

## Cheese marketing amongst marketers in Kwara state, Nigeria: An economic analysis approach

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**Abstract:** This study assessed the economics of cheese marketing amongst marketers in Kwara State. Specifically, the study examined the costs and returns to cheese marketing, assessed the market efficiency of cheese marketing, determined the marketing margins, described the structure of the cheese market and determined the factors influencing net returns of cheese marketing among marketers in the study area. A three-stage sampling technique was employed in the selection of 120 cheese marketers. Data were collected using an interview schedule. Descriptive statistics, marketing efficiency model, marketing margin, Herfindahl Index, and multiple regression analysis were employed. The study revealed a monthly gross margin of N107, 778 with a marketing efficiency of 184.9% which implied that the marketing activities were efficiently implemented. The Herfindahl index value of 0.012 revealed a modest and sparsely populated cheese market. The estimated average marketing margin was N58.3 per kg of cheese. N102, 038 was revealed as the net income on cheese marketing on monthly basis with rate of return on investment (RORI) of 0.59. Therefore, cheese marketing is feasible, lucrative and investment worthy. The purchase cost ( $p < 0.05$ ), spoilage cost ( $p < 0.01$ ), storage cost ( $p < 0.01$ ) and marketing margin ( $p < 0.01$ ) were the statistically significant variables determining the net returns to cheese marketing among marketers in the study area. The study recommended the improvement of storage facilities to reduce spoilage and increase efficiency which could attract more able-bodied youth to work and invest in the industry.

**Keywords:** Cheese, marketing efficiency, Herfindahl index, RORI, marketing margin.

### INTRODUCTION

The Nigeria economy, in terms of revenue and foreign exchange is indisputably dominated by the oil sector but agriculture is still one of the critical sectors of the country with respect to provision of employment opportunities, the provision of raw materials for agro-industries, as a source of income for rural families and perhaps most importantly, provision of food for the populace (Salau *et al.*, 2017). Food is momentous to life. The right to an adequate and quality food is recognized in the universal declaration of human right as such adequate intake of quality food is a key requirement for health and productive life (FAO, 2012).

According to FAOSTAT (2017), Nigeria has a population of 20,113,358 cattle, 78,037,077 goats and 42,500,000 sheep. However, less than 2,313,036, 2,497,187 and 765,000 of Nigeria's cattle, goats and sheep populations are utilised for dairy production respectively. The minimum protein requirement for daily consumption in Nigeria is 35gramms as recommended by FAO (2017) for daily health maintenance. Dairy development in Nigeria involves various activities such as milk production, processing, marketing, consumption and exporting. This sector represents important component and the agricultural sectors of the economy with great institutional and social implications despite unorganized (FAO, 2017). Dairy products appear in the market in different forms such as sour milk (Nono), cheese (warankasi or wara), sour yoghurt (kindirmo), while some are imported in form of sweetened concentrated milk, butter and cheese. Cheese is a concentrated dairy

commodity produced by acid or rennet coagulation or curdling of milk, stirring, and heating the curd, draining off the whey, collecting and pressing the curd. The cheese is ripened, cured, or aged to develop the flavour and texture (Raheem *et al.*, 2009).

Marketing is one of the significant aspects of Nigerian agriculture. Agricultural marketing is the performance of all the activities involved in the flow of agricultural products and services from the initial points of production until they reach the hands of the ultimate consumers.

Cheese is an important source of protein and contributes to the dietary protein intake of millions of populace but sadly its marketing is poorly developed in Nigeria. Thus, this study estimated cost and returns to cheese marketing, determined the marketing efficiency and market margin, described the market structure, and determined the factors influencing net returns of cheese marketing.

