

<https://doi.org/10.33003/jaat.2023.0904.16>

MARKETING OF *Hypheane thebaica* (Doom palm) FRUITS IN SOKOTO, SOKOTO STATE

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ABSTRACT

The study examined the marketing channels, the profitability and the challenges in *Hypheane thebaica* fruits in Sokoto, Sokoto State Nigeria. Data was collected using structured questionnaire which was administered to one hundred (100) marketers. Five markets were purposively selected namely; “Kure, Kara, Kasuwandaji, and Tsohonkasuwa market”, 20 marketers were randomly selected from each market. Data obtained was analysed using descriptive statistics and profit margin analysis was used to analyse data on profitability. Results indicated that, marketing of *H. thebaica* fruits is dominated by males (98.0%) and mostly (55.0%) between 41-50 years, 73.0% were married, 62.0% has household size of 16-20 individuals. 11.0% of the respondents had no form of formal education but (71.0%) have Quranic education. Marketers were majorly farmers 50.0% Results also showed 51.0% had (22-28) years of experience, 100% involved in the marketing of the product. About 46.5% source *H. thebaica* fruit from wholesalers and sold to consumers directly. 47.1% sold the fruits at its dried stage, 49.6% reported seasonality as their reason for selection. The total revenue indicated ₦19,500.00 and average net profit made was ₦15,100.00 per week, while gross profit margin indicated 77.44% for *H. thebaica* fruits business is highly profitable. Government should support and provide harvesting equipment like go to hell, so as to ease the difficulties in harvesting of *H. thebaica* fruits in the area and grant soft loans to the marketers so as to boost their business is recommended.

Key words: Marketing, *Hypheane thebaica*, Socio-economic, Fruits

INTRODUCTION

Hypheane thebaica (*H. thebaica*) is a desert palm tree that produces edible oval fruit and was originally found in the Nile Valley. It also grows well in northern Nigeria. It belongs to the palm family "Arecaceae" The trunk of this little palm regularly branches into two "Y" shapes, and each branch frequently divides again in a "Y" shape, giving the tree a highly unusual appearance; it is dichotomous and arborescent in nature. It is listed as one of the world's most useful plants (Fletcher, 2006). It is classified under the genus *Hyphaene*. People around the Nile weave baskets from its fibre and leaflets. Doom palm fruit contains powerful antioxidants (Hsu *et al.*, 2006). The fruit has a dark exterior fibrous flesh that is typically chewed and then spit out or swallowed. Doom palm kernel is edible while unripe, but hard when ripe. Despite a thorough search, there is insufficient published material on the exact physical properties of doom palm and their dependence on operating factors that would be beneficial for the design of processing equipment.

H. thebaica fruits have a lot of potential, but insufficient resource utilisation has historically been a key impediment to increasing production and earnings. Farmers may use resources intelligently, but not at an economically optimal level. As the goal of every agribusiness is to maximise profit while minimising cost, marketing doom palm fruits is not encouraging in this regard; rather, it minimises profit while increasing cost, resulting in low marketing of the fruit to marketers due to

low consumer demand. This study will raise public awareness of the latent potentials of *H. thebaica* fruits, despite the fact that they already have many benefits for locals. It will also offer strategies for locals to increase their income by marketing this crucial livelihood commodity, so reducing poverty and enhancing sustainability in the area. This research will also suggest ways in which tree planting can be initiated with the available resources in areas suitable for *H. thebaica* fruits marketing. The overall objective of this study is to examine the marketing of *H. thebaica* fruits in Sokoto Metropolis, Sokoto State, Nigeria

METHODOLOGY

Study area

Sokoto Metropolis consists of Sokoto South and North, parts of Wammako local government area, Dange Shuni, Kware and Bodinga. Sokoto is located in the extreme North-West part of Nigeria, near the confluence of Sokoto and Rima Rivers. It is located between It lies on latitude 12°57' 30"N to 13°8' 0"N and longitude 05°9' 0"E to 05°19' 30"E (Google Maps, 2019). The state covers an area of 25,973kmsq or 10,028sqm. Sokoto state is made up of 23 local government areas (Figure 1) and an estimated projected population of over 5.4 million as at 2017 (health policy plus, 2017). The GDP of the state is \$4,818m with per Capital income of about \$1,274 (Sokoto service portal, 2015).

