA

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Abstract

This research was carried out to identify and evaluate some factors that influence soybean distribution in Niger state, Nigeria. Multistage sampling procedure was used for this study. Primary data was obtained through the use of structured questionnaire. The study used descriptive statistics and Tobit regression model for relevant analyses. The study found out that Peak period at harvest and collective decision by soybeans farmers are significant at 1%, while direct order from buyers and calls from fellow soybean farmers are significant at 5%.

Introduction

Agriculture is said to involve cultivation of land for crop production and rearing of animal for industrial and animal consumption. As the definition implies, those that consume agricultural output are mostly not in the farm field, even when they are found in the farm field, some farm produce undergo certain transformation process before they are suitable for human and animal consumption, hence the need to move these produce from one point to another.

Distribution is the process of making a product or service available for the consumer or business user who needs it (Wikipedia, 2019). We have three (3) major approaches to agricultural distribution. These are Intensive Distribution, Selective Distribution and Exclusive Distribution.

- **Intensive Distribution:** this occurs when products are stocked in major outlets. Basic food supplies are found in this category.
- **Selective Distribution:** in this type of distribution approach, the producers rely heavily on some few selected intermediaries to handle their products. This type of distribution is mainly applicable where the product handling requires special skills and training.
- **Exclusive Distribution:** in this approach, distribution is available to only very few intermediaries. This is also known as “limited outlet” distribution.

Distribution Channels in Agriculture;

According to Adegeye and Ditto (2015), agricultural distribution channels can take any of the following forms, thus:

- Farmer Producer → Farm-gate middlemen → commissioned agent → wholesaler → retailer → consumer
- Farmer Producer → Farm-Gate Middlemen → consumer



- Farmer Producer → Non-Commissioned agent → wholesaler → retailer → consumer
- Farmer Producer → Non-Commissioned agent → retailer → consumer
- Farmer Producer → Non-Commissioned agent → consumer
- Farmer Producer → Farmers' marketing cooperative → wholesaler → retailer → consumer
- Farmer Producer → wholesaler → retailer → consumer
- Farmer Producer → wholesaler → consumer
- Farmer Producer → retailer → consumer
- Farmer Producer → consumer

In all of the above channels, producers and consumers are constant. These made them most important elements of agricultural production, through to consumption.

Soybean;

Soya bean is specie of legume that has its origin traced to East Asia. Soya bean is a fat free cheap source of protein to both human and animals. Soya beans are also known to be rich in calcium, fiber, iron, magnesium, and some other enriching vitamins and minerals. Soya bean is a versatile source of food as it can be cooked, fermented, dried, and converted into products like milk, flour, tofu and more (Steve, 2017). Soya bean is grown largely for its edible bean which has several uses. The plant is categorized as an oil seed rather than a pulse by the Food and Agricultural Organization (FAO). Soya bean is a major source of vegetable protein and oil in the world. Worldwide demand continues to be high and production has more than doubled in the past 20 years to a total of 264.2 million metric tons in 2011 (National Agricultural Statistics Service, 2012).

Materials and Methods

This study used primary data which was obtained through a well-structured questionnaire administered by trained enumerators. A Multistage sampling technique was used for this study. Niger state is an emerging state in terms of soybeans production in Nigeria. Niger State has three agricultural zones, thus; Zone 1 (Niger-South), Zone 2 (Niger-Central) and Zone 3 (Niger-East) with twenty five (25) Local Government Areas (LGAs). Two (2) Local Government Areas were purposively selected from each agricultural zone in Niger State.

These local government areas are Mokwa and Lapai, Shiroro and Paikoro, Mariga and Mashegu from agricultural Zone 1, Zone 2 and Zone 3 of Niger state respectively. These LGAs are known for soybean production according to National Cereals Research Institute (NCRI) 2018 report. The second stage involved selection of three (3) communities randomly from each selected Local Government Area. This gave a total of eighteen (18) communities used in this study. The third stage involved determination of sample frame for the study, after which sample determination formula as cited by Robert V., Krejcie and Daryle W. Morgan's article (1970) will be used to arrive at the sample size.

