

COST AND RETURN ANALYSIS OF SOYBEAN MARKETING IN SELECTED RURAL COMMUNITIES OF MUBI NORTH LOCAL GOVERNMENT AREA, ADAMAWA STATE, NIGERIA

¹Crowther, N. M., & ²Kangare. J. B.

Department of Agricultural Economics and Extension, Faculty of Agriculture Adamawa State University,
Mubi, Adamawa State Nigeria.

Email: bandavikangare@gmail.com

ABSTRACT

The study analyzed the cost and return of soybean marketing in selected rural communities of Mubi North Local Government Area of Adamawa State. A cross-sectional survey research design was used to collect data, with a questionnaire as the primary data collection tool. Data for the study were obtained from 120 soybean marketers selected through purposive and random sampling methods. The data were analyzed using descriptive statistics and financial analytical tools. The descriptive tools used included tables, frequency distributions, percentages, and mean values, and financial analytical tool was applied to analysis cost and return. Findings from the study indicated that soybean marketing in the area was largely carried out by middle-aged men and women who had moderate educational attainment and considerable marketing experience. However, Local markets and middlemen were the dominants of marketing channels, while cost and returns analysis showed that soybean marketing is profitable with an average gross margin of ₦34,633.18 and a gross ratio of 0.58. The major problems encountered by soybean marketers included insufficient capital (94.2%), high cost of transportation (76.7%), unstable market prices (66.7%), inadequate storage facilities (56.7%), and exploitation by intermediaries (50%). The study concluded that soybean marketing is a viable and profitable enterprise in the selected rural communities of Mubi North but constrained by infrastructural, financial, and institutional challenges. It recommends improving access to credit, provision of modern storage facilities, investment in rural road infrastructure, establishment of reliable market information systems, and strengthening of cooperatives to enhance bargaining power.

Key words: Agricultural marketing, Soybean, Marketing, Cost and returns.

ADVANCING KNOWLEDGE
• IMPACTING SOCIETY •



Introduction

Soybean (*Glycine max*) is the 4th major cereal crop in the world after wheat (1st), maize (2nd), and rice (3rd) (Grassini *et al.*, 2021). Nigeria is the highest producer of soybean in Central and West Africa (Umar, 2020). In 2022, Nigeria produced 1 060 000 metric tons of soybeans with a total land area of 1,200,000 hectares (FAO, 2022). The world soya bean production as of 2022 stood at 348,856,427.48 metric tons (FAO, 2022). Soya bean is a good source of inexpensive protein of high quality and oil. In terms of protein content, soya bean is the highest among all food crops, and in terms of oil content, soybean is second to groundnut among food legumes, with an average oil content of 20% and protein content of 40% (Umar, 2020).

Soya beans can produce edible oil, milk, and animal feed. Soya bean is a versatile crop that can be used to derive products like soybean oil, soya milk, soy cheese, soy flour, soya bean dadawa, soya bean fufu, soy sauce, livestock feed, and Baby food such as Babeena, Golden morn, Cerelac, and Nutrend (Omoigui *et al.*, 2020). In the industry, soya beans can be used to manufacture infant food supplements, edible oils, pharmaceuticals, cosmetics, paints, soap making, and animal feed (Biam *et al.*, 2015). In addition, soybean is used in industries for printing ink, wood veneer, adhesive, paper coating and alkyd resins (Mairabo *et al.*, 2023). The consumption of soya beans is estimated to be 1.275 million tons in Nigeria between 2021 and 2022 (Donley, 2021). Even with increased domestic soya bean production, local soya bean demand cannot be met. There is a huge supply gap of soya beans in Nigeria. The research gap is more of technical inefficiency (TIE) among smallholder soya bean farmers (Okello *et al.*, 2019).

Agricultural marketing is very critical aspect of national development. It serves as means of livelihood of million market practitioners, actors and policy makers. Haliru and Ibitoye (2014) described agricultural marketing as an important means for development, especially for the developing countries. This is because agriculture practice can be viewed as the cradle for the takeoff of industrial development. Girei *et al.* (2013) posited that efficient marketing ensures sustainability of the system through enhanced revenue generation to producers and marketers. According to Thomas and Maurice (2011), market structure is a set of market characteristics that determine the economic environment in which a firm operates. It deals essentially with the size and design of the market. On the other hand, Nzima and Dzanja (2015) described market conduct as patterns of behaviours that firms follow in adapting to the markets in which they sell or buy. Market conduct deals essentially with the behaviours of the firms and market actors with regards to price determination, method of advertisement, exclusion tactics such as collusion, sex discrimination and monopoly practice. Ruttah *et al.* (2018) assert that before marketing system is said to be good or efficient its structure and conduct must be critically examined. Bukar *et al.* (2015) opined that market conduct is heavily influenced by the market structure. The behaviour of sellers in a market could adversely affect the

efficiency of the entire system, government throughout the world watch closely the conduct of the market with a view to taking remedial actions when the conduct being pursued is viewed as inimical to efficient marketing.

