

# **COSTS AND RETURNS TO SMALL SCALE CHEESE PRODUCTION IN ODEDA LOCAL GOVERNMENT AREA OF OGUN STATE.**

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## **ABSTRACT**

The protein deficiency problem of the average Nigerian has been tackled and addressed in many ways. Not much attention has however been placed on milk production and its derivatives such as cheese. Alabata in Odeda local government area of Ogun State is a nomadic Fulani settlement where cattle are bred for their meat. In this process, mating occurs and calves are produced. The lactating cattle are milked and the milk is processed into cheese. This study investigated the socioeconomic characteristics of the cheese producers and cost and returns to cheese making. Data were randomly collected from forty respondents in five settlements in the study area.

The study revealed that most (92.5%) of the respondents were females, majority of whom were married. The modal age group was 21-30 years. Cheese production was found to be profitable with an average monthly profit of N2964.43 from 309 litres milk. The return on investment was 1.53 meaning that for every N1.00 invested, a revenue of N1.53 was made.

The absence of good water sources and poor transportation networks were identified as some of the problems hindering the overall efficiency of the profits.

**Key words:** Cheese, Returns, Small scale, Milk.

## **INTRODUCTION**

The quality of any food as a basic necessity of life is evaluated on the basis of nutrients it contains. The essential nutrients of foodstuff are carbohydrate, fat, protein, mineral and water. Of these, proteins are the building blocks of the body. The inadequacy or insufficiency of protein

result in nutritional disorders such as kwashiorkor and marasmus. The major foods in Nigeria are largely deficient in protein such that large proportion of people feed on food richer in carbohydrate rather than protein.

An average Nigerian consumes 46.7g of crude protein per day as against the minimum requirement of 53g recommended by the Food and Agriculture Organisation (FAO). According to Onyewaku (1973), the average Nigerian is ignorant about the chemical constituents or nutritional implications of the food commodities he consumes. The estimated daily average per capita animal protein intake is just about 10g whilst the daily per capita intake (less than 2400 kcal) much below the minimum recommended for healthy living (Igene, 1997). Nigerians obtain most of their animal protein from sources such as fish, meat, and game. However, some of the fish dairy products which are an important source of protein are almost non-existent in the food basket of the average Nigerian home.

The principal dairy products consumed in Nigeria are whole milk, dried milk, cream butter, cheese and ice cream. Fresh milk which is the primary raw material from which all these products are produced is obtained in Nigeria mainly from dairy cows or from lactating cows. Milk from these sources have been processed into cheese (as a preservation method) in Nigeria as far back as 1938. Cheese and fermented milk products are among nature's most important contributor to civilisation, which are made from low cost materials and provide full nutritional health (Karima and Yoshiyaki, 1996).

The main cheese producing areas in Nigeria are the central, northern and some parts of the South Western regions inhabited by the Fulani tribe. The Fulani herdsmen rear the cattle for meat. When the cows calve, milk is produced



TABLE 1: AGE DISTRIBUTION OF CHEESE PRODUCERS

Age (years)	Frequency	Percentage
0-20	9	22.5
21-30	31	77.5
31-40	8	20.0
41-50	1	2.5
Total	40	100

Source: Field survey, 1998

TABLE 2: SEX DISTRIBUTION OF CHEESE PRODUCERS

SEX	Frequency	Percentage
Male	3	7.5
Female	37	92.5
Total	40	100

Source: Field survey, 1998

TABLE 3: DISTRIBUTION OF CHEESE PRODUCERS BY MARITAL STATUS

Status	Frequency	Percentage
Single	7	17.5
Married	33	82.5
Total	40	100

Source: Field survey, 1998

naturally. This milk apart from serving its natural function of weaning the calves also provides the raw material for cheese which is an income generating activity for the wives and family of the cattle rearer who would otherwise might have been engaged in other household duties. The Fulanis are the principal sources of local dairy products in Nigeria especially cheese (locally known as "wara").

Today, over 800 different types of cheese variety are produced world wide, differing mainly in shape, size, degree of ripening, type of milk, condiments, packaging and geographical area of production (Irvine and Hill, 1985).

