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Credit Impact on Profitability and Marketing Efficiency of Sawn Wood Marketers

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Abstract

Aim of study: Credit impact on profitability and marketing efficiency of sawn wood marketers was examined.

Area of study: Ndokwa West Local Government Area, Delta State.

Material and methods: 120 respondents were obtained using multistage sampling technique and interviewed with structured questionnaires. Data were analyzed using descriptive statistics and profitability model.

Main results: Respondents were male (70.0%) with 50 years average age. Sizes of sawn wood sold varied (4"x12", 1"x12", 2"x3", 2"x2"). The 2"x4" (16.8%) and 2"x2" (14.8%) sawn wood were most sold. Purchase price (₦1306.5) and selling price (₦1503.3k) of 4"x12" was higher than other sawn wood sizes. Total cost, revenue, net profit, benefit cost ratio and market efficiency of sawn wood business were ₦456604.20, ₦845843.30, ₦389239.20, 2.17 and 85.7% respectively. Credit had significant improvement on profitability (69.6%) with z-value of 0.00000127 (P<0.05). Producers (93.3%) who sell directly (56.0%) to consumers dominated sawn wood market and market channel. Market conduct shows prices are fixed by wood union. Sawn wood marketing overall constraints index was 67.0% with insufficient finance (Ẋ=3.43) and transportation costs (Ẋ=3.13) highest.

Research highlihts: With access to credit, profitability index of sawn wood marketers will greatly increase. Intervention with soft loans could help expand sawn wood business.

Keywords: Profitability, Marketing, Efficiency, Sawn Wood, Marketers

Kredinin Biçilmiş Ahşap Malzeme Pazarlamacılarının Kârlılığı ve Pazarlama Verimliliği Üzerine Etkisi

Öz

Çalışmanın amacı: Biçilmiş ahşap malzeme pazarlamacılarının karlılığı ve pazarlama verimliliği üzerinde kredi etkisi incelenmiştir.

Çalışma alanı: Ndokwa Batı Yerel Yönetim Alanı, Delta Eyaleti.

Materyal ve yöntem: Çok aşamalı örnekleme tekniği kullanılarak 120 katılımcı elde edilmiş ve yapılandırılmış anketlerle görüşmeler yapılmıştır. Veriler, tanımlayıcı istatistikler ve karlılık modeli kullanılarak analiz edilmiştir.

Temel sonuçlar: Katılımcılar yaş ortalaması 50 olan erkeklerdir (%70). Satılan biçilmiş ahşap malzemenin boyutları farklılık göstermektedir (4"x12", 1"x12", 2"x3", 2"x2"). En çok satılanlar 2"x4" (%16.8) ve 2"x2" (%14.8) kesilmiş ahşaplardır. 4"x12"'nin alış fiyatı (₦1306.5) ve satış fiyatı (₦1503.3) diğer biçilmiş ahşap ebatlarından daha yüksektir. Biçilmiş ahşap malzeme işinin toplam maliyeti ₦456604.20, geliri ₦845843.30₦, net kârı ₦389239.20, fayda maliyet oranı %2.17 ve piyasa verimliliği %85.7'tir. Kredinin, 0.00000127 z değeriyle (P<0.05) karlılık üzerinde önemli bir iyileşme (%69,6) sağladığı görülmüştür. Tüketicilere doğrudan (%56.0) satış yapan üreticiler (%93.3) kesilmiş ağaç pazarına ve pazar kanalına hakimdir. Piyasa davranışı, fiyatların ahşap birliği ile sabitlendiğini göstermektedir. Biçilmiş ahşap malzemenin pazarlama genel kısıtlama endeksi %67.0 olup, en yüksek yetersiz finansman (Ẋ=3.43) ve nakliye maliyetleri (Ẋ=3.13) olmuştur.

Araştırma vurguları: Krediye erişim sayesinde, biçilmiş ağaç malzemepazarlamacılarının karlılık endeksi büyük ölçüde artacaktır. Uygun kredilerle müdahale, biçilmiş ahşap malzeme sektörünün genişletilmesine yardımcı olabilir.

Anahtar Kelimeler: Karlılık, Pazarlama, Verimlilik, Biçilmiş Ahşap, Pazarlamacılar

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Introduction

In 2017, the global production of sawn wood was 485 million cubic meters (m^3), while global trade amounted to 153 million m^3 (FAO, 2018). The main production regions were Asia, Pacific, Europe and North America. Production has been steadily increasing in these regions from 2012 to 2017. In contrast, production in Africa, Latin America, and the Caribbean is relatively modest. Africa and the Asia-Pacific region are main importing regions, while Europe and North America are main exporting regions (FAO, 2017).

Wood has been valuable material throughout human history and played a crucial role in industrial development. It not only supports wood-based industries but also contributes to the growth of other sectors such as construction and engineering (Ohwo et al., 2020a).

