CHAPTER - I

GENERAL INTRODUCTION

1.1 INTRODUCTION

In today's highly dynamic and increasingly competitive market situation, consumer product markets are heterogeneous, complex, wide, and diverse in nature. Also, multi-faceted behaviour of consumers in their needs, wants, expectations, and constraints along with availability of multiple products of similar type and varying usage's patterns has resulted in division of the total market into smaller and more homogeneous segments. In such a market condition, the marketing manager cannot derive optimum benefit from the total market by catering one type of product, at a single price for all. As, no two buyers are alike in their marketing behaviour, grouping of buyers do share certain common characteristics which enable in the formation of some meaningful and useful market segments.

The herculean task that marketing manager faces is in identifying meaningful segments on some bases taking into consideration the characteristics of prospective buyers which are less diverse and more uniform in nature compared to the total market and is also expected to respond similarly to certain marketing moves as well as forthcoming changes. There should be much homogeneity within intra-segments and clear distinction between the inter-segments. Once, the identification of meaningful market segments is done, then the process for exploiting each market segment starts based on its own potential demand so as to achieve marketing objectives of the marketing manager. The next task would be to formulate effective marketing strategies and implement them and to evolve new marketing opportunities in due course.

As market for consumer products are dynamic, marketing professionals are needed to identify and keep updated with the changing needs of organisations and of individuals. But, with improved and rapid technological changes in certain areas, the responsibilities of marketing executives have also increased to deal with the complex marketing situations. As a result of this, some organisations have become more market-driven in their strategic decision making. In that case, marketing executives have to tackle a problem in a way where information and decision-making in a scientific way play a vital role.

The decision making by marketing management involves marketing problems viz., in the areas of price, distribution, product design, and promotion; in case of market segmentation studies, it involves decision making in selection of meaningful and useful market segments, tailoring effective marketing strategies and then implementing them to evolve new profitable market opportunities. Once the marketing decision maker has identified the problem, then necessary information is searched for development of a model
(usually mathematical) to reach an optimal solution which is then implemented and evaluated in a workable system for use by marketing manager.

The marketing activities are normally carried out under a highly complex environment where consumer behaviour differs in the market place. Making strategic plan and taking effective decision under such conditions is a difficult task. Mathematical programming models can overcome this task in a scientific manner. The application of mathematical programming models in such type of planning and decision making provides a logical route to express a real world marketing problem to a marketing decision system. In recent years, mathematical programming models have made significant new contributions in the field of marketing management decision making. The technique involves evaluating the actions that would optimize marketing objective(s) viz., maximum profit or minimum cost under certain resource constraints. The availability of large-scale, powerful computer hardwares and user-friendly softwares alongwith their decreasing cost and at the same time the easy access of large quantity of information / data needed, has contributed to the increased usage of computer-based mathematical programming models which has become economical for making plans and decisions. Darby- Dowman et al, (1988) state that “Modelling of mathematical programs and their computational solution are two salient activities in the exploitation of mathematical programming as a decision tool”.

The traditional optimization approaches is to evaluate an action with its performance on single criterion viz., maximization of the profit function or minimization of the cost function. But, in reality the marketing system is considered to be multidimensional and decision making under single criterion does not lead to a satisfactory solution as marketing system is highly complex due to multiple territories, multiple objectives and varying consumer behavior, etc. Under such situation, taking a good decision is possible only when multiplicity of criteria are taken into account and such decision systems are referred to as “Multiple-Criteria Marketing Decision Systems”.

The use of multi-objective mathematical programming model for optimization in the design of market segmentation problem analysis involves resources allocation to each market segment by different market mixes. In general, there does not exist a single solution which can maximize / minimize all criteria. The procedure involves generation of multiple alternatives among which a “good alternative“ also termed as “compromise solution“ has to be singled out. For such a system involving multiplicity of objectives which may also be conflicting viz., maximize sales at minimum cost, the choice of a good marketing strategy from a set of alternative strategies needs to be ranked in order of preference for a satisfactory solution. Multi-objective mathematical
programming models those can be used in market segmentation are of various types viz.,

[i] Utility Theory Method,
[ii] Vector - Maximum Method,
[iii] Goal - Programming Method,
[iv] Fuzzy Programming Method, etc.

