CHAPTER - V
MARKET SEGMENTATION DECISION SYSTEM- I: MARKETING CHANNELS

5.1 INTRODUCTION

In marketing mix decision system to design, develop and maintain effective and efficient marketing channel strategies play a vital role in providing significant competitive advantage to the management. Developing a strategically sustainable marketing channel system helps in bridging the gap between producers and ultimate consumers in different market segments. On the other hand, a poor management of marketing channel strategy may lead to substantial loss, both for end-users they serve and the organizations that they deal with. Accordingly, the selection of a proper marketing channel strategy and the segment which will be profitably served is the most important strategic decision which a marketing manager has to make. Market environment has become highly complex as manufacturer's product become cannibalize in different market segments to ersatz products. Technology is changing rapidly and pressure is being developed on each market segments by economical, social and political factors which has emphasized importance of marketing channels. Marketing channel’s primary function is to deliver the product fast and to local supply. Besides, providing delivery facility, it adds customer value to product category and also enhance the loyalty in the dynamic market environment. The bottom line of any marketing strategy involves supplying the right kind of product at right time and in right place. So, marketing channels has important function in whole marketing activity; if it is not properly planned than whole marketing activity may be jeopardized.

To work out an effective marketing channel strategy, the herculean task that management faces today is to frame different objectives in a market i.e., of manufacturer - customer - intermediary and to achieve culminate results within environmental factors affecting the structure of marketing channels. Consideration of objectives of different segments will lead to strategically long-run plans and productive channel relationships. The manufacturersupplier channel objectives are market share by segment, profit/contribution goal, it’s ROI, distributor loyalty, channel goodwill and market development. The consumer objectives are in terms of consumer satisfaction i.e., in shape of choice, availability, value and convenience. The distributor's objectives are stock turnover, gross margin, ROI, promotional assistance, technological support, exclusivity and market development, within manufacturer/distributor cooperation and conflict. Environmental factors affecting the marketing channel system are due to decision-making under uncertainty, diversity, dynamism, concentrated capacity and
turbulent dimensions of channel's environment. To have efficacious of basic objectives which are at times conflicting and under certain system constraints, the management has to prepare well in advance channel strategy for creating a unique market segment. An integrated or 'Systems Approach' to channel management has to be designed such that objective function of manufacturer, customer and intermediary are to be satisfied according to priority structure drawn for each market segments.

Once the objectives are defined and constraints of system are known then appropriate segmentation approach has to be applied. The decision system for marketing channels is applying segmentation approach for forming meaningful basis depending on the decision - oriented objectives. From the perspective of managerial action, a combination of appropriate basis of segments (such as consumer behavior, demographic character, geographic, socio-economic character, benefit sought, loyalty status, usage rate and marketing mix variables) is useful. In framing effective and efficient marketing channel system the satisfaction of end-user is to be taken into account.

In the present study, the effective management of marketing channels for milk and its products is essential for producers due to it's perishability nature to increase market penetration and also sustain competitive advantage. In Keonjhar district of Orissa state (India), milk is mainly produced in rural areas as availability of milch cattle are in rural areas and where consumption of milk and its products are less in comparison to demand in urban areas. Cow’s milk is mainly consumed for drinking purposes and buffalo’s milk for manufacture of products. The major portion of milk production is consumed in form of fluid only and in milk products ghee is most consumed product next. The average per capita consumption of milk and its products vary from one part to other due to availability, the level of income of the people and the prices. There is no organised assembling or processing of milk for sale in the rural areas. There is regular change in demand and supply basing on rural - urban areas. Hence, there should be coordinated efforts and lessen communication gap between the dairy production center to the dairy consumption center.

For multi-level marketing channels, the functionaries operating in the dairy business are divided into three main groups, viz., (I) producers, (II) wholesalers and (III) retailers. The first includes rural and urban producers as well as dairy farms, the second collectors and co-operative societies and the third milk-vendors, dairies and producer retailers. A typical business partners consists of several producers, a few collectors and wholesaler or retailer. They operate on a contract basis and continue to work for several years. The actual mode of transport used depends upon the distance and the quantity handled per trip. Local conditions also
largely determine the means of transport employed. In Keonjhar milk is transported by head loads, pack animals, bullock carts, bicycles, tongas, lorries and milk vans. The figure 5.1 depicts the marketing channel alternatives for dairy products in Keonjhar district.

Figure 5.1: The marketing channel alternatives for dairy products market in Keonjhar district

5.2 RESEARCH METHODOLOGY

5.2.1 Research Purpose & Objective

This research was designed to illustrate the application of segmentation principles into marketing channel decision. The present study for dairy industry is to select the available marketing channel strategy which play profitably in serving diverse market segments. A large number of marketing channels are available to the producers for bringing his product to the ultimate consumers. From this vast number of potential marketing channel arrangement, the marketing executive must screen those which may be appropriate channel for the product at least expense per unit of merchandise and which secure the desired volume of sales in the target market segments. By considering potential channel alternatives on basis of segmented market which will help in catering the needs of target segments, and at the same time reduces the cost of distribution attaining the desired volume of sales.
The requirement of the potential customer, when aggregated, gives grouping of customers with similar requirements i.e., a segment. Then selection of appropriate market channel depends upon the availability of channels, capabilities of organization and requirement of target segments. The basic objectives of marketing channels for the said dairy industry are: profit maximization, cost minimization and channel goodwill maximization.

5.2.2 Information Collected:

1. Milk and milk products available in Keonjhar district.
2. Types and quality of milk and milk products available in Keonjhar district.
3. Demand and supply of the milk and milk products in the area.
4. Number of levels of channel intermediaries available in the area.
5. Types of consumers, their characteristics such as socio-economics and usage rates.
6. Number of transport media used to delivery the dairy products.
7. Prices charged for each product at each demand area.
8. Number of plants supplying products.

5.3 MARKET SEGMENTATION BASED ON MARKETING CHANNELS

In the present study, seven item products are considered, which are sold to the same customer groups and marketed through the same channels. The seven items in product-line segments are as follows: Fluid milk classified into three segments depending upon contents of fat and snf via., Double tone milk (1.5% fat and 9.0% snf), tone milk (3.0% fat and 5% snf) and whole milk (4.0% fat and 8.0 snf) and the milk products considered are Ghee, butter, flavored milk and Yogurt. Product-line makes the most sense when each item performances its own sales and profits in their line and compares with competitors' product-lines.

