

PROFITABILITY OF PROCESSING OF BAOBAB FRUIT INTO JUICE AMONG WOMEN IN DABENSEME COMMUNITY OF ZURU LOCAL GOVERNMENT AREA IN KEBBI STATE, NIGERIA

Zachariah, T.,¹ Shuaibu, H.² and Ahmed, G. A.²

¹ Department of Agricultural Economics and Extension, Faculty of Agriculture, Kebbi State University of Science and Technology, Aliero

² Department of Agricultural Extension and Rural Development, ABU Zaria

Corresponding Author: amadumaijama@gmail.com 07061353848

Abstract

This research was carried out to determine the profitability of processing baobab fruit into juice among women in Dabenseme community in Zuru local Government Area in Kebbi state. Sixty (60) women were selected using simple random sampling to form the study group in Dabenseme community. Baobab fruit were processed into juice and the group was linked up with the distributors, super-markets and drinks shops available within and outside the study area. The baobab juice was retailed and whole sold for income generation. Primary data on processing and marketing of baobab fruit juice were collected through record of activities while institutional characteristics were collected through the use of checklist. Data obtained were analyzed using simple descriptive statistics and gross margin analysis. Results showed that 63.30% of the participants had access to credit facilities. Some participants (13.30%) had access to credit through family and friends while 23.30% had no access to credit facilities. All the participants had access to local market for their products. A total of N2,869.00 was required to process 3.2kg of baobab fruit powder into juice and a total revenue of N4000 was realized after sales of the product giving a gross income of N1,131.00 and the RNI value of N1.39 was realized. It was concluded that processing of baobab fruit into juice is a potential source of income generation among women in the study area. It recommended that the scope of the training should be widened by the government and non-governmental organization in Dabenseme, Zuru Area and Kebbi State in general so as to increase a greater number of processors who could benefit from the technology.

Keywords: Profitability, Processing, Baobab Fruit Juice, Women

INTRODUCTION

Background to the Study

Women make essential contributions to the agricultural and rural economies in all developing countries. Their roles vary considerably between and within regions and are changing rapidly in many parts of the world, where economic and social forces are transforming the agricultural sector. Rural women often manage complex households and pursue multiple livelihood strategies. Their

activities typically include producing agricultural crops, tending animals, processing and preparing food for the household, working for wages in agricultural or other rural enterprises, collecting fuelwood and water, engaging in trade and marketing, caring for family members and maintaining their homes (SOFA Team and Cheryl, 2011). Many of these activities are not defined as “economically active employment” in national accounts but they are essential to the well-being of rural households (SOFA Team and Cheryl, 2011).

Baobab fruits are among commonly processed forest fruits by women. The fruits from baobab trees are harvested through handpicking by children who climb the trees, or by women pulling off the fruits with a knife or hook mounted on a long bamboo cane. Women help young boys and girls in harvesting and then process, store, and prepare baobab leaves and fruits for consumption. Surplus is sold by women at the local market to earn some cash income, which is often spent on children's clothing, food, or school fees. Local women know the types, quality, and prices of baobab fruit pulp, seeds, and leaves in the local markets and can therefore make a conscious decision when, or if, to sell or to store the baobab surplus (Buchmann *et al.*, 2010).

In northern Nigeria, baobab fruit pulp plays an important role in the local markets (Assogbadjo *et al.*, 2008). Farmers and tree owners can participate in local markets on the bases of their harvesting and processing skills. Lack of attention to different methods of processing fruits in the local markets can result in diminished appreciation of rural women's role in supporting livelihoods, which could potentially lead to further marginalization of the low-income groups, and especially the women involved (Shackleton *et al.*, 2007). Baobab fruits in the study area are usually used unprocessed. The dry pulp is either eaten fresh or used to add to gruels on cooling after cooking. According to Sidibe and Williams (2002) when the fruit is ripe, children remove the pulp from the fibre and seeds by kneading in cold water: the resulting emulsion is sieved which is then served as meal. The women thus, need to be engaged in certain phases or activities of the supply chain of baobab fruit (e.g. processing and packaging). Therefore, the study is aimed at determining the profitability of baobab fruit processing into juice for increase income generation among women in Dabenseme community of Zuru L.G.A. in Kebbi State.