In the past, the timber industry ranked as the most important sectors in Nigeria, generating jobs, revenue, and significantly contributing to socio-economic development (Ohwo & Ogoha, 2017). The timber industry has historically been of great significance to Nigeria's Gross Domestic Product (GDP). The timber industry in Nigeria has substantial economic importance as it contributed two-thirds of Nigeria's GDP in 1970. Sawn wood is a crucial product within the timber industry. It is a versatile raw material used for manufacturing various products such as furniture, floorboards, and other secondary wood products (Ohwo, 2021).

Sawn wood remains the major sellable product in timber industry. Individuals are engaged in sawn wood business because it offers timely returns on capital investment and profits with relatively fewer challenges compared to other wood derivatives intended for export (Ohwo & Ogoha, 2017). Apart from its direct applications, sawn wood serves as a vital raw material for secondary wood users (Ohwo et al., 2020b). These industries manufacture goods for export markets, further contributing to the country's economic growth (Izekor & Izekor, 2011).

Timber is obtained through various means, including mill operators, conventional loggers, and poachers. Managing timber resources sustainably and combating illegal logging and poaching are likely challenges faced by the industry (Olukosi et al., 2005). However, it's important to note that sustainable and responsible practices are essential to ensure the long-term viability of the industry and to protect Nigeria's valuable forests and natural resources. Although the Forest sector contributes significantly to Nigeria's Gross Domestic Product (GDP), a substantial portion of the revenue generated is not properly accounted for (Olukosi et al., 2005), which can lead to a perception of a decline in the sector's overall contribution to the national GDP.

Sawn wood, especially hardwood, is economically important. It is used in various applications, including furniture making, building construction, and plywood production. This makes sawn wood a valuable commodity with a wide range of uses. The sawn wood industry has a ripple effect on the entire economy (Ohwo & Ogoha, 2017). It contributes to raw material manufacturing, distribution for construction and furniture making, and packaging, among other sectors (Ohwo, 2016). In Nigeria, wood trade involves of many Nigerians, and it provides jobs and financial opportunities, thereby enhancing the living standards of those involved (Ohwo & Ogoha, 2017). Efficient marketing of sawn wood is emphasized as it ensures that the economic benefits of the industry are distributed equitably among various stakeholders (Agustino et al., 2011).

Efficiency in timber marketing is seen as an economic asset for sustainable resource production, distribution, and consumption (Ohwo et al., 2018). Sawn wood marketing encompasses all the activities involved in moving sawn wood from production to the end consumer. It includes various business activities related to the trade. Marketing efficiency is defined as providing the best services to producers and consumers while achieving the highest return on the resources employed. It focuses on structure, conduct, and performance of marketing activities. An efficient marketing system is considered essential for increasing and sustaining production in forestry. It contributes to

forestry development and economic growth by facilitating interactions between buyers and sellers that lead to profitable outcomes, increased sales volume, utilization, and sustainability (Olukosi et al., 2005).

In African and Nigerian contexts, markets for forest products, including sawn wood, face various challenges such as poor transport networks, limited traders, and lack of credit, huge supervision costs, poor information flow in market, weak negotiation, and immature industrial segments (Ohwo et al., 2021). Given the aforementioned challenges, credit is identified as a necessary catalyst to sustain sawn wood marketing. Access to credit can potentially help sellers overcome these challenges and improve their profitability and marketing efficiency (Nita et al., 2016; Gbigbi, 2019). Previous studies conducted by Aremu et al. (2015), Olugbire et al. (2015) and Sambe et al. (2016), have examined viability of sawn wood trade in different states in Nigeria (Benue and Oyo) but conducted outside of Delta State. There is limited information regarding the impact of credit on sawn wood sellers in Delta State. This study examined how credit affects profitability and marketing efficiency of dealers in the sawn wood trade in Delta State. This research aims to provide valuable insights into the role of credit in this specific geographic and economic context. Understanding how credit influences profitability and market efficiency can have important implications for the sustainable development of sawn wood industry.

The specific objectives were to:

i. Identify the different forms of sawn wood sold
ii. Ascertain the volume of sawn wood sold per day
iii. Estimate profitability and efficiency of the different types of sawn wood sold
iv. Examine effect of credit on marketers profitability
v. Ascertain the marketing constraints of sawn wood.
vi. Identify the marketing channel

Hypothesis
Ho: Credit do not influence sawn wood marketing profitability

Materials and Methods

The research was conducted in Ndokwa West LGA, which is located at latitude 5.7368°N and longitude 6.3652°E. Ndokwa West LGA has a landmass of approximately 816 square kilometers and population of about 149235, as per the National Population Commission (NPC) data from 2006. The research used a multistage sampling technique. The first stage involved purposively selecting twenty (20) communities/markets, with the selection criteria being the predominance of sawn wood markets. In the second stage, six (6) marketers were randomly selected from each of the chosen sawn wood markets. This two-stage sampling process was employed to gather data from the target population. Total of 120 respondents were surveyed using structured questionnaires. However, due to COVID-19 pandemic, only 60 questionnaires were retrieved for analysis. It's common for research studies to experience variations in sample size due to factors like non-response or external circumstances, as in this case.