The data collected from district of Keonjhar has been divided into two distinct geographic segments i.e., Rural and Urban. In the Indian context marketing mixes of milk and milk products greatly vary in rural and urban areas. Marketing channels is considered to be more significant in the marketing mix of milk and milk products and have greater distinction in rural and urban market segments. Most of fluid milk is procured from rural areas and demand for fluid milk and milk products is largely (in terms of salebility) in urban market with comparison to rural market. Segments are Harichandrapur and Saharpada. The geographic segments selected by judgmental sampling after considering the geographic location, milk potential and transportation facilities.
For this study, further assumption are made regarding income groups in the Indian condition. Segmenting the market on the basis of level of income of consumers carries an outstanding significance as it varies with change in the regions or places. The income level of the households are assumed as Low Income Group (LIG) whose income is below or equal to Rs. 6000/- per month; Middle Income Group (MIG) whose income is between Rs. 6001/- to Rs. 12000/- per month and Higher Income Group (HIG) whose income is above Rs. 12001/- per month. The household size segment are on the basis of small household size having 1 to 2 persons, medium household size having 7 or more persons. The market segmented according to household usage rate as heavy users, medium users and light users according to average usage rate of household per month depicted in Table:

Table 5.1: Dimensions of households usage rate segments.

<table>
<thead>
<tr>
<th>Type of household usage segment</th>
<th>Fluid milk (double tone, tone and whole milk)</th>
<th>Ghee</th>
<th>Butter</th>
<th>Flavour d milk</th>
<th>Yogurt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heavy usage segment</td>
<td>50 litres or more</td>
<td>5 kgs or more</td>
<td>2 kgs or more</td>
<td>20 litres or more</td>
<td>10 kgs or more</td>
</tr>
<tr>
<td>Medium usage segment</td>
<td>20 to 50 litres</td>
<td>2 to 5 kgs</td>
<td>1 to 2 kgs</td>
<td>10 to 20 litres</td>
<td>5 to 10 kgs</td>
</tr>
<tr>
<td>Light usage segment</td>
<td>less than 20 litres</td>
<td>less than 2 kgs</td>
<td>less than 1 kg</td>
<td>less than 10 litres</td>
<td>less than 10 kgs</td>
</tr>
</tbody>
</table>

In this segmentation approach following assumption are considered for marketing of milk and milk products. Raw milk supply in particular geographic segment will strongly be seasonal; there is more production of milk in summer than in winter. The daily orders do not vary much except periodic fluctuations in demand and supply of milk and milk products due to seasonal variation and during fairs and festivals seasons whose effect are easily predictable. The major factor for seasonal variations in milk production is due to incidences of calving of milch animals (Cow's and buffalo's) during different months. In present study seasonal variation marketing mix of milk and milk products has considerable effect and a year has been divided into half year and then into four quarters of seasons viz., spring (March to May), summer (June to August), autumn (September to November) and winter (December to February). The study intends to collect data for demand and supply variation in different seasons basing on different geographic segments. For application aspect, construction of the segmentation tree
are done on a priori segmentation basis for marketing channel decision shown in Fig. 5.2.

5.4 ALGORITHM

**STEP 1**: Solve \( m \) linear programming problems of maximization type stated as:

\[
\text{Max} \quad G_i(X) ; i = 1 \ldots m \\
\text{Subject to} \\
A_j(X) \leq b_j \\
X \in \{0,1\} \\
\]  \hspace{1cm} (5.4)

Let \( X^1 \) be the optimum solution which maximises the 1st objective \( G_1(X) \) given \( g_{1i} \) as its optimal value. The pay-offs on the other objectives at \( X^1 \) can be denoted by \( g_{ji} \) signifying the value of \( j \)th objective \( G_j(X) \) of the optimal point \( X^1 \) of the \( i \)th objective.

**STEP 2**: Construct a pay-off matrix \( G \) given by

\[
G = \begin{bmatrix}
g_{11} & g_{12} & g_{13} & \cdots & g_{1m} \\
g_{21} & g_{22} & g_{23} & \cdots & g_{2m} \\
\vdots & \vdots & \vdots & \ddots & \vdots \\
g_{m1} & g_{m2} & g_{m3} & \cdots & g_{mm} \\
\end{bmatrix} \hspace{1cm} (5.4.1)
\]

where the matrix can be referred to as decision matrix. The \( k \) tuple \((g_{11}, g_{22}, \ldots, g_{mm})\) comprising the diagonal element of the matrix \( G \) is the ideal point in the \( m \) dimensional criterion space. Due to the conflicting nature of the objectives, this point usually does not lie in the feasible criterion space. Denote this point by \( g^* = (g^*_1, g^*_2, \ldots, g^*_m) \) after replacing \( g_{ij} \) by \( g^*_i \). The boundary point for the objective \( G_j(X) \) can be obtained by taking the minimum of all \( g_{ij} \) for \( i \neq j, i = 1, \ldots, m \). Hence, for all \( G_i(X) \), their boundary point can be taken as \( g_i \).

**STEP 3**: This step is known as the decision making stage and involves the determination of a feasible point \( g' = (g'_1, g'_2, \ldots, g'_m) \) nearest to \( g^* \) according to the choice of the DM. This will be accomplished by the following substeps.
SUBSTEP I: Determine $X$

Such that

$G_i (X) \geq g_i^* : i = 1, 2, \ldots, m$

$A_j (X) \geq b_j : j = 1, 2, \ldots, k$

$X \in \{0, 1\}$ ..........................(5.4.2)

The fuzzy goal \("G_i (X) \geq g_i^*\) can now be identified as $G_i$ defined over the set of feasible solutions with the membership function $\mu_{G_i} (X)$ defined linearly as follows.