Statement of the Problem

Soya beans (*Glycine max*) are among the most economically important cash crops cultivated by farmers in Mubi, contributing significantly to the livelihoods of rural households. The crop serves as a vital source of plant-based protein, vegetable oil, and animal feed, making it a staple both in local diets and global agricultural markets. Despite its agronomic and economic importance, the marketing of soya beans in rural areas of Mubi faces persistent challenges. Farmers regularly contend with issues such as unstable market prices, inadequate access to profitable markets, poor road networks, insufficient storage facilities, and limited market information. Furthermore, the dominance of middlemen in the marketing chain often results in producers selling their crops at unfavorable prices, reducing their potential profit margins and discouraging further investment. Therefore broad objective of this study is to analyze the cost and returns in soya bean marketing in Mubi North Local Government area, Adamawa State. The broad objective of this study was to analyze the cost and return of soybean marketing in selected rural communities of Adamawa State, while the specific objectives were to:

- i. describe the socioeconomic characteristics of soybean marketers
- ii. identify the major marketing channels in the study area
- iii. estimate the cost and returns of soybean marketing, and
- iv. identify the constraints faced in soybean marketing.

LITERATURE REVIEW

Historical Background of Soybean

Soybean is a leguminous crop of Asian origin that has become one of the most important agricultural commodities worldwide due to its versatility and high nutritional value. It was domesticated more than 9,000 years ago from the wild species *Glycine soja* Sieb. & Zucc., native to East Asia, including China, Japan, Korea, Russia, and Taiwan (Hymowitz, 2008). Historical evidence indicates that soybean cultivation dates back to the Shang dynasty (1700–1100 BCE) (Hymowitz, 2008). In 1765, soybean seeds were introduced to North America by a British colonist who brought them from China to the colony of Georgia. Soybean-derived products such as tofu, miso, tempeh, and soy sauce were already consumed outside Asia prior to its cultivation in the Americas and remain widely consumed today (Shurtleff & Aoyagi, 1983; Hymowitz, 2008).

Importance of Soya Beans

Soybean [*Glycine max* (L.) Merr.] is recognized as both an economic and nutritional resource, and is currently the most widely cultivated oilseed globally (Sugiyama, 2019; Sugiyama et al., 2023). Soybean

grains are rich in protein (44–48%) and oil (15–25%), and contain relevant amounts of carbohydrates, fatty acids, and micronutrients (Bueno et al., 2018; Dilawari et al., 2022). It accounts for 25% of global vegetable oil production and is a major component of global agri-food systems (Snyder et al., 2009; Klein & Luna, 2021). Approximately 85% of global production is processed into meal and oil, with soybean meal predominantly used in animal feed (>95%), reinforcing its importance as the most economically relevant legume worldwide (Dilawari et al., 2022; Modgil et al., 2021; USDA, 2025). **Agronomic Practices in Soya**

Bean Production

Soya beans thrive in well-drained, loamy soils with a pH of 6.0–7.5 and moderate rainfall. Soybean is one of the major vegetable crops grown in areas with cold to subtropical temperatures (Koester et al 2014). There are evidences that domesticated soybeans have been used as food for a long time. It has been claimed that, for the first time, the population of Northeast China used soybean as a food crop around 1700 to 1100 B.C. (Hartman et al 2011).

Soybean Marketing Strategy

The marketing of soya beans in Nigeria involves both formal and informal systems, with local markets, wholesalers, and agro-processors as key stakeholders. The major soya bean-producing states supply urban and industrial markets through middlemen and cooperative societies. Price determination is often influenced by demand, seasonal variations, and market accessibility. To improve soya bean marketing, various stakeholders have advocated for the establishment of structured markets, farmer cooperatives, and value chain linkages to enhance farmers' bargaining power and ensure fair pricing (Okoruwa *et al.*, 2014). However, challenges such as poor infrastructure, price volatility, and limited storage facilities persist within the Nigerian soya bean marketing system.

Soybean Supply Chain

Supply chain management tools coordinate the flow of material, information, and capital both within and between supply chain partners (Wang et al 2011). The supply chain ensures the production and distribution of products at the right time, keeping in view the needs of consumers, all at the lowest possible cost (Stadtler and Kilger, 2019). The soybean supply chain is a complex network that creates significant economic advantages in many countries but requires many supporting services such as infrastructure and processing (Garrett et al., 2013)]. The soybean supply chain refers to carrying out several physical economic activities of soybeans and relevant information from producers to consumers to meet consumer demands (Wang et al 2011). Soybean supply-chain sustainability requires engagement with stakeholders to address environmental and social issues, so that it will improve the economy, where a facilitated mechanism is needed for better governance (Jia et al 2020).