The data collected was analyzed using both descriptive and inferential statistics. Descriptive statistics such as frequency counts, means, graphs, and percentages summarized and presented the data. Cost and return analysis investigated profitability of sawn wood business.

Model Specification
Gross Margin

The Gross margin analysis as a popular model was used, which also measured profitability of the enterprise. According to Gbigbi (2017) the gross margin (GM) equation (1) is specified as:

$$GM = TR - TVC \quad (1)$$

But, *profit = Total Revenue – Total Cost*
Expressed as,
$\pi = TR - (TFC + TVC)$
Also,
$TC = TFC + TVC$

Where:
GM = Gross Margin (₦)
TVC = Total Variable Costs (₦)
TFC = Total Fixed Cost (₦)
TR = Total Revenue (₦)

Sawn wood marketing efficiency was examined using the shepherd-future model. Efficiency in this research was synonymous to market performance. The model equation (2) is simplified as;

$$M.E=\frac{costs\ of\ marketing\ of\ products}{total\ value\ of\ marketing\ of\ the\ products}x100\% \quad (2)$$

Also this model considers marketing efficiency as;

$$M.E = \frac{TR-TC}{TC}\ x\ 100\%$$

Where;
M.E = marketing efficiency (co-efficient)
TR = Total Revenue
TC = Total Costs

The coefficient shows the percentage of total revenue taken by total costs. Therefore the lower the coefficient the better the marketing margin, hence the more efficient market (Shepherd-futrel, 1982).

Credit impact on sawn wood marketers

Credit impact was measured using equation (3);

$$CI = PRS - ACA \quad (3)$$

Where;
CI=Credit Impact
PRS=Profit Realized
ACA=Amount of Credit of Accessed

The percentage increase in income stated as difference between profit realized and amount borrowed was proxy for impact. A positive and significant income difference implied project intervention impact on the marketers but a negative sign implied no improvement. This was mathematically tested using z-test.

Results and Discussion

Sawn Wood Marketers Socioeconomic Characteristics

Gender distribution: Majority (70.0%) of marketers were male. This suggests sawn wood marketing is primarily carried out by men consequent upon the physically demanding nature of the job as reported by Ohwo et al. (2018).

Age distribution: Most (28.3%) respondents fell in age range of 60-69 years. This was followed by 50-59 years (23.33%), indicating that a significant portion of sawn wood marketers are older individuals. Mean age (50 years) suggests that many marketers are still actively involved in business.

Marital status: Most (50.0%) respondents were married, while 21.69% were single, 18.33% were separated, and 10% were widows or widowers. The findings suggest that married individuals are vastly engaged in wood marketing, possibly due to their maturity and ability to take on responsibilities to increase household income (Gbigbi, 2018).

Educational level: In terms of education, 43.3% had tertiary education, secondary education (31.67%), primary education (70%) and no formal education (5%). Education is seen as a factor that can impact marketing activities, as higher educational levels may contribute to better profit maximization and utilization of market information (Ohwo & Ogoha, 2017).

Household size: The majority (60.0%) of marketers had households with 4-6 members, while 33.3% had 7-9 members. This indicates a relatively large household size, which can provide labour for sawn wood marketers and create opportunities for their businesses. This affirms with Gbigbi & Chuks-Okonta (2020) study on feed marketers in Delta State.

Income status: The majority (53.3%) of marketers had an income status ranging from ₦ 201000 to ₦ 300000; while 26.7% had income levels between ₦ 301000 and ₦ 400000. The mean income was ₦ 245433.32k, which could serve as a motivating factor for individuals involved in sawn wood marketing. Ohwo et al. (2021) reported that individuals engaged in forest products marketing earn high income from sales.

Marketing experience: A significant proportion (71.7%) of marketers had between 11-15 years marketing experience, indicating a wealth of experience. This experience is

valuable for making profitable decisions and avoiding losses and is consistent with reports of Ohwo et al. (2020b).

Occupational status: About 95.0% of marketers were full-time operators, while only 5% were part-time. This suggests that most respondents were fully committed to sawn wood business, which could potentially increase efficiency levels.

Table 1. Socioeconomic characteristic of respondents (N=60)

Variables	Frequency	Percentage (%)	Mean/Mode
Gender			
Female	18	30.0	Male
Male	42	70.0	
Age (year)			
20-29	4	6.7	50 years
30-39	12	20.0	
40-49	8	13.3	
50-59	14	23.3	
60-69	17	28.3	
> 69	5	8.33	
Marital Status			
Single	13	21.7	Married
Married	30	50.0	
Separated	11	18.3	
Widow/Widower	6	10.0	
Educational level			
No formal education	3	5.0	Tertiary
Primary	12	20.0	
Secondary	19	31.7	
Tertiary	26	43.3	
Household Size			
1-3	4	6.7	6 persons
4-6	36	60.0	
7-9	20	33.3	
Income Status (₦)			
<50,000	2	3.33	245433.32k
50,000 – 100,000	6	10.0	
101,000 – 200,000	4	6.7	
201,000 – 300,000	32	53.3	
301,000 – 400,000	16	26.7	
Marketing experience			
1-3	2	3.3	11 years
6-10	15	25.0	
11-15	43	71.7	
Occupational status			
Par time	3	5.0	Full time
Full time	57	95.0	