$\mu_{G_i} (X) = \begin{cases} 1 & \text{for } G_i (X) \geq g_i^* \\ \frac{(G_i (X) - g_i)}{(g_i^* - g_i)} & \text{for } g_i \leq G_i (X) \leq g_i^* \\ 0 & \text{for } G_i (X) \leq g_i \end{cases}$ ..........................(5.4.3)

SUBSTEP II: Combine all the fuzzy sets $G_i$ using minimum operator and solve the model as:

Maximise $\quad \mu_{G_i} (X) = \text{Maximise } \lambda = \text{Maximise } \lambda = \frac{1}{2} \lambda_1 + \frac{1}{4} \lambda_2 + \frac{1}{8} \lambda_3 + \frac{1}{16} \lambda_4 + \frac{1}{32} \lambda_5$

Such that $\lambda \leq \mu_{G_i} (X) = (G_i (X) - g_i) / (g_i^* - g_i) ; i = 1, \ldots, m$

$A_j (X) \leq b_j ; j = 1, \ldots, k$

$\lambda_K, X \in \{0, 1\} ; K = 1, 2, \ldots, 5$ ..........................(5.4.4)

Let the solution of the model (3.18) be $X = X^*$ which yields $\mu_{G_i} (X) = \lambda_i$ for all $i$. If the decision yields satisfactorily for all membership values, then it is the final solution. Otherwise go to the next step.

SUBSTEP III: The DM is asked whether he can make some concession in the level of any membership function, whose attainment in his opinions is more satisfactory to improve those which are less satisfactory. Suppose the DM is not
satisfied with the solution $X = X^*$ and he can concede $\Delta \lambda_m$ amount from $\lambda_m$. Then
the following transformation can be made

$$g_i \rightarrow G_i(X^*) \text{ and } g_i^* \rightarrow g_i^* \forall i \neq h$$

Solve the equivalent problem

$$\text{Max} \quad \prod_{i=1}^{m} \mu_{G_i}(\bar{X}) = \text{Max } \lambda = \text{Maximise } \frac{1}{2} \lambda_1 + \frac{1}{4} \lambda_2 + 1/8 \lambda_3 + 1/16 \lambda_4 + 1/32 \lambda_5$$

Such that

$$\lambda \leq \mu_{G_i}(\bar{X}) = (G_i(\bar{X}) - G_i(\bar{X}^*))/(g_i^* - G_i(\bar{X}^*)) \quad \forall i \neq h$$

$$G_i(\bar{X}) \geq G_i(\bar{X}^*) + \Delta \lambda_h (g_i^* - g_i)$$

$$A_j (\bar{X}) \leq b_j ;$$

$$\lambda_k, \bar{X} \in \{0,1\} \quad K = 1,2,\ldots,5 \quad \text{...... (5.4.5)}$$

Repeat this step, till the DM becomes satisfied with the attainment level of all membership function.

**Numerical Example :**

Let a Multi-Criteria Decision System involves 3 objectives which are conflicting and non-commensurable and at the same time are bounded by 6 rigid constraints. Mathematically, it may be given as:

Max A. $50x_1 + 70x_2 + 30x_3 + 75x_4 + 65x_5 + 40x_6 + 80x_7 + 70x_8$

Max B. $5000x_1 + 5000x_2 + 5000x_3 + 5000x_4 + 7000x_5 + 7000x_6 + 7000x_7 + 7000x_8$

Max C. $57.6x_1 + 99x_2 + 243x_3 + 205.8x_4 + 84x_5 + 128.7x_6 + 207.9x_7 + 205.8x_8$

S.t.

1. $x_1 + x_3 \leq 1$
2. $x_2 + x_5 \leq 1$
3. $x_3 + x_7 \leq 1$
4. $x_4 + x_8 \leq 1$
5. $x_1 + x_2 + c_3 + x_4 - x_5 - x_6 - x_7 - x_8 \leq 0$
6. $x_1 + x_2 + c_3 + x_4 + x_5 + x_6 + x_7 + x_8 \geq 0$
7. $x_1, x_2, x_3, x_4, x_5, x_6, x_7, x_8 \in \{0,1\}$
Now, all these objectives are kept at the same priority level. The maximum and the corresponding minimum for each of the objectives can be obtained from $G_{ij}$.

$$
G_{ij} = \begin{bmatrix}
290 & 70 & 210 \\
24000 & 7000 & 24000 \\
596.7 & 205.8 & 661.5
\end{bmatrix}
$$

Now,

$$
\mu_{G_1}(X) = \frac{G_1(X) - 70}{290 - 70}
$$

$$
\mu_{G_2}(X) = \frac{24000 - G_2(X)}{24000 - 7000}
$$

$$
\mu_{G_3}(X) = \frac{G_3(X) - 205.8}{661.5 - 205.8}
$$

The problem can be formulated as:

\begin{align*}
\text{Max} & \quad \lambda' = 0.5\lambda_1' + 0.25\lambda_2' + 0.125\lambda_3' + 0.0625\lambda_4' + 0.03125\lambda_5' \\
\text{s.t} & \quad \lambda' \leq \mu_{G_1}(x), \lambda' \leq \mu_{G_2}(x), \lambda' \leq \mu_{G_3}(x), \lambda' \leq \mu_{G_4}(x) \\
& \Rightarrow \quad 110x_9 + 55x_{10} + 27.5x_{11} + 13.75x_{12} + 6.875x_{13} - (50x_1 + 70x_2 + 30x_3 \\
& + 75x_4 + 65x_5 + 40x_6 + 80x_7 + 70x_8) \leq -70 \\
& + 8500x_9 + 4205x_{10} + 2125x_{11} + 1062.5x_{12} + 531.255x_{13} + (5000x_1 + 5000x_2 \\
& + 5000x_3 + 5000x_4 + 7000x_5 + 7000x_6 + 7000x_7 + 7000x_8) \leq 24000 \\
& + 227.85x_9 + 113.92x_{10} + 56.96x_{11} + 28.48x_{12} + 14.24x_{13} - (57.6x_1 + 99x_2 \\
& + 243x_3 + 205.8x_4 + 84x_5 + 128.7x_6 + 207.9x_7 + 205.8x_8) \leq -205.8
\end{align*}

1. $x_1 + x_5 \leq 1$
2. $x_2 + x_6 \leq 1$
3. $x_3 + x_7 \leq 1$
4. $x_4 + x_8 \leq 1$
5. $x_1 + x_2 + x_3 + x_4 - x_5 - x_6 - x_7 - x_8 \leq 0$
6. $x_1 + x_2 + x_3 + x_4 + x_5 + x_6 + x_7 + x_8 \geq 0$
7. $x_1, x_2, x_3, x_4, x_5, x_6, x_7, x_8 \in \{0, 1\}$

.............. (5.4.6)
Solving 5.4.6 by 0-1 linear programming approach, the following result is obtained

\[ X' = 0.375 \]
\[ X_1 = (0, 0, 0, 1, 0, 0, 1, 0) \]
\[ \mu^1 = (0.386, 0.705, 0.456) \]
\[ G^1 = (145, 12000, 411.6) \]

**Decision Stage**

Suppose in the opinion of the DM, the utility of the objective \( G_1(X) \) is not that desirable and he wants to concede an amount 35 in the objective value \( G_1(X) \).