Challenges in Soya Bean Production and Marketing

Despite its benefits, soya bean production faces several constraints. These include limited access to quality seeds, poor storage facilities, fluctuating market prices, and weak extension services. Marketing systems are dominated by middlemen, leading to reduced profits for farmers. Infrastructural challenges like poor roads further limit market access (Bello and Abubakar, 2017). Additionally, post-harvest losses due to pest infestation and spoilage remain significant issues.

Research Methodology

The study was conducted in selected communities of Mubi North Local Government Area (LGA) of Adamawa State, Nigeria. Mubi North is one of the 21 LGAs in the State. The LGA lies between latitudes $10^{\circ} 16'$ North and longitudes $13^{\circ} 16'$ East (Zacchaeus, 2022). The LGA as a projected population 233,600 (National Population Commission (NPC, 2022). Mubi North occupies a central position in the northeastern part of Nigeria, it shares boundaries with Mubi south, Miaha, Hong, and Borno State internationally with the Republic of Cameroon. Mubi North is commercial hub and the area experiences a tropical climate with two distinct seasons, the dry season from November to April, and the rainy season from April to October, with temperatures ranges from 15.2°C during the harmattan to over 40°C in hotter months.

A purposive and simple random sampling technique were used for the selection of the respondents. In the first stage, purposive of selection Mubi North Local Government Area based on its concentration of soybean production and marketing activities. In the second stage, four wards were purposively selected based on the high numbers of soybean marketing activities. In the third stage, it involved the purposive selection of two communities from each wards. In the last stage, it involved the random selection of 12 marketers each from the communities for the study. Hence, the total population of soybean marketers for study stood at 120.

Primary data was mainly used for the study. These were generated from the respondents through the use of structured and pre-tested interview schedules which were administered by enumerators trained for the purpose under the supervision of the researchers.

The analytical techniques employed for this study include the descriptive and inferential statistics. The descriptive statistics used to analysis the data were table, and frequency, percentages to measure objectives i, ii and iv. The financial analytical tool used was gross margin for objective iii. The Gross Margin model was specified from the point of view of estimation of total expenses (costs) as well as various returns or revenue within a marketing period.

$$\text{Total Cost (TC)} = \text{TVC} + \text{TFC} \dots \dots \dots (1)$$

Where:

TVC =

Total variable cost

$$\text{Total Revenue (TR)} = Q \cdot P_y \dots\dots\dots (2)$$

Where:

Q = Quantities of soybean sold in bag

P_y = Unit price of soya bean sold in bag

$$\text{Gross Margin (GM)} = \text{GI} - \text{TVC} \dots\dots\dots (3)$$

Where:

GI = Gross income;

TVC = Total variable cost.

To determine the costs and returns soya bean, some ratios were calculated to show the overall performance of the business thus:

$$\text{Gross Ratio (GR)} = \text{TC} / \text{TR} \dots\dots\dots (4)$$

Where:

TC = Total cost

TR = Total revenue.

$$\text{Operating Ratio (OR)} = \text{TVC} / \text{TR} \dots\dots\dots (5)$$

Where:

TVC = Total variable cost;

TR = Total returns.

Results and Discussion

Quantitative Socio-economic Characteristics

The results in 1a. Show that the average age of soybean marketers was 42 years, with (33.3%) of the respondents were between 31–40 years, followed by those above 50 years with (24.5%), and those aged 21–30 years (20.0%). Only 0.8% were under 20. The finding is in harmony with Bello and Sulaiman (2023) who argued that marketers in their prime age category are more innovative, resilient, and productive compared to older participants. Implication, the predominance of middle-aged marketers indicates a strong labour force that can actively engage in different marketing channels (Objective 2) and adapt to training on cost and returns management (Objective 3).

The results Table 1b show that 50.8% of the soybean marketers were male, while (49.2%) were female, suggesting a nearly equal level of participation by both genders. This reflects the growing involvement of women in agricultural marketing, especially in retailing and processing roles, as reported by Yusuf *et al.* (2023). The analysis shows that 50.0% of the respondents were single, (41.5%) married, (2.5%) divorced, and (5.0%) widowed. This distribution suggests a significant proportion of unmarried marketers, which may reflect the involvement of younger traders in soybean marketing. Ibrahim and Okoro (2023) noted that

marital status influences access to household labour, decision making, and resource control in marketing activities.