Different Forms of Sawn Wood

Figure 1 shows the types of sawn wood that marketers are engaged in selling, along with the percentage of marketers involved in selling each type of wood product. All marketers (100%) engaged in selling 2"x2" wood products, 95% were involved in selling 1"x12". Other sizes of 2"x12", 2"x8", 2"x6", and 4"x12" accounted for 86.7%, 85%, 83.3%, and 81.7% of daily sales, respectively. This suggests that these sizes are also quite popular amongst marketers but not as universally sold as 2"x2". About 93.3% of dealers involved in selling 2"x4", and 86.67% sold 3"x4" and 4"x4" sizes. These sizes are also fairly common amongst marketers. It appears that the marketers have various range of wood product sizes in their inventory, with 2"x2" being the most commonly sold, followed by 1"x12", 2"x3", and other sizes with varying degrees of popularity. Ohwo (2021) reported 2x2 size of sawn wood ($0.013m^3$) as the most dominantly sold by marketers.

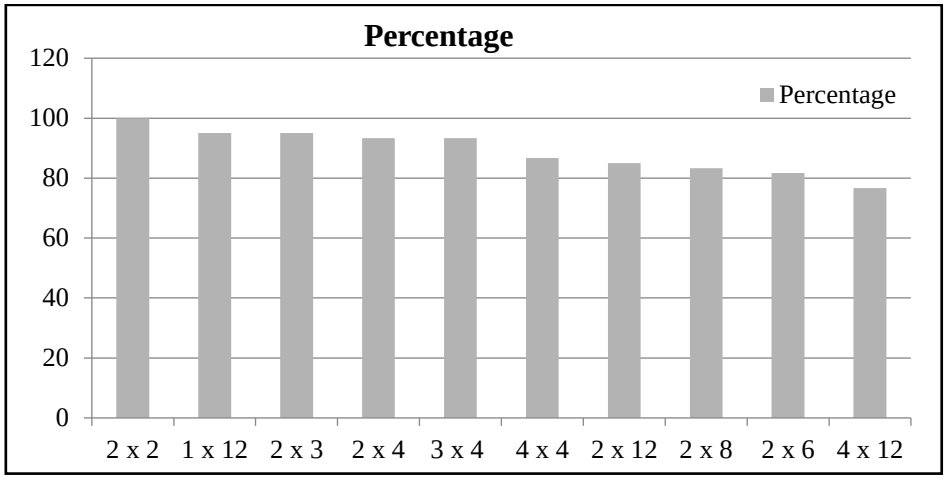

Figure 1. Distribution of different forms of sawn wood traded

Proportion of Sawn Wood Sold According to Sizes

In Figure 2, sales volume according to sawn wood size shows 2"x4" and 2"x2" sizes were the most sold with a 16.8% and 14.8% of all sales respectively. These sizes had significant market share. The 4"x12" sawn wood was the lowest sold accounting for 5.2% total sales. This size was the least preferred among consumers. The explanation provided suggests that the reason for these sales patterns may be attributed to the fringe benefits received by consumers. It implies that consumers may have been motivated to purchase certain sizes of sawn wood because they offered additional advantages or benefits that made them more attractive choices. This trend corroborates Sambe et al. (2016).