$S = X^2NP(1-P) \div d^2(N-1) + X^2P(1-P)$ was used to arrive at the sample size for the study.

Where

S = required sample

X^2 = the table value of chi-square for 1 degree of freedom at the desired confidence level (3.841)

N = the population size

P = the population proportion (assumed to be 0.5 since this could provide the maximum size)

d = the degree of accuracy expressed as a proportion (0.05)

Tobit regression analysis was used for all the qualitative response parameters. According to Hisayuki (2008), Tobit model is the model in which econometricians only observe dependent variables that satisfy some restrictions.

Explicitly, the standard Tobit model for this study is stated as;

$$y_i^* = \chi_i \beta + \varepsilon_i \quad \text{Eq. (1)}$$

$$\text{The dependent variable } y_i^* \text{ is determined by } y_i = y_i^* : \text{ if } y_i^* > L \quad \text{Eq. (2)}$$

$$0 : \text{ if } y_i^* \leq L \quad \text{Eq. (3)}$$

y_i^* is a latent variable which is not observed.

χ_1 = market days

χ_2 = direct order from buyers

χ_3 = peak period at harvest

χ_4 = call from fellow soybean farmers

χ_5 = price rise

χ_6 = forced sale due to inadequate storage facility

χ_7 = collective decision by soybean farmer within the locality

ε_i = disturbance term

L = is a constant threshold value which needs not be known and could be zero

Results and Discussion

The socio-economic characteristics of soybean producers in the study area consider the age, sex, marital status, highest education attainment, household size, major occupation and average monthly income as presented in Table 1 below.

From table 1 and 2 below, it can be deduced that the age group of farmers with the highest frequency is 41 – 50, which has 76 frequencies, making a percentage concentration of 40.60, this is followed by age group 31 – 40, with total of 68 frequency and 36.40 percent. This shows that the major producers of soybean in the study area fall within the economic active age of 31 – 50 years of age.

All the respondents at the production nod of soybean are male. The concentration of production sex of male cannot be unconnected with the supportive role which the female counterparts play in virtually all the communities under study. Some respondents shield their wives away from responding to our enumerators for reasons best known to them.

The major occupation of the respondents is farming with a frequency concentration of about 180 (96.3%) out of the 187 respondents. The remaining 3.7% falls within those that combine farming and business as well as farming and civil service.

The highest educational attainment of the respondents is secondary school with a total frequency of 86 (46%), followed by primary school certificate which has a total frequency of 43 (23%). Polytechnic and Quranic education show an improved concentration of 14 (7.5%) and 21 (11.2%) respectively.



Marital status of respondent shows that about 178 (95.2%) of them are married, while a minute frequency of 9 (4.8%) are still single.

The household size of the respondents is impressive at a range of 6 – 10. This has a concentrated frequency of 109 (58.29%). Household size of 5, and below stood at 58 (31.01%).

On the nature of land ownership, about 87.2% of the respondents inherited their land. The remaining 12.8% fall in the range of gift, leasehold, purchased, inherited & gift, inherited and rent and so on.

Membership of cooperation and relevant union is vital to this study. A close look at the result of the field survey shows that about 152 (81.3%) are members of relevant body of

cooperative societies and other unions while about 35 of the respondents find no reasons to belong to any body of association either circumstantially or deliberately.

Table 1 Composition of Socio-economic Characteristic of Soybean Producers

| Characteristics | Frequency | Percentage (%) |
|-------------------------------|------------------|-----------------------|
| Age Group (Yrs) | | |
| Below 30 | 27 | 14.4 |
| 31 – 40 | 68 | 36.4 |
| 41 – 50 | 76 | 40.6 |
| 51 – 60 | 13 | 7.0 |
| Above 60 | 3 | 1.6 |
| Total | 187 | 100 |
| Sex | | |
| Male | 187 | 100 |
| Female | 0.00 | 0.00 |
| Major Occupation | | |
| Farming | 180 | 96.3 |
| Farming and Business | 6 | 3.2 |
| Farming and Civil Service | 1 | 0.5 |
| Educational Attainment | | |
| Primary School | 43 | 23.0 |
| Secondary | 86 | 46.0 |
| College of Education | 5 | 2.7 |
| College of Health Tech. | 1 | 0.5 |
| Polytechnic | 14 | 7.5 |
| Quranic | 21 | 11.2 |
| University Degree | 5 | 2.7 |
| Quranic and Secondary | 1 | 0.5 |
| Illiterate | 11 | 5.9 |
| Total | 187 | 100 |

