ISSN: 2736-0040 (Online)
ISSN: 2695-1975 (Print)
AKSUJAEERD 8(2): 34 – 40, 2025 AKSU Journal of Agricultural Economics and, Extension and Rural Development.

PROFITABILITY ANALYSIS OF BAMBARA NUTS (OKPA) MARKETING IN EBONYI STATE, NIGERIA

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Abstract
The study examined the profitability of bambara nuts (okpa) marketing in major markets in Ebonyi State, Nigeria. Two LGAs (Abakaliki and Ikwo) were purposively sampled with eight markets in each LGAs randomly selected using the simple random sampling technique also ten Bambara nuts traders were also sampled using simple random sampling procedure. Primary data was used for this study and analyzed using both descriptive and budgetary analysis. According to the findings, majority of respondents (41.3%) were between the ages of 21 and 30, and 71.2% were females. Additionally, 45.0% of respondents had households of 6 to 10 people, and 36.2% of respondents had completed secondary school as their highest level of education. Additionally, 15.0% of respondents had above 16 years of experience in processing and selling Bambara nuts (okpa) in the study area, generating ₦152,000,000 in net revenue, and ₦158,000,000 in gross margin. Result also revealed a BCR and ROI of ₦1.38k and 3.75%, respectively. The study also revealed that the major constraints faced by Bambara groundnut traders in the study area were poor perception of bambara nut marketing as a low-achieving occupation (17.5%), and the issue of trade being regarded as occupation for women (15.0%) with high cost of transportation (13.8%) when sourcing the raw materials (Bambara groundnut) both inside and outside the State which was the third highest barrier to Bambara nuts marketing in the study area.
Keywords: Processing, vending, awareness, factors, constraints.

Introduction

Bambara nut is an important crop for the small holders' farm families, processors and marketers livelihood as an important source of income and protein. Agricultural organizations and policymakers have recognized the role and untapped potential of Neglected and Underutilized Crops (NUC) such as bambara nut for food and nutrition security, generating income in rural areas (Ani and Ekwe, 2013). The crop has been labeled an under-utilized crop in Nigeria because of the localization of its production and utilization, specifically, to a restricted geographical location and niche markets as well as the dearth of research activities on the crop (Hillocks, Bennett and Mponda, 2012). According to International Plant Genetic Resource Institute (IPGRI) (1997), bambara nuts and its products are often perceived as a local snack or food supplements, but not as lucrative cash crop. As a result of this under-utilized characterization, the livelihood impact of bambara nuts, among the largely smallholder producers, processors and marketers, stands to be obscured with little policy recognition. Boulay and Khan (2020), also pointed out that indigenous crops such as bambara nut are neglected in development research. With about 60percent of the food supply coming from rice, wheat, and maize (Adzawala, Donkoh, Nyako, Reilly, Olawale, Mayes and Azman, 2016), massive underutilization exists among many other crop species, subsequently constraining the production of these crops, including bambara nuts and their marketing. One among such crops which have been greatly side-lined and underutilized is the Bambara nut (*Vigna subterranea*). It is a leguminous crop capable of supplying necessary and important nutrients to the population. Increasing leguminous crop marketing would increase the availability of bambara nut in space and time, improve on the income of the marketers which inturn, improve their standard of living. Additionally, bambara groundnut is recognized as a sustainable and low-cost source of various nutrients and efforts to address value chain bottlenecks and raise awareness about its benefits are seen as crucial for encouraging more widespread local

