

**ANALYSIS OF YOGHURT AND CHEESE PROCESSING AND MARKETING
IN KWARA STATE, NIGERIA**

BY

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(MSc /AGRIC/5644 /2010-11)**

**A DISSERTATION SUBMITTED TO THE SCHOOL OF POSTGRADUATE
STUDIES, AHMADU BELLO UNIVERSITY ZARIA, IN PARTIAL
FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER
OF SCIENCE DEGREE IN AGRICULTURAL ECONOMICS**

**DEPARTMENT OF AGRICULTURAL ECONOMICS AND
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JANUARY, 2016

DECLARATION

I hereby declare that this dissertation titled “**Analysis of Yorhurt and Cheese Processing and Marketing in Kwara State, Nigeria**” was written by me and it is a record of my research work. No part of this work has been presented in any previous application for another Degree or Diploma in this or any other institution. All borrowed information have beendulyacknowledged in the text and a list of references provided.

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CERTIFICATION

This dissertation titled “**Analysis of Yorhurt and Cheese Processing and Marketing in Kwara State, Nigeria**,” by Habibu BELLO meets the regulations governing the award of the Degree of Master of Science in Agricultural Economics of the Ahmadu Bello University, Zaria and is approved for its contribution to knowledge and literary presentation.

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DEDICATION

This dissertation is dedicated to Almighty Allah (SWT), the Lord of the world and the Sustainer of the universe, who have created mankind from the cloth of blood and thought men what they knew not.

ACKNOWLEDGEMENT

I sincerely appreciate and thank my supervisors Prof S.A Sanni and Prof Z. Abdulsalam for their invaluable assistance, guidance, close supervision, constructive criticisms and pieces of advice which aided the completion of this research work. I remain grateful and God bless you.

My appreciation also goes to Prof M.O. Akinlola, Dr M.W. Musa, and the entire staff and students of Department of Agricultural Economics and Rural Sociology, Faculty of Agriculture Ahmadu Bello University, Zaria. My profound gratitude goes to my parent Alh A. Bello and Mallama B. Wasilat (late) for their parental care, upbringing and useful advice which have served as pivots to my learning. Special appreciation goes to my lovely wife Marufat AbdulSalam for her patience, understanding, prayers and word of encouragement during the programme.

My deep appreciation goes to my elder brothers Alh Abdulwaheed Bello (Abad motors), Engr Ayuba Bello of shirash oil and gas, for their love and support. To other members of my family I say a big thank you. I specially thank my friends Comrade Abdullah. Abdulmajeed (President National Youth council of Nigeria), Achukwu Mannaseh, Onipe Hassan and Abdulrahman Sanni for their support during this program. Gentlemen, I love you all. To my colleagues in MTN ILORIN 2 CONNECT, Moshood Uthman, Atinuke Awobore, Emerentia Tolulope, Muritala Elelu, and Alh Kazeem Sadiq of FAFASAD communications ltd, I say thank you so much.

TABLE OF CONTENTS

Content	Page
TITLEPAGE.....	i
DECLARATION.....	ii
CERTIFICATION.....	iii
DEDICATION.....	iv
ACKNOWLEDGEMENT.....	v
TABLE OF CONTENTS.....	vi
LIST OF TABLES.....	vii
LIST OF FIGURES.....	viii
LIST OF APPENDIX.....	ix
ABSTRACT.....	x
CHAPTER ONE	1
INTRODUCTION.....	1
1.1 Background of the Study	1
1.2 Problem Statement.....	4
1.3 Objectives of the Study.....	5
1.4 Justification of the Study.....	6
1.5 Hypotheses of the Study.....	6
CHAPTER TWO.....	7
LITERATURE REVIEW	7
2.1.Dairy products processing in Nigeria	7
2.2. Types of Dairy Products	8
2.3. History of yoghurt.....	10
2.4. Origin of cheese.....	11

2.5. Types of cheese	12
2.6. Cheese Production	14
2.7. Nutritional Composition of Cheese.....	16
2.8. Marketing of dairy products.....	17
2.9. Marketing structure in dairy industries.....	18
2.10 Dairy marketing in sub-Saharan Africa.....	21
2.11 Marketing of dairy products in Nigeria.....	23
2.12 Problems of dairy products in Nigeria.....	25
2.13 Marketing Efficiency.....	27
2.14 Marketing Margin.....	29
2.15 Empirical Studies on marketing of dairy products	29
2.16 Concept of Profitability.	30
2.17 Measurement of Profitability	31
2.18 Empirical studies on profitably	31
CHAPTER THREE	33
METHODOLOGY.....	33
3.1. Description of the Study Area	33
3.2. Sampling techniques and sample size	35
3.3. Data collection	35
3.4. Analytical techniques	35
3.5. Descriptive statistics.....	36
3.6. Gross margin analysis	36
3.7. Marketing performance measurement.....	36
3.8. Marketing efficiency	37

CHAPTER FOUR.....	39
RESULTS AND DISCUSSION	39
4.1. Socio-economic Characteristics of the respondents in the study area.....	39
4.1.1 Age distribution of yoghurt and cheese producers.....	39
4.1. 2Household size of the marketers	40
4.1.3 Distribution of experience among yoghurt and cheese marketers	41
4.1. 4 Educational level of the respondents.....	42
4.1. 5 Distribution of yoghurt and cheese producers according to marital status.....	43
4.2. Cost and returns of yoghurt and cheese production	44
4.2.1 Costs of milk	44
4.2.2 Cost of labor.....	45
4.2.3 Cost of Transportation	45
4.2.4 Cost of Flavor.....	45
4.2.5 Cost of Firewood.	45
4.3 Market Structure.....	48
4.4 Marketing Margin	51
4.4.1 Marketing Efficiency	52
4.5 Constraints of Yoghurt and Cheese Production in Study Area	53
CHAPTER FIVE	56
SUMMARY, CONCLUSION, & RECOMMENDATIONS.....	56
5.1. Summary	56
5.2. Conclusion.....	57
5.3. Contribution to knowledge	58
5.4. Recommendations.....	58
REFERENCES	60

LIST OF TABLES

Table	Page
Table 2:1 Some varieties of cheese in Africa.....	14
Table 2:2 Nutrition composition of cheese.....	17
Table 2:3 Distribution of Milk base on countries.....	24
Table 4:1 Distribution of the respondent base on their age.....	40
Table 4.2 Distribution of the respondent base on household.....	41
Table 4.3 Distribution of the respondent base on their production experience.....	42
Table 4.4 Distribution of the respondents base on their level of education	43
Table 4.5 Distribution of marital status for yoghurt and cheese producer in the Study area.....	44
Table 4.6 Summary of the cost and return of yoghurt and cheese producers.....	47
Table 4.7 Summary of the market structure for the various value actors of yoghurt and Cheese Processing and marketing	51
Table 4.8 Marketing Margin.....	52
Table 4.9 Marketing efficiencies of yoghurt and cheese production in the Study area	53
Table 4.10 Production Constraints of yoghurt and cheese production.....	54

LIST OF FIGURES

Figures	Page
Fig.2.1 Diagrammatic flow of local cheese processing	16
Fig.2.2 Flow scheme for a typical dairy market channel	20
Fig.3.1 Map of Kwara State showing the Study Area	20
Fig.5.1 Pie chart representation of constraint of dairy marketing	55
Fig.5.2 Bar chart representation of constraint of dairy marketing	55

LIST OF APPENDIX

Appendix	page
Appendix 1: Research questionnaire.....	60

ABSTRACT

This study examines the efficiency and profitability of dairy products processing and marketing in Kwara state, Nigeria. The specific objective was to examine the efficiency of dairy product processing and marketing in terms of cost and return, marketing margin, market structure, marketing performance as well as to identify the problems of associated with the processing and marketing of dairy products in the study area. Primary data were collected from processor and marketers of dairy product in the study area with aid of structured questionnaires. This study was carried out in three local governments in Kwara state where dairy processing and marketing activities is very common. A multi-stage sampling technique was used in selecting respondent in the study area. Sample frame of 180 was used as sample size. In all, 90 respondents comprising of 20 yoghurt and 70 cheese processor were selected using purposive and random method. Descriptive statistics, gross margin analysis and marketing structure and performance were used in analyzing the data. The study reveals that majority of the marketers and processors in the study area are within the age of 21- 50 implying that they are within their productive age. The average household is also 5 in the study area. The result shows that the dairy activities in the study area are also profitable with an average return of 1.13 for yoghurt production and 1.8 for cheese production. The market efficiency for the dairy products is 50 percent and 33 percent for yoghurt and cheese respectively. It was also found that power supply and basic infrastructure is the major problem facing the processors. It was therefore recommended that loan should be provided and improved power supply and basic infrastructure should be provided in the study area.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The agricultural sector in Nigeria is the most important non-oil sector of the economy, it is one of the largest employer of labour forces (National Bureau of Statistics, 2010). It plays a significant role in the Nigerian economy with 4.14 percent contribution to the GDP. The benefit it offers to the economy include production of food for consumption, raw material for the industries, foreign exchange earnings and also serves as the major revenue generation for the country before the oil boom (Olajide *et al.*, 2007). After the oil boom the sector has suffered neglect due to government inconsistent policies over the years (Akinlabi *et al.*, 2008). This led to change in emphasis from agriculture and low return in terms of efficiency and performance. According to Food and Agriculture Organization (2012) dichotomy has emanated in the agricultural production sector in the sense that while crop production is characterized by falling prices due to large supplies and stock replenishment in the recent years, cost of livestock production is increasing over the time due to high feed costs and reduced global livestock inventories and production (Food and Agricultural Organization, 2012). Also there seems to be more focus on livestock production due to increase in market demand driven by population growth in developing countries.

Research findings on processing and marketing of dairy product has shown that economic efficiency and success of a dairy product largely depend on effective management of operations like milk procurement, processing and marketing of dairy products as well as efficient marketing system (Dhaka *et al.*, 2007). This minimizes cost of marketing such that consumers are provided with quality product at an affordable

price. Dairy development in Nigeria involves various activities such as milk production, importation, processing, marketing and consumption.

Despite the unorganized system of the dairy industry, it still represents an important component of the agricultural sector of the economy with great institutional and social implications (Food and Agriculture Organization, 2007). Dairy products are also found mostly where the culture of people favors cattle rearing and where the climatic condition support grass land vegetation which provides the basic food for milk producing animals (Lawalet *al.*,2012). Imported dairy products are available across the country both in urban and rural outlets. The industries serve as a means of livelihood for most rural pastorals farmers in the sub humid and semi-arid area of the country. Dairy products appear in the market in different forms such as sour milk (*Nono*) cheese (*wara*), sour yoghurt (*kindirmo*), while some are imported in the form of sweetened concentrated milk, butter and cheese.

Yoghourt can be made from variety of milk such as cow, buffalo, and goat milk. There are also several types of yoghurt such as flavoured or unflavoured, sweetened and unsweetened, and some with differing level of fat contents.

Sour milk is also another dairy product mostly found among Fulani dairy women. It is referred to as “*nono*” usually made from skimmed milk usually sold with “*fura*” a doughy patties of sorghum or millet .Sour milk is mostly produced traditionally by uncontrolled fermentation of milk with lactic acid bacteria which occur naturally in the milk (Peter,2011). This sour milk usually has a distinct smell and coarse texture as a result of fermentation which generated new aroma.

Cheese is a concentrated source of milk, produced by coagulation or curdling of milk through stirring, heating the curd and draining of the whey. It contributes to animal protein and mineral intake especially in rural communities (Akintundeet *al.*, 2010). It is mostly processed by Fulani women from unpasteurized cow milk, using traditional processing method (Awoyeleet *al.*, 2014). Its quality varies with breeds of cow whose milk is being used (Yunusa, 2011). Despite the traditional method employed in the production, the small quantities of cheese produced appear to be a valuable food and source of protein particularly among the Fulani where it serves as a means of livelihood. (Akintundeet *al.*,2010).

1.2 Problem Statement

As the trends of population increase, income growth and urbanization has resulted in tremendous growth in demands for animal protein such as meat, milk and eggs. Consequently the dairy industries have not been able to meet the demand of the country for dairy and dairy products. There have been expressions of fear in terms of food production. Dairy products provide the most important amino acid required for the body. Presently there is a perception that food production may not be enough to feed the teeming population and ensuring maximum food security for all (Food and Agriculture Organization, 2012). Despite Nigeria's agricultural potentials to ensure food security for all, there is still insufficient food production. Over the time there has been inability to feed on right portion of calories by most household. Animal protein consumption does not commensurate with the recommended intake by nutritionists (Opanaku, 2006). In Africa, Nigeria is one of the countries with the potential of being a major milk producer if well harnessed, but absence of improved method of processing, packaging, storage and marketing of dairy product has made it substantially difficult for internal use as well

as for export. Despite the potential possess by the dairy industries and high consumption pattern among the dairy farmers in the study area only very few study have been conducted in the study area. Most of these researches lay more emphasis on nutritional quality of cheese. Akintunde *et al* 2010 focus on the analysis and microbiological quality of local cheese. Also, Yunusa (2011) focuses on the quality characteristic of cheese produced from different breeds of cattle. However no study seems to have been carried out research on the profitability and marketing of dairy in the study area. In this light these study intend to identify knowledge gap on profitability and marketing of dairy products in the study area. Therefore the questions this study seeks to answer are:

- i. What are the socio economics characteristics of dairy processors and marketers in the study area?
- ii. What are the cost and return of processing and marketing of dairy products?
- iii. What are the marketing structures and performances of dairy product in the study area?
- iv. What are the factors militating against the marketing and processing of dairy products?

