

ANALYSIS OF MARKET MARGINS AND MARKETING EFFICIENCY IN THE SOYBEAN SUPPLY CHAIN: EVIDENCE FROM LERE LGA, KADUNA STATE

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Abstract

Soybean is primarily produced on smallholder farms in Lere LGA of Kaduna State. However, soybean marketers in Lere face numerous challenges, including high transaction costs, fluctuations in soybean prices, limited storage capacity, access to credit, and inadequate distribution networks. These challenges make profit maximization difficult. This study examines the market margin and efficiency of the wholesale soybean supply chain in Lere, Nigeria. A survey research design was utilized to collect data for the study. A structured questionnaire was administered to a sample size of 110 respondents. The cross-sectional data on soybean marketing collected includes production and yield data, market prices, and demographic information about the market participants. The study employed a random sampling technique to select soybean marketers from a list provided by the Soybean Marketing Association in Lere LGA. To ensure representation from different markets, five wards notable for soybean marketing were purposely selected: Gure/Gwassoro, Okuta, Ilesha, Gwanara, and Yashkira. Cost-benefit analysis was used to estimate the market margin and marketing efficiency of soybeans. Our results indicate that an average of 17.5 bags were sold by marketers on each market day, with an average profit margin per marketer of ₦5,188 and a market margin of 12.35%. However, the marketing efficiency of soybeans in the area is relatively low, at 9.35%. These findings suggest that while soybean sales are profitable in Lere, there are inefficiencies in the marketing channel that need to be addressed to improve the performance of soybean marketers. The study recommends strategies to enhance marketing efficiency, such as reducing transaction costs, improving market access, and enhancing the productivity of soybean marketers.

Keywords: Soybean marketing, Market Margin, Efficiency, Supply chain, Wholesale

1.0 INTRODUCTION

Nigeria's agricultural landscape is characterized by the cultivation of diverse crops, each playing a pivotal role in ensuring food security and economic development (Ojeleye, 2020). Among these, soybeans (*Glycine max*) stand out as a vital crop, serving as an essential source of protein, oil, and

income for countless smallholder farmers (Tewari, 2021). With Nigeria ranking among the top 20 global producers of soybeans, major production hubs have emerged in states like Benue, Kaduna, Kwara, and Adamawa (Khojely., 2018; Agada, 2020). Kwara State, nestled in the North-Central region, has emerged as a significant contributor to the national soybean output, with Lere Local Government Area (LGA) being among the leading production hubs (Olorunsanya, 2021).

While soybean cultivation holds immense importance for food security and rural livelihoods in Nigeria, the efficiency of the marketing system plays a crucial role in ensuring fair returns for farmers and affordable prices for consumers (Brown et al., 2020; Kalita, 2021). Marketing efficiency refers to the ratio of output to input in the marketing process, with output measured in terms of sales, market share, or other marketing objectives, and input measured in terms of marketing expenses. (Kotler, 2022). An efficient marketing system ensures that consumer prices are not disproportionately higher than producer prices after accounting for necessary marketing services (Chen, 2020).

Based on a pilot survey, marketing of soybean in Lere LGA is plagued with many challenges such as high transaction costs, fluctuations in soybeans prices, limited storage capacity, access to credit and inadequate distribution network. These problems lead to situations that either tends to increase costs, challenges in predicting and adjusting to prices, high post-harvest loss, cashflow constraints, and delays and increased cost which reduces the market margin. To the best of the researcher knowledge, examining the marketing margin and efficiency of soybeans in Nigeria, the marketing efficiency of soybean in Lere remains understudied, with little or no research on profitability and marketing efficiency, highlighting a need for investigation into this critical aspect of the soybean value chain. Thus, this study seeks to fill the literature gap by conducting a comprehensive analysis of the market margins and marketing efficiency within the soybean supply chain of Lere LGA, Kaduna State. The specific objectives are:

- i. To estimate the marketing margins associated with soyabean marketing in Lere LGA, Kaduna State
- ii. To analyze marketing efficiency of soyabeans supply chain in the study area

The study formulates the following research questions:

- i. What are the marketing margins associated with soybean marketing in Lere LGA, Kaduna State?
- ii. How efficient is the soybean supply chain in the study area?