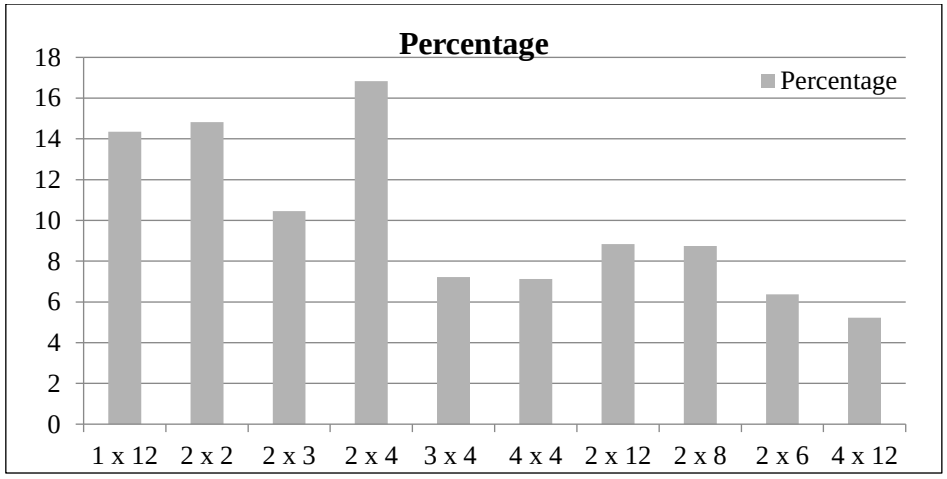

Figure 2. Distribution on quantity of sawn wood sold

Purchase Price of Sawn Wood Traded By Marketers

Information about the market prices of various sawn wood is presented in Figure 3. The average purchase price was highest **(**₦1306.5k**)** for 4"x12". This was followed by 2"x12" (₦1103.33k), 1"x12" **(**₦ 1083.17k**),** 4"x4" **(**₦ 908**),** 3"x4" **(**₦ 807.33k**),** 2"x8" **(**₦ 648**),** 2"x6" **(**₦ 479.50**),** 2"x4" **(**₦ 316.17**),** 2"x3" **(**₦ 205.33**),** and 2"x2" had the lowest average purchase price of ₦ 106.92**.** The result suggests that 4"x12" sawn wood was significantly more expensive than other sizes, while 2"x2" was the least expensive option. This information can be useful for individuals or businesses looking to purchase sawn wood and make informed decisions based on budget and project requirements. Price information is key in making informed decision (Ohwo, 2016).

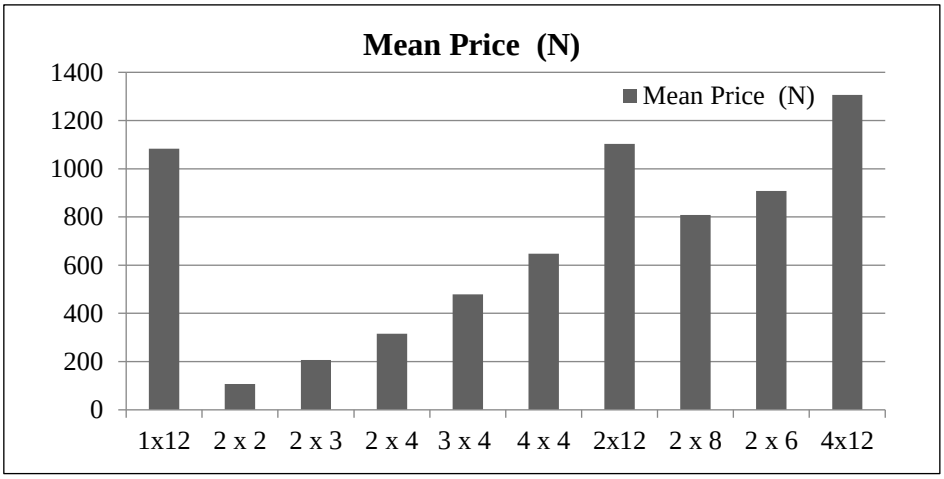

Figure 3. Distribution on purchase price of sawn wood sold

Selling Price of Sawn Wood Traded

Figure 4 is categorized by different sizes of wood and the mean prices for each category. The trend in sawn wood purchase prices followed also in sales. The aim of every business is for profit hence 4"x12" had the highest mean selling price of ₦1503.33k. The mean price for wood with sizes of 1"x12" was ₦1286.67k, which was lower than that of 4"x12" but still relatively high. Wood size of 2"x12" had mean price of ₦1103.33k, indicating it was sold at a lower average price compared to the previous two categories. Looking at cost of purchase, sales of this dimension is not profitable. Other categories (4"x4", 3"x4", 2"x8", 2"x6", 2"x4", 2"x3" and 2"x2") had mean selling prices of ₦1004.67k, ₦853.33k, ₦653.33k, ₦553.33k, ₦403.33k, ₦306.67k, ₦306.67k) respectively. The 2"x2" size compete favourably with 3"x3". From this information, the 4"x12" wood was not only the most expensive but also the most readily sold by traders, likely due to its higher demand or specific uses by end-users. This price trend is valuable to businesses and individuals involved in wood industry to make informed decisions (Ohwo, 2021).

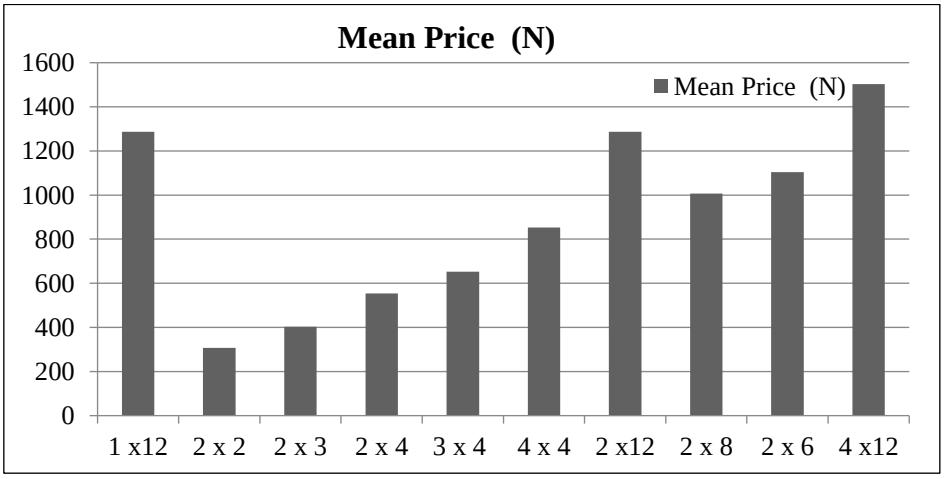

Figure 4. Distribution on selling prices of sawn wood traded

Profitability of Sawn Wood Marketing

Costs and returns associated with selling sawn wood by marketers is presented in Table 2. The costs include store rentage, labour cost, marketing fee, loading, phone call cost, other costs, and offloading. These costs add up to a total expenditure of ₦456604.20k. The gross revenue generated from selling sawn wood is ₦845843.30k. The margin, which is the revenue minus the