Fuzzy Programming approach is more meaningful for solving multi-objective optimization problem with fuzzy parameters. At the same time, vector-maximum problems can also be solved by constructing equivalent goal version of each objective. The main thrust of this approach is that the decision-maker's satisfaction pattern regarding each objective is to be represented in terms of the membership function. This membership function, which may be linear or even non-linear is supposed to reflect the decision-maker’s satisfaction function for each objective and hence the approach may be termed as “satisfaction programming”. This may also be referred to as “knowledge engineering approach to multi-objective optimization” as it solves both the purposes, viz.,

i) represents the decision-maker’s knowledge through the construction of membership functions.

ii) solves the multi-objective optimization problem.

Hence, the decision-systems based on fuzzy programming may be termed as “intelligent decision systems” which are more appropriate for implementation point of view.

The literature on mathematical programming models for marketing decision making is extensive. The scope of marketing management has been expanded in the usage of mathematical programming techniques and has yielded useful insights into marketing decision-making in areas viz., advertising, [Mazanee (1986), Little (1979), Wierenga (1981)]; media selection decision [(Deckro & Murdock (1987), Widey and Zimmerman (1978), Steuer and Oliver (1976), Keown and Duncan (1979) and Charnes et al, (1968)]; advertising budget [Sethi (1973)]; warehouse location [Kuehn and Hamburger (1963)]; segmenting market [Mahajan and Jain (1978), Claycamp and Massy (1968), Tollefson and Lessig (1978), Ladany (1996) and Winter (1979)] and for overall marketing problem [Corstiens and Doyle (1985), Little (1975), Lilien and Kotler (1983), and Chatterjee and Lilien (1986)] etc.

1.2 RESEARCH METHODOLOGY
1.2.1 Research Purpose and Objectives:

This research is designed to illustrate the application of segmentation principles into decision process of marketing research. Specifically by focusing on dairy industry, the research is aimed at to operationalise market segments based on marketing mixes of dairy products market.
In the present case the dairy product industry is sharply declining in its sales volume over some period in Keonjhar district of Orissa state. Due to increase in competition and lack of availability of proper marketing system, a detailed investigation into the marketing system of dairy products is required. The results of this study can be used as a basis for design and planning of the market segment in the marketing system. The main purpose of the present research work is to develop some mathematical programming models for market segmentation based on marketing mixes in general and then their application for dairy product industry. For making a good decision in present market situation the decision systems considered are complex having multiple, conflicting and non-commensurable objectives. This clearly highlights the applicability of mathematical programming models to such systems.

The main objectives of the study are as follows:

* To identify and exploiting the potential market segments available in the market.
* To find out untapped market segments for particular product where serving may be profitable.
* Assessing current customer base on different geographic characteristics, demographic characteristics and socio-economic factors.
* Increasing the sale in market segments for a particular product by designing appropriate marketing decisions based on multi-objective mathematical programming models.
* By satisfying the consumer in catering the needs of market segment.
* Advertising budget allocation should be aimed at specific geographic segments through proper media vehicles.
* Pricing management for particular market segment so as to yield maximum market share.
* In selection of appropriate marketing channels to cater particular market segments effectively and efficiently.
* Product package should be designed with the needs of market segments which should be compatible with homogenous behaviour of consumers.
* Finally, selection of new retail outlet location decision model within specific market segments done.

1.2.2 Methodology:

The study intends to identify the main market segments in order to generate marketing strategies within the available resources with regard to dairy industry. For this the main approach of data collection is survey method. The data was collected from Keonjhar district in the state of Orissa (India) having three sub-divisions. Primary data was collected from two distinct geographic segments i.e., rural and urban. The two towns selected for urban segments are
The data base for the study consists of respondents selected on stratified connivance stationary sample of 800 households who are the user of milk and milk products of all available brands in Keonjhar district over a period of three years (beginning in January 1995). The segments don’t form a cluster and they are spread allover in various areas of the district. The primary data was collected through structured questionnaires administered to convenient sample of 800 households. A total of 765 usable questionnaires were obtained. The confidence interval was 95% with an allowable standard error of 5%. Respondents were told that this research was for academic purposes and that there would be no attempt to sell them anything. The data was collected bimonthly. Each respondent was questioned with specific variables relating to purchase behaviour of the household such as purchase of type of brands, quantity of purchase, store from where purchased and price of product in relation to cluster of other variables used to segment markets. While visiting the different areas information were also collected form the local institutions such as panchayat, veterinary aid centres and some financial institutions.