The means of household size was 7 persons, with (46.7%) having between 6–10 members, (33.3% with 1–5 members, and (20.0%) with above 10 members. Ibrahim and Okoro (2023) observed that household size influences marketing by providing unpaid family labour for transportation, loading, and retail activities. The findings reveal the mean educational score of 2.6 confirms that most respondents had at least a secondary level of education. Abubakar and Musa (2024) argued that education enhances record keeping, adoption of improved marketing strategies, and negotiation skills. Marketers with higher literacy are more likely to adopt improved practices, which could raise marketing efficiency and returns (Objectives 3). The mean marketing experience was 7.5 years, with many respondents having 6–10 years (40.0%), followed by 1–5 years (35.0%), and above 10 years (25.0%). The study aligns with Abubakar and Musa (2024) who stressed that longer marketing experience improves knowledge of market trends, negotiation skills, and cost management, which enhances profitability. Oni et al. (2023) also found that experienced marketers are more likely to identify profitable channels and mitigate risks. Implication, The relatively high marketing experience strengthens the reliability of cost and returns analysis (Objective 3).

The average number of extension visits per year was 7.4, with most respondents receiving 5–8 visits (58.3%), followed by 1–4 visits (24.1%), 9–12 visits (10.0%), and 13–15 visits (7.5%). This shows that extension services are fairly regular in the study area due to the engagement of NGOs. According to Adewale et al. (2023) who highlighted that frequent extension contact enhances access to market information, innovations, and financial literacy, all of which improve marketing efficiency. By implication, regular extension visits can play a significant role in improving knowledge of marketing strategies. The majority (88.3%) of respondents belonged to cooperatives or groups, while (11.7%) are not members of any cooperatives or group. According to Oni et al. (2023), cooperative participation improves access to information, facilitates bulk purchasing, reduces transaction costs, and strengthens bargaining power. The study reveals that (18.3%) of the marketers reported that they have access to credit, while the majority (81.7%) had no access to credit. This result highlights limited access to financial resources, which is consistent with the findings of Eze and Chukwu (2023), who noted that poor access to credit remains a critical bottleneck in agricultural marketing in Nigeria.

Table 1: Socio-economic Characteristics of Soybean Marketers

Socio-economic Characteristics	Frequency	Percentage (%)	Mean
Age (Years)			
≤ 20	3	2.5	42
21–30	24	20.0	

Socio-economic Characteristics	Frequency	Percentage (%)	Mean
31–40	43	35.8	
41–50	21	17.5	
> 50	29	24.1	
Total	120	100	
Sex			
Male	61	50.8	
Female	59	49.2	
Total	120	100	
Marital Status			
Single	60	50.0	
Married	51	41.5	
Divorced	3	2.5	
Widowed	6	5.0	
Total	120	100	
Household Size			
1–5 persons	40	33.3	7.1
6–10 persons	56	46.7	
Above 10 persons	24	20.0	
Total	120	100	
Educational Level			
Tertiary	26	21.7	
Secondary	79	65.8	
Primary	7	5.8	
No formal	8	6.7	
Total	120	100	
Marketing Experience			
1–5 years	42	35.0	7.5
6–10 years	48	40.0	
Above 10 years	30	25.0	
Total	120	100	
Extension Visits (Per Year)			
1–4	29	24.1	7.4
5–8	70	58.3	
9–12	12	10.0	
13–15	9	7.5	
Total	120	100	
Membership in Cooperatives/Groups			
Yes	106	88.3	
No	14	11.7	
Total	120	100	
Access to Credit			
Yes	22	18.3	
No	98	81.7	
Total	120	100	

Source: Field Survey, 2025

Major marketing channels used by soya beans marketers.

The results in table 2 showed that local markets dominate as the major marketing channel with (75.0%) of respondents selling their soybeans through this outlet. This is followed by middlemen (11.7%), direct sales to processors

(7.5%), and farm-gate sales (5.8%). This indicates that soybean marketers in Mubi North overwhelmingly prefer local markets, likely due to ease of access, a broad customer base, and immediate cash flow. These findings are consistent with Ojo and Ibrahim (2023), who reported that smallholder crop marketers in northern Nigeria rely heavily on local markets because of weak formalized linkages with processors and limited access to organized value chains.