1.3 Objective of the Study

The broad objective of the study was to analyse yoghurt and cheese processing and marketing in Kwara state, while the specific objectives of the study were to:

- i. describe the socio economic characteristic of the dairy products processors and marketers in study area;

- ii. determine the cost and return of processing and marketing of dairy products in the study area;
- iii. determine the marketing structure of dairy products in the study area;
- iv. describe the problems associated with marketing and processing of dairy products.

1.4 Justification of the Study

The dairy industry is a distinct sector of the livestock economy; hence its development has a big role to play in terms of employment and income generation (Dayanandan, 2011). The findings of this study will provide a fundamental framework for the dairy processors and marketers on the mode of processing their product so as to improve on the profit margin. The study will also contribute greatly to the existing knowledge on profitability and marketing of dairy products. The finding will as well generate information which will contribute to the existing knowledge for researches and policy makers who would want to carry out findings on yoghurt and cheese processing and marketing of dairy products. More so the problem affecting the profitability of marketing of dairy would also be examine, as such researchers would be able to assess the problem encountered by dairy processor with a view of providing a better solution for them.

1.5 Hypotheses

- i) Processing and marketing of dairy products is not profitable in the study area.
- ii) Processing and marketing of dairy products is not efficient in the study area.

CHAPTER TWO

LITERATURE REVIEW

2.1 Dairy Products Processing in Nigeria

The Nigeria dairy industries are centered mostly on milk production, importation, processing, marketing and consumption. These activities are however unorganized except for the relatively few processing firm (Fakayode *et al*, 2012). Most of these activities are found in the pastoral system with 95% is under the control of Fulani, some Fulani don't really settle in a place, they move from one location to the other in searching of seasonal water supplies and pasture during the dry season. This system involve keeping of large herd of cow by Fulani who depend mostly on milk and dairy product for survival. The processing of the diary product into various traditional products is mostly done by the wife of the Fulani. The commonly processed products include *nono* (Cow milk), *kindirmo* (Sour Yoghurt), *manshanu* (Local butter), *cuku* (Fulani cheese) and *wara* (Yoruba cheese). These are mostly hawked around in the rural and urban areas, thus making these products more available for household consumption. Urban dairy processing are mostly involved in more organized and well packaged dairy products like powdered milk, baby formula, packaged liquid milk, yoghurt, butter and ice cream with sales dispatch bicycles boys, retailer and other market outlets as a means of distribution. A typical example of these is fan milk Nigeria plc which was founded by Danishes merchant.

2.2 Types of Dairy Product

Many products can be derived when milk is processed. Mostly in modern supermarket there are ranges of products on the shelves. Among this are skimmed and semi skimmed whole or full fat, homogenized long life fresh milk, fermented milk, powdered and condensed milk as mostly found. However it is also possible to obtain milk from Goats

and sheep. In other part of the world it is normal to obtain milk from other animal such as buffalo, render as well as camel. Though milk production is synonymous with milk from cow, this has increased drastically over the century as a result of dairy cattle breeding and production efficiency, and with the introduction of modern high technical operations, which simplifies the process involve in the processing of the dairy product. Based on the consumption pattern across the world the UK and Europe seem to be the most significant milk producing region of the world along with USA, Canada, Australia and New Zealand, consumption of milk and dairy products varies from country to country and from person to person. In most develop countries the consumption of milk is quite regular which spread along all the different ages from infant to Adult. According to most researchers the fat content of milk when collected at dairy is very high 38% (Marvin, 2007). This fat content varies from cow to cow due to influence of climatic condition on the physiological nature of the cow. In most cases primary heat treatment, a process known as pasteurization is introduce to remove spoilage microorganism. Before, full fat was the most common milk consumed by household but now low fat milk is at current trend. Semi skimmed milk has a fat content of about 1.5% and skimmed milk has had almost all of the fat removed closer to about 0.1-0.3%. In some places, it is also possible to buy milk with fat content between these two levels. Basically some of the processed product made from milk includes the following

Cream:- The fat layer of milk is separated to make different types of cream, single cream contain about 18% fat whereas double cream is about 48% fat and whipping cream about 40% pasteurization can still be applied without affecting the ability to form a foam, which is essentially what results when air is whipped into such cream.

Yoghurt: This is very popular dairy product made by the fermentation of milk by lactic acid bacteria, in some cases fruit flavor and cereal can also be added. Yoghurts are often used as a delivery vehicle for other ingredients such as pro-biotic.

Butter : this is a water-in-oil emulsion made from cream by phases inversion (Milk as an oil in water emulsion, is discussed further on) butter is about 80% fat, reduced fat spreads based on dairy or non-dairy components often more popular today. Spreads are often used to carry “functional” ingredients such as cholesterol – Towering plant derived sterols.

Cheese: Is made from curdled, milk by removal of the white part (liquid part) and then ripening of the curd part (solids part) using particular microbial cultures, there are few thousand varieties of cheese in the world.

Ice Cream: This is another universally popular dairy product, made from milk of varying fat contents. The process is used to create ice cream that will not contain lactose because of the lactose intolerance people, though milk solids are often added back, reintroducing lactose to the finished product.

Lactose-Free milk: This is now available in most developed country for those who are lactose intolerant this modified milk is usually made by filtering regular milk to remove half the lactose. The enzyme lactase is then added to the milk to break down the remaining lactose into simpler forms which the body can absorb.

2.3 History of Yoghourt

The consumption of milk and dairy products is as old as domestication of mammals. These fermented milk products are thought to have originated from the Middle East. The original production of fermented milk products was derived from the need to prolong the shelf life of milk rather than being disposed. Yoghurt manufacture was

initially base on knowledge and empirical process without standard procedure or investigation of the steps that occur during the entire process. After the late 20th century yoghurt became a profitable commercial good, its manufacture became industrialized and the process was standardized. During the last 20 years interest in yoghurt manufacture has increased tremendous for scientific and commercial reasons (Panagiotiset *al.*, 2014).

Yoghurt is one of the dairy products manufactured with or without the addition of some natural derivatives of milk such as skim milk powder, whey concentrates, caseinates or cream with a gel structures that result from the coagulation of the milk proteins due to lactic acid secreted by define species of bacteria cultures. The most common types of yoghurt commercially available are set type yoghurt and strain (Constatnina, 2014). Set type yogurt is fermented in retail container and no further stirring or water removal takes place after the fermentation process. Strained yoghurt is fermented in tanks under mild stirring and after the completion of fermentation a portion of the whey is removed. Based on the manufacturing process the two types develop a different texture. The set type yogurt develops a continuous gel texture whereas strained yoghurt display a vicious creamy smooth texture.

2.4 Origin of Cheese

Cheese is solid milk produce from the milk of goat, cow, sheep and other mammals by curding, and using of combinations coagulant (Buckman, 2013). Cheese is an ancient food which has no conclusive evidence to indicate its origin. Estimated evidences show that cheese dated as far back as 7000BC. With the addition of coagulant it has become a way of improving the shelf life of milk. From an unrecorded source it was said to have been discovered from the practices of storing milk in containers made from the

stomachs of animal (National Holistic Chamber of Commerce, 2009), hence the rennin (an enzyme in stomach lining) caused the milk to separate into curds and whey. Another possible explanation for the discovery of cheese stems from the practice of salting of curdles milk for preservation purpose in medieval era. Irrespective of the origin, it is clear that by the time of Julius Caesar varieties of cheese are being produced and traded across the Roman Empire and beyond (National Holistic Chambers of Commerce, 2009). Most travelers from Asia also believe to have brought the art of cheese making to Europe. In fact, cheese was made in many part of the Rome at the height of the Empire. These were later introduced to England during the middle Ages from the decline of the Roman Empire until the discovery of America (International Dairy Food Association, 2010). In the 10th century Italy had become the cheese making Centre of Europe. Cheese making continued to flourish in Europe due to the supplies to the pilgrim when they made their voyage in the 1620 (International Dairy Food Association, 2010). In the Africa Sahara it was discovered that based on identification cheese production was first found in the Libya. From early days of farming in Europe and the Middle East, Africa had not yet developed the genetic mutation to allow people to digest milk (South Africa Cheese Report, 2010). So the Sahara lactose intolerant dairy farms were likely making yoghurt and cheese rather than drinking milk from their animal. Only after the people learned to process dairy foods did their bodies develop the ability to drink pure milk. (Emily, 2012). According to Armenian development Agency report, 2012 Dutch are said have been producing cheese since 400 A.D. where it is believed to have originated from the Mesopotamia in an approximated of 8,000 years. Due to its high amount of protein and other mineral content the consumption of cheese has improved tremendously across the world over the years. Subsequently the art of

cheese making has now evolved into a lucrative business. Consequently, the intention cheese trade stated to increase on a regular basis.

2.5 Types of Cheese

Cheeses are produce in different form base on desire flavor and ingredient used. However to make good quality cheese it is necessary to have hygienic and quality milk, good raw material, clean equipment and careful attention manufacturing process. (International Dairy Food Association, 2010). Also cheese can be classified base on the following.

Country origin: the country where the cheese was first developed, determine the name.

Type of milk: Cheese always starts from milk. Therefore the types of species of cow to a large extent determine the final flavor and creamy nature of the milk which in turn has impact on the type of cheese.

Aging: most cheese is aged for a period of time in a temperature controlled environment. In the process moisture evaporate which lead to a denser paste and a more lactose flavor. In Africa cheese production is largely dictated by tradition, a process which take account of number of factor such as the facilities used, types of ingredient, coagulate as well as species of cow which produces the milk. There are a number of cheese varieties which are indigenous to Africa Varieties of cheese and their origin are presented in the table 2.1.

Table 2.1. Some varieties of cheese in African

Name of cheese	Type	Country of origin	Type of milk use
Aoules	Hard	Algeria	Goat Milk
Ajib	Curd	Ethiopia	Cow Milk
Braided	Semi- hard	Sudan	Cow, Goat and Sheep milk
MudaFlara	Semi- Hard	Sudan	Cow milk
Country cheese	Hard	Nigeria	Cow milk
Fromage	Semi- Hard	Madagascar	Cow milk
Gybna	Soft	Sudan	Cow, goat, sheep milk
Mashena	Soft	Zaire	Cow milk
Wara	Soft	Benin, Nigeria,	Cow milk
Wagashi	Soft	Mali, Nigeria, Benin	Cow milk
Wagassirou	Soft	Benin	Cow milk

Source: ILCAR, 2012.

2.6 Cheese Production

Cheese generally are mostly made from cow milk, but in some countries certain varieties cheese are made from milk obtain from other mammals (Helen and Elizabeth, 2004) for example Ewe's milk is used for making Roquefort cheese and varieties such as Feta, Ricotta, Pecorino etc. goat milk are also source to make varieties of milk in Italy and Greece and Buffalo's milk in India and Egypt. (Brown, 2004).The production of cheese follows a basic process which involved heat-treated or pasteurization of the milk. If non pasteurization milk is used, the cheese must be ripened for at least 60 days at a temperature of not less than 4⁰c to ensure safety against pathogenic organism (Kosikowski, 2007).Despite the advance in science and technology, production of cheese in most African country is largely produce through the old traditional method

which to a very large extent are prone to risk of microbial contamination (Awoyele *et al.*, 2014).