Materials and Method

The study was carried out at Dabenseme community of Zuru Local Government Area (LGA) in Kebbi State. The Area is located within latitude 11° 35' and 11° 55' N and longitude 4° 45' and 5° 25' E of the equator (KBSG, 2003). Zuru Local Government Area (LGA) is geographically located in the south-eastern part of the state. The estimated population of the LGA is 165,547 people (NPC, 2016). The target people for this research were the women tree owners that engage in baobab marketing and also everyone else interested in the innovation was welcomed. Simple random sampling was used in selecting sixty (60) women from within Dabenseme community which formed the sample size for the study. The baobab fruits were provided by the group of processors at Dabenseme community. The fruits were selected and cleaned. The shells were removed from the fruit content. Red funicles were separated due its high antioxidant capacity. The seeds are covered by the fruit pulp. Therefore, the pulp was separated from the seeds using pestle and mortar. The fruit pulp was then sieved. The finished product was a powder. The powder can be stored until when the need arises; otherwise it was further processed in to juice. The ingredients used included baobab fruit powder, water, sugar and preservatives. Five liters of water was boiled to 100°C, 1 *Mudu* (equivalent to a measure of half *Tiya*) of sugar was added to the boiled water until totally dissolved. Ten (10) kg of baobab fruit powder and preservatives (Sodium benzoate) was added and stirred until it was homogenous. The containers were sterilized using hot water. The bottles (containers) were filled with the mixture and sealed (air- tight), the products were pasteurized at 80-95°C for 1-10 minutes after hot-filling into bottles. At the simplest level, this was carried out in a stainless-steel saucepan over a gas flame, but it could be any local source of heat. It was then allowed to cool and ready for sale.

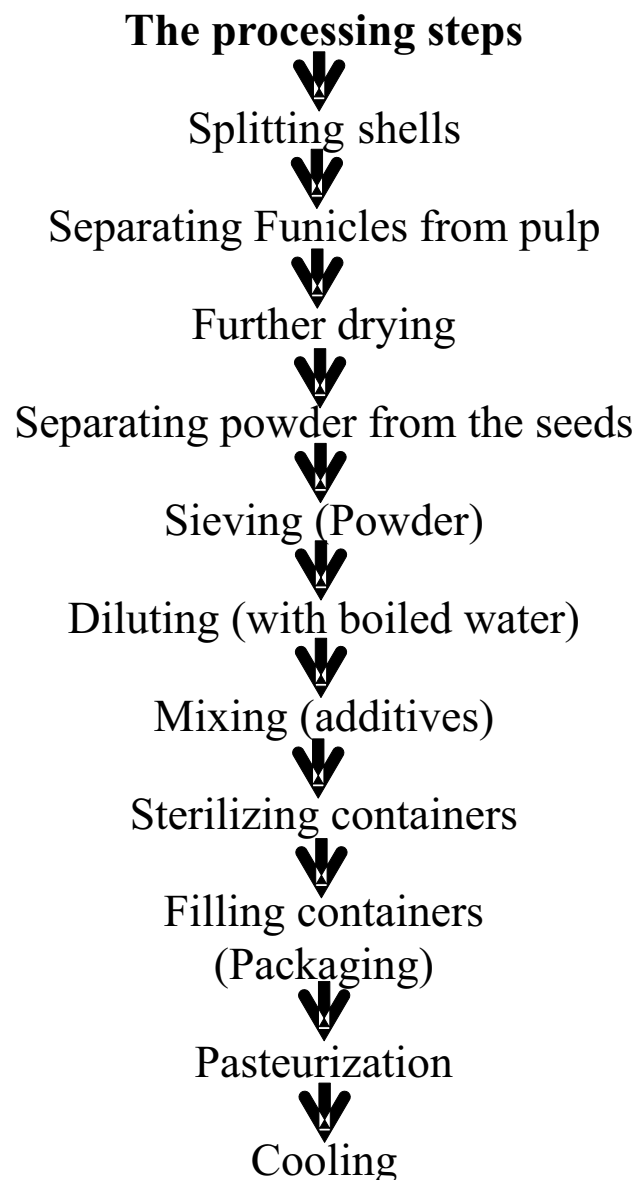


Fig. 1: Baobab Juice Processing Steps

The Baobab fruit processing group was linked up with the distributors, super-markets and drinks shop keepers available within and outside the study area. The juice was retailed and whole sold for income generation and the activities were recorded and for the purpose of this research primary data on processing and marketing of baobab fruit juice were collected through record of activities while institutional characteristics were collected through the use of checklist. All relevant activities were recorded during the demonstration process and marketing for data gathering reasons.

Gross margin analysis was used to analyze the data. Gross margin is the difference between the gross income and total variable cost of production. This was used to determine the profitability of the study.

The model is expressed as;

$$GM = GI - TVC$$

Where:

GM = Gross Margin (N)

GI = Gross Income

TVC = Total Variable Cost

Gross margin is a good approximation of net business income since small scale business operators usually have negligible fixed cost (Olukosi and Erhabor, 2008).