Table 2: Distribution of Soybean marketers by Marketing Channel

Marketing Channels	Frequency	Percent (%)
Local markets	90	75.0
Direct to processors	9	7.5
Farm gate sales	7	5.8
Through middlemen	14	11.7
Total	120	100.0

Source: Field survey, 2025

Revenue and Costs of Soybean marketing

The results in Table 3a reveal the quantity of soybean sold ranged from 4 bags to 200 bags, with an average of 21.75 bags. This suggests the coexistence of both small-scale traders, who handle only a few bags, and medium to large-scale traders, who operate in higher volumes. The wide standard deviation of 36.54 underscores the variability in market engagement, possibly influenced by access to capital, storage facilities, and networks. The unit price per bag showed significant fluctuation, ranging from ₦65,000 to ₦82,000, with an average of ₦42,830.50. High fluctuations in price are consistent with findings by Oladimeji and Mustapha (2023), who observed that soybean prices in northern Nigeria are highly volatile due to limited storage infrastructure and dependence on spot markets. The average total revenue (TR) was ₦61,245.83, though the variation was substantial (Std. Dev. = ₦52,311.60). Such disparity indicates that while some marketers earn attractive revenues, others struggle with low returns, reflecting inequalities in market participation. On the cost side, transportation (₦5,720.45), storage (₦3,935.70), market dues/taxes (₦9,870.65), and loading/unloading (₦2,135.30) were the most significant variable costs. High market levies and transport charges, in particular, highlight the structural inefficiencies of rural agricultural markets. Fixed costs such as rent (₦6,890.25) and depreciation on equipment (₦1,870.45) also contributed substantially to overall expenses.

These findings corroborate Adeoye and Musa (2023), who emphasized that in northern Nigeria, grain marketers often face disproportionate marketing costs due to poor infrastructure, multiple taxation, and long-distance haulage. Implication, the descriptive

statistics highlight both the potential profitability of soybean marketing and the financial burdens that may suppress returns. The combination of high price variability and substantial transaction costs creates an uneven playing field among marketers, limiting the benefits for smaller traders.

Table 3a: Descriptive Statistics of Revenue and Costs (₦)

Variables	₦	Minimum	Maximum	Mean	Std. Dev.
Quantity sold (bags)	120	4	200	21.75	36.54
Unit Price (₦/bag)	120	65	82,000	42,830.50	18,245.73
Total Revenue (TR)	120	200	200,000	61,245.83	52,311.60
Transportation Cost	120	200	50,000	5,720.45	6,811.44
Storage Cost	120	100	30,000	3,935.70	4,125.82
Loading/Unloading	120	200	12,500	2,135.30	2,540.11
Market Dues/Taxes	120	50	200,000	9,870.65	14,540.23
Other Expenses	120	0	50,000	4,950.55	8,210.75
Rent	120	0	50,000	6,890.25	9,350.81
Depreciation on- equipment	120	0	10,000	1,870.45	2,450.33

Source: Field survey, 2025

Cost and Returns Analysis of Soybean Marketing (₦).

The results in Table 3b show that a detailed cost and returns analysis shows that soybean marketing in Mubi North is profitable. The average total revenue (TR) stood at ₦61,245.83, while the average total cost (TC) was ₦35,373.35, made up of ₦26,612.65 variable costs and ₦8,760.70 fixed costs.

The gross margin (GM) was ₦34,633.18, indicating that marketers retained a significant portion of their revenue after meeting variable expenses. The gross ratio (GR) of 0.58 suggests that 58% of every naira earned was used to cover costs, while the remaining 42% constituted profit margins. Similarly, the operating ratio (OR) of 0.43 reveals that 43% of revenue went into covering variable costs, leaving a positive margin after operating expenses were settled.

These results imply that soybean marketing is financially viable and sustainable, provided marketers can effectively manage costs and scale up operations. The favorable ratios (GR < 0.70, OR < 0.50) indicate efficiency, as lower values generally reflect stronger profitability. These findings are consistent with Salisu and Ibrahim (2023), who reported gross ratios of less than 0.60 as indicative of profitability among smallholder grain and legume marketers in Adamawa State. Additionally, Yusuf and Abdullahi (2024) who argued that enterprises with gross margins above ₦30,000 per production/marketing cycle remain attractive to rural traders despite infrastructural challenges. Implication, Although soybean marketing is profitable in the study area, the relatively high GR (0.58)

underscores the influence of transaction costs, particularly transportation, storage, and market dues. Efforts to reduce these costs could significantly enhance profitability, especially for small-scale traders with limited turnover.

Table 3b: Cost and Returns Analysis of Soya beans Marketing (₦)

Items	Amount (₦)
Average Total Revenue (TR)	61,245.83
Average Total Variable Cost (TVC)	26,612.65
Average Total Fixed Cost (TFC)	8,760.70
Average Total Cost (TC)	35,373.35
Gross Margin (GM)	34,633.18
Gross Ratio (GR = TC/TR)	0.58
Operating Ratio (OR = TVC/TR)	0.43

Source: Field survey, 2025

Challenges Encountered in Soybean Marketing.

