



**PROFITABILITY OF CHARCOAL MARKETING IN GUSAU METROPOLIS,
ZAMFARA STATE, NIGERIA**

¹Gusau, S. M., ²Gusau, Y. M., ³Abbas, A. and ⁴Sani, A.

¹Department of Agricultural Education, Federal College of Education Gidan Madi,
Sokoto State, Nigeria.

²Department of Automobile Technology, Federal College of Education Technical Gusau,
Zamfara State, Nigeria.

³Department of Agricultural Economics, Federal University Dutsin-ma, Katsina State

⁴Department of Agricultural Economics, Usmanu Danfodio University Sokoto State, Nigeria.

*Corresponding Author's Email: sulaimanmuhammadgusau@fcegm.edu.ng,
GSM: +2348060592303

ABSTRACT

The study assessed the profitability of charcoal marketing in Gusau metropolis, Zamfara State, Nigeria. Simple random sampling technique was used in selecting 50 charcoal marketers from the study area. Data were obtained through the administration questionnaire and analyzed using descriptive statistics, Marketing margin, Rate of return ratio and net marketing margin. The findings revealed that charcoal marketing was predominantly dominated by married males. All (100%) of the respondents were male, 62% of the respondents were in the active age of between 31-40 years. The result shows that (100%) of the respondents were registered members of charcoal marketers association. With regards to marketing margin analysis the study revealed that charcoal marketing was profitable with a net marketing margin ₦2800/100kg bag and ₦1800/100kg bag at peak and off-peak period. The result also revealed a net return of ₦4600, indicates the magnitude of the returns in charcoal marketing. The peak period had ₦2800 profit while the off-peak period of marketing had ₦1800, with rate of return ratio of (0.28) and (0.26) indicates that rate of return to capital of 28 kobo at peak period and 26 kobo at off-peak period for every naira invested in charcoal marketing in the study areas. The study concluded that charcoal marketing in the study area is profitable as it gives higher returns per naira invested during the peak period and off period of marketing. It is recommended that charcoal marketer's association leaders should be very active and partner with financial institutions so as to easily have access to loans at reduced interest rate to help the charcoal marketers to have more capital base and in turn improve their business and their living standard. Provision of alternative livelihood systems for charcoal marketers and regulation of the charcoal marketing by the government will help manage the forest resources sustainably.

Keywords: Assessment, Profitability, Charcoal, Marketing, Gusau.

INTRODUCTION

Charcoal remained one of the major sources of energy for domestic activities in Gusau and other Urban and Rural areas in Nigeria. National Bureau of Statistics (NBS, 2020) assessed that 68.3 per cent of all households rely on solid biomass in Nigeria. However, solid fuels remain the primary source of cooking energy for most households in Nigeria. Charcoal made from wood has been used as an energy source since ancient times and is still a modern source of energy used for cooking and heating by millions of people with limited options of alternatives, particularly those who live in the urban and peri-urban areas in Sub-Saharan Africa (FAO, 2020). Chiteculo *et al.* (2018) asserted that charcoal and firewood account for more than 80% of the primary energy supply in sub-Saharan Africa and many people generate their household income from the production. Given that there are few forests in urban areas and people cannot easily gather firewood for cooking and heating, charcoal is very popular and frequently readily available in urban local markets. The raw material (wood) used in charcoal production is sourced from natural forests, plantations, and private farms, and it is converted to charcoal most often in rural areas. Households in the rural areas rarely utilize charcoal because firewood is readily available, nonetheless, charcoal production and trade is a source of livelihood for them. As a