The secondary data was collected from Keonjhar district co-operative milk producer’s union Ltd.. The consumption of milk is confined to the area of availability whereas milk products can be marketed in distance areas as it doesn’t require daily transaction. The main reasons which causes the consumption of milk and milk products in an area are availability, the level of income of consumers and the prices. The product considered for the study is of well known brand ‘OMFED’, frequently purchased by consumer and available in nearby market places. The industry is dominated by a few firms and healthy competition exists with other brands available. Some assumptions were considered based upon the structured and unstructured information collected, suggestions and viewpoints received from different areas.

1.3 STUDY AREA

The area of study is limited to the Keonjhar revenue district and in respect of marketing of dairy products. It is one of the backward districts of Orissa as declared in Industrial Policy Resolution (IPR) of Govt. of Orissa. As the district is dominated by tribal inhabitants, the study has considered the consumption pattern, social and cultural backgrounds of those peoples to find out demand and supply based on existing and potential market segments.

1.3.1 General Characteristics of Keonjhar District

Location: Keonjhar district is situated in the northern part of Orissa. It is surrounded by Balasore and Mayurbhanj districts in the East, Sundargarh
district in the West, Jajpur district in the South and Singhbhum district of Bihar in the North. The district is covered with an geographical area of 8310 sq. kms. and situated in the latitude of 450-900 meters above sea level (1400 - 3000 ft.).

**Administrative set up:** The district has been sub-divided into 3 Sub-divisions, 7 Tahasils and 13 C.D. Blocks. The district has only 6 towns and 20 Police stations excluding Railway Police station.

**Climatic and Rainfall:** The climate of the district is characterised by hot summer, moderate winter and humidity, well distributed rainfall during the monsoon season. On the average 79 rainy days is prevailed during a year in the district with average rainfall of 1534 mm.

**Forest:** The district with 2494.11 sq. kms. of forest area covers about 30% of the geographical area.

**Tourist:** Keonjhar district is endowed with grandiose landscape, evergreen forests and natural springs and places of worshipping eminence to attract tourists. Sanaghagara, Badaghagara and Ghatagaon are important tourists spots in the district that mostly attracts domestic tourists.

**Income:** Agriculture is the main source of income of the people in the district. With its vast forest resource, most of the tribal people depend particularly on forest resources to earn their lively hood. The district though have indeth forest and mineral resources, it has yet to be explored for optimum utilisation for elevating the income level of the people.

**Human Resources:** In Keonjhar district 1,315,627 persons live comprising of 6,68,026 males and 6,47,601 females. The population of this district constitutes 4,17 percent of state population as enumerated in 1991 census. Percentage growth of population from 1971 to 1981 was 16.65% while the same became 18.03% from 1981 to 1991. Following table gives the details of population in Keonjhar district.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Particulars</th>
<th>1981 Census</th>
<th>1991 Census</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Total Population</td>
<td>11,14,622</td>
<td>13,15,627</td>
</tr>
<tr>
<td>1.1</td>
<td>Male</td>
<td>5,62,157</td>
<td>6,68,026</td>
</tr>
<tr>
<td>1.2</td>
<td>Female</td>
<td>5,52,465</td>
<td>6,47,601</td>
</tr>
<tr>
<td>2</td>
<td>Density of Population (sq. kms)</td>
<td>134</td>
<td>158</td>
</tr>
<tr>
<td>3</td>
<td>Sex Ratio ( no. of Females per ‘000’ Males)</td>
<td>984</td>
<td>969</td>
</tr>
<tr>
<td>4</td>
<td>Scheduled Caste Population</td>
<td>1,24,000</td>
<td>1,53,000</td>
</tr>
<tr>
<td>5</td>
<td>Scheduled Tribe Population</td>
<td>5,00,000</td>
<td>5,95,000</td>
</tr>
</tbody>
</table>
**Occupational Pattern of Population:** The occupational pattern of a particular area serves as an economic indicator both for its level of development (on the extent of backwardness) and the potentiality of development as determined by human resources factor. In other words, the working force along with its composition speaks of the level of economic development of an area. According to the 1991 census, there were 1,62,399 workers out of which 90,387 are main workers and 72,012 are marginal workers. Main workers constitute 33.08 percent of total workers while cultivators are 47.93 of the main workers. Again, agricultural labourers are 29.06 percent, household Industrial workers are 2.97 percent and other workers are 20.04 percent of main workers in the district.

