ECONOMIC ANALYSIS OF CHEESE PRODUCTION IN IDO OSI LOCAL GOVERNMENT AREA, IDO EKITI, EKITI STATE, NIGERIA

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Abstract – This research was carried out to analyse the economic analysis of cheese production in Ido-Osi local government, Ido Ekiti, Ekiti State. The specific objectives were to describe the socio-economic characteristic of the respondents in the study area, assess the profitability of cheese production in the study area, determine the factors affecting the production of cheese in the study area and highlight the constraints of cheese production in Ido-Osi local government area, Ekiti state.

Primary data was collected from 80 cheese producers in the study area through structured questionnaire. Analytical tools used include: Descriptive statistics which was used to describe the socio economic characteristic of the respondents. Gross margin analysis was used to assess the profitability of the respondents. Multiple regression analysis was used to determine the factors affecting cheese production in the study area. Descriptive statistic was used to highlight the constraint of cheese production in the study area.

Some major problems facing the cheese producers are lack of education, lack of capital, market price, transportation system.

It is therefore recommended that cheese production in the study area can be improved upon.

Keywords: Cheese, Milk production, Supply of milk, "Wara" Milk sources, and " Warankasi".

INTRODUCTION

Cheese has been defined, as a product made from the curd obtained from milk by coagulating the casein with the help of rennet or similar enzymes in the presence of lactic acid produced by added microorganisms, from which part of the moisture has been removed by cutting, cooking and/or pressing, which has been shaped in a mould, and then ripened by holding it for some time at suitable temperature and humidity. The essential ingredients of cheese are milk, coagulants (coagulants cause liquid to thicken or transforms liquid into a soft semi-solid mass), bacterial cultures and salt. The coagulant causes the milk protein to aggregate and ultimately transform fluid milk to a semi-firm gel. When this gel is cut into small pieces (curds), the whey (mostly water and lactose) begins to separate from the curds.

Acid production by bacterial cultures is essential to aid expulsion of whey from the curd and largely determines the final cheese moisture, flavor and texture. Cheese is a concentrated source of many of the nutrients in milk The cheese production process is governed by the temperature, acidity, and calcium content of the milk as well as other factors (Augustine O. A. 2014).

In Nigeria, milk production is mainly done by the Fulani nomadic people who are pastoralists involved in the rearing of cattle moving from one location to another in search of green pasture. Due to lack of refrigeration facilities, the Fulani women process the surplus fresh milk into a soft, unripened cheese called "warankasi" or "wara" in short term (Adetunji and Babalobi, 2011).

Wara is an excellent source of protein, fats and minerals such as calcium, iron and phosphorus, vitamins and essential amino acids, thus making it an important food in the diet of both old and young (Oladipo and Jadesimi, 2013).

Milk is a complex food containing numerous nutrients. Most of the constituents in milk do not work in isolation, but rather interact with other constituents. Often, they are involved in more than one biological process, sometimes with conflicting health effects, depending on the process in question. One such example is milk fat. The traditional diet-heart paradigm, developed in the 1960s and 1970s, held that consumption of fat, and saturated fat in particular, raised total cholesterol and low-density lipoprotein (LDL) cholesterol levels, leading to coronary heart disease (CHD) (Mozaffarian, 2011).

Milk does not contain substances that inhibit mineral bioavailability, such as phytates and oxalates.. In addition, milk is thought to contain constituents that enhance mineral absorption, such as lactose and certain amino acids, but absorption of minerals from cow milk has not been demonstrated to be greater than that from mineral salts. Cow milk does not contain appreciable amounts of iron (Dror and Allen, 2011). Nevertheless, recent studies indicate that Consumers are demanding products lower in fat to traditional dairy products such as full-fat milk and cream. Consumers are also demanding products with specific functional ingredients such as omega 3 essential fatty acids, fibre, plant sterols, enzymes and isoflavones (Euromonitor, 2011)

Milk can easily be converted to a range of products to increase shelf-life and to provide additional opportunities for improved income to the smallholder. One such product is cheese **(**Mona and Nawal, 2011). The processing of milk, particularly the production of cheese have been a critical development because it not only allowed the preservation of milk products in a non-perishable and transportable form, but it also made milk a more digestible commodity (Mélanie*et al.*, 2012).furthermore, In the field of the dairy production industry, the adverse effects of mammary gland infection is explained by the fact that the rise in SCC is directly related to the decrease in productivity, changes in chemical composition of milk (fat, lactose and casein), in the activity of enzymes in the clotting time, and the yield and quality of milk products (Mikulec, 2012; Montanhini, 2013).