2.0 LITERATURE REVIEW

2.1 Market Margin

Kohls and Uhl (2015) define market margin as the difference between the price paid by the final consumer and the price received by the producer or farmer. This concept illustrates the costs and returns associated with moving a product through various stages of the supply chain, encompassing activities such as processing, transportation, and marketing.

Olukosi and Isitor (2020) describe market margin as the financial spread between the producer's price and the retail price. This perspective highlights the role of intermediaries in price formation and the costs incurred at different stages of the supply chain. According to these scholars, understanding market margins is essential for identifying inefficiencies that may hinder equitable pricing for producers and consumers.

Adebayo (2022) further conceptualize market margin as a critical tool for evaluating the profitability and economic performance of agricultural marketing systems. They argue that market margin analysis is vital for uncovering inefficiencies and price disparities within the supply chain, ultimately aiding policymakers and stakeholders in making informed decisions to enhance equity and productivity.

2.2 Market Efficiency

Tomek and Kaiser (2020) define market efficiency as the extent to which a marketing system optimally allocates resources, minimizes losses, and ensures fair pricing for all stakeholders. In their view, an efficient market balances supply and demand effectively, reducing transaction costs and enhancing overall productivity in the agricultural sector.

Abdullahi and Yusuf (2021) describe market efficiency as a market's ability to optimize resource allocation, reduce transaction costs, and facilitate equitable distribution among participants. They emphasize the critical role of infrastructure, institutional support, and technological advancements in improving market efficiency, particularly in developing economies where agricultural markets face numerous challenges.

Ogundipe (2023) conceptualize market efficiency as a measure of how well a market facilitates the exchange of goods and services with minimal delays and costs. They stress the importance of factors such as transparency, competition, and effective governance in achieving market efficiency. According to them, efficient markets not only benefit consumers but also enhance the profitability and sustainability of producers and other stakeholders in the supply chain.

2.3 Relationship between Market Margin and Market Efficiency

The relationship between market margin and market efficiency revolves around the performance of supply chains and resource allocation mechanisms. Market margin represents the price difference between the producer's earnings and the consumer's expenditure, which includes production, transportation, and distribution costs (Rahman & Jahan, 2019). Market efficiency measures the ability of a market to allocate resources effectively, minimizing unnecessary costs while maximizing value (Kohls & Uhl, 2015). These concepts intersect as efficient markets often exhibit margins that reflect genuine costs without being inflated by inefficiencies.

Efficient markets streamline supply chain activities, ensuring that market margins mirror the value added at each stage without additional costs caused by inefficiencies. For example, markets with strong infrastructure and competitive practices tend to lower transaction costs, leading to fairer

margins (Adekoya., 2020). Conversely, inefficiencies such as poor infrastructure and lack of transparency distort margins, potentially increasing consumer prices or reducing producer incomes (Rahman & Jahan, 2019).

Empirically, several studies have investigated the profitability and efficiency of soybean production and marketing in Nigeria. Ogbanje (2023) found that soybean production is profitable, with a higher gross margin and return on investment per hectare in the treatment group compared to the control group. Udeh, Adebayo, and Eke (2020) reported marketing margins for soybeans and identified challenges faced by soybean marketers, including inadequate capital and limited access to credit. Ukaoha, Ekong, and Usoro (2022) found that soybean production is profitable, but farmers achieved only 52% profit efficiency, indicating room for improvement. Biye et al. (2021) reported a marketing efficiency of 74.19% and identified obstacles faced by soybean marketers, including limited access to capital and seasonal scarcity of soybeans. Ugbabe, Onyekachi and Yakubu (2022) assessed the profitability and technical efficiency of soybean production in Northern Nigeria and found that the highest profit was earned by soybean-producing households in Dawakin-Tofa LGA.

2.4 Theoretical Review

Transaction Cost Economics (TCE) is a theoretical framework introduced by Ronald Coase in 1937 and further developed by Oliver Williamson in 1975. The theory examines the costs associated with economic exchanges, emphasizing the role of institutions and governance structures in minimizing these costs. Transaction costs include expenses incurred during the search for information, bargaining, contracting, monitoring, and enforcing agreements (Coase, 1937; Williamson, 1985). TCE posits that firms and markets exist to reduce transaction costs, which arise due to uncertainty, asset specificity, frequency of transactions, and bounded rationality.