Cheese provides cheap protein and can be produced easily, yet not many people are into its production. This study seeks to analyse the cost and returns to cheese production from lactating cows in the Odeda local government area of Ogun state.

## MATERIALS AND METHODS

### Data Collection

Data were collected with the use of structured questionnaires from forty respondents randomly selected from Fulani settlements of Ago-Ode,

Arinle, Ogunola, Opeji and Oluwo in and around Alabata, a community in Odeda local government area.

### Data analysis

Socioeconomic data were presented in frequency tables and analysed using simple percentages. Profit was computed from the production of cheese. In a particular period (a month in the present study),

$$\text{Profit} = \text{TR} - \text{TC}$$

$$\text{TC} = \text{TVC} + \text{TFC}$$

where TR = Total revenue (Naira)

TC = Total cost (Naira)

TVC = Total variable cost (Naira)

TFC = Total fixed cost (Naira)

### Depreciation

The value of fixed inputs were depreciated using the straight line method because it is assumed that the assets are used on a constant rate year after year. In addition the method is easy, simple and usually very satisfactory for most purposes.

$$D = (V - S)/N$$

where D = depreciated value of fixed input

V = original value of fixed input

S = salvage value of fixed input

**TABLE 4: VARIABLE COST INCURRED (ON THE AVERAGE)  
BY A CHEESE PRODUCER PER MONTH**

Variable cost items	Average Cost per month	Percentage of total variable cost	Percentage of total cost
Milk	4635.00	83.51	
Fuel	287.50	5.18	
<i>Calotropis procera</i>	237.75	4.28	
Cellophane	231.25	4.17	
Transport	158.75	2.86	
<b>Total Variable Cost</b>	<b>5550.25</b>	<b>100</b>	<b>99.89</b>
<b>Fixed cost items</b>			
Spoons	2.13	35.68	
Baskets	1.97	32.99	
Knife	1.13	18.93	
Stove	0.38	6.37	
Milk basin	0.33	5.53	
Cooking Pot	0.03	0.50	
<b>Total Fixed Cost</b>	<b>5.97</b>	<b>100</b>	<b>0.11</b>

Source : Fixed Survey, 1998

N = useful life of fixed input in years.

### Return on Investment

In order to determine the amount of return to every Naira invested, the return to investment was computed as:

Return on Investment =  $TR / TC$  where TR and TC are as defined above.

### Assumptions made

1. Milk was given an imputed cost based on the market price of raw milk. A litre milk costs N15.00.
2. The variable and fixed cost structures were based on an average of 309 litres of milk per month by a cheese producer.
3. Salvage value of all the capital assets were assumed to be zero, because the assets would be worn out and would no longer be of use.

## RESULTS AND DISCUSSION

### Socioeconomic characteristic of Cheese Producers

Most (92.5%) of the cheese producers were female mainly in the 21-30 years age bracket. It can be concluded that the majority of the cheese producers fell within the economically active population. Most (82.5%) of them were married. They had only non-formal Islamic education.

### Production systems and practices

All the respondents produced cheese on a full time basis for personal consumption and income purpose. Cheese production starts from the state of milking and nursing the calf. Milking was done once in a day between the hours of 6.30 a. m. and 7.00 a.m. The udder of the cow is cleaned with water before the cow is milked. The four teats of the cow are milked simultaneously into a calabash. It takes on the average about ten minutes to manually milk a cow.

Cheese production in these parts did not follow the enzymatic or bacteria cheese making processes. Cheese is produced by slowly heating the fresh milk from the cow. A plant extract of *Calotropis procera* (Ait) of the family *Asclepiadaceae* known as Sodom apple is added to the milk during heating. After about 15-20 minutes, the milk starts to curdle. At the end, the coagulated product is cheese locally known as "wara". These are poured into conical shaped baskets. The conical shaped cheese are kept in whey.