This study found answers to the following research questions:

i. What are the socio-economic characteristic of the respondents in Ido-Osi local government area, Ekiti state?
ii. How profitable is cheese production in the study area?
iii. What are the factors affecting cheese production in the study area?
iv. What are the constraints of cheese production in the study area?

METHODOLOGY

The population of this study are the total number of cheese producer in the study area study. Multi-stage sampling technique was used in the course of this study. Ido-Ekiti being centre for cheese producers in Ekiti State was purposively selected from the 10 towns in Ido-Osi local government in stage one.

In stage two, list of cheese Producers in Ido-Ekiti local government was obtained from the [CHEESE] coordinator and respondents were randomly selected from the list. Primary data was collected for the purpose of this study.

There were two set of variables in this study. They are independent and dependent variables. The dependent variables is cheese production output while the independent variables are the factors affecting the production of cheese or the economic analysis of cheese production in the area of study.

DISCUSSION OF RESULT

Table 1 shows that 100% of the respondents were female which means that all the cheese producers in kajola local government area were female, as 100% of the respondents were female. This is a result of cultural believe of the Fulani that restricts production of cheese to their wives alone.

2% of the respondents were between 0-20 years of age, 44% were between 21-30 years of age, 24% of the respondents were between 31-40years of age, 22% of the respondents were between 41-50 years of age, and 8% 0f the respondents were more than 50 years of age and the mean is 32 years. This implies that most respondents were still at their productive age.

The out of the cheese producers 10% of the respondents were single, 82% were married and 8% were widower. The result indicated that most respondents were married, which put them in the position to enjoy good position to enjoy family laboring in cheese processes activities. This implies that they also pose to enjoy family labor from family members too.

This study shows that 98% of the respondents were Fulani, while 2% were Hausa. This implies that majority of the cheese producer are Fulani's, this is as a result of cultural believe that limit the sale of milk to other tribe as the milk is met for the women in the house to make living.

Table 1: Distribution of the Respondents by Sex, Age Group, Marital Status

Sex	**Frequency**	**Percentage**
Female	100	100.00
Male	0	0.00
Total	**100**	**100.00**
Age group		
Age (years)		
< 20	2	2.00
21 – 30	44	44.00
31 – 41	24	24.00
41 – 50	22	22.00
> 50	8	8.00
Total	**100**	**100.00**
Age Mean 32 year		
Marital status		
Single	10	10.00
Married	82	82.00
Widow	8	8.00
Total	**100**	**100.00**
Tribe		
Hausa	2	2.00
Fulani	98	98.00
Yoruba	0	0.00
Total	**100**	**100.00**

Source: Field survey, 2018.

Table 2 shows that 26% had household size ranging from 1-3 members, 52% had household size ranging from 4-6 members while 22% had above 7 household members. This implies that majority of the respondents had a large household size which could mean availability of family labor. These indicate that cheese producers' households had moderate members in their respective households.

How far the respondents had been involved in cheese production. From this table it was observed that highest percentage of the year of experience for cheese production was 62% of the total respondents and this is between the range of 11-30 years of experience, 28% of the respondents has an experience of 0-10 years of production experience while 10% of the respondents had been in the business for over 30 years.

98% of the respondents' source milk for cheese production from cattle while 2% of the respondents source their milk from sheep. This is because of larger milk letdown of cattle than sheep and goats.

100% of the respondents use their family as labor in cheese production. This means all the respondents source their labor from their family members. This is because of small-scale production of cheese.

40% of the respondents' hawk their cheese as a means of marketing it, 6% of the respondents were distributor while 54% of the respondents were whole sellers.

Table 2: Frequency distribution of respondents by household size, year of experience, source of milk, source of labor and method of sales.

Household size Size	Frequency	Percentage
1 – 3	26	26.00
4 – 6	56	56.00
> 7	22	22.00
Total	**100**	**100.00**
Year of experience		
0 – 10	28	28.00
11 – 30	62	62.00
> 30	10	10.00
Total	**100**	**100.00**
Source of milk		
Cattle	98	98.00
Sheep	2	2.00
Goats	0	0.00
Total	**100**	**100.00**
Source of labor		
Hired labor	-	-
Family labor	100	100.00
Total	**100**	**100.00**
Method of sales		
Hawking	40	40.00
Distributor	6	6.00
Whole seller	40	40.00
Total	**100**	**100.00**

Source: Field survey, 2018.

Cost and return

Table 3 shows that majority (48%) of the respondents started their businesses (cheese production) with less than or equal to 500 naira ,22% of respondents started with 500-1000 naira,24% started with 1000-2000 naira while 6% of the respondents started with more than 2000. This implies majority of the respondents started with little fund.

