

The Role of Marketing in the Supply Chain Management of Shea Butter Production

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Mubarik Abdul Mumin ¹, Mary Asare-Larbi ², Akanganngang Joseph Asitik ²

¹. Procurement and Supply Chain Management, University for Development Studies, Tamale, GHA ². Marketing and Entrepreneurship, University for Development Studies, Tamale, GHA

Corresponding author: Mubarik Abdul Mumin, mamubarik@uds.edu.gh

Abstract

The integration of efficient supply chain management into marketing ensures an enhanced level of performance among shea processing companies in Sub-Saharan Africa. However, there is a knowledge gap among shea processors, particularly in Northern Ghana, regarding how to capitalise on supply chain and marketing opportunities. The primary question addressed in this paper is as follows: what marketing challenges exist within the supply chains of the Ghanaian shea processing industry? A convenience sampling method was used to collect data from 184 respondents via a questionnaire, and the partial least square structural equation model was applied to analyse the data. The results of this study indicate that marketing positively influences the shea butter industry by generating demand, ensuring efficient distribution, and establishing strong connections between producers and consumers. The study also identified a positive relationship between supply chain management and both marketing and the shea butter industry. These findings have implications for women in the shea butter industry and shea marketing companies.

Categories: Strategic Supply Chain Management, Marketing and Market Issues in Business, Sustainability in Supply Chain Management

Keywords: marketing, supply chain management, shea processors, shea products, northern ghana

Introduction

According to research, trade liberalisation promotes the competitiveness of the quality of a product and the accessibility of a market in the long run (Wenwen, 2023). Shea is a native untamed tree found only in 19 countries of Africa, from West Africa's savanna belt to East Africa (Tom-Dery et al., 2018). About 900,000 women are employed and paid by the shea sector in the three northern regions of Ghana (Katsektor et al., 2024). Shea butter production is an income source for many women, making shea processing extremely important to the local community (Oduro Akrasi et al., 2021). In Ghana, the butter business is anticipated to eventually equalise cocoa butter as it is a better substitute in the confectionery industry (Davrieux et al., 2010). Shea is becoming increasingly popular globally, particularly in the cosmetics and confectionery industries. There is a high international market potential for shea butter, which warrants a high export potential. Policymakers and other stakeholders are most concerned about the need to get shea processors who are mostly women connected to the global market. Ghana's shea industry can grow without interruption if processors are engaged in creating good systems for a market capable of encouraging consumer-producer networks, including all mechanisms, flows, interchanges, services, and operators (Yayah, 2020). Despite attempts to expand the shea butter market, shea processors still face significant challenges due to the lack of systematized metrics (size, colour, and weight) (Naughton et al., 2017). Largely, shea processors only take price and cannot deliver the necessary constancy of quality; market accessibility continues to be a concern (Adekambi et al., 2018). Furthermore, Ghana's rural indigenous women who live in the northern areas handle the primary production and retail trade in shea butter, unlike intermediate dealers who easily use institutional and administrative assistance to engage in wholesale and export commerce. Generally, retail commerce in the local market has more difficulties regarding the expansion and development of businesses due to reduced income in sales and poor credit, which makes it challenging for women's enterprises to expand, survive, and diversify. Properly adopting supply chain management in shea butter production can guarantee a possible increase in market share whilst reducing cost, as all activities and actions are connected to the movement and transformation of the products, from the raw material extracting stage to the numerous processing steps to reach the final users (Kovács and Kot, 2016). Shea supply chain management has to do with integrating key practices of an organization's operations, procedures, and transactions across the shea supply chain, with the overarching objectives of enhancing performance over the long term and gaining a competitive edge in the market (Dumitrascu and Hila, 2017). Observably, a common focus on consumer demand, product creation, branding, promotion, customer relationship management, and the use of data and analytics is what causes the overlap between supply chain management and marketing. The critical question that needs answers is as follows: what role does marketing play in the supply chain management of shea butter processing? To provide policy recommendations that will enhance production and boost shea processors' income through improved market access, the current research examines characteristics that affect how

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easily micro-entrepreneurs in Ghana's shea processing business may access market opportunities. Ghana's shea nut industry has seen a boom in recent years, but globalisation has had only a marginal impact on its supply chain. The study focuses on shea micro-entrepreneur's ability to access markets. It advances the shea supply chain literature by integrating marketing and supply chain management into a cohesive framework, grounded in empirical data and resource-based view (RBV) theory while highlighting pathways for economic empowerment and sustainable industry growth. Other parts of the study are organised as follows: Examination of existing literature is followed by an exploration of the theoretical model and research hypotheses. The research methodology is subsequently outlined, leading to the presentation and analysis of the study's findings. The conclusion involves a discussion of the implications, recommendations, and potential avenues for future research.