total expenditure, is ₦389239.20k. The report calculates Benefit-Cost Ratio (BCR) of sawn wood marketing as ₦2.17k for ₦1 invested, indicating that the venture is viable. In other words, for every ₦1 invested, a return of ₦2.17k is obtained. Researches by Larinde (2010) and Ohwo & Ogoha (2017) also found that sawn wood business is profitable.

Sawn wood marketers are reported to have an efficiency level of 85.7%. This suggests they are operating at a relatively high level of efficiency, but need about a 14.3% improvement to reach the frontier of maximum efficiency.

Table 2. Costs and Returns of Sawn wood Market

	Amount (₦)	Percentage
Revenue		
1" x 12"	191210.80	26.61
2" x 2"	48337.93	5.71
2" x 3"	43345	5.12
2" x 4"	90320.83	10.68
3" x 4"	49961.86	5.91
4" x 4"	60900.85	7.20
2" x 12"	120199.2	14.21
2" x 8"	79020.83	9.34
2" x 6"	83671.67	9.89
4" x 12"	86666.67	10.25
Total Revenue	845843.30	
Transportation Cost	157133.3	34.41
Store Rentage	99450	21.78
Market Fees	24151.67	5.29
Association Dues	11750	2.57
Labour Charges	48283.33	10.79
Phone Call costs	12559	2.75
Loading	16983.33	3.72
Offloading	6580	1.44
Miscellaneous	9075	1.99
Purchase price	66947.50	15.25
Total Cost	456604.20	
Marketing Margin	389239.10	
BCR (TR/TVC)	2.17	
Marketing Efficiency	85.71	

Credit Impact on Sawn Wood Marketers

Information regarding sawn wood marketers and impact of credit intervention on their income is presented in Table 3. Sawn wood marketers generated profit of ₦ 389239.17k after deducting costs of ₦ 456604.20k from an income of ₦ 845843.30k (Table 2). Credit beneficiaries received an average income of ₦ 118383.33k from financial institutions to support their marketing activities. After repaying the borrowed loans, marketers were left with a surplus of ₦ 270855.83k. This indicates a positive impact of the loan intervention. The surplus suggests a 69.6% improvement in income due to the loan intervention, which aligns with Gbigbi (2019) study on why worry about informal money lenders patronage.

Table 3. Credit impact on sawn wood marketers

Operators	Profit(₦)	Credit Accessed (₦)	Income diff.	Improvement %
Marketers	389239.17	118383.33	270855.83	69.6%

The z-test (Table 4) delivers a calculated z-value of approximately 0.00000127, coupled with an exceptionally low p-value. This statistical significance strongly supports the rejection of the null hypothesis, indicating that the observed difference between Profit and Credit Access is highly unlikely to occur by random chance alone. Instead, it provides compelling evidence of a genuine discrepancy between the two variables. This statistical rigor reinforces the confidence in the significance of the observed difference and its implications for decision-making. Moving beyond statistical significance, the results of the z-test carry profound implications for strategic planning and resource allocation. The pronounced difference between Profit and Credit Access underscores distinct financial dynamics within the organization. This prompts a deeper exploration into the underlying drivers shaping profitability and credit accessibility. Understanding these factors is paramount for informed decision-making, enabling organizations to optimize resource allocation and financial strategies effectively. The result is consistent with Nita et al. (2017) and Gbigbi (2019), reinforcing the idea that credit intervention can have a positive impact on the income of marketers.

In summary, the study indicates that providing credit to sawn wood marketers led to a significant increase in their income and profitability. This finding supports the idea that access to credit is a valuable intervention for individuals involved in sawn wood marketing.

Table 4. Z-test on Credit impact of sawn wood marketers

	Mean	Std. deviation	Mean diff.	z-cal
Profit(₦)	389239.17	164126.64	270855.83	0.00000127
Credit Accessed (₦)	118383.33	101733.97		

Sources of Sawn Wood By Marketers

Information about the sources of sawn wood of marketers involved in sales of sawn wood shows that 88.3% of sellers source their sawn wood from Delta State (Table 5). About 11.7% obtain sawn wood from other Southern States. Ohwo et al. (2018) reported that most sawn wood sellers sourced logs from Delta State. Aside from profitability, the continuity of the business is dire to an entrepreneur. With the rate of exploitation of wood resources from the state, there will be lag in supply over demand in the nearest future. Hence, sustainable harvesting, reforesting and afforestation are measures which when adopted will foster a continued sawn wood market as recommended by Ohwo (2021).