The area's climatic conditions are characterised by dry and wet seasons, similar to those found in tropical

regions. The area receives 300mm to 800mm of rain each year, with a mean temperature of 34.5°C and a maximum temperature of 45°C during the dry season. The relative humidity is consistently less than 40% (20-35%) during the dry season and 43-70% during the wet season (Sokoto Energy Research Centre, 2012; Anonymous, 2015). The trees growing up to 5 – 9m tall widely spaced and dominated by trees and shrubs (*Adansonia digitata*, *Hypheane thebaica*, *Balanites aegyptiaca*, *Ziziphus spinachristi*, *Z. mauritiana*, *Khaya senegalensis*, *Guiera senegalensis*, *Piliostigma reticulatum*, *Acacia nilotica*, *Acacia Senegal*, *Vitex doniana*, *Senna obtusifolia*, *Senna occidentalis*, etc.) and grasses (*Sida cordifolia*, *Striga hermonthica*, *Eragrostis tremula*, *Combretum*

glutinosum, etc). The vegetation type is Sudan savannah and the soil type is sands and sandy loamy with low organic matter content (Ogigirigi, 1993; Tsoho, 2008). The regions lifeline for growing crop in the flood plains of Sokoto Rima River system which is covered with the rich alluvial soils and the people of Sokoto are mostly dominated by Hausa and Fulani.

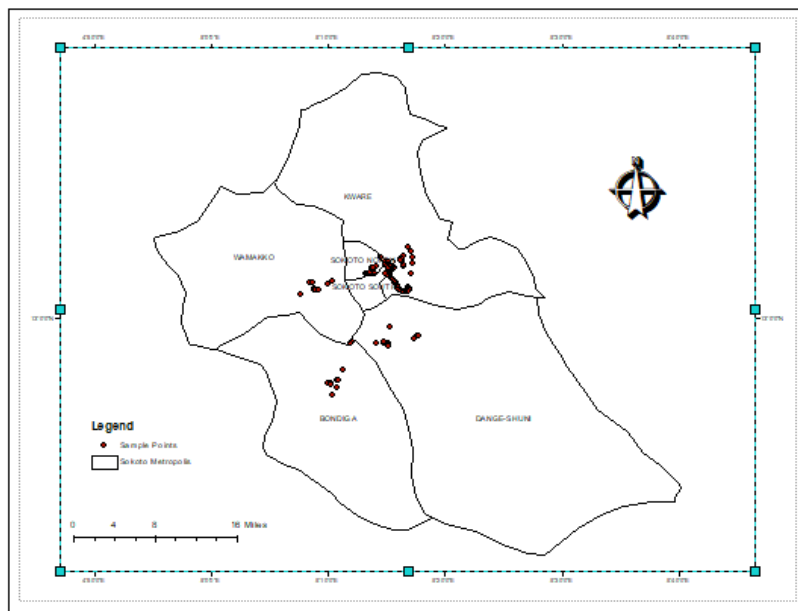


Figure 1: Map of Sokoto metropolis showing the sampling points

Sampling Procedure

A multi-stage sampling technique was used for this study, preliminary survey was carried out and found where marketing of doum palm fruits is concentrated. In the first stage, five markets in Sokoto Metropolis were purposively selected based on the high rate of doum palm marketing in the markets, the markets include “Kure market”, “Kara market”, “Kasuwandaji”, “Tsohonkasuwa” and Central Market. In the second step, 20 respondents were randomly picked from each market, resulting in a total sample size of 100 respondents in the area. A well-structured questionnaire was administered and retrieved.

Data Collection

The data were acquired using an interview schedule and an outlined questionnaire. Data were collected on socioeconomic aspects, as well as the inputs and outputs of *Hypheane thebaica* marketing.