**Livestock:** Animal husbandry, like agriculture, is the important occupation of the people in the district. According to the cattle census 1982, there are 10,76,643 nos. of livestock animals and 8,28,094 poultry. So, total number of livestock and poultry is 19,04,737 nos. in the district.

Table - 1.2 : Live Stock and Poultry Population in Keonjhar district

<table>
<thead>
<tr>
<th>SL. NO.</th>
<th>TYPES OF ANIMALS</th>
<th>NUMBERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cattle</td>
<td>5,97,616</td>
</tr>
<tr>
<td>2</td>
<td>Buffalo</td>
<td>46,303</td>
</tr>
<tr>
<td>3</td>
<td>Sheep</td>
<td>95,756</td>
</tr>
<tr>
<td>4</td>
<td>Goat</td>
<td>3,10,650</td>
</tr>
<tr>
<td>5</td>
<td>Pig</td>
<td>16,954</td>
</tr>
<tr>
<td>6</td>
<td>Poultry</td>
<td>8,28,094</td>
</tr>
<tr>
<td></td>
<td><strong>TOTAL</strong></td>
<td><strong>19,04,737</strong></td>
</tr>
</tbody>
</table>


In Keonjhar district, there are 22 Veterinary dispensaries working under 22 Asst. Surgeons. There are 88 livestock centres, 14 pure A.I. centres, 45 A.I. centres for frozen semen, working in the district.

**1.4 DAIRY INDUSTRY**

**1.4.1 Introduction:**

Dairy industry has been and will continue to be the one of most dominant and basic socio-economic activity in a developing country like India. Dairy products are basic amenities of our life's and the choicest item of food in the dietary of the Indian people. In India over population has created major problems such as unemployment, poverty, health and backwardness, which can be solved to some extent by better marketing management of dairy products in a systematic and scientific ways.
Despite progress in the marketing of industrial and agricultural goods, in India, the marketing of dairy products is not satisfactory. Considerable efforts are needed for qualitative improvement in the marketing mix of dairy products such as planning of product mix, channellising the distribution, management of prices, designing of the packaging structure and decision-making on promotional strategies.

Unlike any other industry, dairy industry in India needs least possible investments and proper planning of marketing mixes of dairy products to have high rate of returns. For a developing country like India having financial constraint, the marketing of dairy products needs total concentrated priority and efficient management of the existing resources to achieve the desired objectives. Dairy industry requires effective management of dairy products, by planning of production process which is simple in usage of modern technologies and manpower required- either semi-skilled or non-skilled albeit marketing mix is profitable.

In dairy developed countries in Asia like India, the milk is marketed through co-operatives which are better organised. In India, under operation milk flood major portion of milk produced is collected, processed and sold in nearby areas or cities. The effective marketing system will improve milk production, distribution as well as sale. The proper planning and scientific designing of marketing mix would create new ventures as well as streamline old ones for marketing of dairy products. The “ANAND” has brought a revolutionary change in the management of dairy products. The skimmed milk powder, tinned rosgullas and chocolates in attractive packages have received good response in domestic as well as the overseas market.

1.4.2 Milk and Milk Products :

Domestication of cattle was from Aryans period i.e., from 1500 to 2000 BC when they used cattle for agricultural purposes as well as milk and milk products. Milk and milk products form the basic and choicest food item in the dietary of all communities and for both categories - vegetarians and non-vegetarians in India. The knowledge for scientific study of physical and chemical properties of milk and its biological value has enhanced it’s utility. At the same time, the management of milk and milk products using advanced technology involving better handling and processing, its nutritional evaluation and systematic marketing of these products will lead to better utilisation.