Return per Naira Invested (RNI) was also obtained
 $RNI = GI/TVC$

Where:

RNI = Return per Naira Invested

GI = Gross Income

TVC = Total Variable Cost

RESULTS AND DISCUSSION

Institutional Factors

Extension contacts of participants

Based on the extension contact of the participants the results on Table 1 shows that 36.7 percent of the participants had extension contact in the study area, while 63.3 percent of the participants had no extension contact in the study area. This shows that there is poor extension activity in the area. The result is contrary to the findings of Sama'ila (2018) who found that all (100%) the respondents had no contacts with extension agents in the study area. This implies that there were poor extension activities in the study area. The implication of this could be low yield and ultimately poor farmers' income.

Table 1: Extension contact of participants

Extension contact	Frequency	Percentage
Yes	11	36.7
No	19	63.3
Total	30	100.0

Participants' membership of cooperative society

It was observed from Table 2 the results on cooperative society indicated that 63.3 percent of the participants had cooperative society they belong to whereas 36.7 percent of the respondents had no cooperative society. This indicates that majority of the participants enjoyed the benefits of being a member of a group as stated by Benor *et al.* (1984) who opined that in agriculture initiatives; it makes sense to work in groups. Working with individuals is

expensive; time consuming and laborious, because the group provides the necessary back and support system to cope with problems in the adjusting phase when implementing the change. More often than not, an individual decision is usually influenced by group standard and actions. The finding of this research is in agreement with Muhammad (2017) who found that 73.33 percent of the participants were members of cooperative association, while only 26.67 percent of the participants were not members of any association

.Table 2: Participants' membership of cooperative society

Variables	Frequency	Percentage
Cooperative Society	19	63.3
No Cooperative Society	11	36.7
Total	30	100.0

Participants' access to credit

The results on Table 3 indicated that 63.3 percent of the participants had access to credit through cooperative societies; the Table also shows that 13.3 percent of the participants had access to credit through family and friends, while 23.3 percent of the participants had no access to credit. The result shows that most of the participants had access to credit one way or the other, which is an indication

that majority of the participants can boost their production and processing activities through credits obtained from cooperative societies in the project area. This result is contrary to the findings of Muhammad (2017) who found most of the respondents to access credit from Microfinance Bank; this could be as a result of the differences in the categories of respondents used.

Table 3: Participants' access to credit

Access to credit	Frequency	Percentage
Cooperative Society	38	63.3
Friends/Family	8	13.3
No access	14	23.3
Total	60	100.0

Access to market

It is observed on Table 4 that all (100%) the participants had access to local market in which they can dispose their product. This implies that the

processors can dispose-off the processed juice within the locality. This finding is in agreement with Muhammad (2017) whose findings revealed that 80% of the participants had access to market in less than five (5) kilometers.

Table 4: Access to market

Access to market	Frequency	Percentage
<5 Km	60	100.0
Total	60	100.0

Profitability of processing of baobab fruit in to juice

The results in Table 5 showed the cost and return of processing of baobab fruit juice in Dabenseme community in Zuru Local Government of Kebbi State. Twenty liters of water were used in mixing 3.2 Kg of baobab powder. Each kg of Baobab powder cost N334 which make a total of N1,069 for 3.2kg used. Half *Tiya* (0.5) of sugar was obtained at the cost of N500 in Dabenseme market while Sodium benzoate (preservative), Flavour, and Stabilizer were obtained at the cost of N200, N400 and N100 respectively. Fifty naira (N50), N100 and N400 were spent on milling, transportation and

packaging material respectively. This gave a total of two thousand eight hundred and sixty-nine naira (N2869) as total variable cost incurred in processing. It was further revealed in Table 5 that 40 bottles (50cl each) were produced and sold. Each bottle was sold at a cost of N100 and gave a total of N4000. A gross margin of N1,131 was therefore obtained indicating that the activity is profitable.

This research is in agreement with Michael and John, (2014) whose study analyzes the profitability of fruit juice processing using data from Kudors Fruit Juice Limited at Kasoa in Ghana and the results revealed that fruit juice processing had a

Benefit Cost Ratio (BCR) of 1.03 which means that going into the pineapple juice processing is profitable. The results also showed that it is more profitable to invest in the blend (pineapple and mango blend) than other fruits juice alone as it yields a BCR of 1.36 which was greater than the BCR of 1.03 for a single fruit juice and suggested that the blend is more profitable. Moreover, they stated that it is also more likely to recover capital investment earlier in the processing of the blend than when one goes into single fruit juice processing only.

Machiraju (2001) stated that benefit–cost analysis is concerned with the examination of a project from the view point of maximization of net benefit. Profitability can be measured on yearly basis or over or the lifespan of an investment while the lifespan profitability measure is employed to enable in resource allocation decision (Ross *et al.*, 2001). Return on assets, profit margin and return on equity are also well-known profitability measures (Ross *et al.*, 2001).