Literature

Shea Products

Shea nuts or kernels are the raw materials needed for shea butter production. The American Shea Butter Institute has outlined 21 applications for shea butter (Abdul-Mumeen et al., 2019). On a local level, shea butter has diverse uses encompassing food, medicinal purposes, cosmetics, soap production, and detergent manufacturing, as well as its cultural and religious significance (Adams et al., 2016). The commercial uses of shea butter are in the cosmetics, pharmaceuticals, and candies industries (Abdul-Mumeen et al., 2019). Hence, there are prospects to raise the value, quality, and quantity of the exported butter and domestic consumption (Adekambi et al., 2018). Ghana plays a significant role as a major shea butter supplier in the West African region (Adekambi et al., 2018). It has been noted that shea butter is a better substitution in chocolate production because it easily replaces cocoa, especially in the European Union (De Clercq et al., 2017). The shea sub-sector stands out as one of the few agro-processing sectors that has received support from both governmental and non-governmental organizations (Owoo et al., 2018). Improvements to extraction procedures have attempted to reduce inputs such as wood, fuel, labour, and water, among others, and enhance uniformity of quality (Mkuna et al., 2021).

Shea Industry in Ghana and Processors

Ghana's shea industry is built on a large population of wild trees, whose nuts are harvested and prepared for local and worldwide distribution (Abdul-Mumeen et al., 2019). Shea nuts and butter have become vital economic commodities from an economic standpoint that have gained recognition on a global scale due to their value and advantageous characteristics. The confectionery, cosmetics, and pharmaceutical sectors import shea nuts and shea butter, which are highly appreciated ingredients (Glew and Lovett, 2014) (Goumbri et al., 2021). The shea industry is made up of a variety of actors, including communities that grow shea, shea pickers and processors, butter extractors, and individual interest groups. These actors communicate with one another and are linked by their dependence on one another for the flow of shea nuts, butter, and other goods and services, such as transportation and marketing (Hatskevich et al., 2014). People in Ghana's northern regions have traditionally viewed shea trees as a woman's crop and the shea trade as a woman's profession (Kent, 2017). About 1 million women work in the shea sector by extracting shea butter or processing the nuts (Naughton et al., 2017). Shea nuts and butter are now a multimillion-dollar industry that significantly boosts economies such as Ghana, bringing in foreign exchange (Yayah, 2020). Similarly, the privatization of public firms, trade liberalization to increase exportable items, and institutional reforms to lessen and loosen state control in industries have all been credited with turning the shea sector into a multimillion-dollar industry (Opoku-Mensah et al., 2024).

The harvesting and processing of shea nuts and butter is a significant source of income, contributing 33 per cent of the family income of rural women in Northern Ghana (Agúndez et al., 2019). More than 600,000 women in Ghana rely on the proceeds from the sale of shea products and other related activities to provide for their daily needs (Kombiok and Agbenyega, 2017). The picking and processing of the shea nuts and the production of the butter, as well as the selling of the nuts and the butter, serve as critical socioeconomic activities of women with the potential of reducing the poverty level of women in northern Ghana (Oduro Akraasi et al., 2021).

Marketing and Supply Chain Interface in the Shea Industry

To create value and cross-organizational borders in shea butter production, marketing and supply chain management are two essential components (Gölgeci et al., 2019) (Jüttner et al., 2010) (Piercy, 2009). The supply chain management interface is the primary arena for businesses to oversee their interactions with organisations and align their value-creation activities upstream and downstream across supply chains. It serves as the central hub for boundary-spanning operations. The core shea processing domains and techniques are marketing and supply chain management (Geng et al., 2017) (Xiong and Bharadwaj, 2013). Establishing and managing inter-organizational relationships between processors and potential markets is the responsibility of managers in the marketing and supply chain management functions (Jackson and Young, 2016) (Stolze et al., 2018). Therefore, it is crucial to comprehend how marketing and supply chain management interact. The marketing-supply chain management interface, however, is a challenging area

with possible conflicts that impact how a company conducts its activities that cross boundaries, gathers, and processes outside knowledge. The duties of marketing and supply chain management functions are different, and they depend on different fundamental assumptions (Piercy, 2009). Despite intentional attempts to encourage collaboration between marketing and supply chain management, their perspectives frequently diverge, featuring distinct values and objectives. This dichotomy challenges establishing and sustaining alignment between the two functions (Jüttner et al., 2010).