The preparation involves the separation of the curd from the whey which is found globally in the cheese processing. The separations depend on the coagulant used. For instance in most developed world chemical like rennet or photolytic enzymes are used while in the local production juice extraction from *calotropisprocera*, *papaya*, and lemon juice are mostly used. In the production process the milk is collected in the early hour of the day. The young calves are allowed to suckle the teats which stimulate milk flow. The milk collection is subsequently done using hands in the milking. The milk is transferred from the basin to a metallic pot which is placed over a slow burning fire and heated to a temperature of about 50⁰c and 30minutes. It is gently stirred during the initial and subsequent heat and cooking. At this point the juice extractor of *calotropisprocera* or any of the coagulant is added. The milk is then heated gently with intermittent stirring until it coagulates and there is visible separation of curds and whey. The pot is then moved from heat source the curds and whey are placed into the basket which facilitates drainage of the whey and gives the cheese its characteristics shape and size. When the cheese is firm enough to retain its shapes it is removed from the basket and placed in a container of cool water. The diagrammatic flow of local cheese production process is presented in Fig 2.1

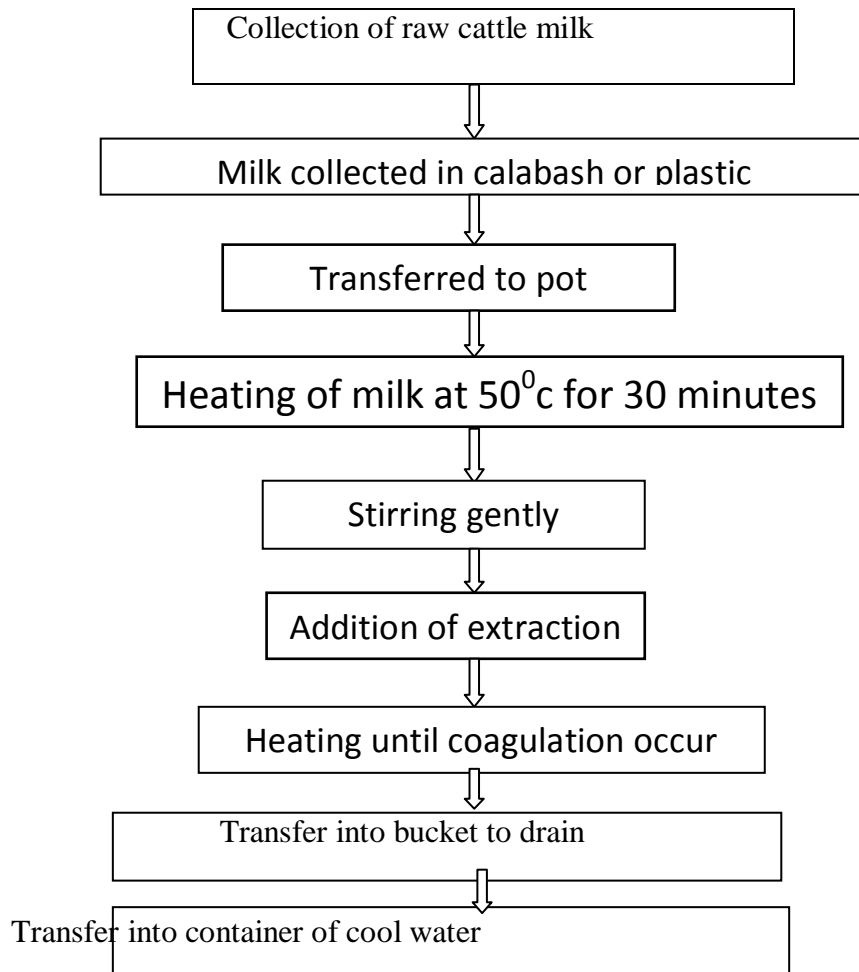


Figure 2.1: Diagrammatic flow of local cheese processing

2.7 Nutritional Composition of Cheese

Cheese contains a host of nutrient such as calcium, protein, phosphorus, Zinc, vitamin A and vitamin B12, Calcium is one of the element lack in most country diet (German *et al*, 2009).According to the US government statistic show that 9 out of 10 woman and 6 out of 10 men fall short of recommendation (Dairy Council of California, 2009). The high quality protein in cheese provides the body with essential building block for strong muscle. The lactose intolerant can also take as many cheeses as possible such as cheddar Swiss.

For the years saturated fat found in meats, eggs, cheese, butter, whole milk and some oils have been considered to be the primary cause of heart disease. New research however has shown that by changing the saturated fat to cholesterol free oil hence allowing people to enjoy more cheese and other favorite food with little or no concerns (Dietary guideline for American, 2010) .Cheese can also be grate or sprinkle on food to reduce calories and add delicious cheese flavor. Table 2.2 shows the nutrition composition of cheese varieties.

Table 2.2 Nutrition Composition of Cheese

Nutrient	English Cheese	Monte Jack	Swiss	Cream cheese	Reduce fat cheese	brie	Cheddar
Calories	114	104	106	98	261	95	100
Protein	7g	7g	8g	3.1	3.1g	6g	6g
Calcium	204mg	209mg	224mg	98mg	84mg	52mg	150mg
phosphorus	145mg	124mg	161mg	100mg	62mg	53mg	110mg
Fat	9g	8g	8g	1.4g	9.4g	8g	8g
Sodium	176mg	150mg	54mg	50mg	2.2g	178mg	395mg
Lactose	0.00g	0.14g	0.02g	0.01g	0.1g	0.13g	0.14g

Source: ICUSDNDCR, 2011.

2.8 Marketing of Dairy Products

Marketing can be define as the performance of all business activities involved in the flow of good and services from the producer to the consumer (Korea Central Cancer Registry,2002). Marketing of dairy product involves a large numbers of individuals including the pastoralist, dairy distributor and retailer implies that there are several categories of key players in the marketing chain each with its own vested interest. For

instance consumer wants to get what they need at the lowest possible price while the producer wants to maximize their profit with minimum cost. In a dairy industry processors are mostly interested in getting the highest possible return for their milk (Korea Central Cancer Registry, 2002). Though between them there are market intermediaries or middlemen who perform various marketing functions such as transportation, retailing.

In most cases dairy industries are found to have not less than four intermediaries in the marketing channel before getting to final consumer (Korea Central Cancer Registry, 2002). These numbers of involved have a bearing on both produce and consumers price because the shorter the channel the more likely that the consumer price will be low and the producer will get a higher return (Korea Central Cancer Registry, 2002). Most case when retailers obtain their dairy products directly from the processors, it is more likely that the retail price will be low and affordable to the consumer. This explain why direct sales of raw milk from producers to consumer of through hawkers has been on the increased despite the public health risks associated with the consumption of untreated milk and dairy products. However farmers sometimes prefer selling milk to hawkers because of other factors like prompt payments, inaccessibility to formal markets outlets such as co-operatives and lack of nearby milk processing industries.

2.9 Marketing Structure in Dairy Industries

Structure of an industry or market is defined as characteristic of the organization of the market which seems to have a strategic influence on the nature of the competition and pricing within the market (Brain, 2005). These characteristics include

- Marketing channel

- Marketing concentration
- Product differentiation
- Condition for entry

Marketing channels: Dairy marketing system consists of different chains and channels. Marketing channels are alternative route of product flows from produce to consumer (Kols and Uhl, 1990). Thus dairy marketing channels have different passage or outlet which dairy products are distributed to consumers. On the way to the consumer the products change ownership from time to time among the dairy marketing participants. Hence the more hands it involved the higher the costs are likely to be. Marketing channel in the dairy industries is made up of various individual who handle fresh milk as it move through the marketing process. The channels are route through which fresh milk flow from producer to the consumer. Generally dairy products move through the group of actors along chain of distribution before reaching the final consumers. These groups of actors include assemblers, processors and retailers as shown in fig 2.2.

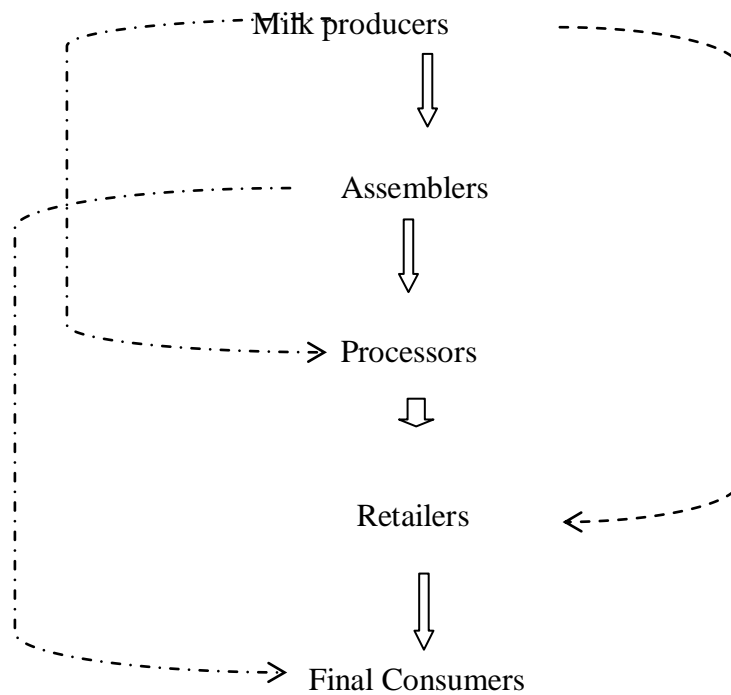


Figure 2.2: Flow scheme for a typical dairy market channel

Dairy marketing involved more intermediary each who add some delivery of transformation service to the products fresh milk from the farm, it is either sold to assembler or it is delivered by the herdsman to other processors, as well as retailer at either the primary collection center or at the secondary market center.

Assemblers (Itinerant collectors). They collect raw milk at the farm gate and deliver to the processors and wholesalers or retailer in the market. Milk assemblers are mostly men who move from farm to farm collecting raw fresh milk.

Processors: dairy processors are mainly involved in the production and sales of process dairy product. Some of the processors produce on a larger scale and in a more formal manner, a typical example are the yoghurt processing industries while some other product are sold in an informal manner e.g. The sour milk, butter , and the local cheese.

Marketing concentration: Concentration account for a large part in determining market behavior as it lead to affect interdependence among marketing agent and

bargaining power to influenced prices and transaction. Noncompetitive behavior such as collision is normally as a result of high market concentration. High levels of market concentration ae often found in food processing industries like dairy processing industries.

Product differentiation: A product is differentiated if there is a significant basis for distinguishing the product of one seller from the other. Producers basically differentiate their products in other to increase their appeal to buyers, to reduce the substitutability for their products and increase the latitude in pricing. Typical product differentiation factors include product typology, product handling and preservation and advertisement. Successful competition through product differentiation eliminates their rivals or discourage market agent.

Entry condition: This refers to condition that determine the potential entrance in and out of an industry. Barrier to entry usually revolved around institutional, technological, and financial factors. Existing agent usually enjoy a cost advantage over potential competitors through command over financial resources , access to raw material, technical knowhow of existence of economic scale.

2.10 Dairy marketing in sub-Sahara Africa

Marketing of dairy are in different forms which are mostlycompetitive and complementary in nature. These determine the direction of products flow as well as the amounts of the product in different marketing channels. In most cases government involvement in the marketing system determine the kinds of marketing structure which prevail in country.

Marketing Policy: Marketing policies this refer to as any government decisions that affect one or more of the main marketing function. However this function has spoiled activities despite the need for food and pertinently for livestock products in most under develop country, small scale producers. However access to technology and transport stimulate the establishment of dairy farms in urban and sub-urban areas than in rural areas (Department for International Department, 2005).Today there is a tremendous increased in marketing of dairy product in urban center as a result of direct response to customer demands from small holder or commercial dairy enterprises. There is a year round employment from small holder dairy production because it also plays the role of cash crop and increase in regular income (Mohamed, 2009).Even though in a process of dynamic change there is quite number of constraint facing market oriented dairy production and unsustainable development which include the different component such as animal feed resource upgrade, genotype and management of reproduction disease, marketing mechanism, environmental impact and policy environment. Due to the magnitude oriented dairy and the prospect of market oriented dairy production in most African country, dairy system have turn into field of interest in area for research and development. This could have a significant implication in bringing to a harmony-dairy production and urbanization in Sahara country in sub-saharaAfrican countries where there are large livestock population, like Ethiopia its contribution to the economy is limited and remain to be a quantities boast (Amha, 2008).For example population in Ethiopia is growing at a rate of 2.9% per year, while urban population increase at the rate of 4.4%. Therefore, an increasing population size and consumer income in the future is expected to increase liquid milk consumption. (Tangkaet *al*, 2006).

There is basically potential for dairy development due to its large livestock populated as well as the favorable climate for improved. Given the considerable, potential for small

holder income and employment generation from high-value dairy products development of the dairy sector can contribute meaningfully to poverty alleviation. However, the government launched a national dairy products development policy which seeks to bring about an improvement in the livestock sector by enhancing the quality and quantity of feed, improved extension services, increasing livestock health services and improved productivity of local cow by artificial insemination while preserving the indigenous breeds (Mohammed *et al.*, 2007)

2.11 Marketing of Dairy Products in Nigeria

The sale of dairy product is prominent among Fulani cattle rearer who basically are known for their pastoral nomadic culture and well noted for milk production. This is known as major preoccupation of the Fulani's. The Fulani women are mildly or excessively involve directly in the local dairy production. In the cultural perspective the Fulani men provide enough cows for their wives to milk or risk his marriage. During the wet season due to high availability of pasture the Fulani milk the cows twice a day with approximately 1.5 liters of milk per cow and just a day in the dry season (Alalade *et al.*, 2006). The proceeds realized from the sale of this milk are often use in buying grain, vegetable beverages, cooking oil as well as other household good.