result, the production of charcoal for urban use has had serious effects on both the social and economic well-being of rural people as well as on natural forests. Chiteculo *et al.* (2018) asserted that forest degradation and deforestation are significantly influenced by the clearing of forests for industrialization and agriculture. Also, FAO (2017) stated that the most common kilns used in the carbonization process to turn wood into charcoal are earth-mount or earth-pit kilns with relatively low efficiencies, mostly in the range of 10-15%, compared to 35% or even higher with modern charcoal kilns. William and Pinto (2008) affirmed that the marketing of charcoal is a very lucrative venture in Nigeria. The country has a comparative advantage in the production and export of charcoal in Africa over its counterparts due to the large arable land available and the conducive climatic condition for the production of wood. In Nigeria, charcoal production has been associated with the clearing of indigenous trees and land degradation, as well as affecting the health, social and economic livelihood of the rural population. As charcoal production has impacts on the ecosystem as many trees are felled without consideration for management practices that would enhance tree regeneration and growth. During the carbonization process which is when trees are burnt, greenhouse gases are emitted and there is an increase of carbon dioxide in the atmosphere thereby causing global warming. The foregoing scenario of the cash flows to the charcoal producers being minimal, with almost no money going to the communities or governments whose forest areas are being depleted for proper forest makes charcoal production a possible threat to the ecosystem. From the aforementioned statements, it is important to assess the economic returns from charcoal production and returns to the forestry sector so as to advocate for possible policy interventions that guarantee sustainable forest development. Charcoal is one of the affordable domestic fuel and demand for it has been on the increase in recent years due to its affordability. This situation has been linked to the recent economic problems which have been faced by some developing countries including Nigeria. Increasing demand for charcoal has brought a sharp upturn of the number of charcoal factories in the country. Charcoal production has both positive and negative impacts not only on the people directly involved in the production but also on those who are residents of the communities housing or around such factories and the environment at large. These impacts range from the source of livelihood and economic development to physical stress and injuries, exposure to high temperature and toxic gases among other impacts. In addition, land degradation has reduced global crops productivity by 23% of the global land surface and as many as 100-300 million people are at risk of floods because of loss of coastal habitat and protection (Odubo & Raimi, 2019). Marketing of charcoal is quite complex and risky due to the negative impacts on the ecosystem as many trees are felled without consideration for management practices that would enhance tree regeneration and growth. Moreover, the marketing arrangements at different stages also play an important role in price levels at various stages namely from farm gate to the ultimate user. These features make the marketing system of charcoal to differ from other agricultural commodities, particularly improvising time, form and space utilities. In Zamfara State, charcoal price fluctuate during the year base on supply, lower charcoal prices are received during high supply (peak period) and high price during low supply (off-peak). This is mainly due to poor transportation facilities and insecurity. Therefore, the study seeks to assess the profitability of charcoal marketing in Gusau metropolis, Zamfara State, Nigeria and specifically to:

- i. describe the socio-economic characteristics of charcoal marketers;
- ii. determine the cost and returns in charcoal marketing; and;
- iii. determine the level and difference in profit obtained between charcoal marketers in peak and off-peak periods of charcoal marketing.

METHODOLOGY

Study Area

The research was conducted in Gusau Local Government Area of Zamfara State. Gusau Local Government has an area of 3,364km² (1,299 square metre) and a population of 383,162 people and with population growth rate of 3.5 per annum, the population is expected to hit 651,382 by 2026 (National Population Commission of Nigeria, (NPC), 2022). Gusau lies between latitudes 10°21'N to 13° 5'N and



longitude 6° 20'E (Zamfara State government (ZSG), 2022). The rain in Gusau falls mostly in the spring, with relatively little rain in summer. In a year, the average rainfall is 1199 mm. The variation in annual rainfall is around 5.6°C. Agriculture is the main stay of the teaming populace which accounts for up to 70 percent of the source of livelihood of the population nearly 90 percent of the population work primarily in Agriculture (Zamfara State government (ZSG), 2022).

Sampling Procedures

Randomized sampling procedure was used in selecting the respondents. A total of 50 charcoal marketers registered with charcoal marketers' association were selected for the study from the sampling frame obtained from the association.

Data Collection

Data were collected through the administration of structured questionnaire to the respondents randomly drawn from the study area.