The theory classifies transaction costs into three categories: ex-ante costs (costs of drafting and negotiating contracts), ex-post costs (costs of enforcing and monitoring contracts), and opportunity costs (costs of alternatives forgone). TCE also highlights the significance of governance structures—markets, hierarchies, or hybrids—in managing these costs effectively (Williamson, 1996).

TCE is an appropriate framework for analyzing market margins and marketing efficiency in the soybean supply chain for several reasons: The soybean supply chain involves various stages such as production, transportation, storage, and marketing. Each stage incurs transaction costs that influence market margins and overall efficiency. TCE helps identify where costs are inflated due to inefficiencies. The soybean market in Lere LGA, Kaduna State, often faces challenges like poor infrastructure, limited market access, and information asymmetry. TCE provides a framework for understanding how these issues increase transaction costs and disrupt marketing efficiency.

3.0 METHODOLOGY

Survey research design was used in collecting data for the study. Structured questionnaire was administered to a sample size of 110 respondents. A cross sectional data on soybean marketing collected includes production and yield data, market prices, demographic data on the market participants etc. This study used a random sampling technique to select soybean marketers from the list provided by the Soybean Marketing Association in Lere LGA. To ensure representation from different markets, five wards notable for soybean marketing were purposely selected: Gure/Gwassoro, Okuta, Ilesha, Gwanara, and Yashkira. From each of these wards, two markets were selected, and a proportionate sampling of 50% was used to select respondents (marketers) from these markets. This resulted in a total sample size of 110 soybean marketers. The sample frame for this study consisted of the registered soybean marketers on the list provided by the Soybean Marketing Association in Lere LGA. A structured questionnaire was administered to the selected marketers to gather data on their demographics, marketing practices, and activities of the soybean market. By using a random sampling technique and proportionate sampling, this study aimed to ensure a representative sample of soybean marketers in Lere LGA, and to gather reliable data on their experiences and marketing activities.

3.1 Data Analysis

The marketing margin analysis was employed to estimate the margins associated with soybean marketing at wholesaler level of the supply chain. The marketing efficiency ratio was calculated to assess the marketing efficiency of the wholesale soybean supply chain.

3.2 Marketing Margin Analysis

The marketing margin is the difference between the selling price and the purchase price of a commodity at different levels of the supply chain. It represents the cost incurred by market participants in facilitating the movement of the commodity from producers to consumers (Wohlgenant, 2021). The marketing margin was computed using the following formula:

Where: $MM = \frac{sp - pp}{sp} \times 100 \dots\dots\dots 1$

MM = Marketing Margin; SP = Selling Price; PP = Purchase Price

Marketing Efficiency Ratio

Shepherd's Marketing Efficiency (SME) is a metric used to evaluate the effectiveness of marketing efforts in generating revenue. It is calculated by dividing gross profit by marketing expenditure, expressed as a percentage (Shepherd, 2022). This metric helps businesses assess the return on investment (ROI) of their marketing strategies and optimize resource allocation (Kotler, 2003).

Where : $MER = \frac{\Delta R}{\Delta M} \times 100 \dots\dots\dots . 2$

MER = Marketing Efficiency Ratio (expressed as a percentage), ΔR = Revenue generated from marketing activities, ΔM = Total Marketing Costs

A higher SME indicates better marketing efficiency, while a lower SME suggests room for improvement (Kotler, 2003). An SME < 100%: Inefficient marketing efforts, SME = 100%: Break-even point, SME > 100%: Efficient marketing efforts.

4.0 RESULTS AND DISCUSSIONS

4.1 Market Margin of Soyabeans

The market margin analysis revealed that soybean marketers in the study area enjoy a moderate level of profitability, with a market margin of 12.35%. This suggests that for every ₦1 of soybean sold, the marketer retains a profit of ₦0.12. The moderate market margin (12.35%) suggests that soybean marketing is a viable business, which can attract more entrepreneurs and create employment opportunities in the agricultural sector. This finding is consistent with previous studies, such as Udeh et al. (2020), who reported low marketing margins for soybean marketing in Benue State, Nigeria. The average profit margin per bag of soybean was ₦5,188, with a total cost of ₦36,812.27 per bag and a selling price of ₦42,000 per bag. This indicates that marketers can cover their costs and earn a reasonable profit, suggesting that soybean marketing is a viable business in the study area. The profitability of soybean marketing may also lead to improved livelihoods for farmers and marketers, contributing to poverty reduction and economic growth.