• Milk :

It is generally accepted that milk is a perfect food. The general composition of milk are proteins, fats, citric acid, carbohydrates, phosphorous, organic compounds and mineral constituents. Cow’s and Buffalo’s milk are commonly used, whereas in some parts goat’s and Camel’s milk are also used.
But to a very less extent Mare’s milk is used. There are several benefits of milk viz., for diet- tasteful, delicious, digestive and beautifier; for health and nutritional value- containing several mineral salts and vitamins; medicinal uses of milk and milk preparation for treatment of different ailments (curative) as well as preventive for heart diseases, anaemia, mental depression, low fever, thirst, stomach asthenia, hyperacidity, eye ailments and etc.; worshipping to gods. Milk could be converted into fats and other products and flavour can be enhanced by ageing and culturing and its life is extended by heat treatment and pasteurisation. It is relatively unaffected by in the flavour and composition by heating and evaporation or by sterilisation processes. It has good co-efficient of absorption of protein, fats, carbohydrates, minerals and vitamins than any other food item.

- **Ghee:**

  Ghee is clarified and ripened butter fat obtained from buffalo’s or cow’s milk in India. The milk is soured by the addition of buttermilk, thus causing the separation of a curdled mass and after churning, melting and skimming off the clear liquid. Ghee is the best in nutritive value, biological value and digestible than other edible fats. It helps in making strong mind and body- it glistens body and radiance of face.

- **Butter:**

  Butter is branded as farm-butter and creamery-butter. In farm-butter the cultures employed whatever micro-organisms are available naturally for ripening. In the creamery-butter ripening is done through the agency of special bacterial cultures and destroys the bulk of the natural organisms in the cream through pasteurisation. Both produce pleasing aroma and flavour in butter.

- **Curd:**

  It is hard for digestion but is nourishing. It is tonic suited to persons with strong digestive powers.

- **Cheese:**

  There are wide variety of cheese types which differ considerably in consistency and taste; each kind needs different production methods and different treatment in ripening and storage. Cheese consists essentially of the coagulum separated from milk after curdling with rennet or with the lactic acid developed by souring.
• **Whey**: It has properties similar to those of curdled milk, which is particularly useful in constipation. The chief constituents are accordingly lactalbumin, lactose and soluble ash.

• **Butter Milk**: The by-product obtained from the churning of sweet cream is essentially the same in composition as skim milk. It is excellent source of roughage and constipation fighter.

• **Milk Powder**: Separated or whole milk can be dried by the roller or the spray process. The milk is concentrated in an evaporator thus increasing the output of the drier.

• **Ice Cream**: It is a frozen food product made from mixture of cream, sugar and flavours, converted into a semi-solid porous frozen product. Demand of ice cream is seasonal and liable to great fluctuation. It is necessary therefore to have the maximum flexibility of production and to make provision for storage.

1.4.3 **Production Planning in Dairy Industry in India**: This is a brief introduction and explanation of the planning of production activities and process required by dairy industry in India. In India the increase in population has created problem of inadequate production of food. In order to tackle this problem of providing food to people, the modern management has to plan the production process and better utilisation of raw materials and technology. In general processed food increases the total food availability and preventives from decaying and remains for utilisation in the glut seasons. Proper planning of production process brings about economic development and social change as speedily as possible.

In India, the dairy industry needs much more planning in its activities and process for production in large quantity and to cater the needs to wide range of people. Considering the importance of milk and its products for their palatability, in alleviating deficiencies Viz., calorie deficiency, protein deficiency, vitamin A and iron deficiency, sanctity from religions, ethnic and for other reasons, the proper production and marketing of the dairy products are needed. The production and marketing of milk and its products in India is
not in full capacity and standard of dairy sanitation and hygiene are low. Some of the production planning activities are described as:

**Plant Operation:**

The management of raw materials, energy, labour, capital and technology in an efficient and effective manner is utmost essential for the dairy plant in production of finished products. Dairy plant operational objectives are to optimise four dimensions that are minimise costs, high quality, better delivery and flexibility to changes in volume and new product introduction. Managing the mix decisions are complex and require constant attention to the trade-offs available. In dairy, the inputs (raw milk), after being received goes into storage to take its turn in processing. It is then pumped from storage to begin processing according to a predetermined sequence. Thus dairy plant operation converts the inputs (raw milk) into the output (finished products - milk and milk products).