Data Analysis

Data were collected and analysed using both descriptive and inferential statistics. Profit margin was used to achieve the profitability of the respondents.

$$GM = TR - TVC \dots\dots\dots \text{eqn 1}$$

$$ROR = \frac{GM}{TR} \times 100 \dots\dots\dots \text{eqn 2}$$

Gross profit margin is a company's gross profit divided by total revenue expressed in percentage. Companies uses

gross margin to measure how the product cost relate to their revenue.

RESULTS AND DISCUSSIONS

Demographic Characteristics of *Hypheane thebaica* fruits Marketers

The attributes that support or impact an individual's ability to make decisions, job capacity, degree of operation, and overall commercial ventures are known as demographic characteristics. These include of things like age, gender, education level, and marital status (Ajayi, 2013).

Gender

The results revealed that, 98.0% were men who were directly involved in both the marketing of *H. thebaica* fruits, only 2.0% were women found in the business. The thought here is that the male preponderance in this group is linked to the challenging task of gathering doum fruits, as certain non-timber forest products require climbing

trees to be harvested. This result is consistent with that of Okuduwor *et al.* (2023), who found that most of their respondents were men who were selling bush mangos.

Age

This category comprises just men, and the data indicates that men of all ages were involved in the doum palm fruit marketing industry. The age group of the respondents (55.0%) falls between the age ranges of 41-50 years indicating that, they are in their active labour force, younger marketers participated more than older marketers. Age is a factor that determine the years of an individual's as young and old, age composition among individuals especially family head has influence on decision making in any enterprise. The results are consistent with those of Sunday *et al.* (2022), who stated that the mean age of the respondents falls within 44 years, and Babalola and Agbeja. (2009), who reported that 43.0% of the respondents fell between 41 to 50 years in the marketing of *Irvingia* spp. in Southwest Nigeria.

Table 1a: Socio-Economic Characteristics of *H. thebaica* fruit Marketers

Factor	Frequency	Percentage
Gender		
Male	98	98.0
Female	2	2.0
Age		
21-30	15	15.0
31-40	14	14.0
41-50	55	55.0
51-60	13	13.0
60 and above	3	3.0
Marital status		
Married	73	73.0
Single	17	17.0
Widow/widower	10	10.0
Household size		
1-5	11	11.0
6-10	9	9.0
11-15	11	11.0
16-20	62	62.0
21 and above	7	7.0
Total	100	100.0

Source: Field survey, 2021

Marital Status

According to table 1a result, 10.0% of the respondents in the *H. thebaica* fruits marketing were widowed, and 73.0% of the respondents were married. Married persons have a tendency to boost their commercial operations in order to serve as sources of revenue for their families' survival and well-being because they are typically seen as more devoted to their responsibilities. This result is consistent with that of Onu *et al.* (2021), who found that the majority of respondents in their study on the "Characteristics of small-scale palm oil production

enterprise in Anambra State" were married. This is also consistent with research by Ajayi. (2013), who found that married marketers have stronger business morale than single marketers.

Household Size

According to the findings, 62.0% of the respondents had households with between 16 and 20 people, while 7.0% of marketers of doum palm fruits had households with more than 21 people. This result disagrees with the findings of Okuduwor *et al.* (2023), "Determinants of Marketable Surplus of African Bush Mango Kernel (Ogbono) in

Kolokuma/Opokuma Local Government Area of Bayelsa State, Nigeria," which stated that 53.3% of their

respondents had households with six to ten people.

Table 1b: Socio-Economic Characteristics of *H. thebaica* fruit Marketers

Factor	Frequency	Percentage
Education		
Quranic	71	71.0
Primary	13	13.0
Secondary	2	2.0
Tertiary	3	3.0
No Basic Education	11	11.0
Primary Occupation		
Farming	50	50.0
Fishing	7	7.0
<i>H. thebaica</i> business	30	30.0
Trading	6	6.0
Tailoring	7	7.0
Secondary Occupation		
<i>H. thebaica</i> business	80	80.0
Fishing	7	7.0
Trading	6	6.0
Tailoring	7	7.0
Total	100	100