The marketing mindset is characterised by agility, pragmatic utilization of networks, resource leverage, and calculated risk-taking. This approach actively seeks opportunities for innovation co-creation and value delivery to stakeholders such as consumers, employees, and platform allies (Alqahtani and Uslay, 2020). There is an understanding that marketing practices aim to improve business performance by adopting the benefits of market-oriented tactics (Boso et al., 2013). Marketing enables businesses to create a customized campaign that will convert prospects by considering their profiles. It also enables businesses to learn about customer expectations and meet them, as well as how personalized retargeting can assist businesses in realizing their strategic goals (Frazer and Stiehler, 2014). Agility is a key marketing component, emphasising the relevance of a flexible and responsive supply chain to adapt to the market and customers' shifting needs. In the context of West Africa's shea butter industry, this agility is essential. Exporters have a significant opportunity to tap into the growing global demand for shea butter, but success depends on their ability to consistently deliver high-quality products that meet international standards (Ayelazuno and Yaro, 2024). This is crucial since badly planned export campaigns might result in quality issues that reduce sales to import markets (Opoku-Mensah, 2023). Due to the possibility of direct sourcing, the cosmetics industry in Europe and the United States stands out among the largest markets for West African providers of shea butter (Goumbri et al., 2021). Shea butter is also in greater demand in the personal care sector due to the cosmetics industry's growing understanding of its therapeutic advantages (Adeyemo et al., 2015). A therapeutic benefit is driven from shea butter when combined with plant sterols, oleic, stearic, palmitic, and linolenic acids. These oil-soluble materials are not saponifiable, which implies that when they come into contact with an alkali, they do not turn into soap. Compared to most other nut oils and fats, shea butter has a larger non-saponifiable proportion, which enhances its capacity to heal skin lesions (Fold, 2000). Due to the markets in developed nations and the recent realisation of these advantageous features, the demand for shea butter keeps rising. The Western personal care market is expected to use shea butter to account for 10% of Africa's total exports. The demand from the United States is anticipated to grow by 25% each year. It was recently stated that nutritional supplements for both people and animals have been created using shea butter fractions and that US patents had been obtained for products with antidiarrheal, anti-arthritis, and lower cholesterol qualities. Despite the enormous demand for shea butter in the local, regional, and global markets, shea butter's profitability and market composition are poorly known in northern Ghana, the home of shea.

Shea Supply Chain Management

The administration of the shea supply chain involves overseeing and arranging a range of tasks, including sourcing, procurement, conversion, and logistics management. It also involves working together with various channel partners, such as suppliers, intermediaries, third-party service providers, and clients throughout the shea value chain. Essentially, supply chain management integrates the regulation of supply and demand within and between businesses (Opoku-Mensah et al., 2024). Excellent shea supply chain management operations and strategies may significantly contribute to the success of the shea and related businesses (Kozlenkova et al., 2015). The shea butter supply chain consists of the main players, the tasks or roles they play, actors who support the whole chain, as well as actors who display the volume of product that moves between them (Rousseau et al., 2015). The main actors engage in specific actions that guarantee that shea nuts are gathered, processed, and produced properly and sold to the final consumer (Adams et al., 2016). The supporting players ensure that the main actors' surroundings and circumstances for carrying out these tasks are suitable to ensure maximum resource use, efficiency, and returns (Abdullahi and Baba, 2020). The goal of supply chain management is connecting people who provide the resources to generate things. Marketing researchers claim that the synchronization of information and product flow is one key instance of how supply chain management connects marketing and logistics (Alvarado and Kotzab, 2001), which is indeed necessary to boost the marketing of shea products. Supply chain management, a network of enterprises collaborating to deliver goods or services to clients, connects flows from raw material supply to final delivery (Ellram and Murfield, 2019). Hence, the paper seeks to examine how the interplay between marketing and supply chain management enhances the activities in the shea industry anchored on the resource-based view theory.