Analytical Tools

Data for the study were analyzed using Descriptive statistic, Marketing margin analysis, and Rate of return ratio.

Marketing Margin Analysis:

Marketing margin represents the differences between price paid and received by a given market intermediary in the marketing of a commodity such as wholesaler or retailer, etc. The marketing margin analysis is expressed mathematically as:

Marketing Margin = Selling Price - Purchasing Price

Percentage Marketing Margin = Selling Price/ Purchasing Price x 100

Marketing margin is influenced by the market forces of demand and supply.

Net Marketing Margin

Net marketing margin was used to determine the profitability of charcoal marketing in the study area. It is defined as the total revenue derived from an enterprise less the total marketing cost (TMC) incurred. It is given by the formula:

$NMM = TR - TMC$

Where,

NMM= Net Marketing Margin (₦/Kg)

TR= Total revenue (amount realized from the sale of charcoal) (₦)

TMC= Total marketing cost (₦/Kg).

$TMC = X_1 + X_2 + X_3 + X_4 + \dots + X_n$

Where

X₁=Purchasing cost, (₦/kg)

X₂=Transportation cost, (₦/kg)

X₃=Labour cost (onloading/offloading), (₦/kg)

X₄= Rent on shop (₦)

X_n=number of marketing cost incurred.

The TR was obtained by multiplying the quantity of sold by charcoal the unit selling price (₦/kg).

TMC is the total marketing cost of charcoal (storage cost, transportation cost, packaging cost and labour cost).

Rate of return ratio: The RRT was obtained by dividing the net return by total cost. The financial successes of the marketer were determined by evaluating the rate of return ratio (RRT) of the business. The higher the RRT the better for the business and vice-versa.

$RRT = NR/TC$

Where;

RRT = Rate of return to capital

NR = Net of rerun

TC = Total cost



RESULT AND DISCUSSION

Socio-economic Characteristics

The result in Table 1 showed the distribution of the respondents based on the selected socioeconomic variables. The result shows that (62%) of the respondents were between the age bracket of 31-40 years, which implies that charcoal marketing is dominated by middle aged people in the study area. The dominance of those in their active and productive age has an implication on sustainability of the enterprise as experience is passed on from generation to generation. The results also indicated that (100%) of the charcoal marketers were males. This implies that charcoal marketing in the study area is dominated by men probably due to the nature of the activities involved, religious beliefs and cultural setting of the area. The results further indicated that all charcoal marketers were married. This implies that majority of the charcoal marketers were responsible men, can take technical decisions on their own and can put more effort to sustain domestic household demand. This is expected since age and marital status are positive correlates. That is, the age group where people are saddled with a lot of socio-economic responsibilities and people in this age group are usually married with attendant responsibilities of running the homes, paying school fees and meeting other exigencies in society (Fasoro *et al.*, 2021). The findings of the study however, revealed that respondents had different educational levels, 56% had Islamic education while 26% had primary, and 12% had secondary education. Only 6% had tertiary education. The implication of this is that charcoal marketers face difficulty in effective and efficient utilization of credit facilities, adoption of improved technologies and so on. Education is known to help people understand and use improved technology and practices to increase their earnings. Oladele *et al.* (2013) and Fasoro *et al.* (2021) confirmed that educational status has a positive impact on skill acquisition and bookkeeping in businesses. The higher an individual's level of education, the more empowered the individual is to acquire and apply relevant production and marketing information (Ajewole and Fasoro, 2013). The result of the study equally shows that (100%) of the charcoal marketers were registered members of charcoal marketers' association.