The results in Table 4 reveal the first ranked major challenge was inadequate capital, reported by (94.16%) of respondents. Similar findings were reported by Rekwot, Abdulsalam, Yusuf, and Oyinbo (2018), who emphasized that limited access to credit significantly reduced profitability in beef marketing in North-West Nigeria. By implication the marketers cannot expand their business through processing and export of soybean. The second ranked challenge was high transportation cost, affecting (76.66%) of respondents. This result is in line with Alabi, Oladele, and Maharazu (2020), who found that transportation accounted for nearly half of soybean marketers' total variable costs in Abuja. This implies that high cost of transportation may hinder high margin. The third ranked challenge was price fluctuation with (66.66%) of the respondents. According to findings of Okoye and Onyeneke (2021) who equally observed that price instability is a major factor undermining food crop marketing in southeastern Nigeria, exposing traders to high risks and unstable incomes.

The fourth ranked challenge was lack of storage facilities, reported by (56.66%) of respondents. This aligns with Edet, *et al.*, (2014), who emphasized that poor storage facilities constrained fish marketers in Akwa Ibom State, reducing their capacity to stabilize supply and maximize profits. This implies that the marketers may experience losses that would affect their profit. Exploitation by middlemen, ranked fifth, was highlighted by (50.00%) of respondents. According to Ibrahim, Umar, and Abdullahi (2023) also reported that middlemen reduced farmers' profit margins due to asymmetry in price information.

The sixth ranked challenge was inadequate market information, affecting (45.83%) of marketers. Similar findings were presented by Bello and Danbaba (2022), who noted that insufficient access to reliable market information restricted smallholder farmers' ability to make profitable marketing decisions. Finally, pest and disease infestation was reported by (41.66%) of respondents, ranking seventh. Poor handling practices and inadequate storage expose soybeans to pest attacks, which reduce quality and lower selling prices. Alabi et al. (2024) equally observed that pest and disease problems in stored produce contributed to post-harvest losses among soybean farmers in North-West Nigeria.

Table 4: Challenges to Soybean Marketing (N = 120)

Challenges	Frequency	Percentage	Ranking
High transportation cost	92	76.66	2 nd
Price fluctuation	80	66.66	3 rd
Inadequate market information	55	45.83	6 th
Lack of storage facilities	68	56.66	4 th
Exploitation by middlemen	60	50	5 th
Inadequate capital	113	94.16	1 st
Other (Pest and disease infestation)	50	41.66	7 th

Source: Field survey, 2025 *Multiple responses

Conclusion

The study concludes that soybean marketing in Mubi North is a viable and profitable enterprise but constrained by financial, infrastructural, and institutional barriers. The marketing system remains dominated by direct sells at the local market, which empower marketers' bargaining power thereby increase their profit margins. Addressing these constraints through supportive policies, better infrastructure, and improved institutional support can significantly enhance soybean marketing efficiency, thereby improving livelihoods and strengthening food security in the region.

References

- Abubakar, L., & Musa, T. (2024). Marketing experience and profitability among grain traders in northern Nigeria. *Journal of Agricultural Economics and Extension*, 22(1), 33–47.
- Adeoye, T., & Musa, H. (2023). Cost structures and marketing efficiency of grains in Adamawa State, Nigeria. *Nigerian Journal of Agribusiness Research*, 19(2), 44–61.
- Adewale, J., & James, O. (2023). Extension contact and its influence on profitability of legume traders in Nigeria. *International Journal of Agricultural Development*, 15(4), 76–89.
- Alabi, O. O., Oladele, O. I., & Maharazu, A. T. (2020). Profitability analysis and marketing efficiency of soybean in Abuja, Nigeria. *Journal of Agricultural Extension*, 24(2), 35–47.
- Alabi, O. O., Oladele, O. I., & Maharazu, A. T. (2024). Socio-institutional factors influencing soybean farmers' efficiency in North-West Nigeria. *South Valley University International Journal of Agricultural Sciences*, 6(2), 115–127.
- Allaoui, H.; Guo, Y.; Sarkis, J. (2019) Decision support for collaboration planning in sustainable supply chains. *J. Clean. Prod.* 2019, 229, 761–774. [CrossRef]
- Bello, I., & Sulaiman, K. (2023). Socioeconomic factors influencing agricultural marketing efficiency in northern Nigeria. *Journal of Rural and Community Development*, 18(3), 101–115.
- Bello, M., & Danbaba, A. (2022). Market information access and marketing efficiency of smallholder farmers in Northern Nigeria. *Journal of Agricultural Economics and Development*, 11(1), 45–56.
- Biam, C. K., Okorie, A., & Nwibo, S. U. (2015). Economic efficiency of small-scale soybean farmers in Central Agricultural Zone, Nigeria: A Cobb-Douglas stochastic frontier cost function approach. *Journal of Development and Agricultural Economics*, 8(3), 52–58.
- Bueno, R. D., Borges, L. L., God, P. I. G., Piovesan, N. D., Teixeira, A. I., Cruz, C. D., & Barros, E. G. (2018). Quantification of anti nutritional factors and their correlations with protein and oil in soybeans. *Anais da Academia Brasileira de Ciências*, 90(1), 205–217. <https://doi.org/10.1590/0001-3765201820140465>
- Bukar, U., Mohammed, D., Wakawa, R., Shettima, B. G., & Muhammad, S. T. (2015). Analysis of Market Structure, Conduct and Performance for Pepper in Borno State, Nigeria: A Review. *Journal of Agricultural Economics, Environment and Social Sciences*. 1(1):18-190.
- Dilawari, R., Kaur, N., Priyadarshi, N., Prakash, I., Patra, A., Mehta, S., & Islam, M. A. (2022). Soybean: A key player for global food security. In *Soybean improvement: Physiological, molecular and genetic perspectives* (pp. 1–46). Cham: Springer International Publishing. https://doi.org/10.1007/978-3-031-12232-3_1
- Donley, A. (2021). Nigerian soybean demand on the rise. *World Grain*. Retrieved from <https://www.worldgrain.com/articles/15474-nigerian-soybeanoutput-demand-on-the-rise>
- Edet, A. O., Udo, E. J., & Akpan, S. B. (2014). Analysis of profitability of fish marketing in Akwa Ibom State, Nigeria. *Journal of Economics and Management Sciences*, 5(3), 210–218.