The study's findings also support the notion that marketing margins can vary significantly among traders, as reported by Achike and Anzaku (2021) in their study on benniseed traders in Nasarawa state, Nigeria. This highlights the importance of understanding the market dynamics and identifying opportunities for improvement in the soybean marketing chain. Practically, Marketers may need to explore strategies to reduce costs, improve product quality, and enhance market access to increase their market margin. The result from market margin analysis is presented in Table 1.

Table 1 Market Margin of Soybeans in the Lere LGA

Item	Total amount (₦/bag)
A. Cost Component/bag	
Cost of Storage	96.55
Cost of loading& off loading	93.50
Cost of bagging	70.77
Transportation	1006
Farm gate price (fp)	35,545.45
Total cost/bag	36,812.27
B. Revenue/bag	
Selling price (sp)	42,000
C. Profitability/bag	
Profit margin (B-A)	5,188

Marketing Margin (%)	12.35
Average of bags sold	17.5

Source: Field survey 2023

4.2 Market Efficiency of Soybeans

This refers to the effectiveness of marketing efforts in achieving the desired objectives of the soybean's marketer, i.e. higher sales, and revenue. The marketing efficiency ratio of 9.35% was obtained. This indicates that for every naira spent on marketing, the return on investment (ROI) is 9 kobo. This suggests that the marketing efforts of soybean marketers are generating a decent return, but there is room for improvement. Which in turn suggests potential for increased revenue and profitability for soybean marketers. The marketing efficiency ratio also indicates that for every naira spent on marketing generates a return of 9 kobo impliedly that marketers are efficiently utilizing their resources but may need to explore new strategies to maximize their ROI. This could involve diversifying their marketing channels, enhancing product quality, or improving market access. The efficient resource utilization may lead to increased employment opportunities and improved livelihoods for farmers and marketers.

This work is in contrast with Biye et al.'s (2021) finding of a 74.19% marketing efficiency ratio in Gombe State which might suggests that there may be regional differences in marketing strategies and resource allocation. This highlights the need for soybean marketers to assess and adapt their marketing approaches to optimize their ROI. Table 2 showed the results from marketing efficiency of soybeans obtained in the study area.

Table 2 Market Efficiency of Soybean in Lere LGA

Profit Margin/bag = B-A (from Table 1)	5,188
Revenue/price/bag	42,000
Marketing costs/bag	1,267.27
Marketing Efficiency (%)	9.35

Source: Field survey, 2023

5.0 Conclusion and Recommendations

This study examines the market margin and efficiency of soybean marketing in Lere, Nigeria. The findings indicate a substantial market margin of 12.35%, highlighting the potential for profitability in soybean marketing. However, the marketing efficiency of soybean in the region was found to be relatively low, at 9.35%, suggesting the presence of inefficiencies in the marketing channel. The study identified three primary factors contributing to the low marketing efficiency: high transaction costs, poor market access, and inefficient marketing channels. These findings suggest

that soybean marketers in Lere, Nigeria, face significant challenges in optimizing their marketing strategies, leading to reduced profitability and efficiency.

The results of this study have important implications for stakeholders in the agricultural sector, including soybean marketers, policymakers, and other industry players. By addressing the identified inefficiencies and implementing strategies to enhance marketing efficiency, soybean marketers can improve their profit margins, contribute to the growth of the agricultural sector, and enhance the overall performance of the marketing channel. Thus, the study recommends that:

- i. The government and private sector should invest in essential infrastructure, such as roads, storage facilities, and market buildings, to enhance market access and reduce transaction cost
- ii. Soybean marketers should adopt efficient marketing strategies, such as direct sales to processors, to minimize costs and maximize profits.
- iii. Farmer-marketer organizations should be empowered through capacity-building programs and training to enhance their bargaining power and marketing efficiency.

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