Table 1: Distribution of Respondent according to Socio-economic Characteristics

Variable	Measurement	Frequency	Percentage %
Gender	Male	50	100
	Female	00	00
Age	21-30	7	14
	31-40	31	62
	41-50	10	20
	51-60	2	4
Marital status	Single	00	00
	Married	50	50
Education	Islamic education	28	56
	Primary	13	26
	Secondary	6	12
	Tertiary	3	6
Membership	Yes	50	50
	No	00	00

Source: Field Survey 2026

Marketing Margin Analysis

The Table Provide information on the average cost and return per marketing cycle among charcoal marketers in ₦/kg/bag. The result in Table 2, shows the result of the average cost and returns of charcoal marketing during a complete marketing cycle. The result indicated that a marketer purchases 100kg of charcoal at an average price of ₦8000 and later sold it at an average price of ₦11000 during a complete marketing cycle with a marketing margin of ₦3000 and net marketing margin of ₦2330 naira. On the average a marketer incurred a total marketing cost of ₦8670 per 100kg with purchasing



cost accounted for 92.27% of the percentage total marketing cost and total marketing expenses accounted for 7.72%. An average profit of ₦2330 was generated as a return per 100 kg bag of charcoal invested by a marketer during a complete marketing cycle.

Table 2: Average Cost and Return of Charcoal Marketing during the Marketing Cycle

Cost/Return Component	Cost per Marketing Cycle	% TMC
Transportation	210	2.42
Labor(offloading/onloading)	150	1.73
Taxes	50	0.57
Rent on shop	100	1.15
Storage	50	0.57
Security	50	0.57
Commission	60	0.69
Total Marketing Expenses	670	7.72
Purchasing price (₦/100kg bag)	8000	92.27
Total marketing cost (₦/100kg bag)	8670	
Selling price (₦/100kg bag)	11000	
Marketing margin	3000	
Net marketing margin	2330	

Source: Field Survey 2026

Table 3 present the result for average profit obtained by the charcoal marketer at peak and off-peak period of charcoal marketing in the study area. A marketer purchase 100kg bag of charcoal at peak period at an average price of ₦9000 and sold it at an average price of ₦12500 with a marketing margin of ₦3500. Purchasing price constitute the highest percentage with 92.78% of the total marketing cost while the marketing expenses accounted for only 7.21% with transportation contributing the highest percentage with 3.09% total marketing cost. On the overall, a marketer makes an average profit (return) of ₦2800 per 100kg bag of charcaol during peak period. During off peak period, the merketer purchase 100kg bag of charcoal at an average price of ₦6500 later sold it at an average price of ₦8700 with a marketing margin of ₦2200. The purchasing price during off peak period is relatively higher accounted for 94.20% of the percentage total marketing cost. While the marketing expense accounted for only 5.79% of the total marketing cost, transportation cost accounted for 2.89% followed by labour 1.15% of the total marketing cost. This result implies that the marketers make more profit during peak period than in off peak period due to the fact that the marketer purchases more charcoal and sells more because charcoal is very cheap during such period and vice versa. This is in agreement with the findings of Fasoro *et al.* (2021) who reported that charcoal marketing was found to be profitable and plays a significant role in the economic development of some communities.



Table 3: Average Profit obtained at Peak and Off-peak Period

Cost/Return Component	Peak period (₦)	%TMC	off-peak (₦)	%TMC
Transportation	300	3.09	200	2.89
Labor (offloading on loading)	100	1.03	80	1.15
Taxes	70	0.72	40	0.57
Storage	80	0.82	30	0.43
Security	70	0.72	20	0.28
Commission	80	0.82	30	0.43
Purchasing price (₦/100kg)	9000	92.78	6500	94.20
Marketing Cost	700	7.21	400	5.79
Total marketing cost (TMC)	9700		6900	
Selling price (₦/100kg)	12500		8700	
Marketing margin	3500		2200	
Net marketing margin	2800		1800	

Source: Field Survey, 2026

The financial successes of the marketer were determined by evaluating the rate of return ratio (RRT) of the business. The higher the RRT the better for the business and vice-versa. Table 4, present the result of the analysis for evaluating the profitability level of charcoal marketing in peak and off-peak period in the study area. The result revealed a total net returns value of ₦4600, indicates the magnitude of the returns in charcoal marketing. The peak period had ₦2800 profit while the off-peak had ₦1800. Also, the result revealed the rate of return ratio of (0.28) and (0.26) indicated that rate of return to capital of 28 kobo at peak period and 26 kobo at off-peak period were realized as return per naira invested in charcoal marketing in the study areas. The result of the analysis indicated that charcoal marketing is slightly profitable at peak period.