Milk is the most frequently used cattle product which is above the reach of some household. However traditional dairying in Nigeria by the Fulani start as far back as Fulani existence the industrial dairying is more recent. In the 1945, the last colonial chief veterinary officer of Nigeria H.H Well reported to the home office in London that her majesty is empire in Nigeria had developed much interest in dairying. This report however signify that Nigeria has the potential of being a major milk producer in Africa if well harness by provision of adequate storage, processing, packaging facilities for

internal and export. Through the activities of Nomadic and semi Nomadic Fulani by the 80's Nigeria was rank as the largest milk producer in West Africa, and then third largest producer of cow milk in Africa. Though globally the contribution of Africa continent is just 2% in terms of milk production, however milk production account for 20-25% of the agricultural sector in the sub-Sahara Africa. While other stock product make up 11% of the food (Michael *et al*, 2001). Table 2.3 show the distribution of milk base on different countries

Table 2.3. Distribution of milk base on different countries

African Region	Cow Milk	Had Milk	Camel Milk	Sheep Milk	Total
Benin	15	5	--	--	20
Burkina Faso	81	16	6	--	97
Chad	110	13	102	8	131
Gambia	5	--	--	--	5
Ghana	11	--	1	--	11
Guinea	42	4	1	--	47
G/Bissau	10	1	2	--	13
Liberia	1	1	-	1	3
Mali	95	33	48	28	156
Mauritania	96	78	162	74	248
Niger	106	130	83	13	249
Nigeria	360	--	4	--	364
Senegal	94	12	12	15	121
S/Leon	17	--	--	--	17
Togo	9	--	1	--	10

Source (Michael *et al*, 2001)

2.12 Problems of Dairy Production in Nigeria

Currently there have been serious declination in the modern dairy as per capita consumption has since been dropping in the last twenty years average milk intake has dropped significantly. Some of the problems identified in milk production include the low output of Fulani cows, poor grass quality that leads to low milk yield as well as lack of storage and processing equipment. Also the unsanitary method of milk handling, breakdown of processing plant as well as inefficient milk collection also are greater factor which hinder the smooth operation of the milk industries in Nigeria. A whole lot of government policies such as poor pricing policy, management policies and lack of attention from the government. The genetic make-up of local breed of cow for example *Bosindicus* is not a good milk producer as it produces about 0.7liters of milk in a day as well as high mortality rate (20-25%) and long calving interval (20-26months) slow maturation, and low productivity of these breed is also a major cause (FOA, 2007).

With the exception of farm residence, the natural grass upon which the animals depend is low in protein and indigestible roughage therefore most animal feeding on this grass have poor nutrition and low milk harvest. The calves compete with human beings for the limited output of milk. Though caution are often been taken so that the milk ration by herdsman would not jeopardize the well-being of the calves by a disproportionate consumption of milk by human. Improving the pasture resource by delignification of high fiber roughage is uncommon in Nigeria as most animals are left to wander or graze on wild forage. In most pastoral systems the use of human-grown feed has proven costly for an individual to supply effectively to animal. Also among problem facing the dairy industry are logistical problem, ineffective collection and distribution of milk, most milk producing area in hinterland, where vehicle cannot easily reach. These lacks of access to good road slow down the processing of milk since most of the dairy products

are conveyed via foot or by means of animal transportation. The distance from the rural area where the milk is collected to the urban where it is processed takes a longer time which make most milk spoil before reaching the final consumer.

It also worthy of noting that dairy products are basically unstable under heat, therefore delay render it unseal since the pastoral do not have refrigerator to preserve milk. Thereby making the shelf-life of fresh milk short hence most of the fresh milk gets fermented. The fresh milk can only be used by urban resident who use refrigerators. Most of the milk is not sold fresh except on request and at least in the early morning so as to avoid milk sully by the afternoon heat. The filthy unhygienic condition in which milk is been produce is also a major problem as the condition of milking is unsanitary. Bared hand and unsterilized container for processing are been used and in most cases the cow breast is not bathed before milk is connected. Dirty water from stream and rivers are also been use by most rural dwellers to process the milk which often lead to milk bone disease which can be spread when the milk is been consumed. Dairy product often contain impermissible amount of chemical residue, herbicides and antibiotics in situation where cow have intensive veterinary care from high doses of drugs, especially after immunization, which possess potential danger to human health. More so, competition with imported milk, breakdown of the cooling system due to erratic power supply, pasteurized milk by the Fulani producers, as well as bad market and bad management also affect the performance of the dairy sector (Alalade *et al.*, 2006).

The periodic shortage of milk have often led to importation of powder milk and pricing policy which put the retail price of milk below producer price. These further depress the government incentive to milk producers. Bad management policy has placed dairy sector under the wrong department and parastatals, more often it has been argue that the

skills and management capability need for successful dairy could not be developed under a parastatals structure, because the problem often experience by dairy parastatals are inadequate management, political interference, low productivity and poor financial performance. The real cause of the failure of state-owned dairy forms is that the government's goal is not in tandem with commercial objective that is, the government's objective may not necessary be profit-making like most government venture and state managed dairy plants in Nigeria are set up as service industries to create jobs silent political agitation. However the government now has realized the importance of small, backyard dairy firms who use family labor to sustain and provide affordable milk production in Nigeria. These cottage producers use local skills and less energy-dependent method. In some development program, the government plans to make these small-scale industries as the centers of dairy production in Nigeria to this effect, the government has now privatized most dairy ventures and encouraging commercial ranches to supply the milk.

2.13 Market Efficiency

Market efficiency is essentially the degree of market performance .it is define as the ratio of marketing output to marketing input. An improvement in the ratio represents improved efficiency while decrease in the ration represents low efficiency. Marketing efficiency can be assessed base on the following:

Technical, physical or operational efficiency: It pertains to the cost of performing a function such as storage, processing, and handling. Efficiency increased where the cost of performing a function per unit of output reduce.

Pricing/Allocative efficiency: System is able to allocate farm product either overtime, across the space or among the traders, processors and consumers at a point in time. Such

that no other allocation would make producer and consumer better off. Pricing efficiency refers to the structural characteristics of the marketing system; when the seller is able to get the true value of their produce and the consumer receive true worth of their money.

Empirical assessment of marketing efficiency: A reduction in the cost for the same level of satisfaction or an increase in the satisfaction at a given cost result in the improvement in efficiency (Khol and Uhl, 1990)

$$E = \frac{O}{R} \times 100 \dots\dots\dots (1)$$

Where

E= level of efficiency

O= Value added to the marketing system,

R= real cost of marketing.

It can also be measured with Shepherd's formula of marketing efficiency

$$ME = \frac{V-1}{I} \times 100 \dots\dots\dots (2)$$

Where

ME is index of marketing efficiency

V = Value of the goods sold or price paid by the consumer

I = total marketing cost or input of marketing

This eliminates the problem of measurement of vale added

2.14 Marketing Margin

This refers to the difference between the price paid and received by a specific marketing agency, such as retailers or assemblers or by any combination of marketing agencies (Mejhalet *al.*, 2000). In other words it is the difference between the selling price of a product per unit and the total cost of its manufacturing and distribution (Olukosi 1990). It is the difference between price received on resale and the price purchase at every intermediary level (Mejhalet *al.*, 2000). Marketing margin reflects the cost and profit of middlemen. This cost are incur on adding utilities of time, form, place and possession payment for all initial assemblage, storage, processing, transportation ,warehouse and retail charging. In dairy industry the marketing cost includes cost on procurement of milk, cost on processing and distribution of the dairy product.

Milk procurement cost this involve the cost of collection, transportation, and delivery of milk. Processing cost is the costs incur during the processing and these are cost on water, steam, refrigerator, labour, packaging material, cost on equipment as well as miscellaneous cost. Distribution costs include expenses on sales promotion, sales commission, and transportation of dairy products, storage, and sales tax. Market margin therefore has remained an important tool in analyzing the performance of marketing systems, it also indicates the efficiency and inefficiency of market system

2.15 Empirical Studies on Marketing of Dairy Products

The determination of a measurement for market efficiency analysis depends on different marketing structure and performance. For instance Duhanet *al.*, (2004) found that the market efficiency of milk marketing will only improve at high level of production at lower overhead cost per liter of milk marketed. Dayanandan (2011) in his studies on marketing of dairy farmer in highland of Ethiopia shows that demand for dairy product

exceed supply and this result indicate that regression coefficient with respect to concentrate for medium and small size cross breeds farm are positive and significant at 10% level. (Fakayode*etal.*, 2012) found that marketing margin and marketing efficiency indicates that local cow milk trade is efficient, though the return is very meager despite high cost of production and marketing activities involved, also the marketer lack relevant technology to store and processes their products so as to meet standard market demand. (Alex *etal.*, 2005) also show that cost efficiency estimates indicates that there is a significant scope for improving in cost efficiency in small holder dairy farm .Thus the cost efficient farm are the relatively small in the sample of small holder in the dairy farm.

2.16 Concept of Profitability

Profitability means ability to make profit from all the business activities of the organization, company, firm or an enterprise. It shows how efficiently the management can make profitably using all the resources available in the market. According to Hayward (2007) “profitability is the ability of a given investment to earn a return from its resource”.The term profitability is not synonymous to the term efficiency; profitability is an index of efficiency and is regard as a measure of efficiency and management guide to a greater efficiency. Though profitability is an important yard stick for measuring the efficiency, the extent of profitability cannot be taken as a final proof of efficiency. Sometimes satisfactory profits can mark inefficiency and conversely a proper degree of efficiency can be accompanied by an absence of profit .The net profit figure simply reveals a satisfactory balance between the values receive and value given.

2.17 Measurement of profitability

Profitability can be measure in several ways. It can be measure in term of ratio. These include gross profit margin, operating margin, return on assets, return on equity and return on scales. Gross margin: This analyzed profitability of good and services by assessing the cost of the product and can be determine by the ratio of gross profit and sale and multiplying it by 100%

$$\text{Gross margin} = \frac{\text{Gross Profit}}{\text{Net sales}} \times 100\% \dots\dots\dots (3)$$

Operating margin: This takes into account the cost of producing the product or service that is unrelated to the direct product of the product or the services such as overhead and administrative expenses. This can be determined by dividing the operating profit by net sales and multiplying the quotient by 100.

$$\text{Operating Margin} = \frac{\text{Operating Profit}}{\text{Revenue}} \times 100 \dots\dots\dots (4)$$

Return on Assets: This metric measures how effectively the company produce income from its assets it can be determined by dividing net income (NI) for the current year by the value of all the company assets and multiplying by 100

$$\text{Return on asset} = \frac{\text{Net income}}{\text{Assets}} \times 100 \dots\dots\dots (5)$$

2.18 Empirical studies on profitability

To evaluate the competitions of the Czech Republic dairy industry Bavorova *et al.*, (2003) review study on computing the sector yearly profitability measures as a

percentage of total profit in total cost she therefore conclude that profitability fluctuated over 1990-2006, but increase in the subsequence year. Davidoraet *al.*, (2007) also calculate the profitability of Czech farms in 1998-1999, with the ratio of cost to total revenue. He found out that most of the farms were not profitable even when unpaid cost were not considered. Van Berkum (2009) discuss the competitiveness of the dairy sector in the 12 EU new member states and in eight EU candidate countries in 2006 based on several measurement of determining profitability the gross margin analysis was used to compute the difference in the profitability. Bezelephinaetal (2005) estimate a profit function for Russian dairy farm during 1995-2001 using panel data and instrumental economic technique, they specify the profit as a function of input and output prices, fixed input quantities and subsidies. They found out that the shadow price of land and labour are not significantly different from zero and that dairy product were not responsive to milk prices during the period studied.

CHAPTER THREE

METHODOLOGY

3.1 The Study Area

The study was conducted in Kwara State. Kwara State is located in latitude $11^{\circ}21' - 11^{\circ}21'$ and longitude $2^{\circ}45' & 6^{\circ}$. The State has a land area of about 36,825 km² (14,218sqm) with a population of about 4.5million estimates value (National Bureau of Statistic, 2014). It is bounded in the North by Niger State, in the south by Oyo, Ogun and Ekiti States in the east by Kogi State and in the West by Benin Republic. The State experience both dry and wet seasons, with an intervening cold and dry harmmatan from December to January. The annual rainfall ranges between 1000mm to 1500mm, while average temperature ranges between a maximum of 30c to 35c and a minimum of 21.10c to 25c minimally. The vegetation in some part of the state is rainforest and wooded in some others part. This make it well suited for wide varieties of crop. The adequate and conducive climatic conditions make rearing of livestock feasible in the state. The main ethnic groups are Yoruba, Fulani, Nupe and Barubas. Kwara State is generally acknowledged as the heart of tourism in Nigeria due to the potential of its tourist attractions. Farming is the predominant occupation of the resident of the state while some engage in craft activities such as weaving, black smiting, bricklaying, carpentry welding etc. Fishing is also prominent along the Lower River Niger Basin. Major food crops produced in the State include Cassava, Yam, Cocoyam, maize, Millet, Sorghum and Rice, Sugarcane is also planted along the river Niger flood plain.