Source: Field survey, 2021

Educational Level

The results showed that, greater proportion 71.0% of these marketers had Quranic education but no western education, while 11.0% of the marketers have no basic education and the remaining ones has one form of education or the other. The implication would be challenging for those in the doum palm fruit industry without a formal education to implement new ideas, innovations, or current methods in their operations. This is consistent with the research done by Babalola and Agbeja (2009), who found that 66.7% of the respondents lacked a fundamental understanding of *Irvingia spp.* marketing in Southwest Nigeria. According to Farinde *et al.* (2005), innovation uptake and education are positively

correlated. As a result, innovations are rarely accepted, which runs counter to the findings of Esiobu *et al.* (2014), who showed that a strong educational foundation helps create a marketing enterprise that is both effective and long-lasting.

Occupation

The marketing of these NTFPs has become an alternative source of income and food for many farm families. Majority of *H. thebaica* fruits marketers (50.0% and 80.0) had farming as their primary and secondary occupations. The locals also work in tailoring, fishing, and other industrial operations like making artisanal workmanships and agricultural equipment, processing kernael and palm fruits, etc. (Nwalieji and Ojike, 2018)

Table 2: Years of Experience of the Respondents in the marketing Doum Palm Fruits

Marketing Experience(years)	Frequency	Percentage	Are you a marketer?	Frequency	Percentage
1-7	11	11.0	Yes	100	100.0
8-14	9	9.0	No	0	0.0
15-21	22	22.0			
22-28	51	51.0			
29 and above	7	7.0			
TOTAL	100	100		100	100

Source: Field Survey, 2021

The results in the years of experience was seen to be high among the respondents with the majority 51.0% (22 – 28 years) of doum palm fruits marketers, 7.0% of the respondents have 29 years and above years of experience. Only about 11.0% respondents recorded 1-7years of experience as beginners. This is because the number of years is usually seen as how much of a professional the individual has become in the marketing of NTFPs especially the *H. thebaica* fruits. This is in agreement with the findings of Idiaye *et al.* (2022) in their research “Profit efficiency of palm oil processing in Osun state, Nigeria”. This is also in line with Arowolo and Oladejo (2020) in their research who reported that, many of the respondents (54.5%) had been in honey business for a long period of time and Which is in line with the work of Schubert. (2019) that says that the longer the year of marketing experience the better the decision making.

Table 3: Channels used in Sources and Selling *H. thebaica* fruits by marketers

Medium for sourcing	Frequency	Percentage (%)	Medium for selling	Frequency	Percentage (%)
Farm	3	1.9	Consumers	72	46.5
Forest	19	12.3	Itinerants	23	14.8
Shop vendors	21	13.5	Shop vendors	21	13.5
Itinerants	17	11.0	Retailers	17	11.0
Wholesalers	72	46.5	Wholesalers	0	0.0
Retailers	23	14.8	Middle men/Agents	22	14.2
Total	155*	100	Total	155*	100

Source: Field Survey, 2021

***Multiple responses**

The marketing channel is the journey that a commodity takes from the point of production to the final consumer (Olukosi and Isitor, 2005). Marketing channels are significant in analysing the marketing system because they show how the various actors in the marketing system are organised to convey items or commodities from the producer to the end user. Table 5 shows that the majority (46.5%) of marketers source *H. thebaica* fruits from wholesalers who sell in bulk, which could be attributed to profit margins in the marketing of doum palm fruits, while 11.0% source the product from itinerants who roam the streets and markets with their wheelbarrow. But (1.9%) source the products from their farms, although, 13.5% of the respondents are shop vendors and 14.8% are retailers. The results showed that, majority (46.5%) of the marketers sells *H. thebaica* fruits to consumers, while the least (11.0%) was sold to retailers. This could be attributed to the characteristic nature of some doum palm fruits markets, where the individual itinerants can be contacted on the roads, at their house and in the open air space, and in most of these markets there is no specific and qualified structure for doum palm fruits transactions in the area.