The marketing channel of sawn wood sellers was dominated (93.3%) by producers. This suggests that most sellers have direct relationships with the producers of sawn wood. Approximately 51.7% of marketers sell their sawn wood directly to consumers indicating that over half of marketers target end consumers. About 35% of marketers sell their sawn wood to retailers. This suggests that a substantial portion of marketers supply sawn wood to retailers, who may then sell it to end consumers or other businesses with 6.7% of marketers sourcing sawn wood from wholesalers. This is the smallest percentage amongst different market channel. This corroborates the finding of Ohwo et al. (2021) who stated that various routes exist in marketing forest products in Asaba.

Table 5. Distribution of source of sawn wood by marketers

Category	Frequency	Percentage
Source of Sawn wood		
Delta State	53	88.3
Northern States	-	-
Other South States	7	11.7
Total	60	100
Who do you buy from		
Producers	56	93.3
Assemblers	-	-
Wholesalers	3	6.7
Retailers	-	-
Total	60	100
Who do you sell to		
Producers	1	1.7
Consumers	31	51.7
Wholesalers	**7**	11.7
Retailers	21	35.0
Total	60	100

Trend of Sale of Sawn Wood

Information about the trends in sale of sawn wood by marketers (Table 6) portray 63.3% marketers prefer to buy sawn wood from markets within their local government. About 28.3% of marketers opt to purchase sawn wood from markets in other local governments within the same state. This response reflects the stress and cost in mobility of weighty sawn wood from a farther distance. Hence the decision to purchase within the same LGA was a cost and time saving approach. A smaller percentage, 11.7%, indicated that they buy sawn wood from outside the state. This happens when there is scarcity of sawn wood supply.

Most marketers (85%) reported that the peak period for sawn wood sale is between January to March possibly due to seasonal factors. During this period, there exists abundance of construction/building works as it reflects the dry season in Nigeria. Also, accessibility to the forest for timber harvest is guaranteed (Popoola & Ajewole, 2001). A smaller percentage (15%) mentioned that the peak period for sawn wood sale occurs between October to December. The majority (43.3%) of marketers store sawn wood for a month before selling it. Marketers maintain an inventory for a relatively extended period before making sales. About 38.3% of marketers store sawn wood for two weeks before resale, suggesting a shorter storage duration. Some marketers store sawn wood for a shorter period, specifically 1-4 days, before reselling it. These findings provide insights into the buying preferences, seasonal trends, and storage practices of marketers involved in sale of sawn wood as opined by (Ohwo et al., 2018). The information may be valuable for businesses and policymakers in wood industry to understand market dynamics and plan their operations accordingly.

Table 6. Distribution on the trend of sale of sawn wood

Category	Frequency	Percentage
From which do you buy for resale		
Market with the local government	38	63.3
Market in other local government within the state	17	28.3
Market outside the state	7	11.7
Peak Supply of Sawn wood		
January to March	51	85.0
April to September	-	-
October to December	9	15.0
Duration of Sawn wood Storage		
One – four days	5	8.3
A Week	6	10.00
Two weeks	23	38.3
A Month	26	43.3

Marketing Activities of Sawn Wood

Information presented in Table 7 shows that transportation and frequency of purchase were the major activities in sawn wood marketing. About 86.7% of sellers use trucks to convey their sawn wood products from the place of purchase to market. About 13.3% of sellers use vehicles for transportation. Choice of transportation method is influenced by the quantity and sawn wood sizes needed for transport. Trucks are favoured when dealing with larger quantities of logs due to their capacity (Ohwo & Ogoha, 2017).

Majority of dealers (61.7%) purchase sawn wood from producers on a monthly basis. The least common frequency (11.7%) of purchasing is on a weekly basis. This suggests that a smaller portion of sellers buy sawn wood on a more frequent basis, likely to meet immediate market demands or maintain smaller inventories. In summary, it shows that most sellers use trucks for transportation, primarily due to the bulkiness of the logs they handle, and that a majority of them restock their inventory on a monthly basis.

Table 7. Distribution according to market activities

Category	Frequency	Percentage
How do you covey sawn to market		
Truck	52	86.7
Wheel barrow	-	-
By Motorcycle	-	-
By Vehicle	8	13.3
Purchase Sawn wood for sale		
Weekly	7	11.7
Twice a month	16	26.7
Monthly	37	61.7
Quarterly	-	

Market Conduct of Sawn Wood Marketers

The market conduct in Table 8 shows that 100% of marketers agreed that selling price of sawn wood is fixed by market union. A centralized authority or organization determines the prices for sawn wood in market. It implies lack of price flexibility for individual marketers. All traders get information on price changes almost immediately due to their association with the Union indicating efficient communication within the Union, allowing traders to stay informed about any price fluctuations in real-time. This can be beneficial for making informed decisions.