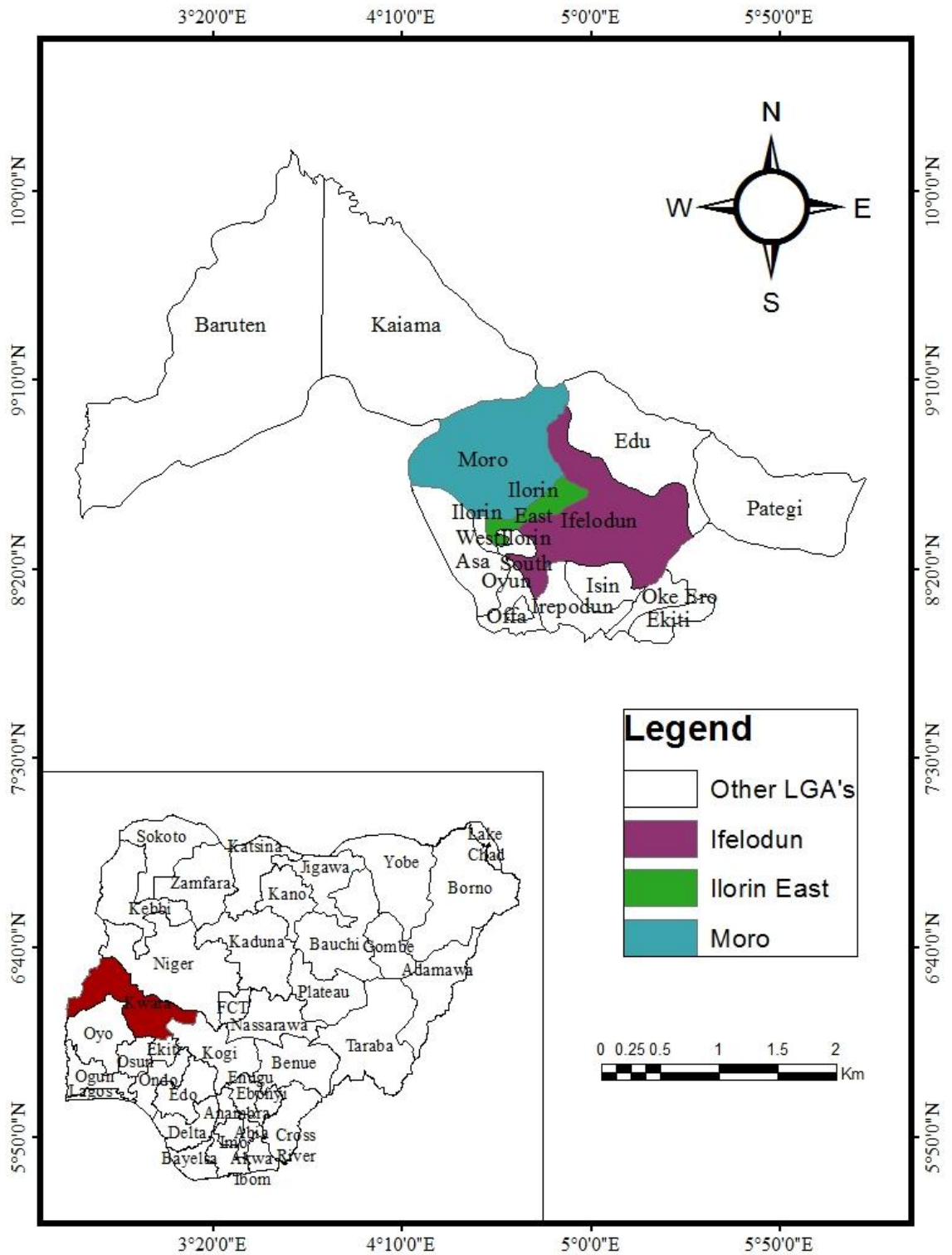


Fig: 3.1 Map of Kwara State showing the Study Area.

3.2 Sample Size and Sampling Technique

Data were collected in 3 Local Governments Area out the 16 Local Government Areas in Kwara State. These Local Government Areas were selected due to high level of dairy processing activities across the area (Fakayode *et al*, 2012), the Local Government Areas include Ilorin east, Ifelodun, Moro. The population consists of individuals involved in processing and marketing of dairy product in the area. A multi-stage sampling technique was employed in selecting the respondents the study. In each of the three local government areas two villages were randomly selected and 30 questionnaires were distributed among processors and marketers of dairy product in the areas making a sample frame of 180. Finally a total number of 90 dairy processors and marketers were randomly.

3.3 Data Collection

Data were collected through primary. The primary data were collected with the aid of structural questionnaire. The questionnaires were administered to marketers and processors of dairy products in the study area. This information includes Socio-economic characteristics such as age, sex, level of educational, marital status, household size and years of processing and marketing experience.

Processing information; Litres of milk, Type of Coagulant, Amount of firewood in (N), Price of cheese, amount of culture and flavor. Marketing information; price stability, market acceptability, storage facilities, consumer preferences, and types of dairy product processed.

3.4 Analytical Techniques

The following Analytical tools were used to achieve the objective of this study. Descriptive statistics, Gross margin analysis and Marketing performance index

3.4.1 Descriptive statistics:

These include measures of central tendencies mean, frequency distribution, bar chart and pie chart, percentages as well as measures of dispersion was used to actualize objectives i, iii and iv.

3.4.2 Gross margin analysis: this is the financial output of a firm minus it variable cost. This is use to determine the profitability of both the cheese and the yoghurt processors. This is given by the following formula.

Gross margin (GM) = Total revenue (TR) – Total variable Cost (TVC)

$$GM = TR - TVC \dots\dots\dots(6)$$

Total revenue (TR) is the total amount obtained from the sales of the processes dairy products.

Total Variables Cost (TVC) + Total Fix Cost (TFC).

The Total Variable Cost (TVC) includes cost of labor, Amount of milk, fresh cow milk, fire wood, flavor, and cost of flavor. While Total Fix Cost (TFC) includes depreciation of processing tool such as generators, pot, spoon, calabash. Using a straight-line method, would be used to determine the depreciation expenses. The total revenue would be total output multiplied by the price per unit of produce from the market price.

This was used to achieve object iii.

3.4.3 Marketing performance measures.

Marketing margin is the difference between the selling price and the total cost of its manufacturing and distribution. The can also be define as the difference in the price

between what the producer receives for a certain product and the amount the consumer pays for an equivalent amount of the product (Olukosi et al,1990).

Marketing margin is given by the formula;

$$MM = \frac{S_P - C_P}{S_P} \times 100\% \dots\dots\dots (7)$$

Where

MM= Marketing Margin

SP= selling price

CP= cost price

This was used to achieve part of objective iii

3.8. Marketing Efficiency. Marketing efficiency this is the ratio of value addition for the goods to their marketing cost (Shepherd, 1965) where the value added is the difference between the cost of the goods purchased by a firm and price for which it sell the goods (khol and uhl, 1987). It is also define as the maximization of the ratio of marketing outputs. The marketing output is the consumers satisfaction or utilities created or the value added to the commodity as it passes through the marketing system while the inputs are the different resources employed to provide marketing services (Olukosiet *al.*, 1988). It is given by

$$ME = \frac{VA}{CMS} \times 100\% \dots\dots\dots(8)$$

Where,

ME= marketing efficiency

VA= value added ie. Selling price minus buying price less cost of marketing service

CMS=cost of marketing service ie cost of transportation, storage, packaging, and branding. This was used to achieve part of objective ii

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Socio-economic Characteristics of the Respondents

4.1.1 Age of yoghurt and cheese marketers

The results presented in Table 4.1 show the age distribution of yoghurt producers in the study area. The results showed that majority 67.2% and 65.0% within 41-50years respectively. The average age of yoghurt and cheese producers was 43 and 42 years respectively. Implication of these findings is that large proportions of the respondents were adults and can adequately be regarded as active, agile, and physically disposed to farming activities. Age is very important in agricultural production activities because age has a significant influence on the decision making process of farmers with respect to adoption of improved farming technologies and other production-related decisions. This findings supports Olayemiet *al.*, (2009) and Yaaisheet *al.*, (2009), since the majority of the sampled farmers in their study were within the productive age of 21 and 50 years. According to Asongwa, Ihemeje and Ezihe (2011) argued that age of farmers have a positive effect on technical inefficiency.

Table 4.1: Distribution of the yoghurt and cheese marketers based on their age

Age (Years)	Yoghurt	Cheese
30-40	23(32.8)	7(35.0)
41-50	47(67.2)	13(65.0)
Total	70(100)	20(100)
Minimum	35	34
Maximum	50	49
Mean	43	42
Standard Error	0.57	0.89

Figures in parentheses are percentages

4.1.2. Household size of yoghurt and cheese producers

The results presented in Table 4.2 shows that about 65.7% and 25% of the yoghurt and cheese producers had household size of 1-3 members, 34.2% and 75.0% had family size between 4-5 persons. The average household sizes for the yoghurt and cheese producers were 3 and 2 members per household and standard error of 0.06 and 0.11 for yoghurt and cheese. This implies that on the average there is appreciable number family labour participating in yoghurt production.

Size of the household may enhance labour availability that can be used for different agricultural activities. The significance of household size in agriculture hinges on the fact that the availability of labour for farm production, the total area cultivated to different crop enterprises, the amount of farm produce retained for domestic consumption, and the marketable surplus are all determined by the size of the farm household (Amaza, *et al.*, 2009).

Table 4.2: Distribution of yoghurt and cheese marketers based on household size

Household Size	Yoghurt	Cheese
1-3	46(65.7)	5(25.0)
4-5	24(34.2)	15(75.0)
Total	70(100)	20(100)
Minimum	1.00	1.00
Maximum	3.00	2.00
Mean	3	1.4
Standard Error	0.06	0.11

Figures in parentheses are percentages

4.1.3 Distribution of experience among yoghurt and cheese marketing

The result presented in Table 4.3 shows that the majority (61.4% and 80%) yoghurt and cheese marketers had an average marketing experience between 3-4 years with the average mean of 3 and 1.8 years respectively, and standard error of 0.08 and 0.22. The minimum and maximum years of production experience was 1 and 4 years respectively. This implied that producers in the study area have sufficient experience in yoghurt and cheese marketing. This findings is in line with Ajani (2000) on productivity in food farming in northern area of Oyo State revealed that year of farming experience increased agricultural productivity among farming households in Nigeria.

Table4.3: Distribution of yoghurt and cheese marketers based on their marketing experience.

Experience (years)	Yoghurt	Cheese
1-2	14(20.0)	16(18.0)
3-4	43(61.4)	4(20.0)
>4	13(18.6)	Nil
Total	70(100)	(20)100
Minimum	1.00	1.00
Maximum	4.00	4.00
Mean	3	1.8
Standard Error	0.08	0.22

Figures in parentheses are percentages

4.1.4 Educational level of yoghurt and cheese marketers

The result presented in Table 4.4 shows the distribution of yoghurt and cheese marketers by their educational level indicates that about 1.4% and 10% of the marketers do not have access to formal education, 65.7% and 40% had primary education, while 32.9% and 50% had secondary education. This implies that the educational level of the marketers in the study area is low. The level of education is believed to influence the use of improved technology in agriculture businesses and, hence, farm productivity. The level of education determines the level of opportunities available to improve livelihood strategies, enhance food security, and reduce the level of poverty. It affects the level of exposure to new ideas and managerial capacity in production and the perception of the household members on how to adopt and integrate innovations into the household's survival strategies. Mohammed, Omotosho and Falola (2009) noted that level of education is expected to influence farmers' adoption of agricultural innovations and

decision on various aspects of farming. They also maintained that education is highly important for sustainable agricultural growth and development.

Table 4.4 Distribution of yoghurt and cheese marketers based on their level of education

Education	Yoghurt	Cheese
No formal education	1(1.4)	2(10.0)
Primary education	46(65.7)	8(40)
Secondary education	23(32.9)	10(50)
Total	70(100)	20(100)
Minimum	1.00	1.00
Maximum	2.00	2.00
Mean	1.3	1.2

Figures in parentheses are percentages

4.1.5: Distribution of yoghurt and cheese marketers according to marital status

This shows that yoghurt marketing in the study area is an enterprise of married individuals, who are seen to be responsible according to societal standard. The Table 4.5 shows that 6.8% and 15% of yoghurt and cheese producers in the study area were single while 94.2% and 85% were married respectively. In other words, the level of marital status is high among yoghurt and cheese producers in the study area. This observation is consistent with the findings of Umoh (2005); Onubuoguet *et al.*, (2013). According to Onubuoguet *et al.*, (2013), who reported that married farmers tend to have easy access to production variables such as land and large family size which are traditionally owned and provided by household heads (husbands) to compliment family labour, enhance production, resource use efficiency of the household farmers and to reduce the cost of hired labour.

Table 4.5: Distribution of marital status for yoghurt and cheese marketers

Marital status	Yoghurt	Cheese
Single	4(6.8)	3(15.0)
Married	66(94.2)	17(85.0)
Total	70(100)	20(100)

4.2 Costs and returns of yoghurt and cheese production

Cost of milk

The quantity of milk used per-day for yoghurt and cheese production was 1342.4 and 264.24kg/per-day with an average market price of ₦600 per day which constitutes about 14.3% and 6.03% of the total cost of production for yoghurt and cheese production respectively. The average cost of yoghurt production was ₦80, 574 while for cheese production was ₦15, 854. They also purchase their milk from virtually the same source and price.

Cost of labour

Labour was sourced from both family and hired. The cost of labour was computed on the basis of opportunity cost in man-days. The wage rate varied according to daily operation performed. An average wage rate of ₦400 per man-day was used. Hence, labour cost accounts for 58.0 % for yoghurt and 11.4 % for cheese production of the total cost. The average cost of labour used for yoghurt and cheese production was ₦32, 571 and ₦29, 856 respectively as presented in the table below. .