Table 5: the result of Gross Margin Analysis of processing of baobab fruit in to juice

Items of Cost and Return	Quantity	Unit Price	Total
Gross Income	40 Bottles (50c)	₦100	₦4000
Gross Margin = GI-TVC			₦1, 131
Baobab fruit pulp powder	3.2 Kg	₦334	₦1, 069
Sugar	0.5 <i>Tiya</i>	₦500	₦500
Water	20 liters	₦50	₦50
Sodium Benzoate			₦200
Stabilizer			₦400
Flavor			₦100
Milling			₦50
Transportation			₦100
Packaging materials	40 Bottles (50c)	₦10	₦400
Total Variable cost			₦2869
RNI = GI/TVC			₦1.39

The RNI value of ₦1.39 was reported for the activity. The implication is that for every ₦1 invested in baobab fruit processing, a profit of 39 Kobo will be realized as gain. This further confirms that baobab fruit juice processing is profitable in the study area.

CONCLUSION

From the study, it was concluded that processing of baobab fruit pulp powder into juice is profitable and could be embarked upon by small, medium and large-scale processors within and outside the study area.

RECOMMENDATIONS

This research recommended that: Baobab juice is profitable; therefore, the scope of the training should be widened by the government and non-governmental organizations in Dabenseme, Zuru Area and the State in general so as to increase a greater number of processors who could benefit from the technology. More extension agents should be employed by the government to enhance extension activities in the area and Kebbi State in general.

REFERENCES

- Assogbadjo, A. E., Glèlè Kakai, R., Chadare, F. J., Thomson, L., Kyndt, T., Sinsin, B. and Van Damme, P. (2008). Folk classification, perception and preferences of baobab products in West Africa: Consequences for species conservation and improvement. *Economic Botany* 62 (1): 74–84.
- Buchmann, C., Prehlsler, S., Hartl, A. and Vogl, C. R. (2010). 'The Importance of Baobab (*Adansonia digitata* L.) in Rural West African Subsistence—Suggestion of a Cautionary Approach to International Market Export of Baobab Fruits', *Ecology of Food and Nutrition*, 49 (3): 145 — 172.
- Kebbi State Government (KBSG), (2003). Kebbi State Government Official Diary, Directorate of Information, Kebbi State, Nigeria, 2003, 10 Pp.
- Machiraju, H. R. (2001): *Fiscal Policy for Equitable Growth*, Macmillan, Project Finance, Vikas Publishing House Pvt. Ltd.
- Michael, K. A. and John, K. M. K. (2014). A comparative analysis of the profitability of pineapple-mango blend and pineapple fruit juice processing in Ghana. *Applied Studies in Agribusiness and Commerce. Agroinform Publishing House, Budapest*. 44-52.
- Muhammad, U. D. (2017). Introduction of Manual Gas-Powered Machine in Processing of Popcorn among Maize Processors in Dabenseme Community of Zuru Local Government Area, Kebbi State. A Supervised Enterprise Project (SEP) Submitted to the Department of Agricultural Economics and Rural Sociology, Faculty of Agricultural, Ahmadu Bello University, Zaria in Partial Fulfillment for the Award of the Degree of Bachelor of Science in Agricultural Extension.
- National Population Commission (NPC), (2016). *National Census projected Figure*, Federal Republic of Nigeria.
- Olukosi, J. O. and Erhabo, P. O. (2008). Introduction to farm management Economics, Zaria Agitab publishers Ltd pp. 66-79
- Ross, S. A., Westerfield, R. W. and Jordan, B. D. (2001). *Essentials of Cooperate Finance*, 3rd edition. NY, America: McGraw-Hill.
- Samaila, A. (2018). Introduction of Motorised Groundnut Oil Extractor among Women for Income Generation in Sito Community of Bungudu Local Government Area in Zamfara State. A Supervised Experience Project (Sep) Submitted to the Department of Agricultural Extension and Rural Development, Ahmadu Bello University, Zaria, in Partial Fulfillment of The Requirements for the Award of Degree of Bachelor of Science in Agricultural Extension.
- Shackleton, S., Shanley, P. and Ndoeye, O. (2007). Invisible but viable: Recognising local markets for nontimber forest products. *International Forestry Review*, 9(3): 697–712.
- Sidibe, M. and Williams, J. T. (2000). Baobab *Adansonia digitata* L. First published in 2002 by International Centre for Underutilised Crops University of Southampton, Southampton, SO17 1BJ, UK.
- SOFA Team and Cheryl, D. (2011). The role of women in agriculture. ESA Working Paper No. 11-02.