### METHODOLOGY

The study was conducted in Kwara State (8°30'N and 5°00'E), Nigeria. Kwara State is bounded in the north by Niger state, in the south by Oyo state, Osun state and Ekiti state, in the east by Kogi state and in the west by Benin Republic. It has 16 local governments, with headquarters located at Ilorin. Kwara State is divided into four Agricultural Development Project zones (Zone A, B, C and D). Zone A comprises of Baruten and Kaiama LGA, Zone B comprises of Patigi and Edu LGA, Zone C comprises of Ilorin West, Ilorin South, Ilorin East, Moro and Asa LGA and the Zone D comprises of Ifelodun, Irepodun, Isin, Offa,

Oyun, Ekiti, Oke –Ero LGA. The topography is mainly plain to slightly gentle rolling lands. The annual rainfall ranges between 1000mm and 1500mm. Average temperature ranges between 30°C and 35°C. It also has an estimated figure of 203,833 farm families with the majority living in the rural area. The vegetation which is namely the wooded Savannah is well suited for the cultivation of a wide variety of food crops which includes yam, cassava, maize, cowpea, rice, sugar cane, fruit and vegetables, as well as livestock which includes cattle, sheep and goats are reared in different parts of Kwara State. The main ethnic groups are Yoruba, Fulani, Nupe with an inclusion of Hausa. (NPC, 2010). Marketing of cheese is done all year round.

Primary data was used for this study. The data were obtained from the field through structured interview schedule, information on socioeconomic variables, cost and returns, marketing structure and factors influencing net returns of cheese marketing in the study area were collected.

The cheese marketers in Kwara State constitute the population for this study. Three-stage sampling techniques was employed in selection of 120 cheese marketers. In the first, three (3) LGAs (Ilorin east, Ifelodun and Moro) were purposively selected because Fakayode *et al.*, (2012) revealed that these LGAs are known for huge dairy processing activities in the State. In second stage, four (4) villages were randomly selected. Lastly, ten (10) cheese marketers were selected using the snowball sampling technique from each of the four villages to make up a sample size of 120 marketers.

**Analytical techniques**

Descriptive statistics such as frequency, percentage, mean, mode, and range were used to describe the socioeconomic characteristics of the respondents.

Gross Margin Analysis was used to spell-out the cost incurred, and revenue obtained from cheese marketing amongst marketers in the study area. The model is specified as:

$$GM = TR - TVC \dots \dots \dots (1)$$

Where GM=Gross Margin

TR= Total Revenue (₦)

TVC= Total Variable Cost (₦)

Rate of Returns on Investment (RORI) was used to determine the rate of return on investment from the cheese marketing industry. The equation is given as:

$$RORI = \frac{TR - TC}{TC} \dots \dots \dots (2)$$

Where TR= Total Revenue (₦)

TC = Total Cost (₦)

Benefit Cost Ratio (BC ratio) was used to establish the solvency state of the industry. The model is assumed as:

$$BC \text{ ratio} = \frac{TR}{TC} \dots \dots \dots (3)$$

The lucrativeness of marketing was determined using marketing margin (MM). The model is given as:

$$MM = SP - FG \dots \dots \dots (4)$$

Where:

SP =Consumer or selling price (₦)

FG= Farm-gate or supply price (₦)

Marketing efficiency (ME) was used to determine the productivity of the market. The equation is specified as:

$$ME = \frac{ROFM}{COMS} * 100 \dots \dots \dots (5)$$

Where:

ROFM = Revenue obtained from marketing,

COMS= Costs of marketing services

Herfindahl Index (HI) was used to describe the structure of cheese.

$$HI = \sum Si^2 \dots \dots \dots (6)$$

Where Si = Market share for respondent i, calculated as:

$$Si = \frac{Qi}{Q} \dots \dots \dots (7)$$

Where Qi = kg of cheese sold per month by respondent i, and

Q = kg of cheese sold per month by all respondents.

Multiple Regression was used to determine factors influencing the net returns of cheese marketing in the study area. The implicit form of the model stated as:

$$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + e_i \dots \dots \dots (8)$$

Where; Y= average price discount by each respondent

X<sub>1</sub>= Storage cost (₦)

X<sub>2</sub>= Transport cost (₦)

X<sub>3</sub>= Spoilage cost (₦)

X<sub>4</sub>= Marketing experience (years)

X<sub>5</sub>= Purchase cost (₦)

X<sub>6</sub>=Cost of labour (₦)

X<sub>7</sub> = Marketing margin (₦)

e<sub>i</sub> = error term

b<sub>0</sub> = constant

b<sub>1</sub>, b<sub>2</sub> ... b<sub>9</sub> = ith coefficient corresponding to X<sub>1</sub>, X<sub>2</sub> ... X<sub>6</sub>