**Iteration : 2**

The lower threshold values (7000, 205.8) of the second and third objectives are replaced by new values (12000, 411.6).

The results obtained are as follows:

\[ \lambda^2 = 0.406 \]
\[ X^2 = (0, 0, 1, 0, 0, 1, 0, 1) \]
\[ \mu^2 = (0.166, 0.416, 0.806) \]
\[ G^2 = (140, 19000, 577.5) \]

**Decision Stage**

Suppose the DM desires to concede 57.5 in \( G_3(X) \).

**Iteration : 3**

After construction of the fuzzy membership functions and new problem formulation, it is solved.

\[ \lambda^3 = 0 \]
\[ X^3 = (0, 0, 1, 0, 0, 1, 0, 1) \]
\[ \mu^3 = (0.166, 0.416, 0.806) \]
\[ G^3_3 = (140, 19000, 577.5) \]

Now, no further improvement is possible in the value of \( G_2 \).
5.5 MODEL FORMULATION
5.5.1 Decision Variables, Constants and Symbols:

The model consists of a number of decision variables, constants and symbols, which are discussed below. All values and variables, unless otherwise specified, refer to the particular time period.

\[ p \in \{1, 2, 3, \ldots, 7\} \] for product line segments of dairy products viz., Double Tone Milk, Tone Milk, Whole Milk, Ghee, Butter, Flavored Milk and Yogurt respectively.

\[ g \in \{1, 2, 3, 4\} \] for geographic segments viz., Keonjhar, Barbil, Harichandarpur and Saharpada respectively.

\[ i \in \{1, 2, 3\} \] for income level segments viz., Higher Income Group, Middle Income Group and Lower Income Group respectively.

\[ q \in \{1, 2, 3, 4\} \] for seasonal variation segments viz., Autumn, Summer, Winter and Spring respectively.

\[ h \in \{1, 2, 3\} \] for household size segments viz., Large, Medium and Small respectively.

\[ j \in \{1, 2, 3\} \] for product usage segment viz., Heavy, Medium and Light respectively.

\[ t \in \{1, 2, 3\} \] for level of marketing channel viz., Zero Level, One Level, Two Level and Multiple Level respectively.

\[ y(f) \in \{1, 2, 3, \ldots, n\} \] referring an ordered set \((p,g,i,q)\) for particular \(p\)th product considered in \(g\)th geographic segment in the \(i\)th income group distributed in \(q\)th. \(y(f)\) represents the segment type, viz., 1,2,...,n for the set of segments \(Z\), where

\[ Z = \{z : z = (p,g,i,q) \text{ and } p = 1, 2, 3, \ldots, 7; g = 1, 2, 3, 4; i = 1, 2, 3; q = 1, 2, 3; \} \]

\[ (y(f), h, j, t) \] : \(t\)th type of channel level with \(y(f)\)th segment for \(h\)th type of household size and \(j\)th type product usage segment.

\[ DX_{y(f), t} \] : Marketing channel variable for \((y(f),h,j,t)\).

\[ C_{y(f), t} \] : Direct cost incurred for marketing channel variable for \((y(f),h,j,t)\).

\[ W_{y(f), t} \] : Weight factor associated with indirect cost of marketing channel level variable for \((y(f),h,j,t)\).
5.5.2. System Constraints:

(i) Budgetary constraint

Budget is a financial plan and orderly presentation of the anticipated results of a plan, project or strategy. Every organization sets its own budget in order to assist in allocating resources and predict performance of management. Present study for dairy industries in the study area needs well planned and designed budget to match the product with the market. The management has hard decisions regarding trade-offs of resources allocated to various products and between various market segments. Hence, funds are limited to maximum extent for the expenses which ensures optimum utilization of funds within a given limit. Mathematically it can be put as,

$$\sum \sum \sum \sum_{y(f), h, j, t} C_{y(f), h, j, t} DX_{y(f), y(f)} \leq B \quad \text{for all } y(f), h, j, t$$
(ii) **Exclusive channel level market segment constraint:**

This constraint insures that no two channel levels are associated in catering the same channel level market segment. This constraint is not a strict equality constraint, for it allows the possibility of associating one channel level or not associating a channel level in a particular market segment at all. In other words, it can be stated as while catering the milk products, various channel levels are available. And one market segment should be associated with the one milk product for a particular channel for a particular period of time. This constraint states that marketing channel variables should be atleast one channel level to be associated for particular market segment, mathematically it can be put as:

\[
\sum_{y(f)} \sum_{h} \sum_{j} DX_{hjt}^{y(f)} \geq 1 \quad \text{for all } t.
\]

(iii) **Channel level limitation constraint:**

This constraint ensures that only a predetermined number of channel levels are available for particular market segments. For marketing of milk products, this constraint specifies the exact number channel level for particular market segment. This constraint decides marketing channel variable to be less than or equal to total number of marketing channels available in the given market segment, mathematically it can be expressed as:

\[
\sum_{y(f)} \sum_{h} \sum_{j} DX_{hjt}^{y(f)} \leq N_t \quad \text{for all } t.
\]

(iv) **Area constraint:**

This constraint specifies the area distribution to different marketing channels in a particular market segment and cannot exceed the total available area for the both collection and distribution of particular dairy product. Due to availability or non-availability of desired resources at certain areas may restrict the optimal performance of marketing channels. So, for marketing of dairy product through particular marketing channel is confined to certain area, which can be expressed as:

\[
\sum_{h} \sum_{j} \sum_{t} DX_{hjt}^{y(f)} \geq 1 \quad \text{for all } y(f)
\]
(v) **Brand share constraint:**

Brand share refers to that part of a total market controlled by one firm's brand. It is expressed as the sales of a particular product/brand or line of products in relation to total industry sales and is commonly computed as a percentage. This can be expressed as:

\[
S_t \quad \quad B = \frac{S_t}{T_t}
\]

where

- \( B = \) Share of particular brand in a given period of time.
- \( S_t = \) Sales of particular brand in given period of time.
- \( T_t = \) Total sales of a particular product category in given period of time.