12% of the respondents spent less than 1000 naira in the production of cheese ,79%(majority) of the respondents spend between 1000-2000 naira in cheese production while 9% of the respondents spend above 2000 naira in the production of cheese. This implies that production of cheese does not require huge capital.

15% of the respondents have a total revenue of less than 1500 naira,83% had their total revenue lies between 1500-3000 naira while 2% 0f the respondents had a total revenue greater than 3000 naira. When compared to the total expenses from table 16 it shows that larger percentage of the respondents make profit from cheese production.

Table 3: Distribution of respondents by initial cost, respect to total expenses and total revenue

Initial Cost	Frequency	Percentage
₦ 0 – 499	48	48.00
₦ 500 – 1000	22	22.00
₦ 1000 – 2000	24	24.00
> 2000	6	6.00
Total	**100**	**100.00**
Total Expenses		
< ₦1000	12	12.00

₦1000 – 2000	79	79.00
>₦2000	9	9.00
Total	**100**	**100.00**
Total Returns		
<₦1500	15	15.00
₦1500-3000	83	83.00
>₦3000	2	2.00
Total	**100**	**100.00**

Source: Field survey, 2018.

Table 4 shows the gross margin and BCR of cheese production in kajola local government area. The average total revenue from cheese production was 2326 naira, average total fixed cost was 36.26naira, and the average total variable cost was 1654 naira while the BCR is 1.38 that is for every one naira the respondent invest on cheese would bring profit of 38 kobo. This reveals that cheese production is profitable in kajola local government area.

Table 4: Profitability ratio of cheese production (Oyo State).

Variables	Cost	Average cost
TVC	165400	1654
TFC	3626	36.26
TC (TVC+TFC)	169026	1690.26
TR	232600	2326
GM (TR-TVC)	228974	2289.74
Π (TR-TC)	63574	635.74
BCR (TR/TC)	1.376	1.38

Source: Field survey, 2018.

TVC= Total variable cost

TFC= Total fixed cost

TC= Total cost

TR= Total revenue

Table 5 shows the estimated regression model shown in table 27 revealed an R-square of 0.89, which means 89% of total variation in dependent variable is explained by the independent variables of the entire variable considered. Five (5) variables are significant as the determinant of the cheese production by cheese producer. These are household size, year of experience, labor cost, transportation, market material and depreciation cost.

The co-efficient of household size is statistically significant at 1% probability level, and positively correlated with cheese production, which means that cheese production increase with increase in household size. The co-efficient of experience is statistically significant at 1% probability level, and positively correlated with cheese production, which means that cheese production increase with increase in experience.

The co-efficient of labor cost is statistically significant at 1% probability level, and negatively correlated with cheese production, which means that cheese production increase with decrease in labor cost .The co-efficient of transportation cost is statistically significant at 1% probability level, and negatively correlated with cheese production, which means that the cheese production increase as the transportation cost decreases.

The co-efficient of market material is statistically significant at10% probability level, and negatively correlated with cheese production, which means that cheese production increase as the cost of market material decreases. The co-efficient of depreciation cost is statistically significant at 5% probability level, and positively correlated with cheese production, which means that cheese production increase as the depreciation cost increases.

From the foregoing, it is evident that there is significant relationship between cheese production and cost of producing cheese and the activities of the producer. Therefore, the null hypothesis is rejected.

Table 5: Parameter estimates of regression model (Oyo State)

Variable	co efficient	standard error	t-value	significance
Age	-35507.47	36193.69	-0.98	NS
Household size	44619.41	9303.902	4.80 *	1%
Experience	8707.251	2884.02	3.02 *	1%
Labor cost	-47.59363	18.2255	-2.61*	1%
Transportation cost	-333.6005	114.1211	-2.92 *	1%
Market material	-725.5022	371.8523	-1.95 ***	10%
Depreciation cost	4603823	2288577	2.01 **	5%
Constant	69013.01	196231.9	0.35	-

Source: Field survey, 2018.

Dependent variable: TR

R-square = 0.89 = 89%. This means 89% of variation in the dependent variable is explained by the independent variables and the remaining 11% can be explained by the error term.

Adjusted R-square = 0.88 = 88%.

***significant at 1% probability level**

**** Significant at 5% probability level**

***** Significant at 10% probability level.**

Conclusion

More supply of milk can be used to increase the level of output and also cost of milk is significance and ad a negative relationship with output level which means that high milk cost will reduce cheese output level. The more milk used in production of cheese the more the output level. A unit increase in the cost of fixed items used in cheese production will decrease the level of output because total fixed cost is significant and had a negative relationship with output level.

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