Structural Analysis of Soybean Marketing in Niger State, Nigeria

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Abstract

The study is a structural analysis of soybean marketing in Niger State, Nigeria. Purposive multistage and simple random sampling techniques were used to select 388 soybean marketers categorized into producer marketers, marketer retailers and marketer wholesalers. Data was collected with the aid of a structured questionnaire. Descriptive and inferential statistics were used for data analysis. The socioeconomic characteristics of the respondents revealed mean ages of 42.47 years for the producer marketers, 43.32 years for marketer retailers and 47.29 years for marketer wholesalers. Respondents were mostly married with 89.31% among the producer marketers, 89.92% among the marketer retailers and 97.7% among the marketer wholesalers. The average household size of the categories of marketers was found to be 12 persons per household. The categories of marketers were literate with cumulatively, 69.4% of producer marketers, 57.54% of marketer retailers and 76.38% of marketer wholesalers attended either primary, secondary or tertiary form of western education. The Gini-Coefficient estimates of 0.132, 0.184 and 0.345 for the producer marketers, marketer retailers and marketer wholesalers respectively, implied inequitable distribution of sales income and high level of market competition among the marketers. The Lorenz curve revealed high market concentration for the categories of marketers. The study recommended that the government through the extension agents and Non-Governmental Organization (NGO) in the state should collaborate and organize marketing trainings for the categories of marketers to improve their information base about marketing and pricing which subsequently, will translate into increased soybean marketing efficiency.

KEYWORDS: Soybean, marketer's category, sales, Gini-coefficient, Lorenz curve

1.0 Introduction

Soybean (Glycine max (L) Merrill), originated from China, and belong to the family leguminoceae, in the sub-family of papiplonaceae (Ogbanje, 2023). After wheat, maize and rice, soybean is the fourth most cultivated cereal crop (Grassini *et al*., 2021). In Africa, the preponderance of soybean cultivation is centered around South Africa, Nigeria, Uganda, Tanzania, Zaire, and Zimbabwe with some scattered productions in the francophone countries. The current annual soybean production figure in Nigeria stands at 680,000MT, ranked second after South Africa amongst producers of soybean in Africa (Khojely *et al*., 2018 and Akah *et al*., 2021). Niger state contributes between 25 – 100MT annually to the total annual production in Nigeria hence, a major soybean producing state (Sahel Capital Partners, 2017). The comparative advantage of high return of investment the crop offers relative to other arable crops, less demanding cultural practices, ability to thrive well in soils with low fertility due to presence of root noodles and being a viable source of income, influences the preponderance of smallholder farmers to soybean production (Ogaje and Abu, 2020, Ali and Wasiu, 2020).

Soybean holds immense economic significance in Nigeria (Pagano and Miransari, 2022). Soybean have become a crucial component of Nigeria agricultural landscape as it contributes significantly to the livelihoods of smallholder farmers, a major cash crop, source of cheap and high protein-rich alternative compared to animal protein hence, an important and popular component of vegetarian diet (Upev *et al*., 2015 and Udeh *et al*., 2018). The dry matter content of soybean contains approximately 40% protein, and 20% oil content which contains essential amino acids, rich in healthy omega-3 unsaturated fats and cholesterol free (Mairabo *et al*., 2023). Omoigui *et al*. (2020) and Akah *et al*. (2021) contended that, soybean meal constitutes a vital and preferred source of protein in compounding poultry and fish feeds with composition up to 20 - 30% and 20% respectively, while the haulms are a suitable feed for goats and sheep. Furthermore, soy milk, soy cheese, vegetable oil, soy flour and food seasoning (dadawa) are all high calorie and rich protein soybean-based food consumed by humans. At the industrial level, soybean is utilized to produce wood veneer, paper coatings, printing ink, adhesive, alkyd resins, anti-corrosion agent, core oil, bio-fuel due to less or no nitrogen element in the oil, disinfectant, pesticides, paints, antibiotics and cosmetics (Ngalamu *et al*., 2012).