Brand share is a demand oriented concept where increasing or maintaining share is considered as key to effective marketing mix. In case of marketing of dairy products based on marketing channels the efficient management of the physical distribution, decentralizing its warehousing operation, economic and efficient mode of transportation and avoiding out-of stock situations in various market segments are key to improve firms profitability further through increasing its brand share. Brand share objective is a benchmark which represents that portion of a market a company wishes to capture. Hence, this model is to maximize brand share within certain limits based on marketing channels in different market segments. This constraints ensures that the marketing channel level variable to be above or equal to certain level of brand share in the market segment, mathematically this can be expressed as:

\[
\sum \sum \sum \sum \frac{h_{jt}}{y(f)} B_{jt} DX_{y(f)} \geq B_s \quad \text{for all } y(f), h, j, t
\]

(vi) **Return on investment constraint:**

Most companies try to improve their capital investment decision making and maximize the channels of attaining their long-term rupee investment objective. In this pipeline the merits of investment for alternative marketing channels in term of their probable return are analysed by using the return on investment (ROI) conception determining its dividend payoffs for each market segment. In the present study for dairy products in different marketing channels for different market segments the objective is to increase return on investment. ROI on marketing channel for each market segment, is expressed as:
\[
R = \frac{S_t - C_t}{C_t}
\]

Where \( R \) = return on investment associated with some segments using marketing channel level ‘t’;
\( S_t \) = estimated sales associated with some segments using marketing channel level ‘t’; and
\( C_t \) = estimated costs associated with some segments using marketing channel level ‘t’.

Hence, to have overall satisfactory performance of the firm, ROI is significant for the long run investment decision making of the firm. This constraints ROI to have atleast a limit for all the channels in the total market. This can be expressed as:

\[
\sum_{y(f)} \sum_{h} \sum_{j} \sum_{t} \frac{R_{hjy}}{D_{y(f)}} \geq R \quad \text{for all } (f), h, j, t
\]

(vii) Stock turnover constraint:

Stock turnover ratio provides a clear picture as to the size of inventory and receivable required for a given level of sales. It is essential for intermediaries in-order to measure the effectiveness of marketing channels in each market segment in employment of inventory for sales and replacement in a given period. Channel intermediary objective is to optimize stock turnover so as to have better sales and regular flow of products to ultimate customer and to maintain the level of stock to avoid over and under utilization of inventory. Stock turnover ratio is expressed as:

\[
S = \frac{S_t}{A_{lt}}
\]

Where \( S \) = Stock turnover ratio
\( S_t \) = Net sales associated with some segment using marketing channel level ‘t’ (in rupees)
\( A_{lt} \) = Average inventory associated with some segment using marketing channel level ‘t’ as selling price (in rupees).

It is assumed that for each channel, stock turnover ratio should have atleast a particular value, which is expressed as:
(viii) Preferential constraint

Preferential constraint determines which specific marketing channel level is preferred to others in a given market segment. There are so many options to choose from and out of that some marketing channels are preferable to some others because of their better facility and availability. Preferential constraints choose one specific marketing channel level to be better in given market segment to the other. Mathematically it can be put as:

$$\sum \sum \sum \frac{h_{jt}}{S_{DX}} \geq S_{i}$$ for all $t$

(yii) Minimum selectivity and competitive advantage constraint

Certain brands and products are already accepted by consumer segments. Based on this producer has to take advantage of producing certain product in minimum quantity to serve the established market segment. This would not only ensure a competitive parity at present, but also would enhance status and approval of the organization in future. So, mathematically it can be put as:

$$\sum \sum \sum \frac{h_{jt}}{S_{DX}} > 1$$ for all $h, j$

5.5.3 System objectives:

(i) Cost objective:

Cost has always been a major consideration in any marketing activity and there is no exception in case of dairy product market. To have an effective and efficient marketing channels among various alternatives in different market segments for dairy product market, the marketing executive must screen alternatives and appropriate marketing channels such that atleast expense per unit of merchandise will secure the desired usage rate, volume of sales and purchases. There are costs of each alternative marketing channels activity itself with which to contend. In this model, the objective is to minimize the sum of all costs affected by each marketing channels in different market segments for dairy products. The direct cost can be measured objectively eventhough substantial uncertainties may be involved viz., raw material cost, production cost, transportation cost, costs of distribution to intermediaries, storage cost, wages paid to the field staff/sales
force/intermediaries and other miscellaneous costs. Minimization of direct cost objective for each market segments for marketing channel model of dairy product is mathematically expressed as:

\[
\text{Min } \sum \sum \sum \sum C_{\text{DX}} \text{ for all } y(f), h, j, t
\]

Similarly, the indirect cost include intangibles such as costs of using intermediaries in the channels of distribution of dairy product in each market segments. This can loose the channel control which could lead to limited and biased sales activity as well as customer service at risk; environmental impact and government regulations leading to higher direct costs; higher stock levels leading to increased costs of stock-holding; as well as reduction in products' freshness and the intermediaries profitability; and damages and stocks losses leading to higher direct costs. Even though these factors may be intangible, they can be systematically evaluated and logically considered together with the direct cost.

Channel rating of indirect cost factors \((F_{M0})\) is evaluated by ten point rating scale (i.e., excellent = 2, very good = 4, good = 6, fair = 8, poor = 10) for each one factor in marketing channel for each market segments which reduces the management judgment to a quantifiable score. The factors shown in table 5.1 have been used for evaluation of indirect costs in using intermediaries for each marketing channels. At the same time, the weights assigned to each cost factor is also depicted in the same table.

Table 5.1: Indirect cost in using intermediaries for each marketing channels.