**RESULTS AND DISCUSSION**  
**Socioeconomic characteristics**

Table 1 revealed that all (100%) of the cheese marketers were female. This finding is not surprising as marketing of local cow milk products in Kwara State is more predominant amongst female as reported by Fakayode *et al.*, (2012). About 42% of the respondents were between the ages of 31-40 years with an average age of 38 years. Majority (78.3%) of the respondents spent between 1-6 years in school with an average schooling year of 5. The illiteracy level might hinder the adoption of advance technology. A larger portion (90%) of the respondents were married with an average household size is 8 persons. This large household size might enhance productivity. The average

marketing experience was revealed as 16 years, this implies that marketers are very familiar with the business and would channel all efforts and energy towards profit maximization. Majority (95.5%) of the cheese marketers were not in any form of cooperative. About 79% of the respondents did not belong to any association. This might be due to the fact that cooperative, and associations were not seen as means of solving their economic problems. This finding agrees with Fakayode *et al.*, (2012) report that no source of funding from banks, cooperative and associations were recorded by the marketers.

**Table 1: Socioeconomic Characteristics of the Cheese Marketers in Kwara State**

Variables	Frequency	Percentage	Mean	Std.
<b>Gender</b>				
Male	0	0.0		
Female	120	100.0		
<b>Age</b>				
21-30	23	19.2	38	9.56
31-40	51	42.5		
41-50	40	33.3		
51-60	06	5.0		
Maximum	49			
Minimum	22			
<b>Marital Status</b>				
Single	8	6.7		
Married	108	90.0		
Divorced	1	0.8		
Widow	3	2.5		
<b>Years of Schooling</b>				
1-6	94	78.3	5	1.43
7-12	24	20.0		
13-18	2	1.7		
<b>Household Size</b>				
1-3	13	10.8	8	1.11
4-6	24	20.0		
7-9	52	43.3		
Above 9	31	25.8		
<b>Years of Experience</b>				
Less than 5	18	15.0	16	4.76
6-10	25	20.8		
11-15	22	18.3		
16-20	34	28.3		
Greater than 20	21	17.5		
<b>Membership of Cooperative</b>				
Yes	7	4.5		
No	113	95.5		
<b>Membership of Association</b>				
Yes	23	20.2		
No	97	79.8		

Source: Field Survey, 2020

#### Cost and returns to cheese marketing

The gross revenue and total variable cost obtained from cheese marketing per month were N274, 196 and N166, 418 respectively, leaving a

gross margin of N107, 778 (as shown in Table 2). The rate of returns on investment was 0.59. This implies that an average returns of N0.59k was realized on every 1 naira invested in cheese

marketing in the study area. The benefit-cost ratio was revealed as 1.6 which implied that the cheese marketing industry in the study area is very solvent

and capable of offsetting the cost involved in its production.

**Table 2: Cost and returns to cheese marketing in Kwara state**

Returns	Value (N)
Cheese output (Total Revenue)	<b>274,196</b>
<b>Variable Costs</b>	
Cheese purchased	138, 876
Transport	4,550
Storage	13, 212
Labour	9,780
<b>Total Variable Cost (TVC)</b>	<b>166,418</b>
<b>Gross Margin (TR-TVC)</b>	<b>107,778</b>
<b>Fixed costs</b>	
Plastic buckets	1,120
Shed/space occupied	1500
Nylons	970
Hat	150
<b>Total Fixed Cost (TFC)</b>	<b>3,740</b>
<b>Total Cost (TVC + TFC)</b>	<b>172,158</b>
<b>Net Income</b>	<b>102,038</b>
<b>Rate of Returns on Investment (RORI)</b>	<b>0.59</b>
<b>Benefit cost ratio (Total revenue/Total costs)</b>	<b>1.59</b>

Source: Field Survey, 2020

**Marketing Margin (MM) of cheese marketing in Kwara state**

According to Fakayode *et al.*, (2010), marketing margin for any product marked shows the level of profit for product. The average marketing margin computed using equation (4).

Where SP =127; CP = 68.1

The prices used in the calculation were those provided by the cheese marketers

$$MM = 127 - 68.1$$

MM= 58.6.