The marked decline in soybean productivity in Nigeria (lower than the optimum yield of 3mt/ha which is approximately 1mt/ha on the average) remained a major source of concern (Ronner *et al*., 2016 and Goldsmith, 2019). Several challenges characterized soybean production and account for aforementioned assertion. Droughts, lack of credit access, inadequate access to improved seeds, low extension contacts, high production cost, lack of market infrastructures, insecurity inform of farmers-herders clash, pest and disease, post-harvest losses and low level of irrigation and reliance on rain fed agriculture have all been indicted as obvious reasons for the low productivity in smallholding farming (Mgbenka and Mbah, 2016 and Hazell *et al*., 2016), Although, the government coupled with efforts from research institutes like International Institute of Tropical Agriculture (IITA) Ibadan and National Cereal Research Institute (NCRI) Baddegi had over the last decades attempted to address the agricultural inefficiencies and harness the potentials of the sector evidenced by the different government policy reforms and farm level technologies and development of high yielding improved soybean varieties to boost productivity respectively, the problem still lingers (Kamara *et al*., 2022). Consequently, the dynamics triggered importation of soybean due to huge domestic deficit supply created as domestic production is unable to match up with domestic demand of soybean.

Kumar (2018) emphasized that, production and marketing in agriculture are closely related concepts and the choice of the commodity to produce is determined by the market. It can be argued that in production, such decision as the variety of crops to grow or breed of animal to keep are all marketing decisions and, the concept of utility is central (Abu, 1997). In addition, marketing by nature is an emotive subject with a range of viewpoints concerning its scope and importance. At the simplest level, it might be assumed that marketing is an activity that takes place in the market. It is a collective term used to describe exchange between buyers and sellers, who are attempting to maximize profit or objective utility (Bwala and Alani, 2020). Though a long time ago, the definition of marketing by The National Commission for Agriculture (NCA) still stands tall amongst the various attempt to define the concept. Agricultural marketing is a process which starts with a decision to produce a saleable farm commodity, involves all the aspects of market structure or system, both financial and institutional, based on technical and economic considerations, and includes pre- and post-harvest operations, assembling, grading, storage, transportation and distribution (NCA, 1976).

Marketing covers all business functions including production and its broadest sense, production decisions. Sani (2018) stressed that agricultural marketing system possesses the tendency to catalyze improved socio-economic status and enhance the production system of smallholder farmers in any given rural location. An efficient agricultural marketing as opined by Ajibade *et al*. (2021), enhances; market participation of smallholder farmers, alleviate poverty in the rural area, an important livelihood option, optimize resource use and out management, improve net farm income, broadening of market, growth of agro-based industries, price signals, and creates utility of form, place, time and possession of the agricultural commodity. From the foregoing, agricultural marketing is an important multiplier of economic development and its advancement makes possible economic integration and the optimum utilization of whatever assets and productive capacity an economy already possessed. Since soybean is a highly differentiated product and the market is highly segmented, the soybean value chain in Niger State is of great interest to major stakeholders due to its organized governance structure where major actors and market forces determine how much of the product to be sold and at what price (Lukman *et al*., 2021).

2.0 Objectives of the Study

The broad objective of the study is to conduct the structural analysis of soybean marketing Niger State, Nigeria. The specific objectives of the study are to:

describe the socioeconomic characteristics of soybean marketers in the study area; and to analyze the structure of soybean marketers in the study area;