Cost of transportation

The unit price of transportation used per-day was ₦100 for yoghurt and cheese with an average transportation cost of ₦46,571 and ₦17160 per-day was used respectively and

this constitutes about 8.3% and 6.5% of the total cost of production for yoghurt and cheese production in study area respectively.

Cost of flavor

The quantity of flavor used were 65.28 litres/ha and 2.89 litres/per-production for yoghurt and cheese with an average market price of ₦200 per litre was used and this constitutes 2.3% and 0.4% of the total cost of production for yoghurt and cheese respectively. The average cost of flavor for yoghurt producers was ₦ 130, 57.2 while for cheese producers was ₦ 578. The cost of flavor was not much different among the yoghurt and cheese production.

Cost of firewood

The quantity of firewood used were 13.42.8logg and 10.34logg with average market per unit price of ₦100per-wood log and this constitutes 0.24% and 0.39% of total cost production for yoghurt and cheese respectively. The average cost of firewood for yoghurt and cheese were ₦1342.8 and ₦1034.

The results presented in Table 4.6 indicated that the total revenue (TR) for yoghurt and cheese were ₦625000 per-production and ₦480500per-production respectively while the average total cost of production for yoghurt and cheese was ₦561301.6 per-production cycle and ₦262861.5 per-production respectively. The gross income was therefore ₦63699 per-production ₦21853. The average rate of returns on investment (return per naira invested) was 1.13 for yoghurt, indicating that for every ₦1 invested in yoghurt production in the study area, a profit of 13 kobo was made. Similarly, the average rate of returns on investment (return per naira invested) was 1.80 for cheese, indicating that for every ₦1 invested in cheese production in the study area, a profit of

80 kobo was made. Thus, it could be concluded that yoghurt and cheese production in the study area was profitable.

Table 4.6: Summary of the cost and returns of yoghurt and cheese producers per production

Cost/Return Items	Unit price (₦)	Average output per production		Value (₦/production)	
		Yoghurt	Cheese	yoghurt	Cheese
(A) Variable Costs					
Milk	600	1342.9	264.24	80574	15854
Labour (man-day)	400	814.29	74.64	325716	29856
transportation	100	465.71	171.60	46571	17160
Flavor	200	65.286	2.89	13057.2	578
Firewood	100	13.428	10.34	1342.8	1034
Fresh milk	350	112.03	22.34	39210.5	7819
Packaging	35	100.86	56.30	3530.1	1970.5
Total Variable Cost	-	-	-	510001.6	216961.5
Total fixed cost					
Building	-	-	-	50000	45000
Depreciation of tools (items)	-	-	-	1300	900
Total	-	-	-	51300	45900
Total cost	-	-	-	561301.6	262861.5
(B) Total revenue	50	12500	9610	625000	480500
(C) Gross Margin	-	-	-	63699	21853
(D) return per naira invested	-	-	-	1.13	1.80

4.3 Market structure

The market structure consists of the characteristics of the organization of a market which seems to influence strategically the nature of competition and pricing within the market (Alex *et al.*, 2005). The market built on the structure of competitive market where there is no universally accepted method of analyzing the market conduct, parameters such as number and size of buyers and sellers, entry and exit condition, no government intervention, pricing policy was determined by the forces of demand and supply, marketing channel and market information were analyzed to examine the influence of the existing market structure on the market conduct.

Examination of the dairy product marketing was concentrated on (i) barrier to entry (ii) nature of the product (iii) market integration and (iv) market information.

i. Nature and relative size of participants in yoghurt and cheese processing and marketing

The participants of yoghurt and cheese processing and marketing included the manufacturers, yoghurt and cheese wholesalers (dealers), retailers and the final consumers.

Manufacturers: The structure of market for manufacturers in yoghurt and cheese processing and marketing was similar to that of purely competitive market in which many participants were involved and they produce similar products. There is no barrier to entry and exit into and out of the business.

Wholesalers (dealers): The relative sizes of yoghurt and cheese wholesalers were not very large and there are constraints to entry into the business. Firstly, one must register and become a member of the association before one can get involved in yoghurt and cheese wholesaling. The business of wholesalers can be described as the one with free

entry and exit into and out of the business where many producers are involved and producing differentiated products.

Retailers: In the business, there are relatively large sellers (retailers) and the products they produced are identical. There is no barrier to entry in the business of retailing dairy product. Retailers can be described as the one with free entry and exit into and out of the business where many producers and wholesalers are involved and producing identical/differentiated products.

The yoghurt and cheese retailers sold on a small scale and their profit level is low. There is no barrier to entry and exit into and out of the business for both wholesalers and retailers. The final consumers involved into the market buy in small quantity directly from the retailers who displayed the product into different units to the choice to final consumers.

ii. Nature of the product

The dairy industry processed yoghurt and cheese. There are differences in the quality of yoghurt and cheese produced by the industries. This led to some variations in the prices of the yoghurt and cheese produced in one dairy and the other. The yoghurt and cheese produced are homogenous not vary in colours from one dairy industry to the other. The variation in the produced by different dairy industries may be technical knowhow, the quality control and taste of the yoghurt and cheese before processing. In dairy wholesaling business, the products they bought are somehow differentiated depends on price and quality. The dairy wholesalers sold to retailers who make some value addition (assembled) before the products are sold to final consumers.

iii The degree of vertical integration

The study revealed that there was some degree of vertical integration performed particularly by some yoghurt and cheese retailers. Some retailers combine the works of buying from wholesalers and process it into ready finished products. Therefore, there is no vertical integration done.

iv. Market information in yoghurt and cheese processing and marketing

The study revealed that all the marketers in yoghurt and cheese processing seek market information. The major information sought were price and available markets for the sales of their products. The respondents generally indicated that any information about price changes or new market got to them but sometimes very late. In some cases, it is not all information that got to them at the time they needed it most.

The major sources of market information available to the various value chain actors were friends and colleagues, members of their association and some buying agents. The study also revealed that market information was hardly obtained from radio, government agents and extension agents. As there was information flow among the marketers, it was not easy for a single buyer to influence the price of yoghurt and cheese.

Table 4.7: Summary of the market structure for the various value actors of yoghurt and cheese processing and marketing

Market actors	Barriers to entry	Nature of the product	Degree of vertical integration	Market information
Producers	No barrier to entry	Homogeneous products -Pure competition	No vertical integration	Seek market information - Price information -Available markets
Wholesalers	No barrier to entry	Homogeneous products -Pure competition	No vertical integration	Seek market information - Price information --Available markets
Retailers	No barrier to entry	Homogeneous products -Pure competition	No vertical integration	Seek market information -Price information -Available markets
Consumers	No barrier to entry	Homogeneous products -Pure competition	No vertical integration	Seek market information - Price information -Available markets

4.4 Marketing Margin

The result resented in Table 4.8 shows the marketing margin of yoghurt and cheese marketing. This marketing margin refers to the difference in price paid for a commodity at different stages of the marketing system. The margin is determined by calculating the average cost of marketing for each participant in the various stages involved in the transaction of dairy business. The major participants are wholesalers, retailers and producers/commission agents. The result shows the average cost, average sales and net return of marketing dairy products. It was revealed that in yoghurt production, the manufacturer had a marketing margin of 1.40% which signifies their profit making

otherwise known as commission, the wholesalers had a marketing margin of 1.61%, and the retailers had a marketing margin of 1.77%. In cheese production, the wholesalers had a marketing margin of 1.35%, and the retailers had their marketing margin of 1.47% with net return of ₦600 and ₦700 respectively.

Table 4.8: marketing margin

Yoghurt Marketers	Items	Average Cost	Average Sale(₦)	Marketing Margin	Net return
Producers	Purchase	35000			
	Commission	500	35500	1.40	500
Wholesalers	Supply price	35500			
	Transportation	200			
	Storage	600			
	Branding	300			
		36600	37200	1.61	600
Retailers	Supply price	37200			
	Transportation	600			
	Storage	400			
	Shop-rent	500			
		38700	39400	1.77	700
Cheese marketers	Supply price	39700			
	Transportation	1500			
	Storage	600			
	Shop-rent	1500			
	Loading	300			
	Others	100			
		43700	44300	1.35	600
Retailers	Supply price	44300			
	Transportation	600			
	Storage	500			
	Shop-rent	1000			
	Others	200			
		46600	47300	1.47	700

4.4.1 Marketing efficiency

The result presented in Table 4.9 shows the various marketing efficiency of dairy products. For the wholesalers in yoghurt and cheese production, cost of marketing

services were ₦1200 and ₦1800 respectively; value added were ₦600 and ₦600 respectively; the marketing efficiencies of yogurt and cheese products were 50% and 33%. For retailers in yoghurt and cheese production, cost of marketing services were ₦1400 and ₦1600, the values added to marketing of yoghurt and cheese products were ₦700 and ₦1000 respectively, the marketing efficiencies of yogurt and cheese products were 50% and 43%. Manufacturers cost of marketing services was ₦500, value added ₦60 and marketing efficiency was 12%.

Table 4.9: Marketing efficiencies of yoghurt and cheese production in the study area

Marketers	Estimates	Yoghurt market efficiency	Cheese market efficiency
Middlemen	Cost of marketing Service(₦)	500	-
	Value added	60	-
	Marketing efficiency (%)	12%	-
Wholesalers	Cost of marketing services(₦)	1200	1800
	Value added	600	600
	Marketing efficiency (%)	50%	33%
Retailers	Cost of marketing services(₦)	1400	1600
	Value added	700	700
	Marketing efficiency (%)	50%	43%

4.5 Constraints of Yoghurt and Cheese Production

Nigeria's business sector in general as well as the dairy subsector in particular has experienced some impediments which slowed the performance of the sector. This has caused the output growth not to keep pace with its demand thereby resulting in declining exports and domestic supplies and a growing reliance on imports of the

products. The problems faced by Yoghurt and Cheese marketers in the study area were ranked according to their severity as stated by the respondents (Table 4.10).

The respondents (72.7%) reported inadequate capital was ranked 1st among the major constraint in yoghurt and cheese production. The importance of credit to agricultural development cannot be overemphasized. Credit enables farmers to advantageously use inputs and factors of production by granting farmers more access to resources through the removal of financial constraints. The provision of credit will reduce the costs of capital intensive technology and assets relative to family labour (Ammaniet *al.* 2010). Looking generally at this constraint, it is assumed that shortage of capital was a major constraint. This affects yoghurt and cheese production in the study area, because the meager savings the farmers might have made or the funds generated from relatives is not sufficient to satisfy various activities in yorghut and cheese production. It also agrees with findings of Nasiru, (2010) who noted that access to micro-credit could have prospect in improving the productivity of marketers and contributing to uplifting the livelihoods of disadvantaged rural farming communities.

The result revealed that 58% and 48.9% of yoghurt and cheese marketers reported inadequate processing and storage facilities as the 2nd and 3rd constraint encountered in yoghurt and cheese production. However, it is an established fact that inadequate processing and storage facilities often leads to perishability of some diary product and glut during harvests period being reduced and farm products wasting. Similarly, processing facilities are very expensive to procure, highly technical for local farmers to operate and very difficult and expensive to maintain. This led to great loss in farm revenue and the risk involved in losing revenue by farmers from their investments could reduce the level of production in agriculture.

Long distance to market (47.8%) coupled with the poor transport network (22.8%) were also constraints reported by the respondents respectively. This could be as a result of the fact that the longer the distance from the farm to the market, the higher the transportation costs that will be incurred. Some farmers, because of their inability to pay the transportation costs, sell as much as they can at the farm gate. Whatever is left is utilized by the household while the remaining is left to rot. Apart from that it might also be as a result of bad network roads. Most of the roads that leads to the farm gates are bad and difficult for vehicles to pass through thereby discouraging these farmers from taking to the market.

About 11.4% of the yoghurt and cheese marketers reported Poor/low price at harvest. It was ranked 4th among the constraints. This was because most of the marketers sold their products at fresh and close to supply area. This cannot be unconnected to the unorganised nature of our rural markets. Market information flow as regards good prices is a major challenge in this aspect. Markets are located in far areas which induce the producers to sell at giveaway prices. This makes producers not to have steady pricing trend which they can predict at any time. While the least constraints was problems of poor power supply 8.5% in the study area.