Resource-Based View Theory

This study adopted RBV. According to the RBV theory, a firm's resources and capabilities are the most important determinants of its strategic competitiveness and long-term success (Kraaijenbrink et al., 2009). Marketing can be viewed as a resource or capability that can assist enterprises in gaining a competitive advantage in the marketplace, such as shea butter production. Firms can differentiate themselves from competitors, enhance brand awareness, and eventually increase sales and profits by effectively marketing their shea butter products (Bello-Bravo et al., 2015). Additionally, the RBV theory

emphasizes the significance of valuable, rare, and unique resources and talents. Effective marketing can be a resource or competence in the context of shea butter production if competitors find it difficult to replicate or supplant (Hitt et al., 2016). For example, any business with a strong brand and a loyal customer base may have a competitive edge over competitors who lack similar marketing capabilities. Following the RBV theory, it can be argued that successful marketing can be a valuable resource and capability for enterprises in the shea butter supply chain, assisting them to acquire a competitive edge and long-term success. Therefore, the theory is contextualised to fit the processing and production of shea nuts and butter and marketing processes.

Hypothesis development

Marketing and the Shea Butter Industry

Customers have become increasingly interested in natural and organic beauty products, so the shea butter sector has grown significantly in recent years. Marketing is essential for promoting shea butter products and educating consumers on the benefits of using shea butter (Sualihu, 2019). One effective marketing technique for shea butter products is emphasising its natural and organic constituents. Many people are seeking products that are free of dangerous chemicals and are eco-friendly thus stressing the natural ingredients in shea butter can be a strong selling point (Nounagnon et al., 2023). Businesses in the shea sector can successfully advertise their shea butter products to a growing audience by adopting various techniques such as promoting natural components, educating clients, utilizing social media, and smart branding (Venciute et al., 2024). Hence, the hypotheses that:

H1: Effective marketing technique has a positive influence on the shea butter industry.

Supply Chain Management and Marketing

Effective supply chain management is hypothesised to positively impact marketing performance (Al Kurdi et al., 2022). The coordination and integration of activities in the supply chain play a crucial role in the flow of goods, services, and information to customers (Di Maria et al., 2022). Timely delivery, facilitated by well-executed supply chain processes, enhances customer satisfaction and positively influences marketing performance (Wachira et al., 2022), and thus can impact the shea businesses. Efficient supply chain management ensures product availability, meeting customer demand and contributing to increased sales opportunities (Modgil et al., 2022). By implementing quality control measures and streamlining processes, effective supply chain management in the shea supply marketing leads to delivering high-quality products, positively impacting brand perception and customer satisfaction. Additionally, collaboration and coordination among supply chain stakeholders foster innovation, enabling the introduction of new products or services that meet customer preferences and contribute to positive marketing outcomes (Mak and Max Shen, 2021) which are essential in marketing shea products. While this hypothesis proposes a positive relationship between supply chain management effectiveness and marketing performance, further research and analysis are required to quantify and validate this relationship. A well-managed supply chain of shea products ensures that supplies to clients are on time, and at the right price. This can lead to increased client satisfaction and loyalty, as well as higher sales (Gligor et al., 2020). Furthermore, a well-managed supply chain can provide a competitive edge by allowing businesses to provide lower costs, greater quality products, and faster delivery dates (Duma, 2018). As a result, we hypothesise that:

H2: Supply chain management can contribute significantly to the success of the marketing of shea butter.

Supply Chain Management and Shea Butter Industry

Shea butter is a valuable commodity used in various industries, such as cosmetics, food, and pharmaceuticals. Shea butter production involves stakeholders such as farmers, collectors, processors, traders, and retailers (Sualihu, 2019). By implementing efficient supply chain management practices, these stakeholders can work together more effectively to improve the quality and consistency of shea butter, reduce waste, and lower costs (Noumi et al., 2013). This can result in a more sustainable and profitable business that benefits all stakeholders. Additionally, efficient supply chain management practices can help to ensure that shea butter production is done in an environmentally responsible and socially sustainable manner (Wilhelm et al., 2016). As a result, we hypothesise that:

H3: Implementing effective supply chain management practices can contribute significantly to the shea butter industry.