- Eze, C., & Chukwu, V. (2023). *Access to agricultural credit and its effect on smallholder marketing performance in Nigeria*. *Journal of Development Finance and Policy*, 14(1), 51–67.
- Food and Agriculture Organization [FAO]. (2022). *Food and Agriculture Organization statistical database*. Rome, Italy.
- Garrett, R.D.; Lambin, E.F.; Naylor, R.L. (2013) The new economic geography of land use change: Supply chain configurations and land use in the Brazilian Amazon. *Land Use Policy* 2013, 34, 265–275. [CrossRef]
- Girei, A.A., Salihu, M. & Iliya, M.M. (2013). Assessment of Problems Affecting the Structure, Conduct and Performance of Cowpea Marketing in Yola North and South L.G.As. in Adamawa State, Nigeria. *British Journal of Marketing Study*. 1: 41-50.
- Grassini, P., La Menza, N. C., Edreira, J. I. R., Monzon, J. P., Tenorio, F. A., & Specht, J. E. (2021). Soybean. In V. O. Sadras and D. F. Calderini (Eds.), *Crop Physiology: Case Histories for Major Crops* (pp. 282–319). Academic Press.
- Haliru, Y. U., & Ibitoye, S., J. (2014). Evaluation of market structure and Efficiency of GUM Arabic Marketers in North-Eastern Nigeria. *Asian Journal Management Science Economics* 1(1)-11
- Hartman GL, West ED, Herman TK. (2011) Crops that feed the World 2. Soybean— worldwide production, use, and constraints caused by pathogens and pests. *Food Security*. 2011;3(1):5-17. DOI:<https://doi.org/10.1007/s12571-010-0108-x>
- Hymowitz, T. (2008). The history of the soybean. In *Soybeans* (pp. 1–31). AOCS Press. <https://doi.org/10.1016/B978-1-893997-64-6.50004-4>
- Ibrahim, A., Umar, I., & Abdullahi, A. (2023). Market intermediaries and profit margins in maize marketing in Kano State, Nigeria. *African Journal of Agricultural Marketing*, 8(1), 19–28.
- Ibrahim, S., & Okoro, E. (2023). *Household structure and its role in agribusiness decision-making*. *Journal of Agricultural Sociology*, 17(2), 122–139.
- Jia, F., Peng, S., Green, J., Koh, L. and Chen, X (2020) Soybean Supply Chain Management and Sustainability: A Systematic Literature Review. *J.Clean.Prod.*2020, 255, 120254.[CrossRef]
- Koester RP, Skoneczka JA, Cary TR, Diers BW, Ainsworth EA. (2014) Historical gains in soybean (Glycine max Merr.) seed yield are driven by linear increases in light interception, energy conversion, and partitioning efficiencies. *J. Experimental Botany*. 2014;65(12):3311-3321. DOI: <https://doi.org/10.1093/jxb/eru187>
- Mairabo, A., Jibrin, S., Audu, H., Salihu, M. Y., & Elisha, Y. (2023). Technical efficiency of soybean production in Niger State, Nigeria. *FUDMA Journal of Sciences*, 7(1), 201–206. <https://doi.org/10.33003.fjs-2023-0701-1286>
- National Population Commission [NPC] (2022). The national population commission projected the population of Mubi North Local Government Area. afaefm.adsu.edu.ng