Table 4.10: Constraints faced by Yoghurt and Cheese Marketers

Constraining factors	Frequency	Percentage	Ranking
Inadequate capital	128	72.7	1 st
Inadequate processing and storage facilities	102	58.0	2 nd
Distance to market	39	48.9	3 rd
High cost of transportation	25	14.2	4 th
Poor market	20	11.4	5 th
Poor power supply	15	8.5	6 th

* Multiple responses

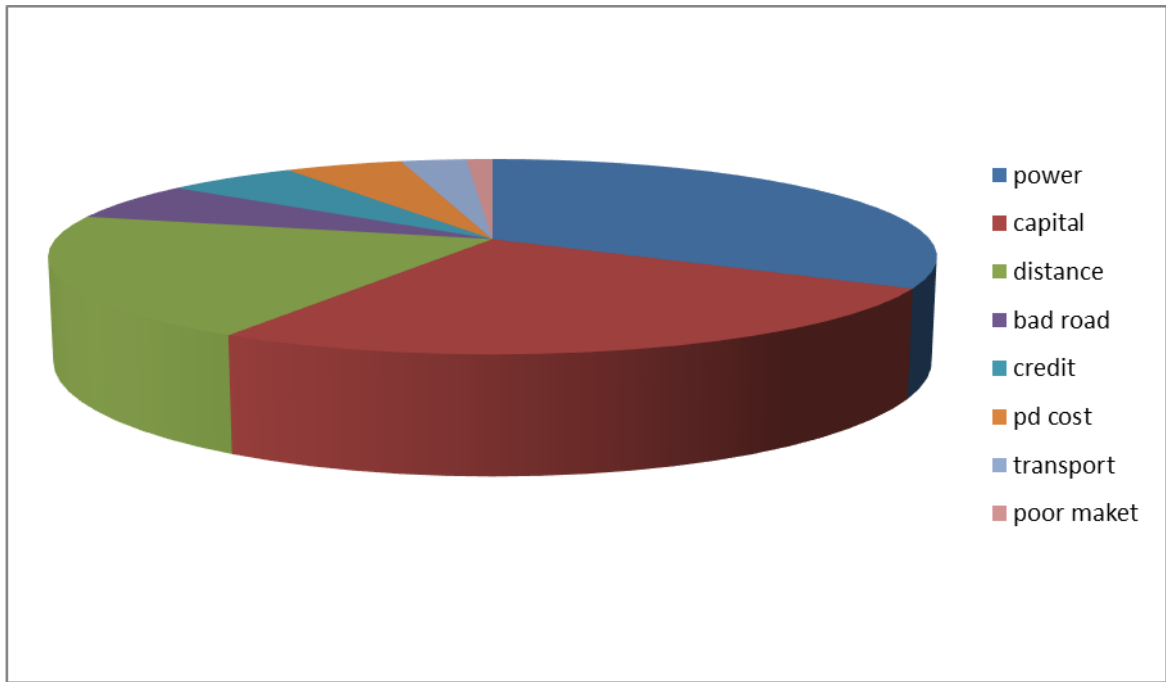


Fig.5.1: Pie chart representation of production constraints of cheese and yoghurt in the study area

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

The main focus of this study was to determine the profitability of processing and marketing of dairy products, while the specific objectives of the study are to: describe the socio economic characteristics of the dairy products processors and marketers in study area, determine the cost and return of processing and marketing of dairy products in the study area, determine the marketing structure and performance of dairy products in the study area and identify the problems associated with marketing and processing of dairy products,

Multi-stage sampling technique was employed in selecting the respondents. In each of the three local government areas two villages were randomly selected and fifteen questionnaires were distributed among processors and marketers of dairy product in the study areas. Finally a total number of 90 dairy processors and marketers were interviewed with the aid of structural questionnaire.

The average age of yoghurt and cheese processors and marketers were 43 and 42 years while the minimum and maximum ages were 35 and 50 years for yoghurt producers, 34 and 49 years for the cheese producers with standard error of 0.57 and 0.89 respectively. The average household size for the yoghurt and cheese processors and marketers were 3 and 2 members per household with standard error of 0.06 and 0.11 respectively.

The total revenue (TR) for yoghurt and cheese were ₦625000 per-production and ₦480500 per-production respectively while the average total cost of production for yoghurt and cheese were ₦561301.6 per- production and ₦262861.5 per-production respectively.

The study revealed that in yoghurt processors and marketers, the manufacturer had a marketing margin of 1.40% which signifies their profit making otherwise known as commission, the wholesalers had a marketing margin of 1.61%, and the retailers had a marketing margin of 1.77%. In cheese processors, the wholesalers had a marketing margin of 1.35%, and the retailers had their marketing margin of 1.47% with net return of ₦600 and ₦700 respectively.

The marketing efficiency of dairy products shows that the wholesalers in yoghurt and cheese production, the cost of marketing services were ₦1200 and ₦1800 and value added were ₦600 and ₦600 respectively; the marketing efficiencies level of yoghurt and cheese products were 50% and 33% respectively. The study revealed that inadequate capital in were the most severe constraint faced by the yoghurt and cheese processing and marketing in the study area.

5.2 Conclusion

Based on the findings of this study, it could be concluded that yoghurt and cheese production in the study area is profitable the average rate of returns on investment (return per naira invested) was 1.13 for yoghurt, indicating that for every ₦1 invested in yoghurt production in the study area, a profit of 13 kobo was made. Similarly, the average rate of returns on investment (return per naira invested) was 1.80 for cheese, indicating that for every ₦1 invested in cheese production in the study area, a profit of 80 kobo was made. Thus, it could be concluded that yoghurt and cheese production in the study area was profitable. In terms market performance, the marketing margin and marketing efficiency were used as indicators for performance. It is concluded that the wholesalers in yoghurt and cheese processors and marketers had marketing services of ₦1200 and ₦1800 with value added of ₦600 and ₦600 respectively.

5.3 Contributions to knowledge

- i The study discovered that the processed yoghurt and cheese products market is a free market where there is free entry and exit, the pricing policy was determined by the forces of demand and supply.

- ii The study revealed that yoghurt and cheese processing and marketing is profitable by having the net profit / gross margin of ₦63699 and ₦21853 respectively.

- iii The study also reveal that there are various marketing efficiency in the depending on the marketing stage . for the wholesaler the market efficiency of yoghurt and cheese is 50% and 33% respectively while at retailer stage it 50% and 43% respectively

5.4 Recommendations

Based on the findings of this study, the following recommendations were:

- i. As low capital base was one of the problems encountered by the producers, therefore, it is recommended that the yoghurt processors should be encouraged to form co- operative groups and pool their resources together to improve their finances and bargaining powers in other to make more profit in the business.

- ii. The marketing efficiencies of yogurt and cheese products were 50% and 43%. This implies that a yoghurt and cheese product in terms of processing and marketing is highly efficient in the study area. Therefore it is recommended that others investors should invest into dairy products since they are marketable.

- iii. Poor power supply was also discovered as another problems and challenges encountered by the producers in terms of storage of the processed yoghurt. The study recommends that adequate power supply should be maintained to reduce losses from the processors and marketers.

REFERENCES

- Adeleke A.(2013). Mini Review: Theoretical and On Site Evaluation of hazard potential in the Local Production of *Wara*: An Indigenous West Africa Cheese. *British Microbiology Research Journal Science*.Domain International.219-234. [http:// www.science domain.org/reviewretrieve](http://www.science domain.org/reviewretrieve) on 14 July, 2014
- Ajani, O. I. Y. (2000) Resource productivity in food farming in northern area of Oyo State, Nigeria. Unpublished PhD thesis, Department of Agricultural Economics, University of Ibadan.Pp.167
- Akinlabi F., Anna, G.,Linda. N, Tim G., (2008). Media and Behavior Change: A Case study of the BBC world service Trust “Stop HIV” Intervention in Nigeria Midline Research Report. The Communication Initiative and BBC WST Website Accessed Jan 10, 2010.
- Akintunde,T.I, Bisi-Johnson.OBesong,P.O,Enwe,Okoli P.N.,Uaboegbenni,P.O.(2010). Proximate Analysis and Microbiological Quality of Cheese Produce from Raw Cow milk obtained from Fulani settlement in OgunState Nigeria.Using Acid Bacterial and Extract from Sodom Apple Leaf” *calotropis. Journal of Nutrition Pakistan*. 9(9) :920-925.
- Akinsoye,.O.(2007). Demand for Dairy Products in Nigeria: Evidence from the Nigeria Living Standards Survey. *Journal of Economics and Rural Development* 16 (1):13-16.
- Alfa-Nla(2009).Economican Analysis of Watermelon. Agriculture Research Unpublish M.Sc. Research Proposal. Department of Agricultural Economics, Faculty of Agriculture.AhmaduBelloUniversity,Zaria.
- Alalade O.A. and Adeneye, J.A. (2006).The Effects of Storage Period on the Chemical Composition and Coliform Micro floral of Wara Cheese. *International Journal of Dairy Science*.1(2) :126-130.
- Alex G., Malucila A.L., Satit.A.andPatcharee,S. (2005) Measuring cost efficiency in smallholder Dairy.Empirical Evidence from Northeast Thailand. International livestock Research institute. Depart of Agriculture economics, Khonketen University, Thailand.
- Amaza, P., Tahirou, A., Patrick, .K., and Amare, T. (2009). Changes in Household Food Security and Poverty Status in PROSAB Area of Southern Borno State, Nigeria. Promoting Sustainable Agriculture in Borno State (PROSAB).International Institute of Tropical Agriculture, Ibadan, Nigeria.:1-40
- Armenian Development Agency (A.D.A.) (2012). Cheese Market Cheese is milk leap toward Immortality. Cheese Market Research for Armenian, Russian and Europe Market.

- AmhaKasahun, (2008). An Integrated Urban, Peri -urban and Rural Dairy Development Program in Tigray Draft Document livestock Development Consulting Group.
- ApataA., Joseph.J.K, Mohammed L., Omotosho(2006). Food Security, Agricultural Production and Co-operatives in Nigeria, University of Ilorin.
- Armenian Development Agency (2012) Cheese markets: Cheese market research for American Russia Georgian European and Arab markets report.
- Asogwa, B.C., Ihemeje, J.C. and Ezihe, J.A.C. (2011). Technical and Allocative Efficiency Analysis of Nigerian Rural Farmers: Implication for Poverty Reduction, *Agricultural Journal*. 6(5): 243-251
- Awoyele, A.A, Adekunle A.J, Ajunwa O.M, Cadmus S.B. (2014) Mini Review: Theoretical and Onsite Evaluation of Hazard Potential in the Local Production of Wara: An Indigenous Africa soft cheese. *British Microbiology Research Journal*. 3(3): 218-233.
- Badmus, A.H.A., Ahmed El-Imam, A.M. and Ajiboye, D.J. (2014). Comparative Evaluation of Soft Cheese Treated with *Moringaolifera* and Natural Honey. *Wayamba Journal of Animal production*. 1(4). Pp. 939-946.
- Bavorova, M. (2003). Influence of Policy Measure on the Competitiveness of Sugar Industries in the Czech Republic. *Journal of Agricultural Economics*. Czech. 49, (6) 266-274.
- Bello, B.H., Dire, B., Girei A. (2013). Assessment of Cost and Return of Cattle Marketing in Central Zone of Adamawa State, Nigeria. *British Journal of Marketing Studies*. 1(4):1-10. European Centre for Research, Training and Development.
- Bernard Bonnert (2011). Demand for Farm Animal Product in Nigeria. An Opportunity for Sahel Countries. Ministry of Livestock and Animal Resource Chad <http://www.iram-fr.org> accessed on 15 August, 2013.
- Bezlepkina, I., Oude Lansink, A. and Oskam, A. (2005), "Effects of subsidies in Russian Dairy farming", *Agricultural Economics Journal*. 33(2): 277-288.
- Brian W. Jesse Ed (2005). Marketing and policy. Briefing paper: Federal Order Product Price Formulas and Cheese maker Margin. University of Wisconsin. Madison.
- Brown, B. (2004). Importance of Marketing Research: Now and Beyond <http://www.agricproduce.com/index>.
- Buckman Raul (2003) Milk Production and It Uses. www.oldandsolid.com/article

- Bui T.N, Trantuu, C. and Niguyen, H.A. (2003): Production and Marketing Constraint of Dairy Farmers in Son La Milk value Chain Vietnam. *Greener Journal of Business Studies Vietnam*. www.gjournal.org.
- Constantina, T. Theodor V. (2014). Food Engineering Fundamental. Food. Engineering Book. (2) CRC press
- Daily Report (2006) for a better understanding of milk production Worldwide. International Farm Comparison Network. (IFCN) Daily Research Centre, Kiel, Germany.
- Dairy Council of California (2009): Bone in children and Adolescents: Implications for Client Crunsell www.nutritionaldimension.com.
- Dhaka, J.P (2011). Production and Marketing Efficiency of Dairy Farms in Highland of Ethiopia. An Economic Analysis: *Internal Journal of Enterprise Computing and Business System* 1(2).
- Daff (2012). A profile of the South Africa Dairy Market Value Change (2012). South Africa www.daff.govsa.
- Davidova, S. and Latruffe, L. (2007), "Relationships between technical efficiency and financial management for Czech Republic farms", *Journal of Agricultural Economics*, 58(2): 269-288.
- Dayanandan, R. (2011) Gender Mainstreaming through Extension: Problem and Prospects. *Alternative Perspective. Soc.Sc* 3 (3):550.
- Department for International Development DFID (2005). Growth and Poverty Reduction: The Role of Agricultural :32-34.
- Dhaka, J.P, and Rangasam, N (2007). Milk Procurement Co-operative and Private Dairy Plants in Tanil Nadu: A Comparison, *Indian Journal of Agriculture Economics*. 62(4): 679-693.
- Dietary Guideline for American (2010). Review Report. United State Department of Health and Human Service. www.dietaryguideline.gov.
- Duhan, V.K., Khatkar, R.K, and Singh, V.K. (2004). Nature of Markets and Role of Co-operatives in marketing of milk in Rewari District of Hariyana. *Indian Journal of Agricultural Economics* 5(3):651
- Erin B. (2005). Livestock Policy Analysis: The role in Food Security McGrew. New York. USA.
- Ehui S, (2008) Livestock Policy Analysis: The Role of livestock in food Security Mccrow New York.