Research Method

Study population, sampling procedure, and sample size

The study population consists of individual shea processors belonging to organised shea processing groups in Ghana's Kumbungu and Sagnarigu districts. The target population comprises 184 individual

shea processors in the Kumbungu and Sagnarigu districts. The convenience sampling method employed in collecting the data enables the practical and quick evaluation of population elements through a point of contact (Senyo and Osabutey, 2020). Furthermore, it was not possible to distribute questionnaires to all individual shea processors because of the dispersed nature of respondents around the districts. The researchers were able to access shea processors through the use of the convenience sampling technique, allowing for simple generalizations (Etikan et al., 2016). To meet the prescribed sample size criteria, we adhered to the '10 times rule' proposed by (Hair et al, 2011). According to this guideline, the minimum required sample size should be tenfold the highest count of structural paths leading to a particular construct in the structural model.

Data sources, characteristics, and methods of collection

To study the links between marketing and supply chain performance, the study relied on primary data from self-reported views of the individual shea processors, with the willingness to participate in the survey based on informed consent. Items measuring constructs such as marketing were adapted from (Ellram and Murfield, 2019). The supply chain management construct was adapted from (Kozlenkova et al., 2015). The data-gathering questionnaire has two sections. The first part (Part A) concentrated on the demographics of the shea processors, and the second part (Part B) concentrated on the perception and knowledge of each construct in the model, using a 5-point Likert-scale with a range of 1 (strongly disagree) to 5 (strongly agree) to elicit data from the respondents. The researcher administered the questionnaire and responded to queries to assist respondents who lacked literacy abilities. The questionnaire used in the study can be found in the Appendices section.

Results

Data processing and analysis

The steps in data analysis were descriptive analysis, evaluation of the measurement, and structural models (Al-Emran et al., 2019). The respondents' demographic characteristics were the main focus of the descriptive analysis. The structural and measurement model evaluations were explored using SmartPLS software. This research relied on partial least square structural equation model (PLS-SEM) due to its capacity to manage complex correlations, constrained sample size, and skewed sample distribution as compared to other techniques (Hair et al., 2019). We piloted the original questionnaire to evaluate the survey instrument's validity and reliability. Results from the piloted questionnaire enable us to improve it to ensure its suitability. We changed the supply chain management and marketing questions in response to the pilot test results. Data collection then started. The first round of data collection involved 200 respondents. However, 184 responses were suitable for the study. We considered the number of replies sufficient for this research because the minimum sample size is 60.

Assessment of measurement model

To assess how well the theory selected for the study aligns with the collected data, it is essential to scrutinize the measurement model. All constructs in this investigation were reflective, emphasizing the importance of appraising the validity and reliability of the measurement model before delving into an evaluation of the structural model. The scrutiny of reflective indicator loadings played a crucial role in ascertaining the reliability of the indicators. An indicator loading of 0.708 or above is considered satisfactory, indicating that the construct accounts for more than half of the variation in the indicator, as per the findings of (Hair et al., 2019). However, not all loadings met the requirement. As a result, they were removed from the model. Particularly, M7, M8, SC8, SC9, SB2, SB3, SB4, and SB10. The items M, SC, and SB representing marketing, supply chain, and shea butter industry, respectively, were removed. All other indicators exceeded the minimum threshold of 0.708 and significantly loaded on their corresponding latent variables (see Figure 1).

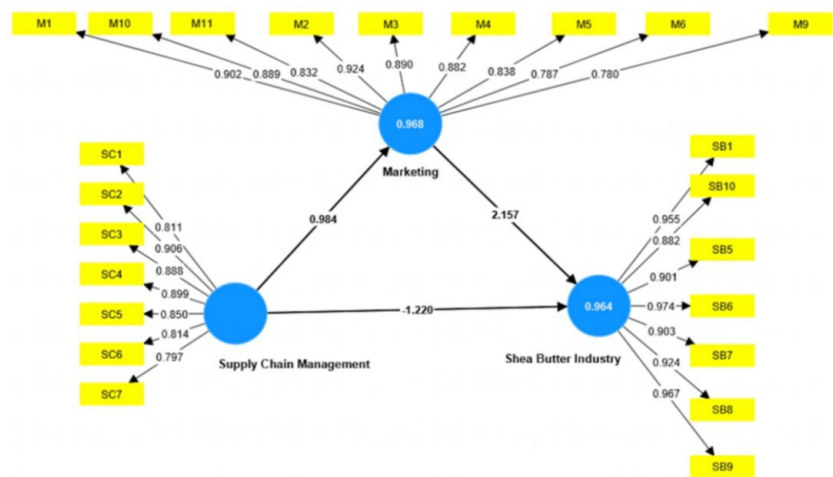


FIGURE 1: Reflective Loadings

M, SC, and SB refer to marketing, supply chain, and shea butter industry, respectively.