uptake and market access (Tan, Azam-Ali, Goh, Mustafa, Chai, HO, and Massawe, 2020). Furthermore bambara nut is a complete food source due to its substantial carbohydrate (65%) and protein (about 18%) content. Bambara groundnut contains micronutrients such as zinc, iron, calcium and potassium. Red-seed varieties have almost twice as much iron as the cream seeds. Thus, they are especially valuable in areas where iron deficiency occurs (Tan, Azam-Ali, Goh, Mustafa, Chai, HO, and Massawe, 2020). Bambara nut marketing in Ebonyi State has been a major source of revenue generation for both wholesalers and retailers due to its high demand and consumption in the State. In Enugu State, marketing of bambara nut (okpa) is predominant. The nuts are sold at the local markets and the processed ones hawked by women in markets and roadsides in the communities. Income from Bambara nut marketing represents a major component of personal savings, investment in children education, feeding, and so on. In lieu of the above, this research aimed at analyzing the costs and returns of Bambara nuts marketing in major markets in Ebonyi State, Nigeria. The study specifically seek to: describe the socio-economic characteristics of bambara nut marketers in the study area, examine the steps involved in processing bambara nuts, examine the cost and returns to Bambara nuts marketing in the study area and identify the constraints faced by bambara nut marketers in the study area. There are many native methods for processing and using Bambara groundnut seeds, our primary focus in this study is "okpa" processing. Both the scientific and traditional methods are used to process bambara nut seed. We will focus on the conventional approach that the respondents employed. There are two ways to employ the traditional method. The first is the paste method, which is made for immediate consumption or family use. Using this procedure, the seeds are dehulled, wet-milled into paste, then soaked in water to soften the seed coverings. Due to the short storage life, commercial traders do not use this strategy. The second approach is the flour method, which was primarily utilized by the study participants. The dried seed is split in an attrition mill, which loosens the coatings. The seeds are then winnowed to remove any loose testa. The seeds are then milled once more to create a fine flour, and finally they are sieved using fine cotton material. The fine flour have a lengthy storage life duration when using this strategy. One of the most common ways to make "okpa" is to combine flour, palm oil, water, salt, and pepper to create a soft, liquid consistency. If desired, additional ingredients, including spices, can be added. After that, it is steamed while wrapped in plantain leaves, small empty liquid milk tins, and either small transparent nylon bags. The final product is prepared and consumed as preferred. According to the results below, "okpa" is the most widely consumed Bambara groundnut product in the study area (Anugwo and Egwue, 2025). Additionally, it is a major source of protein for consumers, particularly when eaten for breakfast, and it provides the Bambara nut vendors with a means of subsistence. The leftover chaff from processing Bambara groundnuts can be sold as manure or utilized as animal feed, among other things.

Processing and Utilization of Bambara Groundnut

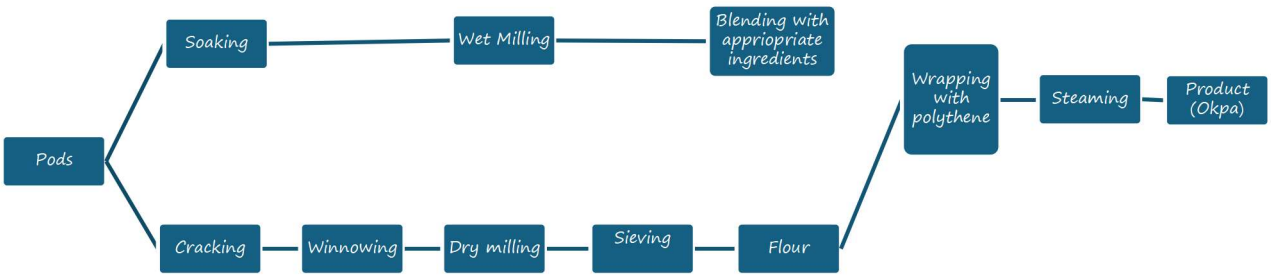

Figure 1: Traditional Method of Processing and Utilization of Bambara Groundnut

Methodology

The study was conducted in Nigeria's Ebonyi State. According to a 2016 census, Ebonyi State has thirteen (13) local government areas and 4,339,136 million residents (EBSG, 2023). It is situated between latitudes 6 ^{0}15` North of the equator and longitudes 8$^{.0}$05` East of the Greenwich Meridian. Benue State borders it on the North and Northeast, Enugu State borders it on the East and Southeast by Cross River State, Abia State borders it on the Southwest. Ebonyi State has a humid tropical climate, with one rainy season and one dry season lasting for 8 and 4 months, respectively. The temperature typically ranges from 20 to 38 degrees Celsius during the dry season and from 16 to 28 degrees Celsius during the rainy season. Harmattan winds are common between December and January. The average annual temperature is 28 degrees Celsius, and the average annual humidity is 50-60%. The region receives an average annual precipitation of 2500mm. The State grows cassava, yam, and oil palm as crops. The primary language of the state is Igbo, and its citizens are of Igbo descent.

Sampling Technique and Sampling Size

This study employed a Three-stage sampling technique. In the first stage, two local government areas namely Abakaliki and Ikwo LGA`s, were purposively chosen from among the thirteen Local Government Areas in Ebonyi State because of the abundance of Bambara nut traders in these areas. Using a simple random sampling procedure, eight (8) significant markets, four (4) from each Local Government Area were chosen at random for the second stage. In the third stage, ten (10) Bambara nut traders were randomly chosen from each of the selected markets, bringing the total number of selected respondents in the study area to eighty (80).

Sources and Method of Data Collection

This study used primary data that were obtained through in-person interviews with Bambara nut traders in the study area with the aid of well-structured questionnaire.