<table>
<thead>
<tr>
<th>Sl.no</th>
<th>Indirect cost factors</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Channel control</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>Communication gap with customer</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>Environmental impact and government regulation</td>
<td>20</td>
</tr>
<tr>
<td>4</td>
<td>Higher stock levels</td>
<td>30</td>
</tr>
<tr>
<td>5</td>
<td>Damages and stock losses</td>
<td>30</td>
</tr>
</tbody>
</table>

The objective function of the model is to minimize the weighted sum of value in each marketing channel for each market segment. Indirect cost is calculated by taking the indirect score factor value (0 to 1000) to be directly proportional to indirect cost value i.e., (Rs.0 to Rs.10,000).

\[
\text{Min } \sum \sum \sum \sum IC_{\text{DX}} \text{ for all } y(f), h, j, t
\]
Where,

$$ IC \propto A $$

The total cost will be sum of direct cost and indirect cost. The objective function of this model will be to minimize the sum of value added for all cost factors. This is expressed as follows:

$$ \min \sum_{y(f)} \sum_{h} \sum_{j} \sum_{t} C_{y(f),h,j,t} DX + \sum_{y(f)} \sum_{h} \sum_{j} \sum_{r} IC_{y(f),h,j,r} DX $$

for all $$ y(f), h, j, t $$

(ii) **Profit objective**:  

In dairy product market, it is always preferable to have maximum profit contribution. In order to improve profits, the firm has to decide which marketing channel gives much of contribution in each market segments. As profit contribution is defined as the difference between the product’s total revenue generated by the sale of goods delivered minus total cost incurred, the profit equation is expressed as:

$$ P = R - TC $$

where $P =$ Profit  

$R =$ Revenue &  

$TC =$ Total cost  

So, currently profit contribution as a system objective should be maximized and it can be expressed as follows:

$$ \max \sum_{y(f)} \sum_{h} \sum_{j} \sum_{t} P_{y(f),h,j,t} DX $$

for all $$ y(f), h, j, t $$

(iii) **Channel goodwill objective**:  

Marketing goodwill is one of the intangible values of a business beyond its net worth. Marketing channel goodwill may include such assets as brand name
recognition, general reputation of firm and channel members, location, technical know how and the historic ability of the company to retain its accounts on the basis for example, of services. The value of channel goodwill in establishing the marketable worth of a company can be established by subjective judgment and negotiation on 0-1 scale. The basic concept in our model is that level of accumulation of market channel goodwill depends on demand generation and consequently increase in market share and brand loyalty for certain time period. This goodwill calculation is as follows:

\[
G_t = bS_t + G(f)_t \\
G_{t-1} = bS_{t-1} + G(f)_{t-1} \\
G = G_t - G_{t-1} = b(S_t - S_{t-1}) + (G(f)_t - G(f)_{t-1}) = b\Delta S + DG(f)
\]

Where

- \( G(f)_t \): Total rating value of market channel goodwill factors for a particular market segment in given period of time 't'.
- \( G(f)_{t-1} \): Total rating value of market channel goodwill factors for a particular market segment in previous time period 't-1'.
- \( G \): Current goodwill
- \( b \): Constant
- \( \Delta S \): Change in sales
- \( \Delta G(f) \): Difference in goodwill
- \( G_t \): Goodwill at time t.
- \( G_{t-1} \): Goodwill at time t-1

The objective function based on goodwill is to have maximize channel goodwill and can be expressed as:

\[
\text{Max } \sum_y \sum_{h,j,t} h_{jt} G(y(f),h,j,t) \quad \text{for all } y(f), h, j, t
\]

5.5.4 (0,1) Restriction:

Each decision variable has to take 0 or 1 as it’s solution. Mathematically, it can be represented as:

\[
h_{jt} \in \{0,1\} \text{ for each } y(f), h, j, t
\]
5.6 APPLICATION
5.6.1 Decision Variables, Constants and Symbols:

The model consists of a number of decision variables, constants and symbols. These are discussed below. All values and variables, unless otherwise specified, refer to the particular time period.

- **p**: 1 for product line segments of dairy product i.e., Double Tone Milk.
- **g**: 1 for geographic segment i.e., Keonjhar.
- **i**: 1, 2 for income level segments i.e., Higher Income Group and Middle Income Group respectively.
- **q**: 1 for seasonal variation segment i.e., Winter.
- **h**: 1, 2 for household size segments i.e., Large and Medium respectively.
- **j**: 1, 2, 3 for product usage segment viz., Heavy, Medium and Light respectively.
- **t**: 1, 2, 3 for level of marketing channel viz., Zero Level, One Level, Two Level and Multiple Level respectively.

- **y(f)**: 1, 2, 3 .... n referring an ordered set (p,g,i,q) for particular p\textsuperscript{th} product considered in g\textsuperscript{th} geographic segment in the i\textsuperscript{th} income group distributed in q\textsuperscript{th} Here, y(f) represents the segment type, viz., 1,2,...n for the set of segments Z, where 
  \[ Z = \{z : z = (p,g,i,q) \text{ and } p = 1; g = 1; i = 1, 2; q = 1; \} \]

- **(y(f), h, j, t)**: t\textsuperscript{th} type of channel level with y(f)\textsuperscript{th} segment for h\textsuperscript{th} type of household size and j\textsuperscript{th} type product usage segment.

- **DX\textsuperscript{hjt}**: Marketing channel variable for (y(f),h,j,t).
- **C\textsuperscript{y(f)}**: Direct cost incurred for marketing channel variable for (y(f),h,j,t).
- **W\textsuperscript{y(f)}\textsuperscript{hjt}**: Weight factor associated with indirect cost of marketing channel level variable for (y(f),h,j,t).
- **F\textsuperscript{y(f)}\textsuperscript{hjt}**: Indirect cost factor score associated with marketing channel variable for (y(f),h,j,t).
Indirect cost associated with marketing channel variable for $(y(f),h,j,t)$.

Profit contribution by marketing channel level variable for $(y(f),h,j,t)$.

Share of brand by marketing channel level variable for $(y(f),h,j,t)$.

Return on investment by marketing channel level variable for $(y(f),h,j,t)$.

Stock turnover by marketing channel level variable for $(y(f),h,j,t)$.

Budgetary amount

Brand share

Return on investment

Stock turnover

Other level of marketing channel

Number of channel type available for all $t$.

Indirect cost value incurred for marketing channel variable for $(y(f),h,j,t)$.