An examination of internal consistency reliability followed the assessment of indicator reliability. Composite reliability (CR) values were employed for this purpose, as they are considered by (Henseler et al., 2015) to be a more precise measure of indicator reliability than Cronbach's alpha. This preference for CR is attributed to its foundation on the assumption that all indicators possess distinct loadings (Chin, 1998). The obtained CR values, presented in Table 1, ranged from 0.900 to 0.945, indicating a "good" level of reliability. Additionally, convergent validity was assessed through the average variance extracted (AVE). To meet the requirement for convergent validity, AVE values should be at least 0.50 (Hair et al., 2019). The results in Table 1 demonstrate satisfactory convergent validity as all AVEs surpassed the minimum threshold of 0.50.

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted
Marketing	0.931	0.955	0.945	0.624
Shea Butter Industry	0.888	0.957	0.917	0.569
Supply Chain Management	0.851	0.939	0.900	0.566

TABLE 1: Construct Reliability and Validity

Assessment of structural model

Following the assessment of the measurement model, a structural evaluation was conducted (Hair et al., 2019) (Urbach, 2010). A bootstrapping procedure was used with 500 re-samples in SMART PLS to determine the direct effects. In addition, we evaluated the significance of the path coefficient between the model's latent variables (Urbach, 2010). The t-values obtained through the bootstrapping procedure were used to make the inference (Figure 2 and Table 2). For a 10% significance level, it is recommended to use a minimum critical value of 1.65 using a 95% confidence interval (two-tailed) (Hair et al., 2011).

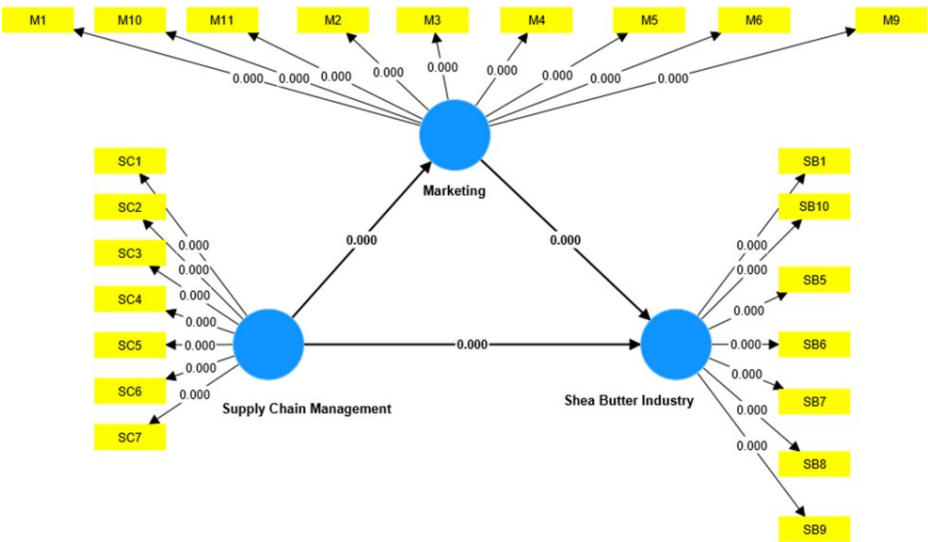


FIGURE 2: PLS-SEM Bootstrap Result

PLS-SEM, Partial Least Squares Structural Equation Modeling

M, SC, and SB refer to marketing, supply chain, and shea butter industry, respectively.