3.0 Methodology

The study is cross-sectional research which adopted the survey design. Structured questionnaire was developed and used to elicit responses from soybean marketers in the study area based on the specific objectives developed for the study. The study was conducted in Niger State, Nigeria. Niger State was created on the 3rd February 1976, with Minna as the headquarter. Niger State is located in the North-Central part of Nigeria, and lies between Latitude 8°20' and 11°30' North, and Longitude 3°30' and 7°40' East of the equator. The state covers an estimated land area of approximately 76, 469 square kilometers, with a human population of 3,954,772 people comprising 2,032,725 males and 1,922,047 females and, consists of twenty-five (25) Local Government Area, divided into three (3) senatorial zones; A, B and C National Population Commission (NPC, 2006). However, the population was projected in 2019 using 3.2% growth rate of National Bureau of Statistics (NBS) to be 5,960,112 people. The United Nations Department of Economics and Social Affairs Population Division (UNESAPD, 2024) projected the population of Niger State to be 27.2 million people utilizing 3.34% yearly growth rate. The state experiences two distinct seasons namely; wet and dry, with annual rainfall varying from 1,100mm2 - 1600mm2 in the Northern and Southern part respectively, with an average daily temperature which ranges from 23°C - 37°C (Niger State Agricultural and Mechanization Authority (NAMDA, 2018). Niger State is bordered with Kebbi State to the North-West, Zamfara State to the North, Kaduna State to the North-East, Kogi State to the South-East, Kwara State to the South-West, Federal Capital Territory, Abuja to the South-East and an international border with Republic of Benin to the West (Niger State, 2007). Niger State is inhabited predominantly by the Nupe, Hausa and Gbagyi which are the major ethnic groups, and host of other tribes which includes Kadara, Koro, Bassa, Kamuku, Ingwai, Fangu, Kambari, Dukkawa, Fulani, Abewa, Bisan, Gungawa, Bauchi, Bariba, Urah, Boko, Bokobaro, Bauchnu, Achifawa, Dakarkari,

Kakanda, Ganagana, and Dibo and numerous non-native tribes leaving peacefully and contributing their quota to the development of the state.

3.1 Population of the Study

The population for the study comprises 12,850 major soybean marketers in selected 11 Local Government Areas (LGA) in Niger State, Nigeria, with particular interest on 3 categories for the purpose of this study:

a. Producer marketers: These are farmers who are either small-holder or large-scale producer and marketers of soybean seed;

b. Marketer retailers: These are soybean marketers who form network with the village agents or sometimes, deals directly with the small-holder or large-scale farmers to purchase soybean seed either in the rural or urban area;

c. Marketer wholesalers: These are either licensed or unlicensed marketers who generally buy soybean seed in large volumes, and are independent individual agents and or commissioned agents to exporters or processors.

3.2 Sample and Sampling Techniques

However, due to the enormity of the population, a purposive multistage and simple random sampling technique was used to select the sample size for the study based on preponderance of soybean production and marketing in the study area. The first stage involved selection of the three (3) Agro Ecological Zones (AEZ); A, B and C in the study area. The second stage involved purposive selection of four (4) LGAs each from AEZ A and B and, three (3) LGAs from AEZ C, identified for their preponderance of soybean production and marketing in the study area. The third and final stage involved simple random selection of the 388 soybean marketers utilizing the Taro Yamane method (Yamane, 1967) and the Bourley proportion allocative formula (Bourley, 1926).

Mathematically, the Taro Yamane method is represented as;

$$n = \frac{N}{1 + N(e^2)} \text{ ……..(i)}$$

Where,

n = Sample size

N = Population size

e = Margin of error (MoE = 0.05)

1 = Constant

Mathematically, Bourley's proportion allocative formula is represented as:

$$n_i = n\frac{N_i}{n} \quad \text{.....(ii)}$$

Where,

n_i = Sample size for the i^{th} stratum

n = Total sample size

N_i = Population for the i^{th} stratum

N = Total population

Table 1: Sample Size Selection Plan

Sample Size Selection				
S/n	**Agro Ecological Zones**	**LGAs**	**Sampling Frame**	**Sample Size**
1	A	Agaie	1050	32
2		Gbako	977	30
3		Lapai	1020	31
4		Mokwa	1503	45
1	B	Bosso	1388	42
2		Gurara	980	30
3		Munya	1200	36
4		Paikoro	1100	33
1	C	Borgu	1407	42
2		Kontagora	1205	36
3		Mashegu	1020	31
Total		**11**	**12,850**	**388**

3.3 Model Specification

The Gini index is defined as a ratio of the area on the Lorenze curve diagram. If the

area between the line of perfect equality and Lorenz curve is A, and the area under the Lorenz

curve is B, then the Gini index is A/(A + B). Since (A + B) = 0.5, the Gini Index is G = 2* A

or G = 1 – 2B. Following Shafaatu, (2017), Gini coefficient model is expressed as;

$$GC = 1 - \sum_{i=0}^{n-1}(Y_{K-1} - Y_K)(X_K - X_{K-1}) \quad \text{.....(iii)}$$