Methods of Data Analysis

Descriptive statistics, including frequency distributions, and percentages, were used to analyze the data collected for the study. Additionally, cost and returns analysis was used to ascertain the profitability of selling processed Bambara nuts. Frequency distribution and percentage were used to analyze objectives 1 and 3, which were to describe the socioeconomic characteristics of the respondents in the study area and identify the constraints of Bambara nut vending in the study area. Cost and returns analysis was used to analyze the profitability of Bambara nut farmers in the study area that is objective 2 and specified as; Gross Margin (GM) =Total Revenue (TR) –Total Variable Cost (TVC)

Total Cost (TC) = Total Fixed Cost (TFC) + Total Variable Cost (TVC).

Total Revenue (TR) = Total Output (Q) * Price (P).

Net Revenue (NR) = Total Revenue – Total Variable Cost (TVC).

Return on investment = Gross Margin/ Total Variable Cost

Benefit Cost Ratio (BCR) = Total Revenue/Total Cost

Results and Discussion

Socio-Economic Characteristics of the Respondents

According to the findings in Table 1; (17.5%) of the vendors were between the ages of 31 and 40, and (15%) were between the ages of 41 and 50. The bulk of Bambara nut farmers were likely in their prime earning years, as seen by the (41.3%) of respondents who were between the ages of 21 and 30 and the (26.2%) who were under 20 years, the mean age of the respondents is 32 years in the study area. Table 1 further shows that, about (71.2%) of Bambara traders in the study area were females, indicating that women dominated Bambara nut trading in the study area. Result also revealed that majority of Bambara nut traders had a household size of 6-10 persons, (38.8%) had a household size of 1-5 persons while (16.2%) had a household size of more than 11 persons and the mean household size was 8 persons in the study area This shows that the respondents had enough hands on labor to process and market Bambara nuts (Okpa) in the study area. Findings from Table 1 further revealed that, (20.0%) were unmarried, (57.8%) were married, while (21.2%) were divorced. The high number of

married respondents will also guarantee availability of labor for processing and marketing of Bambara nut in the study area.

Table 1 also revealed that about (81.2%) of Bambara nut traders were educated with a mean of 12 years of educational attainment. A breakdown of this shows that majority (36.2%) attended secondary school, (23.8%) attended primary school, (21.2%) attended tertiary institution while (18.8%) had no knowledge of formal education. These findings suggest that Bambara nut vendors in the study area are highly literate and are more likely to adopt innovative strategies for selling Bambara nut (okpa) in the area. Experience wise, result show that Bambara nut traders were quite experienced with a mean of 7 years. Majority (48.8%) had between 1-5 years of experience, (25%) had 6-10 years of experience also (15%) had more than 16 years of experience while (11.2%) had 11-15 years of experience, respectively. These findings are in line with Anugwo and Egwue (2025) who posited that most Bambara nut traders have excellent knowledge in the processing and vending of Bambara nuts (okpa), and they will readily adopt new ideas and innovations to generate high profits.

Table 1: Socio-economic Characteristics of Bambara Traders

Socio-economic variables	Frequency	Percentage	Mean
Age			
<20	21	26.2	
21-30	33	41.3	
31-40	14	17.5	32 years
41-50	12	15.0	
Sex			
Male	23	28.8	
Female	57	71.2	
Household size			
1-5	31	38.8	
6-10	36	45.0	8 persons
>11	13	16.2	
Marital Status			
Single	16	20.0	
Married	47	57.8	
Divorced	17	21.2	
Level of Education			
No formal Education	15	18.8	
Primary School	19	23.8	12 years
Secondary school	29	36.2	
Tertiary Level	17	21.2	
Marketing Experience			
1-5	39	48.8	
6-10	20	25.0	7 years
11-15	9	11.2	
>16	12	15.0	
Total	80	100	

Source: Field Survey, 2025.

Profitability of Bambara nuts (okpa) Production

From Table 2, Bambara nut vending in the study area was profitable. The respondents sold three different types and sizes of (okpa), those mixed with vegetables sold for ₦500.00, the ordinary ones had two different sizes sold for ₦300.00 and ₦200.00 respectively. The 80 respondents sold an average of one hundred and fifty (150) pieces/day of the three different sizes making (four hundred and fifty pieces (450) respectively/day for 350days in a year with a combined total revenue of ₦4,200,000,00/annum and net revenue of ₦152,000,000 and gross margin of ₦158,000,000. Total profit/year was

₦1,900,000 with total profit/day of ₦5,205.48k. Rate of return on investment was 3.75%, while Benefit Cost Ratio was ₦1.38k, indicating that for every naira spent on Bambara nut (okpa) vending the Bambara nut vendors were making ₦1.38k. This finding is consistent with Anugwo and Egwue (2025), who posited that Bambara nuts vending is highly profitable with return on investment of 14.8% and benefit cost ratio of N1.14k in Enugu State.