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values	2.5%	97.5%
Marketing → Shea Butter Industry	2.157	2.164	0.080	26.832	0.000	2.016	2.332
Supply Chain Management → Marketing	0.984	0.984	0.003	344.413	0.000	0.978	0.989
Supply Chain Management → Shea Butter Industry	-1.220	-1.227	0.081	15.030	0.000	-1.397	-1.077

TABLE 2: Hypotheses Testing for Direct Effect

The coefficient of determination (R²) was used to assess the model’s goodness of fit (Hair et al., 2014). R-squared values vary from 0 to 1, with stronger explanatory power indicating higher values. R² values of 0.25, 0.50, and 0.75 are considered weak, moderate, and significant, respectively (Hair et al., 2011) (Henseler et al., 2015). R squared values of 96.5% for marketing suggest that supply chain management and the shea butter industry explain 96.5% of the variance in marketing. Furthermore, R squared values of 97% for the shea butter production suggest that marketing and supply chain management explain 97% of the variance in the shea butter production (see Table 3).

	R-square	R-square adjusted
Marketing	0.965	0.965
Shea Butter Industry	0.970	0.970

TABLE 3: R Squared

Discussion

This study aimed to explore the relationship between marketing and supply chain management in the shea butter industry, with a specific focus on the resource-based dimension. The study utilized a quantitative approach known as PLS-SEM to assess the impact of supply chain management on the shea butter industry through marketing. Additionally, the study aimed to examine the direct effect of supply chain management on the shea butter industry. Primary data was collected from 184 participants

representing various sectors of the shea butter industry. The analysis of the data supported all three hypotheses proposed by the researchers.

Firstly, the study found a significant and positive relationship ($\beta = 0.000$ and $t = 26.832$) between marketing and the shea butter industry, indicating that marketing has a considerable influence on the supply chain management of the shea industry. This finding supports the hypothesis (H1) that marketing has a positive impact on the shea butter industry. Previous studies conducted by (Nounagnon et al., 2023) have all demonstrated a positive association between marketing and the shea butter industry, aligning with the current study's findings. Based on the study's findings and previous research, there is a clear need to leverage marketing strategies further to enhance and optimize the shea butter industry's supply chain management.

Secondly, the study revealed a significant positive relationship between supply chain management and marketing ($\beta = 0.000$ and $t = 344.413$). This demonstrates that effective supply chain management is crucial for the shea sector to adapt to evolving consumer demands and market trends. By adopting efficient supply chain strategies, shea businesses can enhance product availability and ensure timely delivery to customers, key factors in supporting marketing success. This reinforces the second hypothesis (H2), which posits that supply chain management plays a vital role in driving marketing outcomes. These insights are consistent with the findings of (Ellram and Murfield, 2019) who also highlight the strategic importance of supply chain effectiveness in achieving marketing goals.

Furthermore, the study also found a significant and positive relationship ($\beta = 0.000$ and $t = 15.030$) between the supply chain management dimension and the shea butter industry. This suggests that effective supply chain management practices positively impact the shea butter industry. Therefore, the third hypothesis (H3) that implementing efficient supply chain management practices significantly contributes to the shea butter industry was also supported. Previous studies conducted by (Rousseau et al., 2015) have similarly demonstrated the positive influence of supply chain management on various industries, corroborating the findings of this study. Some of these include the significant and positive association between marketing and the shea butter business, highlighting marketing's significant influence on supply chain management in the shea industry and the significant, favourable relationship between supply chain management and the shea butter industry, showing that effective supply chain procedures are advantageous to the sector.

Conclusions

This study analysed the relationship between marketing and supply chain management within the shea butter industry. The study developed a conceptual model and collected primary data from 184 shea butter producers located in the Sagnarigu and Kunbungu districts in the Northern Region of Ghana. PLS-SEM was used to evaluate our model, and the results indicated a significant correlation between supply chain management, marketing, and the shea butter industry. The findings uncovered several important insights. Marketing plays a crucial role in the success of the shea butter production's supply chain management. The research emphasised that marketing's significance in the shea butter industry lies in its ability to generate demand, ensure efficient distribution, and establish strong connections between producers and consumers. Implementing marketing strategies such as branding, packaging, and promotional activities holds great potential to enhance the global competitiveness of shea butter. Additionally, the study shed light on how supply chain management practices can support and enhance marketing efforts in the shea butter industry. This implies that shea butter businesses and organisations can utilize supply chain management to gain a competitive edge and achieve positive social and environmental impacts. Furthermore, the study provided valuable information on how supply chain management methods can promote sustainable and profitable shea butter production. The results indicated a positive influence of supply chain management on the shea butter industry, highlighting the potential for enterprises and organisations to leverage supply chain management for favourable social and environmental outcomes.