5.6.2. System Constraints:

(i) Budgetary constraint

$$\sum \sum \sum \sum \frac{h_{jt}}{y(f)} \frac{h_{jt}}{y(f)} \frac{c_{dx}}{y(f)} \leq B \text{ for all } y(f), h, j, t$$

(ii) Exclusive channel level market segment constraint:

$$\sum \sum \sum \frac{h_{jt}}{y(f)} \frac{dx}{y(f)} \geq 1 \text{ for all } t.$$

(iii) Channel level limitation constraint:

$$\sum \sum \sum \frac{h_{jt}}{y(f)} \frac{dx}{y(f)} \leq N_t \text{ for all } t.$$

(iv) Area constraint:

$$\sum \sum \sum \frac{h_{jt}}{y(f)} \frac{dx}{y(f)} \geq 1 \text{ for all } y(f).$$
(v) **Brand share constraint:**

\[ \sum_{y(f)} \sum_{h} \sum_{j} \sum_{t} B_{hj}^{yt} \geq B_s \quad \text{for all } y(f), h, j, t \]

(vi) **Return on investment constraint:**

\[ \sum_{y(f)} \sum_{h} \sum_{j} \sum_{t} R_{hj}^{yt} \geq R \quad \text{for all } y(f), h, j, t \]

(vii) **Stock turnover constraint:**

\[ \sum_{y(f)} \sum_{h} \sum_{j} S_{hj}^{yt} \geq S_t \quad \text{for all } t \]

(viii) **Preferential constraint**

\[ \sum_{y(f)} \sum_{h} \sum_{j} DX_{hj}^{yt} \geq \sum_{y(f)} \sum_{h} \sum_{j} DX_{hj'}^{yt} \quad \text{for all } t \text{ and } t' \text{ as } t \neq t'. \]

(ix) **Minimum selectivity and competitive advantage constraint**

\[ \sum_{y(f)} \sum_{h} DX_{hj}^{yt} \geq 1 \quad \text{for all } h, j \]

5.6.3 **System objectives:**

(i) **Cost objective:**

\[ \begin{align*}
\text{Min} & \sum_{y(f)} \sum_{h} \sum_{j} \sum_{t} C_{hj}^{yt} DX_{hj}^{yt} + \sum_{y(f)} \sum_{h} \sum_{j} \sum_{t} \sum_{r} \sum_{f} IC_{hj}^{yt} DX_{hj}^{yt} \\
& \quad \text{for all } y(f), h, j, t
\end{align*} \]

(ii) **Profit objective:**

\[ \text{Max} \sum_{y(f)} \sum_{h} \sum_{j} \sum_{t} P_{hj}^{yt} DX_{hj}^{yt} \quad \text{for all } y(f), h, j, t \]
5.7 ANALYSIS AND INTERPRETATION OF RESULTS

The problem has been solved by the algorithm for a 0-1 solution as described in section 5.4 and by utilising Lindo software in a Pentium PC at Department of Business Administration, Utkal University, Vani Vihar. The final result obtained is presented in table 5.7 which depicts the specific type of marketing channel associated with the customer market segments (based on geographic, income, household size, usage rate). This is to select marketing channels available to cater the product to the ultimate customer market segments and to fulfill the objectives of producers and customers at optimum level.

The original data sheet of profit, cost and channel goodwill of various marketing channels available with their associated dimensions to the aimed market segments are given in table 5.2. The initial profit maximisation, cost minimisation and channel goodwill maximisation solutions are given in tables 5.3. The maximum value for total profit is determined to be Rs. 33,060/- and the corresponding minimum value of total profit in the presence of other two objectives is determined to be Rs. 9,401/- (table 5.3). Similarly, the minimum and maximum values of total cost are determined to be Rs. 49,078/- and Rs. 2,09,392/- respectively (table 5.3) and the minimum and maximum values for total channel goodwill are 9255 thousands and 32710 thousands respectively (table 5.3). After construction of membership functions, the compromised solution-1 obtained is given in table 5.5. The compromised total values for profit, cost and channel goodwill are Rs. 20,278, Rs. 1,19,177 and Rs. 22,508 thousands respectively (table 5.5). At this point it has been decided to sacrifice some profit keeping the interest of producers and to have better utilisation of investment as well as enhance channel goodwill objective. Consequently, the essential criteria is to have effective marketing channel management to target market, segments. For this one has to sacrifice the profit within specific limits of cost and channel goodwill. After considering channel goodwill to be superior objective under the current circumstances as it creates new customer and it provides a platform for much improvement in product sales through the market channels. Hence, a minimum acceptable value of profit should decide amount of reduction in cost. So profit was traded off with a minimum value of Rs. 19,235/- based on the evaluation of the present market conditions. The value of cost is kept in the interval (119177,
Values leads to increase in channel goodwill and better utilisation of investment. After re-construction of membership functions for cost and channel goodwill, the second compromise solution obtained is presented in table 5.6. The second compromise solution for profit, cost and channel goodwill are Rs. 19,910, Rs. 1,15,676 and 23037 thousands respectively (table 5.6).

Further, it has found that for better utilisation of investment, the channel goodwill value can be sacrificed. So keeping the profit at minimum value of Rs. 19,235/- and the channel goodwill is traded off with a minimum value of 30320 thousands based on the evaluation of the present market condition. The value of cost is kept in the interval (115676, 49078) as this is based on the logic that decrease (sacrifice) in profit and goodwill values to specific limits will better utilise the cost factor. After reconstruction of membership functions for cost, the final solution obtained is presented in table 5.7. The final solution for profit, cost and channel goodwill are 19398, 101102 and 20392 thousands respectively which is presented in table 5.7.

The individual values of the final outcome to MSDS-I are observed in zero-one format i.e., rejection-selection format. Actually, the model accepts or rejects some specific marketing channels with all its associated dimensions which are targeted towards specific consumer market segments. Hence, firstly, the market segment considered on consumer characteristics and marketing channel level dimensions are to be discussed and then the final solution values would be interpreted and analysed.

a) Type-I Marketing Channel:

The type-I marketing channel is known as zero-level channel. It is direct selling of dairy products from producer to the ultimate customer market segments. The direct marketing channels are milkman (producer) co-operatives supply dairy products directly to customer market segments.

b) Type-II Marketing channel:

The type-II marketing channel is known as one-level channel. It contains one selling intermediary such as vendors, gramvikas, Govt. dairy farm, private dairy farms. In this marketing channel producer supply dairy products to intermediary and then intermediary supply dairy products to ultimate customer market segments.
c) Type-III Marketing Channel:

The type-III marketing channel is known as multi-level channel. It contains two or more intermediaries such as society and milk unions, OMFED and retail outlets. In this marketing channel from milk producers there are two intermediaries supply dairy products to ultimate customer market segments.