Where,

GC = Gini coefficient

Y = Cumulative percentage of soybean marketers

X = Cumulative percentage of their sales

Lorenz curve refer to the ratio of the egalitarian line or line of perfect equality (which forms 450 angles with both the X and Y axis) to the area of the entire triangle formed by the egalitarian line and x and y axis and is expressed as;

GC = 10,000 - X

10,000 ……..……(iv)

Where;

10,000 = A constant (i.e the total area of the square (100 x 100))

X = The trapezoidal area

4.0 Result and Discussion

4.1 Socioeconomic Characteristics of Soybean Marketers in the Study Area

The socioeconomic variables considered in this study includes age, sex, marital status, education level, market experience, household size, cooperative membership, ownership of transport and annual income and the breakdown of the analysis is presented in Table 2. Among the categories of marketers, the modal age of the producer marketers was 45 years with 42.47 years as the mean age, the modal age of the market retailers was 35 years with 43.32 years as the mean age and the modal age of the marketer wholesalers was 45 years with 47.29 years as mean age. The result showed that respondents were in their middle ages regarded as the active and productive age for soybean marketing consistent with the result obtained by Ani *et al*. (2017) in their survey. The implication of the findings is that the young and productive active age predisposes the respondents to quickly adopt new and improved marketing strategies and techniques which will efficiently enhance their marketing activities (Girei *et al*., 2013).

In terms of sex, soybean marketing activities is male dominated among the producer marketers (89.31%), market retailers (56.92%) and marketer wholesalers (81.89%) however. The result is in conformity with the study by Udeh *et al*. (2018), who documented male dominated soybean

marketing activities and attributed it to the large capital and labour intensive requirement of soybean marketing and direct production of the crop.

The marital status showed a significant proportion of the producer marketers (89.31%), market retailers (89.92%) and market wholesalers (97.7%) are married. The result corroborates with the study by Oladejo (2015) and Offor *et al*. (2016), who contended that being married among marketers confers to a high degree of responsibility and a depiction of the stability of their households signifying the availability of family labour for marketing activities and the cultural background of the region with a significant population practicing Islam, early marriages and sometimes inclined towards polygamy could be rampant accounting for the high degree of married respondents.

The education level indicated that, majority of the categories of marketers were literate and attended at least, one form of western education with cumulatively, 69.47% of the producer marketers, 57.54% of the marketer retailers and 76.38% of the marketer wholesalers attended at least, primary, secondary and tertiary schools. The result showed a high level of literacy amongst the soybean marketers and the finding is in tandem with the surveys undertaken Alabi *et al*. (2020) and Olayinde *et al*. (2020) who both reported significant percentage of respondents who are literate and attended at least, one form of western education which is expected to enhance their decision-making process in the market, market performance and early adoption of marketing innovations.

Further, most of the category marketers with 69.4% of the producer marketers, 51.54% of the market retailers and 66.93% of the market wholesalers are members of cooperative association. Also, the result revealed mean number of years as a member of cooperative association among producer marketers to be 11.82 years, market retailers to be 12.78 years and market wholesalers 14.62 years, demonstrating a fairly high years of membership amongst the categories of soybean marketers. The result agrees with the research conducted by Adesoji *et al*. (2020) who opined that being a member of a cooperative association offers privileges of easy access to market information, access to capital and credit facilities to conduct marketing business which naturally, will enhance their various marketing activities positively.

The marketing experience of the categories of marketers as revealed that, an average producer marketers' marketing experience ranged from 2 to 40 years with 14.42 years mean marketing experience; an average marketer retailers' marketing experience ranged from 2 to 40 years with 12.22 years mean marketing experience and, an average marketer wholesalers' marketing experience ranged from 2 to 35 years with 14.42 years mean marketing experience. The marketing experience amongst the categories of marketers is fairly high and the result is consistent with the study conducted by Biye *et al*. (2018) who documented a fairly high level of marketing experience amongst soybean marketers implying that they can handle their marketing activities more efficiently and influence them to be convenient with the marketing systems being utilized in the markets where they sell their products.