All traders were active unionist. This aligns with the findings of Achoja & Gbigbi (2019), that market associations are used by marketers as a tool to gain control over the market. Being part of a union likely provides traders with certain benefits and collective bargaining power. All marketers agreed that market levies paid to government officials and other dues affected their business negatively. The financial burdens imposed by such levies are a significant challenge for sawn wood marketers, potentially impacting their profitability and sustainability. About 88.3% of traders supported the idea that the selling environment should be conducive and stress-free to sellers to allow maximum profit and improve living standard. This implies majority of traders believe that a favourable market environment, which includes factors like ease of access and reduced obstacles, is essential for their business success and livelihood improvement.

Table 8. Distribution of the respondents according to their market conduct

Market conduct	Frequency	Percentage
Selling price fixed	60	100
Price information passed	60	100
Member of union	60	100
Maintenance Levy	60	100
Marketing Environment	53	88.3

Multiple Responses

Constraints Associated with Sawn Wood Marketing

Marketing constrains faced by marketers in Ndokwa West LGA of Delta State (Table 9) are ranked below:

Insufficient finance (ranked 1st, mean score 3.43): This is the most significant

constraint. It implies that many marketers struggle due to lack of financial resources. This can affect their ability to invest in equipment, purchase raw materials, and expand their businesses.

High transportation costs (ranked 2nd, mean Score 3.13): Cost of moving sawn wood to market places or customers is a substantial burden on marketers. This can reduce profitability and make it difficult for effective competition amongst marketers.

Low selling price (ranked 3rd, mean score 2.68): Since prices are fixed by the union, most sellers especially those that transport sawn wood from distant area may face challenges in obtaining fair prices for their sawn wood products. Other factors such as market dynamics, competition may contribute to low price.

Inadequate information (ranked 4th, mean score 2.67): Inadequate information can hinder marketers' ability to make informed decisions. It is essential for marketers to have access to market information, trends, and customer preferences to optimize their strategies.

Poor road network (ranked 5th, mean score 2.57): A subpar road network affects transportation and accessibility, contributing to higher costs and logistical challenges. This constraint is ranked fifth but is still significant.

Low patronage (ranked 6th, mean score 2.55): Low patronage suggests that marketers may struggle to get buyers. This can impact their sales and revenue.

High storage cost (not a serious constraint): high storage cost is not a significant constraint. Storage expenses are manageable for marketers.

The above constraints are similar to those mentioned by Ohwo (2016).

The overall constraint index of 67% indicates that these constraints collectively have a substantial impact on sawn wood marketers' efficiency in Ndokwa West LGA. It underscores the need for interventions and strategies to address these challenges and improve sawn wood business environment in the area.

Table 9. Constraints of sawn wood marketers

Constraints	VS	S	NS	NVS	Total	Mean	Remark	Ranking
Insufficient Finance	29	28	3	0	206	3.43	S	1st
Low Patronage	1	37	16	6	153	2.55	S	6th
Low Selling price	6	36	11	7	161	2.68	S	3rd
High Transportation Cost	22	26	19	2	188	3.13	S	2nd
Road Network	8	25	20	7	154	2.57	S	5th
High cost of storage	0	7	35	18	109	1.82	NS	7th
Inadequate Information	6	33	16	5	16	2.67	S	4th
Grand Total						18.85		

Grand Index: 2.69, Constraint Index: 0.67%, VS: Very Serious, S: Serious, NS: Not Serious, NVS: Not Very Serious

Conclusion

Sawn wood business is profitable. With access to credit, profitability of sellers can be greatly enhanced which will improve marketers living standards. Efficient resource utilization in sawn wood marketing can contribute to economic development and growth for investors. However, the business is faced with numerous constraints which when addressed will further enhance securities from the business. The following recommendations when implemented will lead to the desired boost in sawn wood marketing and contribute to forestry economic development and overall economy.

i. Encourage sawn wood marketers to establish cooperative societies. This would facilitate bulk purchases, protect members from exploitation, and promote the growth of sawn wood market.
ii. Government should invest in building and maintaining roads in areas. Improved infrastructure will reduce transportation costs and increase revenue of sawn wood dealers.
iii. Develop marketing channels and structures in Ndokwa. This will assist rural households in optimizing the benefits of sawn wood marketing, ultimately improving their livelihoods.

iv. Provide adequate marketing facilities to assist marketers in increasing their income. These facilities could include storage, transportation, or market access improvements.

Ethics Committee Approval

The conduct of this project was approved by the ethical committee of Agricutural Economics Department, Delta State University Abraka on 02/02/2023 with number 02-2023/098.

Peer-review

Externally peer-reviewed.

Author Contributions

Conceptualization: T.M.G., O.A.O., J.U.I; Investigation: T.M.G., O.A.O.; Material and Methodology: T.M.G., O.A.O.; Supervision: T.M.G. O.A.O., J.U.I.; Visualization: T.M.G.; Writing-Original Draft: T.M.G.; Writing-review & Editing: T.M.G., O.A.O. The entire authors have seen and accepted to publish the version of manuscript.

Conflict of Interest

The authors have no conflicts of interest to declare.

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