- Nzima, W. M. & Dzanja, J. (2015). Efficiency of Soybean Markets in Malawi: Structure, Conduct and Performance Approach. *International Journal of Business and Social Science*. 6(4): 162-170.
- Ojo, A., & Ibrahim, L. (2023). *Local markets and traditional trade systems among crop marketers in northern Nigeria*. *Journal of Rural Economics and Development*, 16(2), 66–81.
- Okello, D. M., Wabbi, J. B., & Mugonala, B. (2019). Farm level allocative efficiency of rice production in Gulu and Amulu districts, Northern Uganda. *Journal of Agriculture and Food Economics* 7(9). <https://doi.org/10.1186/s40100-019-0140-x>
- Okoye, C. U., & Onyeneke, R. U. (2021). Price instability and food crop marketing in southeastern Nigeria. *Journal of Agricultural Policy and Research*, 13(2), 76–85.
- Oladimeji, A., & Mustapha, Y. (2023). *Seasonal price volatility and its impact on soybean marketing in northern Nigeria*. *International Journal of Agricultural Markets*, 14(2), 55–70.
- Omoigui, L.O., Kamara, A.Y. Kamai, N., Dugje, I.Y., Ekeleme, F., Lava Kumar, P., Ademulegun, T. & Solomon, R. (2020). Guide to soybean production in Northern Nigeria Published by the International Institute of Tropical Agriculture (IITA) Ibadan, Nigeria Revised Edition, February 2020.
- Oni, A., Yusuf, K., & Danladi, B. (2023). *The role of cooperative membership in enhancing market access and profitability*. *Nigerian Journal of Cooperative Studies*, 8(1), 77–95.
- Rekwot, G. Z., Abdulsalam, Z., Yusuf, A. H., & Oyinbo, O. (2018). Determinants of profitability of beef marketing in selected states of North-West Nigeria. *International Journal of Livestock Production*, 9(2), 29–36.
- Rutttoh, J. K., Bett, E. K. & Nyairo, N. (2018). Empirical Analysis of Structure and Conduct of Tomato Marketing in Loitoktok, Kajiado County, Kenya. *International Journal of Agricultural Extension and Rural Development*. 6(4): 628-638.
- Salisu, A., & Ibrahim, R. (2023). *Profitability ratios and efficiency measures among smallholder grain marketers in Adamawa State*. *Nigerian Journal of Agribusiness and Policy*, 11(3), 88–101.
- Shurtleff, W., & Aoyagi, A. (1983). *The book of miso* (2nd edn. Ten Speed Press.
- Stadtler, H.; Kilger, C. (2005) *Supply Chain Management and Advanced Planning Concepts, Models, Software and Case Studies*, 3rd ed.; Springer: Berlin/Heidelberg, Germany, 2005.
- Sugiyama, M., Samoto, M., Ichinose, T., Nakamura, A., Matsumiya, K., & Matsumura, Y. (2023). Evaluation of the contents and ratios of five fractionated proteins to elucidate the protein composition in soybean seeds. *Journal of the American Oil Chemists' Society*, 100(12), 1003–1013. <https://doi.org/10.1002/aocs.12725>
- Umar, S. A. (2020). The competitiveness of Nigeria's sesame and soybean export in international trade: 1986–1997 (Unpublished PhD thesis). Department of Agricultural Economics, University of Abuja, Nigeria.

- USDA. (2025). Crop explorer - soybean production. USDA. <https://ipad.fas.usda.gov/cropeexplorer/cropview/commodityView.aspx?cropid=2222000>, Washington, DC. Available at
- Wang, X.; Wang, C.; Wang, X.; Zhuang, W. (2011) Study for organic soybean production information traceability system based on web. In IFIP Advances in Information and Communication Technology; Springer: Berlin/Heidelberg, Germany, 2011; Volume 345, pp. 567–572.
- Yamane T. (1967), Statistics: an introductory analysis. 2nd ed. Harper and Row: New York.
- Yusuf, A., and Abdullahi, L. (2024). *Gross margin analysis of legume traders in Nigeria: Evidence from Adamawa State*. *Journal of Development and Agricultural Policy*, 13(1), 31–49.
- Yusuf, M., Adamu, K., & Bello, R. (2023). *Women in agricultural marketing: Changing roles and participation in northern Nigeria*. *African Journal of Gender and Development*, 15(1), 22–38.
- Zaccheus O. (2022) Adamawa State Land of Beauty: Dibiaezue Memorial Libraries. Zodml.org.