Table 4: Profitability Level of Charcoal Marketing Net Return in Naira per 100kg bag

Profitability Index	Peak period	Off-peak period	Total
Net Return (₦)	2800	1800	4600
Rate of return Ratio (RRR)	0.28	0.26	0.54

Source: Field Survey, 2026

CONCLUSION AND RECOMMENDATION

The study concluded that charcoal marketing in the study area is profitable because it gives higher returns per naira invested during peak period and off-peak period of marketing in the study area. Also, charcoal marketing was predominantly dominated by married males.

Based on the findings of the study, the followings recommendations are made:

- i. Charcoal marketer's association leaders should be very active and partner with financial institutions so as to easily have access to loans at reduced interest rate, this would help the charcoal marketers to have more capital base and in turn improve their business and their living standard.
- ii. Provision of alternative livelihood systems for charcoal marketers and regulation of the charcoal marketing by the government will help manage the forest resources sustainably and reduce the dependence on the forest resources (trees) by charcoal marketer which will further help to reduce the rate of deforestation and forest tree removal.

REFERENCES

- Ajewole, O.I., Fasoro, O.A, (2013). Market and Marketing Information of Bodija Plank Market in Bodija Metropolis, Oyo State, Nigeria. *The Nigeria Journal of Forestry*, **43**(1): 13-19.



- Chiteculo V., Lojka B., Surový P., Verner V., Panagiotidis D. and Woitsch J. (2018). Value Chain of Charcoal Production and Implications for Forest Degradation: Case Study of Bié Province, Angola. *Environments* 5(113):1-13
- Fasoro, O.A., Ajewole, O.I. and Adeniran A.O. (2021). Market Demand and Supply of Cordia Millenii (Omo) Sawwood and its Effect on Conservation of the Species. In: Judita Černiauskiene (Ed.) “Challenges for Sustainable Bioeconomy and Climate Change”, Proceedings of the 10th International Scientific Conference on Rural Development, held 21 - 23 September, 2021, Vytautas Magnus University Agriculture Academy, Lithuania.
- FAO (2017). The Charcoal Transition: Greening the Charcoal Value Chain to Mitigate Climate Change and Improve Local Livelihoods, by J. van Dam. Rome, Food and Agriculture Organization of the United Nations.
- FAO (2020). Sustainable Charcoal Production for Food Security and Forest Landscape Restoration. African Forestry and Wildlife Commission.
- National Bureau of Statistics (NBS) (2020). 2019 Poverty and Inequality in Nigeria: Executive Summary, Abuja: National Bureau of Statistics. Available at: www.nigerianstat.gov.ng
- National Population Commission (NPC) (2019). National Population Commission’s Report, October, Abuja. Population.gov.ng
- Odubo, T. R., and Raimi, M. O. (2019). Resettlement and Readjustment Patterns of Rural Dwellers During and After Flood Disasters in Bayelsa State Nigeria. *British Journal of Environmental Science*, 7(3): 45-52.
- Oladele, A. T., Aiyelaja, A. A. and Aguma, Q. (2013). Economic Analysis of Cane Furniture Production in Rivers State, Nigeria. *Journal of Economics and Sustainable Development*, 4(5): 14-18.
- William, M. and Pinto, F. (2008). Energy Supply Demand Integrations Workshop on Alternative Energy Strategies. Mit Press, Cambridge, Pp230257.
- Zamfara State Government (ZSG) (2022). Zamfara State Government Official Diary, Ministry of Information, Gusau, Nigeria.