Table 4: Type of *Hypheane thebaica* Fruits Sold

Type of Doum palm sold	Frequency	Percentage
Fresh	35	22.6
Dry	73	47.1
Both	47	30.3
TOTAL	155*	100

Source: Field Survey, 2021; *Multiple responses

Table 3 showed that, majority (47.1%) of the marketers' sells doum palm fruits in its dry stage, while 22.6% sells the fresh type of doum palm fruits. Selling the fresh fruits could be attributed to the freshness, succulent and not hard for consumption. Though, some of the marketers (30.3%) do sell both the dry and fresh *H. thebaica* fruits in the area.

Table 5: Reasons for selecting the type of Doum palm Fruits

Reason for choosing fresh type	Frequency	Percentage
Accessibility	17	13.6
consumers choice	28	22.4
Storage ability	18	14.4
Seasonality	62	49.6
Reason for choosing dry type		
Accessibility	9	7.2
Consumers choice	34	27.2
Storage ability	29	23.2
Seasonality	53	42.4
TOTAL	125*	100

Source: Field Survey, 2021

***Multiple responses**

Table 4 revealed that, the marketers (49.6% and 42.4%) choose the fresh and dry *H. thebaica* fruits based on seasonality, but (23.2%) selected dry *H. thebaica* fruits based on the storage ability, 13.60% and 27.2% choose based on consumers choice. The implication here is that, there is preference among the consumers of dry *H. thebaica* fruits. Few of the respondents (22.40% and 7.2%) choose based on accessibility of the fresh and dried dry *H. thebaica* fruits respectively.

Table 6: Marketers' Perceptions on *H. thebaica* Towards Income Generation

Doum palm contributed more to your income	Frequency	Percentage
Strongly agree	20	20.0
Agree	80	80.0
Undecided	0	0.0
Disagree	0	0.0
Strongly disagree	0	0.0
TOTAL	100	100

Source: Field Survey, 2021

Table 6 showed that, 80.0% of the respondents agreed that marketing of *H. thebaica* fruits contributed to their income while only 20% of them strongly agreed and none of them disagreed with generating income from the marketing of this product. This could be attributed to the health benefits and income generation derived from the use of *H. thebaica* fruits marketing in the area.

Table 7: Marketers perception on whether the profit is appreciable or not.

Profits from marketing is appreciable	Frequency	Percentage
Strongly agree	31	31.0
Agree	29	29.0
Undecided	17	17.0
Disagree	20	20.0
Strongly disagree	3	3.0
Doum palm business is a reliable source		
Strongly agree	13	13.0
Agree	45	45.0
Undecided	18	18.0
Disagree	9	9.0
Strongly disagree	15	15.0
TOTAL	100	100

Source: Field Survey, 2021

The results in table 7 revealed that, 60.0% of the respondents have agreed that, profits realised was appreciable. But 23.0% have disagreed with that, while 17.0% have not decided on the profit being appreciable. About 58.0% of the respondents agreed that, Doum palm business is a reliable source, while 24.0% have disagreed about that and 18.0% have not decided.

Table 8: Daily Income Generation by the respondents

Do you generate income?	Frequency	Percentage
Yes	100	100
No	0	0.0
Daily income		
₦500-₦2000	13	13.0
₦2000-₦4000	67	67.0
₦4000-₦6000	13	13.0
>₦6000	7	7.0
Total	100	100

Source: Field survey, 2022

The results revealed that, 100% of the respondents generate income from the marketing of *H. thebaica* fruits in the area. Majority of them (67.0%) made ₦2,000 - ₦4,000 per day, while only 7.0% of the respondents made above ₦6000. This implied a very good contribution of the business to household economy as the marketing activities are concentrated during both seasons due to selling of fresh and dry fruits of *H. thebaica*. Though, much is done in the dry season when the farming activities are less or over thereby reducing poverty among the people in the area.