Table 2: Cost and Return on the Processing/Vending of Bambara nut in the Study Area

Variable Cost	Unit Price (₦)	No of Items	Total Prices (₦)
Total Revenue			**4,200,000,000**
Bambara groundnut Seeds	252,000	85bags*180days	3,855,600,000
Palm Oil	25,000	80	2,000,000
Salt	9,000	80	720,000
Pepper	16,000	80	1,280,000
Gas	16,000*12	80	15,360,000
Firewood	7,000*180	80	100,800,000
Labour/manday	2000/day	80*180days	28,800,000
Transportation	1500/day	80*300days	36,000,000
Cost of milling	2,000/day	80*300days	48,000,000
Waterproof/Leaves	1,500/bundle	80*12months	1,440,000
Total Variable Cost			**₦4,770,400,000**
Fixed Cost			
Big Pots	35,000	80	2,800,000
Basin	9,500	80	760,000
Cup	2,000	80	160,000
Big Spoon	3,500	80	280,000
Wheelbarrow	25,000	80	2,000,000
Total Fixed Cost			**₦6,000,000**
Total Revenue	Unit prices of (Okpa)	Pieces sold/day*No of respondents*no of days	Amount
	₦500	150* 80*350days	₦2,100,000,000
	₦300	150*80*350days	₦1,260,000,000
	₦200	150*80*350days	₦840,000,000
Total cost= (TVC+ TFC)=		₦4,048,000,000	
Net farm Income (TR-TC)=		₦152,000,000	
Gross Margin= (TR -TVC)=		₦158,000,000	
Benefit Cost Ratio (BCR) (TR/ TC)=		₦1.38K	
Total Profit/year =		₦152,000,000/80 = ₦1,900,000	
Total Profit/day =		₦1,900,000/365 =₦5,205.48K	

Source: Field Survey, 2025. TR= Total revenue, TC=Total cost, TVC=Total Variable Cost, TFC= Total Fixed Cost.

Constraints to Bambara Nut Vending in the Study Area

Table 3 reveals that the main constraints faced by Bambara groundnut traders in the study area were the poor perception surrounding Bambara nut marketing that is perception of the trade as low-achieving occupation (17.5%) and the issue of that its largely regarded as occupation for women (15.0%), with that of poor transportation network/high cost of transportation (13.8%). Implying that poor government support will constrain their ability to procure larger quantities of Bambara seed which will deprive them from enjoying economics of scale that is associated with bulk purchase of inputs, also, lack of ready market will lead to spoilage of processed nuts as well as low scale of processing of products which will in turn result in low volume of sales. This result is consistent with those of Anugwo and

Egwue (2025) who also reported that Bambara nut marketing in Enugu State, Nigeria was constrained by high cost of Bambara groundnut and its ingredients, perception as occupation/trade for low achievers and high cost of transportation respectively.

Table 3: Constraints of Bambara Nut Vending in the Study Area

Constraints	Frequency	Percentage	Ranking
Lack of Processing and Storage Facilities	9	11.2	5th
Largely regarded as women occupation	12	15.0	2nd
Largely regarded as occupation/trade for low achievers	14	17.5	1st
Poor transportation network/high cost of transportation	11	13.8	3rd
High cost of Bambara groundnut and its ingredients	9	11.2	5th
Inadequate capital	10	12.5	4th
Lack of government support	8	10.0	7th
Lack of ready market	7	8.8	8th
Total	80	100	

Source: Field Survey, 2025.

Summary and Conclusion

The study examined the profitability of Bambara nuts (okpa) marketing in major markets in Ebonyi State, Nigeria. According to the results, findings revealed that Bambara not marketing was dominated by women who were quite experienced. Result also revealed a gross margin and net marketing income of ₦158,000,000 and ₦152,000,000 respectively with profit/day of ₦5,205.48k per trader. Accordingly, the study concluded that Bambara nut marketing was profitable in the study area with high rate of returns of 3.75%.

Recommendation

Adequate sensitization should be carried out to educate people on the nutritional and economic benefits of Bambara nut as this will motivate people to venture into its marketing. Processing centers should be established in the study area to assist the traders to process their Bambara nuts.

Respondents should be encouraged to form cooperatives as a way of attracting Government support as well as those of other stakeholders.

To reduce high transportation cost, Government should partner with other stakeholders to grade and repair local roads within the study area.

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