**Plant Location:**

The location of dairy plant is an essential factor in the success or failure of the industry. In case of dairy plant where the milk is main product should be close to the consumers where as in case of milk products i.e., butter, ghee, milk powder or cheese and other should be located near the milk producing area in order to minimise the transportation and handling costs. The dairy plant location objective is to minimise cost and maximise the availability of milk and its product to consumer. Lastly, in deciding location of dairy plant, it is essential to know about competitors and consider the intensity of competition from other competitors location nearby.

**Physical Processing Capacity:**

In dairy plant, the physical processing capacity decision mainly depends on the following factors:

1. **Inventory**: availability of raw materials for supply continuously in production process.
2. **Capital**: depends on capital requirement for acquiring inventory, equipment and facilities and to run the processing unit.
3. **Market**: depends on the market conditions i.e., demand of the product in present and future period and also necessary to survey of customer acceptance and rejection of the product in the market.
4. **Manpower**: availability of both skilled and semi-skilled manpower for the processing unit at reasonable costs.
5. **Technology**: availability of required technology within capital investment constraint.
Planning of the Dairy Process:

In dairy plants, processing of fluid milk to finished product requires integration of detail planning activities and implementation of different operations. The planning for operation process activities involves reception of milk, storage, transportation, equipment’s, services required and other related activities till formation of finished products. For example:

- The product flow operation process in manufacturing of standardised milk is-

Raw milk → Reception tank → Dump tanks → Milk pump → Pasteuriser → Standardising Separator → Storage Tanks → Filler and Caper → Cold Store → Standardised Milk.

- The product flow operation process in manufacturing of Butter is-

Raw milk → Reception tank → Milk pump → Pre heater → Separator → Cream Pasteuriser → Ripening Vat → Butter Churn → Butter Printer → Cold Store → Butter.

Some of the basic description of dairy process activities are:

(i) Milk Reception

The milk collected from different farms are delivered directly to the plant and received at one reception centre. There should be proper planning of efficient reception such that milk is handled quickly and does not hamper the subsequent processes in plant. The efficient reception plan involves quick collection, loading, measuring, emptying, washing, testing, cooling and pumping to storage tanks. The efficiency of milk reception is affected by reception rate, time and transportation of milk from the farm.

(ii) Milk Storage:

As soon as the milk is received at reception centre, it is most important to store it in storage tank as milk is perishable. The planning of required quantity of milk and milk products is primarily for storage. Then utilisation of milk and milk products by subsequent process are to be determined before hand.
(iii) **Cream Separation:**

Cream separation is required for standardising the fat content of milk before processing for liquid consumption and for producing cream for butter making. The planning of number and capacity of the separators depends on average fat content of the incoming milk and the amount of cream required.

(iv) **Heat Treatment:**

Milk is heated for extension of life. In planning for designing heat treatment technique requires essential heating equipment's, floor space and washing activities continuously.

(v) **Bottle Washing and Filling:**

Bottle washing is to be done so as to sterilising and pasteurising of plant. And filling must be efficient and filling rates must match the requirements.

1.4.4 **Dairy Products Marketing in Keonjhar District:**

At present milk and milk products marketing system in Keonjhar district is in a developing stage. Milk yield of the local cows is very low whereas bullocks are utilised for agriculture purpose. Marketing system for milk and milk products was organised since 1977. An Integrated Dairy Development programme called Operation Flood-II Project has been launched by the India Dairy Development Corporation in Orissa since January, 1981. Keonjhar is one of the 4 districts selected for this project. The project is being implemented by a 3 tier co-operatives at the base ( village level ), District Milk Unions at the district levels and Orissa State Co-operative Milk Producers Federation (OMFED) at the apex. The project aims at enhancement of milk production through genetic up-gradation of indigenous cattle, scientific dairy management and marketing of the surplus milk. The apex body is known as OMFED. It has been entrusted with the implementation of this project. The different organisations and individuals engaged in this process in Keonjhar district are:

Keonjhar District Co-operative Milk Producer’s Union Ltd ( KDCMPU ),
Orissa State Co-operative Milk Producer’s Federation ( OMFED ),
Milk Producer’s Co-operatives,
Keonjhar Dairy Farm,
Vendors and
Milk Producers.