Table 9: Average Cost and Return of *Hyphaene thebaica* Fruits Marketers per week

	Cost Items	Amounts (₦)	Percentage
A	Total Variable Cost		
	Cost of harvesting	1500	34.1
	Cost of transportation	1000	22.7
	Cost of labour	1000	22.7
B	Other expenditure	900	20.5
	Total Variable Cost (TVC)	4,400.00	100
C	Total Revenue (TR)	19,500.00	
	Gross Profit Margin (TR -- TVC)	15,100.00	
	Return On Investment (Profit/TR X 100)	77.44%	

Source: Field survey, 2022

Profitability is the measure of how successfully a firm can create profits from operational processes that have been adopted to secure the company's future viability (Manoppo and Arie, 2016). The findings in table (8) indicated that, marketing of doum palm fruits (harvesting) among the variable cost items (₦1,500.00) had the highest contribution (34.1%) to the cost of the product being marketed in the area. The results also revealed that transportation and labour (₦1,000.00) had contributed (22.7%) to the marketing of the doum fruits, while other expenditures cost (₦900.00) contributed last (20.5%) doum fruits business. The total variable cost (TVC) incurred in the *H. thebaica* fruits business was ₦4,400.00, the total revenue indicated ₦19,500.00 while the net

profit earned in the marketing of *H. thebaica* fruits was ₦15,100.00 per week. The results therefore indicated that, *H. thebaica* fruits business is a profitable venture and for this, marketing of NTFPs have great potentials for increasing the income of the people of Sokoto Metropolis. This finding was agreed with that of Njoku (2017) who reported that, the of *Irvingia gabonensis* kernels was very profitable in the research, “Economics of Irvingia marketing in Njaba Local Government Area of Imo State, Nigeria”. This finding revealed that, *H. thebaica* fruits business is a profitable venture, that unemployment among Nigerian youths can be reduced by encouraging them to engage in NTFPs businesses, with subsidy from the government.

Table 9: Problems Encountered in the Marketing of *H. thebaica* fruits

Category	*Frequency	Percentage
High rate of deforestation	11	7.9
Lack of capital	4	2.9
Seasonal variation	24	17.3
Harvesting	37	26.6
Storage facilities	21	15.1
Transportation	21	15.1
Price fluctuation	17	12.2
Spoilage	4	2.9
Total	139	100

Source: Field Survey, 2022 *multiple responses

The results revealed harvesting (26.6%) as the most important constraint in the marketing of *H. thebaica* fruits. This is due to the difficulty involved in the process of harvesting *H. thebaica* fruits. Secondly, seasonal variation recorded 17.3% among the constraints encountered in the marketing of *H. thebaica* fruits, while the least percentage was recorded in lack of capital and spoilage with 2.9% respectively. Though, transportation and storage facilities recorded (15.1%) respectively. Spoilage could be attributed to fresh, soft and succulent fruits due to immaturity of the *H. thebaica* fruits that can be eaten easily with no difficulty. This finding has agreed

with the findings of Babalola and Agbeja, (2009) who reported that, (40.0%) of the respondents complained of storage facilities as their major constraints in their research, “Marketing of *Irvingia spp* (Bush Mango) in Southwest Nigeria: Prospects and Challenge” and that of Njoku (2017) who reported that, storage facilities is one of the major constraint in the marketing of *Irvingia gabonensis* kernels in the research, “Economics of Irvingia marketing in Njaba Local Government Area of Imo State, Nigeria”.

CONCLUSION

Marketing of *Hypheane thebaica* fruits is profitable and can therefore serve as a means of employment opportunity for some of the unemployed youths, as well as improving the standard of living of the marketers. Consumption of doum palm fruits in the study area far outstrips local production, consequently fruits are imported from neighbouring countries so as to meet up with the local demands. Therefore, it is imperative to intensify effort in cultivating doum palm in the study area. provision of modern storage facilities, credit loans/ facilities and awareness on the nutritional and health benefits of Doum palm fruit should be provided to the populace with a view to enhance the marketers and production of doum palm in the study area in order to tackle the challenges

RECOMMENDATIONS

The following recommendations were made to improve marketing of *H. thebaica* fruits in Sokoto Metropolis, Sokoto State, Nigeria.

- i. The State government should support and provide harvesting equipment hooks to ease the difficulties in harvesting of *H. thebaica* fruits in the area.
- ii. The State government should assist in granting soft loans to doum palm fruits marketers so as to boost their business.

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