In terms of household size, producer marketers and marketer retailers' average household size ranged from 2 to 22 people and a mean of 12 people per household respectively, while an average marketer wholesalers' household size ranged from 2 to 25 people and a mean of 12 per every household. The fairly large household sizes of the categories of marketers conforms to the result by Lukman *et al*. (2021) who posited that large household size could be a reflection of the practice of early and polygynous marriages due to cultural background and, a direct relationship between marital status and

household size as the children could act as additional hands to provide labour for various marketing operations.

Analysis revealed the producer marketers with 40.46%, the marketer retailers with 29% and the marketer wholesalers with 59.06% owned a means of transportation which is very vital considering that, transportation cost accounts for a large share of the total cost of soybean marketing and could enhance market efficiency through reduce transport cost thus, positioning the marketers to earn extra margin in the long-run.

Table 2: Distribution of Soybean Marketers Based on their Socioeconomic Characteristics (N = 388)

Variable	**Producer Marketer (n = 131)**	**Marketer Retailer (n = 130)**	**Marketer Wholesaler (n = 127)**
	Frequency	**Frequency**	**Frequency**
Age			
18 – 35	22 (16.79)	29 (22.31)	5 (3.94)
36-45	64 (48.85)	53 (40.77)	45 (35.43)
above 45	45 (34.36)	48 (36.92)	77 (60.63
Total	**131**	**130**	**127**
Minimum	18	18	25
Maximum	65	75	64
Mean	42.57	43.32	47.29
Standard Deviation	8.62	8.57	6.87
Sex			
Male	117 (89.31)	74 (56.92)	104 (81.89)
Female	14 (10.69)	56 (43.08)	23 (18.11)
Total	**131 (100)**	**130 (100)**	**127 (100)**
Marital Status			
Single	2 (8.4)	6 (4.62)	3 (2.36)

Variable	**Producer Marketer (n = 131)**	**Marketer Retailer (n = 130)**	**Marketer Wholesaler (n = 127)**
Married	117 (89.31	113 (89.92)	119 (97.7)
Divorced	1 (0.76)	4 (3.08)	2 (1.58)
Widowed/Widower	2 (1.53)	7 (5.38)	3 (2.36)
Total	**131 (100)**	**130 (100)**	**127 (100)**
Education Level			
No formal education	19 (14.50)	35 (26.92)	16 (12.60)
Adult education	5 (3.82)	6 (4.62)	7 (5.51)
Qur'anic education	21 (16.03)	20 (15.38)	17 (13.39)
Primary education	18 (13.74)	15 (11.54)	14 (11.02)
Secondary education	38 (29.01)	41 (31.54)	52 (40.94)
Tertiary education	30 (22.9)	13 (10.00)	21 (16.54)
Total	**131 (100)**	**130**	**127 (100)**
Market Experience			
1 – 5	21 (16.03)	25 (19.23)	15 (11.81)
6 – 11	43 (32.82)	46 (35.38)	54 (42.52)
11 – 15	21 (16.03)	34 (26.15)	29 (22.83)
16 – 20	17 (12.98)	10 (7.60)	12 (9.45)
21 and above	29 (22.14)	15 (11.54)	17 (13.39)
Total	**131 (100)**	**130 (100)**	**127 (100)**
Minimum	2	2	2
Maximum	40	40	35
Mean	14.42	12.22	12.54
Standard Deviation	9.31	7.97	7.49
Household Size			

Variable	**Producer Marketer (n = 131)**	**Marketer Retailer (n = 130)**	**Marketer Wholesaler (n = 127)**
1 – 5	12 (9.16)	15 (11.54)	7 (5.51)
6 – 11	39 (29.77)	48 (36.92)	41 (32.28)
11 – 15	48 (36.64)	39 (30.00)	53 (41.73)
16 – 20	30 (22.9)	24 (18.46)	21 (16.54)
21 and above	2 (1.53)	4 (3.08)	5 (3.94)
Total	**131 (100)**	**130 (100)**	**127 (100)**
Minimum	2	2	2
Maximum	22	22	25
Mean	11.82	11.24	12.06
Standard Deviation	4.46	4.89	4.42
Cooperative membership			
No	40 (30.53)	63 (48.46)	42 (33.07)
Yes	91 (69.47)	67 (51.54)	85 (66.93)
Total	**131 (100)**	**130 (100)**	**127 (100)**
Number of years as member			
Minimum	2	2	2
Maximum	40	40	40
Mean	11.82	12.78	14.62
Standard Deviation	7.75	8.32	8.76
Ownership of transport			
No	78 (59.54)	92 (70.77)	52 (40.94)
Yes	53 (40.46)	38 (29.23)	75 (59.06)
Total	**131 (100)**	**130 (100)**	**127 (100)**