- Ellio.F.(1996).Technical scale and allocation efficiencies of Turkish banking Industries
Journal of Banking and Finance .26(4):719-766.
- Emily S.,(2012). Acient African made Cheese Settle Down. The Archeology Mission
theSahara,Sappiest,UniversityofRome. <http://www.news.discovery.com.history>.
- Fakayode S.B.,Olorunsanya E.O,Nwauwa L.O.E,Yusuf TM,(2012).Economics of
Local Cow Milk Products marketing in KwaraState.*Journal of Agriculture and
Food science* 10 (1):35-50.
- Food and Agricultural Organization.FAO (2004). The State of Agricultural Commodity
Markets FAO, Rome. <http://www.faostat.fao.Org/>.
- FAO (2005).Annual Review and Outlook for Agriculture and Food Production
2004/2005.
- FAO, (2007). FAO Database Crop production Retrieved on 19 July.
<http://www.faostat-fao.org>
- FAO (2009). Milk and Dairy Product: Agribusiness Handbook Food and Agricultural
Organization of the United Nation. FAO, Rome, Italy.
- FAO (2010). Dairy imports into Sub-Saharan Africa problem, policies and prospect.Fact
and Figures on Dairy Imports into Sub-Sahara Africa.International
LivestockResearch Institute for Africa. ILCA,Addis, Ababa Ethiopia.
- FAO (2010).Gender Dimension of Agricultural and Rural Employment: Differentiated
pathways out of Poverty.<http://www.fao.org/docrep/013/> (Accessed 26 February
2012).Institute for Research and Application of Development Methods reports
(2009). www.oie.int/doc/ged.
- FAO (2012).Profitability and Efficiency of Indian Diary Farms.
<http://www.fao.org/WAIRDOCS/LEADS>.
- Fan M. (2013). Milk Producers Dairy Products in Nigeria <http://wiki.projectszoology.com>.
- Germany.J.B., Gibson R.A.,Krauss R.M., NestelP.,Larmarche. B., Van staveren W.A.,
Steijns J.M DE foot L.C., LOCK AL., Destailats ,F., (2009). A Reappraisal of
the Impact of Dairy Foods and Milk Fat on Cardiovascular Disease U.K pubmed
Publication National Library of Medicine National Institutes of Health
- Hannart Burkhart (2007). Preservation of Cheese in Tropic Region.CRCPress
Amazon.com. London.
- Haywad, R. (2007), Maintain co-operate Image. Prentice Hall

- Helen R and Elisabeth, (2004). Micro Biology of cheese Institute of Food Research ShirefieldBerk Shire UK.:409.
- ILCA (2012).International Livestock Centre for Africa. Annual Report, Mombasa Kenya.
- ICUSDNDCR, (2011).Innovation Centre for United State Day and National Day Council.Annual report.New York USA.
- IDFA(2010) International Dairy Food Association .Making a Difference for a Day. Washington D.C USA.
- Khols R.L. and Uhils.J.N.(1990). Marketing Agricultural Products, Macmillan Publish Company, New York 594-605 Pp.
- Koisikowski, F.V. (2007) Soya Bean Extruded Product: A response Analysis, *Journal of Food science*. 41(3):647-651.
- Korea Central Cancer Registry (2002).Annual Report pubmed.gov.US National Library of Medium.
- Lawal A.F. and Adigun O. (2012). Profitability and Technical Efficiency of Yam Production in Kuje Area Council of Federal Capital Territory (FCT)Abuja: In J.M. Jubril,M.A.Hussaini ,B.M. Auwalu, E.U. Essiet, I.R.Muhammad ,S.G Muhammad,M.I.Danaji, Y.Garba and S.A.Pantami(e.ds) . *Agricultural Transformation in a Deregulated Economy: Prospects and Challenges*. Proceeding of the 46th Annual Conference of the Agricultural Society of Nigeria B.U.K Kano. Nigeria.
- Lovell,C.(1993)."Production Frontiers and Productive Efficiency",Freed,Lovell, C.,Schmidt, S.(eds),*The Measurement of Productive Efficiency:Techniques and Applications*,Oxford University Press,New York,: 3-67.
- Marvin JP. (2007): A Comparison of the Dairy Industries in Canada and New Zealand Journal of International Farm Management.4 (1)www.ifmaonline.org.
- Mbanasor A.,Nwankwo,O.O., (2001). An Economic Study of Palm oil Marketing in Akwa-Ibom .*Journal of Applied Agricultural Research*. JACAR.,7(1): 120-126.
- Mejehal, R.O, Nwosu A.C, and Efenwa (2000) Analysis of Rice Marketing in Umuahia Zone Policy Implication for Food Security in Umuahia, Urban, Abia State. Agricultural Production and Strategies for Meeting Nigeria's Food Demand in the 33rd Annual Conference of the Agricultural Society of Nigeria National Cereals Research institution Baddegi, Niger.
- Milk Producers Co-operative Association Limited MILCOPAL (2007). Overview of the Nigeria Dairy Industries and Milk Conference Presentation.
- Mohammed Srage (2009). Determinates of Participation in Livestock Marketing in AwisResu Zone.A far region Unpublished Thesis Mekelle, Ethiopia.

- Muhammed-lawal, A., Omotesho, O. A. and Falola, A. (2009). Technical Efficiency of Youth Participation in Agriculture. A Case Study of Youth-in-Agriculture Programme in Ondo State; South-West Nigeria. *Nigeria Journal of Agriculture, Food and Environment*: 5 (1), 20 – 26.
- Nahar A., Al-Amin, M., Alam S.M.K., Wadud A., Islam M.N., (2007): A Comparing Study on the Quality of Dahi Yoghurt Prepared from Cow, Goat and Buffalo. *International Journal of Dairy* 2(1):260-267.
- NBS 2010. National Bureau of Statistics. Commercial Agriculture Development Project Baseline Survey Report.
- National Bureau of Statistics (2005): Poverty Profile for Nigeria, NBS. Abuja. Nigeria.
- National Holistic Chambers of Commerce N.H.C.C (2009). History of Cheese. National Institute of Cheese Making. *South African Journal Press*.
- Ogundari, K., Ojo, S. O. and Ajibefun, I.A. (2006). Economies of scale and cost efficiency in small scale maize production: empirical evidence from Nigeria. *Journal of Social Science*. 13(2): 131-136
- Olajide, O., Apejaye, F., and Chukwuma B. (2006). A Survey of Economically Valued Forest Trees and Shrubs at the proposed site for Airport in Akwa-Ibom State, Nigeria. In: Popoola, L (e.d) Proceeding of the 31st Annual Conference of FAN held at Makurdi, Benue State Nigeria. From 20th and 25th November, 2006. Pp203-208.
- Olaleye, R. S., Ibrahim, M. and Ojo, M. A. (2009). Probit Analysis of Women's Access to Agricultural Inputs in Bosso Local Government Area, Niger State, Nigeria *Journal of Agricultural Extension* Vol. 13 (2):1-9.
- Olaoye, O.J (2006). Fish Production and Management: Marketing of Fish and Fish Products University of Agriculture Abeokuta UNAAB Lecture notes. <http://unabb.edu.ng>.
- Olayemi JK, Olatunbosun. 2005: Problems of Nigeria food Economy. Course Guide: Global Economics Environment. National Open University of Nigeria. <http://www.nou.edu.ng>
- Olukosi, J. O and Isutor, S.U (1990). An Introduction to Agriculture Marketing and Price: Principle and Application Living Book series. GU Publication Abuja Pp 115.
- Olukosi, J.O and Erhabor P.O. (1988) Introduction to Farm Management Economics: Principle and Application Agitab publisher, Ltd Zaria.
- Oluwatayo, I. B. 2009. "Poverty and Income Diversification Among Households in Rural Nigeria: A Gender Analysis of Livelihood Patterns." Paper presented at the 2nd Instituto de Estudos Sociais de Economicos (IESE) conference on dynamics

of poverty and patterns of economic accumulation, Mozambique, April 22–23, 2005, 1–21.

- Opanaku S.O. 2006: Analysis of Participating Poultry Production Research in Lagos state, Nigeria: Department of Agricultural Extension and Rural Development University of Agriculture Abeokuta.
- Osoimehin K.O., Tijani, A. A and Olukologban, E.O (2006). An Economy Analysis of Smallscale Dairy Processing in Kogi State .Nigeria Livestock Research institute. Pp 118-119.
- Panagiotis Sfakianakis and Constatnina Tzia (2014). Conventional and Innovative Processing of Milk for Yourghort Manufacture Development of Texture and Flavor: A review *Journal of food reports* University of Athens. Greece. (1)176-193.
- Peter, P. (2011). Introduction to Agricultural Research .Ladoke Akintola University of Technology Lecture note.
- Selvin Akku Clemens (2014). Consolidation and Its Efficiency Effects: Evidence from the Dairy Industries. New York University. U.S.A.
- South Africa Cheese Report (2010). Agric. Expo Festival www.cheese Festival.COZA.
- Tangka, F.K.L Dalaker, J., Chattopadhyay, S.K, Gardner, J.G. Royalty, I.J (2006). Meeting the Mammography Screening Needs of Underserved Women the Performance of the National Breast and Cervical Cancer Early Detection Program in 2002-2003. *Cancer causes and Control*. 17(9).1145-1154.
[www.pubmedcentral n.h.gov](http://www.pubmedcentral.n.h.gov).
- Tangka F., Ouma, E.A., Stall S.J and Shapiro, B. (2006). Women and the Sustainable Development of Market-Oriented Dairying Evidence from the Highland of East Africa paper presented at the International Sustainable Development Research Conference. University of Leeds. Leeds U.K.
- Ugbajah, M.O. and Uzuegbuna C.O. (2012). Causative Factors of Decline in Cocoyam Production in Ezeagu Local Government Area of Enugu State: Implications for Sustainable Food Security. *Journal of Agriculture and Veterinary Sciences*. 4:35-44.
- Umoh, G.S. (2006). Resource-use Efficiency in Urban Farming: An Application of Stochastic Frontier Production Function. *International Journal of Agriculture and Biology*, 8(1):38-44.
- USDEC. United State Dairy Export Council. (2014). The United State industry <http://www.usdec.org/files>

- USAID. United State Agency for International Development (2005). Dairy Fact Sheet. info@nigeriamarkets.org
- Van Berkum, S. (2009), An Assessment of the Competitiveness of the Dairy Supply Chain in New Member States, Candidate Countries and Potential Candidate Countries, Final report, Agric Policy, May.
- Vergrof B. (2013). Strategies for Dairy Farm Profitability: Planning for Greater Dairy Herd Profitability, Field Manual. Richard Webster Nutrition Ltd. U.K.
- Ya'aisheModu A., Putai, J. and Petu-Ibikunle, A.M., (2009). An Economic Analysis of Cowpea Production among Women Farmers in Askira/Uba Local Government Area Borno State Nigeria. *African Journal of General Agriculture* 6 (1) :1-11.
- Yunusa, A.J. (2011). Quality Characteristics of Cheese produced from three Breeds of Cattle in Nigeria. *Journal of Environmental Issue and Agriculture in Developing Countries* .3(3) : 95-99

RESEARCH QUESTIONNAIRE

The purpose of this questionnaire is to **examine** the efficiency and profitability of processing and marketing of **dairy** products in Kwara. All information will be treated with optimum confidentiality.

A. Back ground information.

1. Name of Respondents:
2. Age of the respondent: —
3. Marital status: -..... -..... -.....
4. Educational level a. Informal education (b) formal education (c) Qur'anic education

B. Socio Economic activities

1. What is the size of your household?
a. Below 5 (b) 5-10 (c) 11 above
2. Which of the dairy product do you processed?
a. Local cheese (b) butter (c) sour milk (d) yoghurt (e) all of the above
3. How long have you been processing the dairy products? a. Less than 5 years b. 5 - 10yrs c. 11-15 d. above 15 yrs

C. Processing and production information

1. How much do you spend on milk in (litres)?
2. How much do you incur on transportation?
3. How much do you spend on the coagulant?
4. How much do you spend on labour?
5. How much do you spend on packaging?

6. How much do you spend on diesel?
7. How much do you spend to maintain your equipment?

8. What other item do you use?

a. _____ b. c.

9. How much do you spend on each of them?

a. _____ b. c.

10. How much do you realize from sales of the products? D.

Marketing performance information 11 .What is the method in which you sell your product? a. Hawking b. Retailing c.

Wholesaler

12. Do you have any price control?

Yes or No

13. What is the level of acceptability of the product in terms of marketing?

a. High b. low c. moderate

14. Do you have an association?

Yes or No

15 How do you store the product? _____

16 Is it effective?

Yes or No

17 What is the cost of the storage?

- 18 Do you receive any incentive or grant from the government to **assist** in the production process?
- 19 In what way do you think the government could be of help to **you**?
- 20 What are the challenges you encounter in the production **process**?