### Marketing of Cheese

Majority (53.3%) of the cheese producers sold their cheese within their settlements to middlemen who buy and assemble lots of cheese to be sold elsewhere. Other respondents



**TABLE 5: COST AND RETURNS TO CHEESE PRODUCTION PER AVERAGE OF 309 LITRES IN A MONTH PER CHEESE MAKER**

Items	Revenue /Cost per month	
Revenue	8520.65	
Variable Cost		8520.65
Milk	4635.00	
Fuel	287.50	
Calotropis procera	231.25	
Transport	158.75	
Total Variable Cost	5550.25	5550.25
Fixed Cost		
Spoon	2.13	
Basket	1.97	
Knife	1.13	
Stove	0.38	
Milk basin	0.33	
Cooking Pot	0.03	
Total Fixed Cost	5.97	5.97
Total Cost	5556.22	5556.22
Profit		2964.43

Source : Field Survey, 1998

(20%) sold in the village markets and in the nearby towns of Odeda and Abeokuta (20%) . A few of them sold directly to their neighbours.

#### Inputs used (costs)

The fixed costs incurred in cheese production included costs of pots, calabashes, milk basins, store houses, spoons and knives. The variable costs included costs of firewood, kerosene, extracts of Sodom apple, cellophane and transportation. Labour consisted of children and dependants. Since the process altogether did not usually take more than two hours at most per day, and the operations are not tedious, there is no attempt to impute a labour cost. As noted above, cheese is made for personal consumption purposes and the activity could very well form part of the daily household chores of the household. Land which is another major input in most farming enterprises is also not costed in the current analysis because cheese making is a supplementary enterprise which derives from the lactating cow . The cows are milked while they are tethered and the cheese is made in the back yard of the homesteads.

#### Profit Analysis of cheese production

The major variable cost in the production of cheese was the cost of milk carrying a share of 83.50% . Fuel wood and the extract of Sodom apple accounted for 5.18% and 4.28% of the variable costs respectively (Table 4) .The fixed cost components accounted for only 0.11% of the total cost with spoons and baskets accounting for 35.68% and 32.99% of fixed costs respectively (See Table 4). The net income analysis showed that on the average of about 309 litres produced per month per respondent, a gain of N2964.43 is made. The return on investment was about 1.53 showing that for every N1.00 invested in a month, a revenue of N1.53 was obtained.

In order to make the profit and return to investment realistic, in terms of current costs, the fixed cost items were costed at current replacement cost (see Table 6) . Replacement cost is the amount of money that would be needed to purchase the fixed inputs after their useful life. This reduced profit to N1700.40 . The return on investment would drop to about 1.25 . In order words, for every N1.00 invested, a revenue of N1.25 was obtained.



**TABLE 6: COST AND RETURNS TO CHEESE PRODUCTION PER AVERAGE OF 309 LITRES IN A MONTH PER CHEESE MAKER USING REPLACEMENT FIXED COST**

Items	Revenue/Cost per month	
Revenue	8520.65	
Variable Cost		8520.65
Milk	4635.00	
Fuel	287.50	
Calotropis procera	237.75	
Cellophane	231.25	
Transport	158.75	
Total Variable Cost	5550.25	5550.25
Fixed Cost		
Spoon	60.00	
Basket	50.00	
Knife	60.00	
Stove	500.00	
Milk basin	200.00	
Cooking Pot	400.00	
Total Fixed Cost	1270.00	1270.00
Total Cost	6820.25	6820.25
Profit		1700.40

Source: Field Survey, 1998

## CONCLUSION

As a supplementary enterprise to cattle production, cheese production generated income for the women folk which they use in their day to day upkeep and other expenses. This is more so in an era where child welfare and domestic activities of women are being highlighted.

The problems encountered by these women included the unavailability of good clean water and the bad roads over which they had to pass during transportation of their wares to surrounding villages and towns. With good roads, the cost of transportation would be reduced. The rate of deterioration of unsold cheese was rapid because there were no modern preservation and storage methods. As these methods are expensive, the women may need to form cooperatives to benefit from joint utilization of the facilities. This of course raises the larger question of provision of basic infrastructure in the rural areas which is outside the scope of this present study. If there are good storage facilities, then unsold cheese can be kept for sale later thus adding to profits accruable. If these problems are solved, the cost components of the cheese making process would be reduced

and incomes to the household would increase.

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