Variable	Producer Marketer (n = 131)	Marketer Retailer (n = 130)	Marketer Wholesaler (n = 127)
Type of Transport			
Motorbike	47 (88.68)	27 (71.05)	40 (53.33)
Vehicle	6 (11.32)	11 (28.95)	35 (46.67)
Total	**53 (100)**	**38 (100)**	**75 (100)**

Figures in parenthesis represents percentages

Source: Field Survey, 2024

4.2 Structure of Soybean Market in the Study Area

4.2.1 Degree of market concentration

Market concentration is a term used to describe the number of sellers and buyers in the market. The study analyzed the degree of market concentration for soybean marketers in Niger State where, producer marketers, marketer retailers and marketer wholesalers of soybean are significantly involved in the marketing process using the Gini Coefficient and Lorenz curve.

(i) Gini coefficient

The market concentration of the categories of soybean marketers was computed using the Gini Coefficient as revealed in Tables 3, 4 and 5. The soybean marketers' annual sales was classified into 3 categories viz; 1001 – 30,000, 30,001 – 60,000, 60,001 and above. Among the producer marketers, a total of N9,572,706.2 was generated and, 10% of the total marketers in this category contributed N265,507.7, 14% of the total marketers in this category contributed N215,582.35 and 76% of the total marketers in this category contributed N9,091,616.14 to the total amount generated from sales.

Among the marketer wholesalers, a total of N841,914.5 was generated and, 15% of the total marketers in this category contributed N313,346, 19% total marketers in this category contributed N183,946.7 and 66% of the total marketers in this category contributed N8,564,545.5 to the total amount generated from sales.

Among the marketer wholesalers, a total of N9,841,914.5 was generated and, 10% of the total marketers in this category contributed N15,368.4, 40% total marketers in this category contributed N194,774.4 and 50% of the total marketers in this category contributed N731,771.7 to the total amount generated from sales.

Based on the computation, the producer marketers, marketer retailers and marketer wholesales' Gini Coefficient were 0.132, 0.184 and 0.345 respectively. It is observed that the values of Gini Coefficient for all the categories of soybean marketers are lower than 0.35 hence, it indicates inequitable distribution of sales income amongst the soybean marketers. The result of the Gini Coefficient is consistent with the studies undertaken by Rabirou *et al*. (2018) and Ekine *et al*. (2018) who both recorded low values of estimated Gini Coefficient for yam marketers and fish marketing.

Table 3: Gini Coefficient for Producer Marketers (n = 131)

Range of Income	Number of Marketers Frequency	Proportion of Marketers (X)	Cumulative Frequency	Cumulative Proportion	Total sales	Proportion of sale	Cumulative Proportion of Sale (Y)	XY
1,001 - 30,000	13	0.10	13	0.10	265507.71	0.03	0.03	0.003
30,001 - 60,000	5	0.04	18	0.14	215582.35	0.02	0.05	0.002
60,001 and above	113	0.86	131	1.00	9091616.14	0.95	1.00	0.864
Total	**131**	**1**			**9572706.2**	**1.00**		**0.868**

Gini Coefficient =1 – (Sum of XY) = 1 – 0.868 = 0.132; 0.132 < 0.35 indicating equality distribution (concentration) of soybean marketers

Source: Field Survey, 2024

Table 4: Gini Coefficient for Marketers Retailers (n = 130)

Range of Income	**Number of Marketers Frequency**	**Proportion of Marketers (X)**	**Cumulative Frequency**	**Cumulative Proportion**	**Total sales**	**Proportion of sale**	**Cumulative Proportion of Sale (Y)**	**XY**
1,001 - 30,000	20	0.15	20	0.15	313346	0.03	0.03	0.005
30,001 - 60,000	5	0.04	25	0.19	183946.7	0.02	0.06	0.002
60,001 and above	105	0.81	130	1.00	8564545.5	0.95	1.00	0.809
Total	**130**	**1**			**9061838.2**	**1.00**		**0.816**