**Keonjhar District Co-operative Milk Producer’s Union Ltd (KDCMPU):**

The Keonjhar District Co-operative Milk Producer’s Union Ltd (KDCMPU), was registered on the 22nd December 1978 prior to the
implementation of Operation Flood - II Programme in the district. It is an affiliated member of OMFED. The union has its’ head-quarter at Keonjhar.

**Procurement**: The union’s operational area includes all the blocks of Keonjhar district. In all these blocks there are several milk producers’ co-operative societies have been organised for procurement of milk from the producers. And these societies which have more than 2000 farmers and members together into its co-operative fold. There are milk collection centres formed by group of producers in the initial stage before the society is registered formally. In most of the societies milk is procured once in a day i.e., in the morning. Only some society supplies milk to the union by the morning and in the evening regularly.

**Processing**: The union has three milk chilling centres, one at Anandapur of 500 litres per day capacity, one at Raisuan of 2000 litres per day capacity and another at Sillisuan of 10,000 litres per day capacity. Average milk collection is of 3500 kg per day in the year 1995-96. Total procurement is of 10,95,000 kg having 4.0% of fat and 8.0% of snf. The average production and sale of ghee is 2000 kg per month.

**Marketing**: The chilled milk is sold through 9 booths in Keonjhar town. Average local milk marketing is of 3800 litres ( DTM ) per day. There are some institutional buyers from Keonjhar union viz., hospitals, hotels, educational institutions, temples, etc.. The surplus milk or milk that gets sour is diverted into the production of milk products. The ghee marketing is on an average of 2000 kg per month.

**Pricing System**: The producers supply various qualities of milk to the society. The societies make local sales. The society secretary’s duty is to test the qualities of individual producers’ milk, so that payment can be made to the producers based on the quality of milk.

**Orissa State Co-operative Milk Producer’s Federation (OMFED)**:

OMFED markets milk and milk products in Keonjhar district. At present it is selling milk in half litre and one litre polypacks. The milk is supplied to Bhubaneswar Dairy also. It is sold at Rs.10.00 to Rs.14.00 per litre depending on fat and snf concentration. There are retailer network in the town and retailers get commission on sale per litre of milk. The consumers are satisfied with the quality of milk and which is pasteurised and packed in the polypack in most hygienic condition, and keeps the milk bacteria free and unadulterated when it is used. Vitamin A is being added to OMFED milk which prevents eye-diseases. Cream is also available in OMFED milk as per the Govt. of India guideline which is clearly printed in the polypack. OMFED milk is free from hazardous material as milk procured by OMFED is properly tested and treated before selling it for human consumption. As the price of OMFED milk
is higher than the vendor, mostly middle and upper income groups prefer it. Other milk products are also produced and sold by OMFED viz., sweet curd, flavoured milk, table butter, pure cow ghee, butter milk and others.

**Keonjhar Dairy Farm:**

Established since 1946 at Keonjhar town, the dairy farm of the ex-state of Keonjhar has been converted into a breeding farm which, apart from catering to the milk need of the area, produces improved stock suited for breeding purpose. Besides milk, the farm supplies cross-breed bulls to the Utkal Gomangala Samiti for upgrading the local breed of the district.

**Vendors:**

Vendors from the nearby villages and from the urban areas, form the largest network of milk marketing in Keonjhar district. It has been found out from the urban household survey that around 45% of the households buy milk from vendors. The vendors buy milk from the doorsteps of village households. They buy at very low price. They supply milk to the hotels, tea stalls and at the doorsteps of the urban households. The consumers make monthly payments to the vendors. This is the most traditional channel. Any other new channel will face steep competition.

**Milk Producers:**

It has been observed that some of the milk producers sell the surplus quantities of milk after meeting their domestic requirements. Many producers of the nearby villages surrounding the urban areas go to the urban households for delivery of milk. It is seen that there are many producers who are rearing cattle in the urban areas. They prefer buffaloes to cows as buffalo milk has a better market than cow milk.