Source: Field Survey 2021

Table 2: Composition of Socio-economic Characteristic of Soybean Producers

| Characteristics | Frequency | Percentage (%) |
|---|-------------|----------------|
| Types of Land Ownership | | |
| Rent | 3 | 1.6 |
| Purchased | 2 | 1.1 |
| Gift | 14 | 7.5 |
| Inherited | 163 | 87.2 |
| Gift and Rent | 1 | 0.5 |
| Inherited and Gift | 2 | 1.1 |
| Inherited and leasehold | 1 | 0.5 |
| Inherited and Rent | 1 | 0.5 |
| Access to Storage Facility | | |
| Yes | 170 (Local) | 90.9 |
| No | 17 | 9.10 |
| Membership of Association and/or Union | | |
| Yes | 152 | 81.3 |
| No | 35 | 18.7 |
| Marital Status | | |
| Married | 178 | 95.2 |
| Single | 9 | 4.8 |
| Household Size (Grouped) | | |
| 5 and Below | 58 | 31.01 |
| 6 – 10 | 109 | 58.29 |
| 11 – 15 | 20 | 10.70 |

Source: Field Survey 2021

This study identified market days, direct order from buyers, peak period at harvest, call from fellow soybean farmers, price rise, forced sale due to inadequate storage facilities and collective decision by soybean farmers as the major factors that influence soybean distribution by the producers in the study area. The response was indeed qualitative in nature hence the need to apply qualitative response model in its analysis.

Tobit regression model was used in analyzing the response so collected. The result of the analysis shows that direct order from buyers, peak period at harvest, calls from fellow soybean farmers and collective decision by soybean farmers are all significant. Peak period at harvest and collective decision by soybeans farmers are significant at 1%, while direct order from buyers and calls from fellow soybean farmers are significant at 5%. This is shown in table 3 below which is the result of the Tobit regression analysis on the factors that influence soybean distribution in the study area.

Table 3: An Evaluation of Factors that Influence Soybean Distribution by Producers

| Parameters Factors | Coeff. | Std. Err. | t | p> t |
|--|-----------|-----------|--------|-------|
| Market days | 11.31976 | 48.42322 | 0.23 | 0.815 |
| Direct order from buyers | 25.56761 | 9.869495 | 2.59* | 0.010 |
| Peak period at harvest | 28.65653 | 7.483995 | 3.83** | 0.000 |
| Calls from fellow farmers | 21.62071 | 7.881133 | 2.74* | 0.007 |
| Price rise | -1.511927 | 7.438301 | -0.20 | 0.839 |
| Forced sale due to storage problem | -8.347721 | 11.27696 | -0.74 | 0.460 |
| Collective decision by soybean farmers | 41.27239 | 7.975885 | 5.17** | 0.000 |

* = significant at 5% (0.05), ** = significant at 1% (0.01).

Source: Data analysis 2021

Conclusion

Distribution of farm produce is an essential part of agriculture that requires holistic and realistic understanding for policy dimension and investment forecast. It is against this background that this study is carried out to identify and evaluate factors that influence distribution of soybean by producers in Niger state of Nigeria. The major factors identified were market days, price rise, call from buyers and fellow farmers, forced sale due to inadequate storage facilities, collective decision by soybeans farmers and peak period at harvest. Four (4) out of these seven (7) factors were found to be significant at 1% and 5%. Peak period at harvest and collective decision by soybeans farmers are significant at 1%, while direct order from buyers and calls from fellow soybean farmers are significant at 5% using Tobit regression analysis.

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