Gini Coefficient =1 – (Sum of XY) = 1 – 0.816 = 0.18; 0.18 < 0.35 indicating equality distribution (concentration) of soybean marketers

Source: Field Survey, 2024

Table 5: Gini Coefficient for Marketers Wholesalers (n = 127)

Range of Income	**Number of Marketers Frequency**	**Proportion of Marketers (X)**	**Cumulative Frequency**	**Cumulative Proportion**	**Total sales**	**Proportion of sale**	**Cumulative Proportion of Sale (Y)**	**XY**
1,001 - 30,000	13	0.10	13	0.10	15368.4	0.02	0.018	0.002
30,001 - 60,000	38	0.30	51	0.40	94774.4	0.13	0.148	0.044
60,001 and above	76	0.60	127	1.00	731771.7	0.87	1.017	0.609
Total	**127**	**1**			**841914.5**	**1.02**		**0.655**

Gini Coefficient =1 – (Sum of XY) = 1 – 0.655 = 0.34; 0.34 < 0.35 indicating equality distribution (concentration) of soybean marketers

Source: Field Survey, 2024

(ii) Lorenz curve

The degree of market concentration in the study area can equally be represented utilizing the Lorenz curve. Figures 1, 2, and 3 represents the Lorenz curves of the producer marketers, marketer retailers and marketer wholesalers respectively. The Lorenz curve is represented by a diagonal straight line referred to as the line of perfect equality in income or wealth distribution. Observing the Lorenz curves carefully, it can be deduced that the Lorenz curve for the marketer wholesalers assumes a more convex shaped, followed by that of the marketer retailers and the then, that of the producer marketers in that order. The implication of the results of the Lorenz curves of the different categories of soybean marketers is that, both the market concentration and equality in sales of income for the wholesaler marketers tends to be higher than that of the marketer retailers and producer marketers in the study area.