However, it is important to acknowledge the study's limitations. The reliance on data from respondents was limited to a single region instead of all the regions in the North, where Shea is prevalent, as resources and time constraints prevented a nationwide investigation. Therefore, the findings may not apply to other areas in the North. Future studies should consider exploring these linkages in all five regions in the North that all have the product scale, and incorporating additional moderating variables to examine the connections. Moreover, the small sample size used in this study may not fully represent the entire industry across the five northern regions. Therefore, future research could delve into the influence of cultural practices on marketing techniques within the shea butter industry. A larger sample size could be employed to provide a more comprehensive understanding of the industry. Additionally, the study can be replicated in different regions to identify regional variations in marketing methods. Furthermore, considering the growing use of technology in the global market, investigating the significance of digital marketing in shea butter production would be worthwhile.

Appendices

The Role of Marketing in the Supply Chain Management of Shea Butter Production

We are a group of researchers investigating the role of marketing in the supply chain management of shea butter production. Your candid opinion on various issues is essential for the success of this study. The results of the study will help inform policy decisions and effective practices in the shea supply chain. Your identity will not be associated with the outcome of this study in any way, so we kindly ask you to spend some time responding to the questions.

Please tick this box if you agree to participate in this survey. ☐

Thank you for your valuable contribution to this research.

Part A: Demographic Characteristics of Respondents

(1) Sex:

i. Male ☐

ii. Female ☐

(2) District/Metro:

i. Tamale ☐

ii. Sagnarigu ☐

(3) Age:

i. 1-20

ii. 21-30

iii. 31-40

iv. 41-50

v. 50 and above

(4) How long have you been engaged in the shea butter production?

i. Since childhood ☐

ii. Less than 5 years ☐

iii. Between 5 and 10 years ☐

iv. Over 10 years now ☐

(5) Level of Education:

i. Primary School ☐

ii. JHS/MSL ☐

iii. Secondary ☐

iv. No Formal Education ☐

v. Others Specify.....

Part B

Indicate your opinion for the following statements by ticking (√) in the right column (Please select using the 5-point Likert scale the answer that most responds to the statements)

Marketing	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
There is ready market for Shea butter					
Prices offered by buyers are competitive					
Buyers of our Shea butter are of both local and international origins					
Prices of Shea butter are tied to quality					
Inadequate information on market demands/standards affects the Shea business					
Lack of access to affordable capital affects Shea butter production					
Inadequate business skills contributed negatively to Shea butter production					
Poor nature of road network affects the Shea butter industry					
High cost/inadequacy of inputs affects Shea butter production					
The low sale of Shea butter affected Shea butter production					
Supply Chain Management	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
We consider quality as our number one criterion in selecting suppliers					
We have helped our suppliers improve their service quality					
We frequently interact with customers to set our level of reliability, responsiveness, and other standards					
We help customers seek assistance from us					
We inform suppliers in advance of changing needs					
Suppliers share proprietary/exclusive information with us					
Suppliers keep us fully informed about issues that affect our business					
Suppliers share business knowledge of core business processes with us					
We and our trading partners (suppliers and customers) exchange information that helps in the drawing of business plans					
We and our trading partners (suppliers and customers) keep each other informed about events or changes that may affect the other partners					
Shea Butter Industry	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Shea kernel is easy to get					
Shea butter production is my full-time occupation					
Shea production is highly profitable					
Shea butter processing is tedious					
Limited labour during peak production periods affects the Shea butter business					
There are sufficient storage facilities to store Shea butter					

TABLE 4: Study Questionnaire

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

Concept and design: Mubarik Abdul Mumin, Mary Asare-Larbi, Akangnang Joseph Asitik

Acquisition, analysis, or interpretation of data: Mubarik Abdul Mumin, Mary Asare-Larbi, Akangnang Joseph Asitik

Drafting of the manuscript: Mubarik Abdul Mumin, Mary Asare-Larbi, Akangnang Joseph Asitik

Critical review of the manuscript for important intellectual content: Mubarik Abdul Mumin, Mary Asare-Larbi, Akangnang Joseph Asitik

Disclosures

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