The average marketing margin was revealed as N58.6. This implies cheese marketing is highly profitable and it is therefore worth investing. This result is in line with the finding of Fakayode *et al.*, (2012) who observed that local cow milk marketing is a profitable venture in Kwara State.

**Marketing Efficiency (ME)**

The marketing efficiency (ME) was computed using the equation (5).

$$ME = \frac{127}{68.1} * 100$$

ME = 186.5%

A marketing efficiency of 186.5% was reported on cheese marketing in the study area. It is evident from that the marketing efficiency for the cheese is very high, even over 100% for markets in the state.

**Structure of cheese marketing in Kwara state**

Herfindahl Index (HI) was used to describe the structure of cheese marketing in the study area. A

calculated HI of 0.012 revealed that cheese marketing is sparsely populated and highly modest. This also shows that, there are many buyers and sellers of cheese in the study area, there is free entry and exit into cheese market, there is no intrusion from the government into the marketing of cheese. Finally, there is erstwhile knowledge of the price of cheese by the buyers

**Factors influencing net returns of cheese marketing**

The regression analysis from equation (8) revealed a coefficient of multiple determinations (R<sup>2</sup>) value of 0.608, indicating that about 60% of the total variation in the net returns of cheese marketing was explained by the estimated explanatory variables. Five variables were found to be momentous in determining the net returns of respondents. These variables are storage cost (X<sub>1</sub>), spoilage cost (X<sub>3</sub>), purchase cost (X<sub>5</sub>), cost of labour (X<sub>6</sub>) and marketing margin(X<sub>7</sub>).

Table 3 revealed that cheese purchase cost (X<sub>5</sub>) was significant at 5%. This infers that the purchase cost of cheese has an unswerving effect on revenue and might be due to the fact that as marketer purchase more fresh cheese for marketing, it brings more revenue thereby increasing their net returns in the long run. Spoilage Cost (X<sub>3</sub>) was negative and statistically significant at 1%. This implies that as spoilage of cheese increases among the marketers, there'd be a decrease in the net returns of marketers. Marketing margin (X<sub>7</sub>) is positive and statistically significant at 1% level of probability, indicating that an increase in marketing margin

would increase marketers' net returns. Storage cost ( $X_1$ ) were positive and significant at 1% level of probability. This implied that there is direct relationship between storage cost and net returns.

More cost of storage incurred by the marketers give a resultant increase in the availability of the produce for sale. Consequently, storage cost paid was rewarded for by high returns margin.

**Table 3: Factors influencing net returns of cheese marketing in Kwara state**

Net returns	Coefficient	Std. Error	p-Value
Storage cost	0.97781	0.13046	0.00001*
Transport cost	0.04299	0.13985	0.75933
Spoilage cost	-4.01728	1.47068	0.00775*
Marketing Experience	-23.8730	45.4658	0.60098
Purchase cost	0.08573	0.03945	0.03273**
Cost of labour	-1.66783	1.00164	0.09980
Marketing margin	0.43619	0.07814	<0.00001*
Constant	-159.795	270.229	0.55597
R <sup>2</sup> =0.608319			

\*\*, \* Significant at 5% and 1% respectively

Source: Field survey, 2020

### CONCLUSION AND RECOMMENDATIONS

This study examined the marketing of cheese in Kwara State, Nigeria. The results showed that the market was dominated by females, with an average age of 38 years. A monthly gross margin of N107, 778 with a marketing efficiency of 184.9% was revealed. Herfindahl index value of 0.012 revealed a modest and sparsely populated cheese market. Estimated average marketing margin was N58.3 per kg of cheese. N102, 038 was revealed as the net income on cheese marketing on monthly basis with an RORI of 0.59. The estimated value of the RORI implied that for every ₦1 invested in cheese marketing industry, a return of N0.59k is definite. Furthermore, the regression analysis revealed. The purchase cost, spoilage cost, storage cost and marketing margin were the statistically significant variables determining the net returns to cheese marketing amongst marketers. Members of cooperative should bring their resources together so as to tackle the high cost of storage which would enhance marketing margin. Storage facilities should also be provided by the government to reduce cost of storage so as to maximize profit. This could attract more able-bodied youths work and invest in the industry and in-turn reduce unemployment.

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