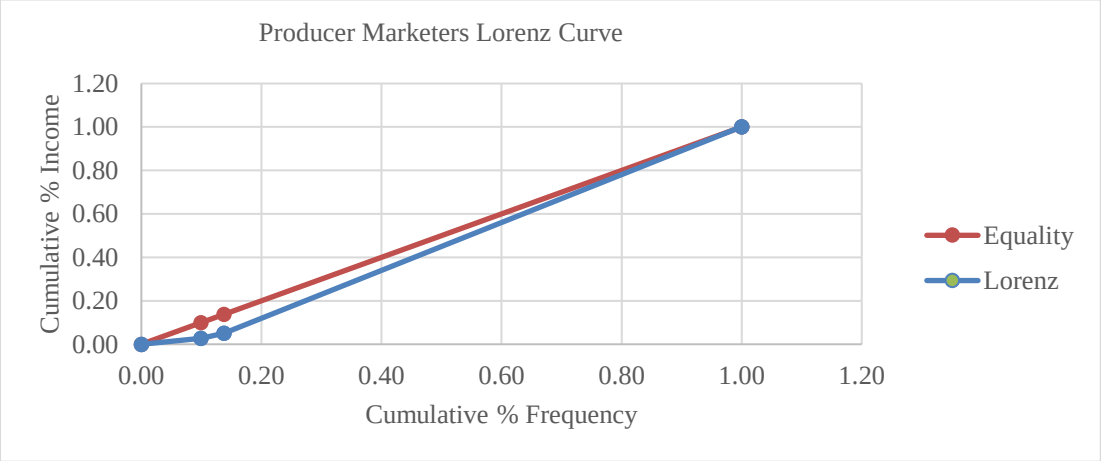

Figure 1: Lorenz Curve for Producer Marketers

Source: Field Survey, 2024

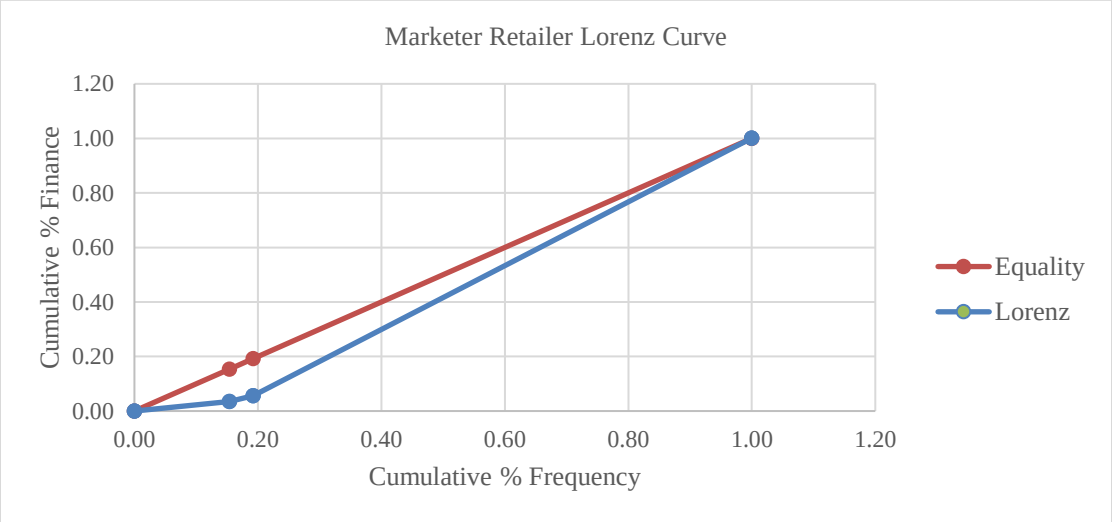

Figure 2: Lorenz Curve for Marketers Retailers

Source: Field Survey, 2024

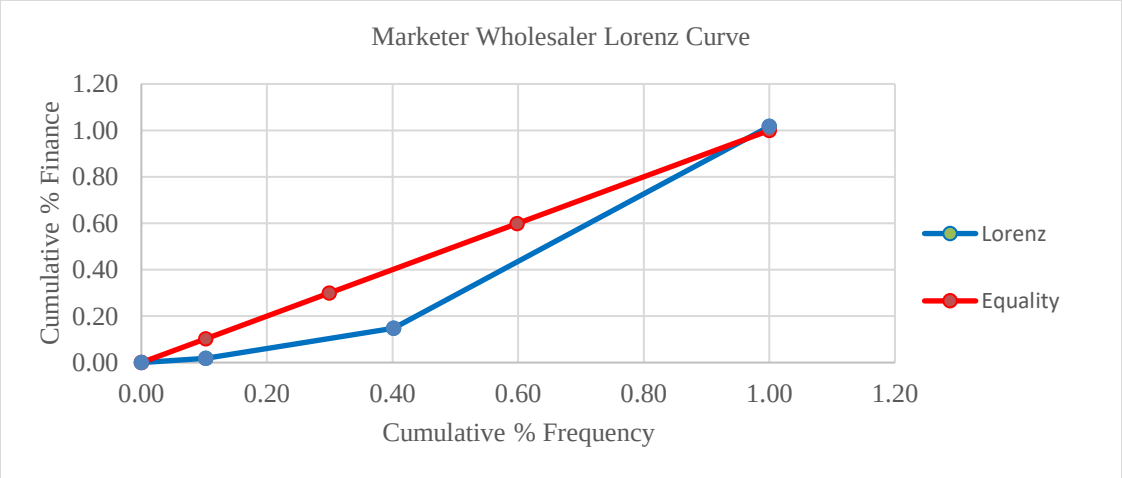

Figure 3: Lorenz Curve for Marketers Retailers

Source: Field Survey, 2024

5.0 Conclusion and Recommendation

Based on the findings of the study, it can be concluded that soyabeans marketing in the study area is predominantly dominated by male traders who are in their active and productive age for marketing activities, are experienced and belonged to cooperative association. The market structure is inclined towards a competitive market with a good level of organization. The study recommended that the government through the extension agents and Non-Governmental Organization (NGO) in the state should collaborate and organize marketing trainings for the categories of marketers to improve their information

base about marketing and pricing which subsequently, will translate into increased soybean marketing efficiency.

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