Now considering the individual values of the final outcome in table 5.7, it is observed that a combination of zero and one values are obtained indicating the selection and rejection of specific type of marketing channel to the various consumer market segments. Market segments $x_1$ to $x_{16}$ represent the type-I marketing channel i.e., zero level marketing channel: dairy product - milk and season to be winter and market segment $x_1$ to $x_8$ represent to geographic segment - Keonjhar and $x_9$ to $x_{16}$ represent to geographic segment - Barbil. Market segments $x_{17}$ to $x_{32}$ represent the type-II marketing channel i.e., level marketing channel: dairy product - milk and season to be winter and market segment $x_{17}$ to $x_{26}$ represent to geographic segment - Keonjhar and $x_{27}$ to $x_{32}$ represent to geographic segment - Barbil. Market segments $x_{33}$ to $x_{48}$ represent the type-III marketing channel i.e., two level marketing channel: dairy product - milk and season to be winter and market segment $x_{33}$ to $x_{40}$ represent to geographic segment - Keonjhar and $x_{41}$ to $x_{48}$ represent to geographic segment - Barbil.

For the type-I marketing channels, where milk producers directly supply dairy products to the ultimate consumer market segments. It totally rejects the participation of societies/cooperatives, intermediaries and retail outlets. $x_1$ to $x_{16}$ represent for type-I marketing channels in which only few market segments are represented such as $x_2$ and $x_7$ from Keonjhar town and $x_{16}$ from Barbil town where $x_2$ reflects market segment with medium usage rate, large household size and higher income group customers, $x_7$ reflects market segment with heavy usage rate, medium household size and middle income group customers and $x_{16}$ reflects market segment with medium usage rate, medium household size and middle income group customers. From the result it has shown that less profit and goodwill among this market segments in comparison to other two types of marketing channels. As supply of milk through an individual should be restricted. This also means that the producer limits the distribution of dairy products locally as it would serve to particular region and market segment.

For type-II marketing channels, where milk producers supply dairy products through one intermediary such as gramvikas, government dairy farms and private dairy farms. $x_{17}$ to $x_{32}$ represent for type-II marketing channels in which some market segments are represented such as $x_{21}$ from Keonjhar town and $x_{27}$ and $x_{28}$
from Barbil town. Where \( x_{21} \) reflect market segment with heavy user, large household size and middle income group customers and \( x_{27} \) and \( x_{28} \) reflect market segment with higher income group, medium household size and heavy and light user customers respectively. From the result it has shown that profit and goodwill among this market segments are more in comparison to the type-I market channels and some what less than type-II marketing channel. In this marketing channel level where the producer don’t have direct contact with customer market segment and it has been found that goodwill to this kind of channel level is at satisfactory level by ultimate customer market segments. The established one level intermediary should be nearer to production centre and also with ultimate customer market segments.

Finally, \( x_{33} \) to \( x_{48} \), the type-III marketing channel, i.e., multi-level channel. Where within milk producer and ultimate customer market segment lies two more intermediaries such as OMFED and retailers. In this channel type producers have less contact with ultimate customer market segment. But all the participants in the marketing channel from producer to the consumer segment forms a close relationship. \( x_{33} \) to \( x_{48} \) depict for the type-III marketing channels and selected market segments are \( x_{40} \) from Keonjhar town and \( x_{41}, x_{42}, x_{45}, x_{46}, x_{47} \) represent from Barbil town. Where \( x_{40} \) reflect market segment with medium user, medium household size and middle income group customers. Where \( x_{41} \) and \( x_{42} \) reflects market segments with higher income group, large household size and heavy medium user customers respectively. Where \( x_{45} \) and \( x_{46} \) reflects market segments with middle income group large household size and heavy and medium user customers respectively. Where \( x_{47} \) reflects market segments with heavy users, medium household size and middle income group customers. From this result it has shown that more of Barbil customer market segment prefer to type-III marketing channel to other two type’s of marketing channels. And found that profit and goodwill among this market segments are more in comparison to other two type’s of marketing channels.

On the whole, the model proposes the supply of milk through an individual should be restricted and these should be establishment of co-operatives where the storage facilities should be scientific and adequate and also better delivery facility. The two level marketing channel should be better coordinated and integrated such that regular supply of milk to the ultimate customer market segment should be at best. Maintenance of superior quality of milk and coordination of intermediaries will lessen the communication gaps between the milk producers and ultimate customer market segments. More free and fair competition is encouraged and other private farms interested can get down to this lucrative business. The government should extend infrastructural facilities, particularly to lessen the communication gap and maximum utilization of catering the products to potential market segments.
Fig. 5.2: Segmentation tree-plan of dairy product marketing channels using Geo-demographic Variables.

<table>
<thead>
<tr>
<th>Marketing channel type #1 (Direct)</th>
<th>Geographic Segment #1 (Keonjhar)</th>
<th>Product #1 (Milk)</th>
<th>Seasonal variation segment #1 (Winter)</th>
<th>Income level segment #1 (HIG)</th>
<th>Household size #1 (Large)</th>
<th>Usage rate #1 (Heavy users)</th>
<th>Usage rate #2 (Medium users)</th>
<th>Usage rate #1 (Heavy users)</th>
<th>Usage rate #2 (Medium users)</th>
<th>Usage rate #2 (Medium users)</th>
<th>Usage rate #2 (Medium users)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marketing channel type #2 (One-level)</td>
<td>Geographic Segment #2 (Barbil)</td>
<td>Product #1 (Milk)</td>
<td>Seasonal variation segment #1 (Winter)</td>
<td>Income level segment #1 (HIG)</td>
<td>Household size #1 (Large)</td>
<td>Usage rate #1 (Heavy users)</td>
<td>Usage rate #2 (Medium users)</td>
<td>Usage rate #1 (Heavy users)</td>
<td>Usage rate #2 (Medium users)</td>
<td>Usage rate #2 (Medium users)</td>
<td>Usage rate #2 (Medium users)</td>
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<tr>
<td>Marketing channel type # 3 (Multi-level)</td>
<td>Geographic Segment # 1 (Keonjhar)</td>
<td>Product # 1 (Milk)</td>
<td>Seasonal variation segment # 1 (Winter)</td>
<td>Income level segment # 1 (HIG)</td>
<td>Income level segment # 2 (MIG)</td>
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<td>Household size # 2 (Medium)</td>
<td>Usage rate # 1 (Heavy users)</td>
<td>Usage rate # 2 (Medium users)</td>
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<tr>
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<td>Product # 1 (Milk)</td>
<td>Seasonal variation segment # 1 (Winter)</td>
<td>Income level segment # 1 (HIG)</td>
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<td>Household size # 1 (Large)</td>
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<td>Segment type</td>
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<td>Cost (in Rs.)</td>
<td>Goodwill (Nos.)</td>
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