Food Processing and Manufacturing

• Add form utility to raw farm product

• Food processing may involve
  ➢ Canning, freezing
  ➢ Dehydrating farm product
  ➢ Disassembling raw farm product
  ➢ Combining several products to make something new
Marketing Management in Food Manufacturing

Product Strategies

The goal of marketing management in food processing is to transform an undifferentiated, low-profit commodity into a differentiated, branded, high value-added, profitable food product.

• Branding: A brand is a name, term, symbol, or design that identifies the seller and differentiates the product from those of the competitors.

Aims:  > Certify the quality of the product
        > Transfer the goodwill of the firm to new products

“Brand Loyalty”: When a firm can increase its product price without shifting the demand to other producers.

Important Facts: 40% of US food products are branded. 60% sold as undifferentiated products.
Product Differentiation

• Generally, it’s an idea and/or an innovation.
  
  - Take-away food did not always exist. It became important with refrigeration.

  - Boil-in-the-bag food has been made possible because of the availability of a new kind of plastic.

• Fact: 15,000 new food products are introduced on the marketplace. Only 10% “will survive” the market test.

• 3 types of innovations important for food manufacturers:

  (1) New marketing methods and technologies
      
      o “Just-in-time” manufacturing
        → Decrease storage costs

  (2) New products or services
      
      o Take-away sushi innovates with respect to the traditional sushi place.

      o Dehydrating techniques.
(3) New business organization

R and D joint venture

ex: Chinese and US firms develop a new product. They form an R and D joint venture.

→ Avoid R and D cost duplication!

Pricing Strategies
• Generally, it is observed that firms “share” the market.

For example, two processors enter sequentially into a market.

2 dimensions differentiation

\[
\begin{align*}
\text{high quality} & \quad \text{“gourmet strategy”} \\
\text{high price} & \quad \text{low price} \\
\text{low quality} &
\end{align*}
\]

Consider the following demand schedules:

| 1\textsuperscript{st} Quality | \(Q^y\) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Fixed cost | Unit price | 7 | 7 | 7 | 6 | 3 | 2 | 2 | 1 |
| Low Quality | \(Q^y\) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Unit price | 3 | 3 | 3 | 2 | 2 | 2 | 1 | 1 |
• The firms enter sequentially and can market their production on one market (for simplicity).

• Their production capacity is 4 units.

• If one firm wants to enter the high quality market, it must pay a fixed cost (FC).

• What are the “price-quality” strategies of the two firms? (Firm 1 enters first.)

• The fixed cost is FC = $10.

Firm 1 can choose

- 1\textsuperscript{st} Q. 4 \times 6 - $10 = $14 if Firm 2 does not enter the same market
- 2\textsuperscript{nd} Q. 4 \times 2 = $8 if Firm 2 does not enter in the same market!

Now suppose that Firm 1 has entered the 1\textsuperscript{st} market.

Firm 2 has two choices

- 1\textsuperscript{st} (B_1 = 4 \times 2 - $10 = -$2)
- 2\textsuperscript{nd} (B_2 = 3 \times 2 - $10 = -$4 (STUPID!))

8 units are sold in market 1
“Stable Outcome” or Equilibrium.

Firm 1 $\rightarrow$ Market 1
\begin{align*}
\text{High Price} \\
\text{High Quality}
\end{align*}

Firm 2 $\leftrightarrow$ Market 2
\begin{align*}
\text{Low Price} \\
\text{Low Quality}
\end{align*}

What happens if FC = $17$?

\begin{align*}
\text{2}\text{nd}\hspace{1cm} 3 \times 3 = \$9 & \hspace{1cm} \text{If alone on the market.} \\
\text{Firm 1} \\
\text{1}\text{st}\hspace{1cm} 4 \times 6 - 17 = \$7 & \hspace{1cm} \text{If alone on the market.}
\end{align*}

Suppose that Firm 1 has entered 2\text{nd} Market.

Then we can show that it is in Firm 2’s best interest to enter Market 1.

\begin{align*}
\text{1} \hspace{1cm} B_2 = 4 \times 6 - 17 = \$7 \\
\text{By entering Market} \\
\text{2} \hspace{1cm} B_2 = 3 \times 2 = \$4 \hspace{1cm} (3\text{ units are already produced on this market})
\end{align*}

Entering Market 2 when Firm 1 already did is a dominated strategy!

Again the same (differentiation) equilibrium as before!
DISTRIBUTION STRATEGIES

• Place or distribution strategies
  o Sell through conventional food stores
  o Sell through non-food stores
  o Sell through vending machines
  o ……..

• Generally, processors prefer to sell to mass outlets. Why?
  → Economies of scale.

• Vertical integration or separation?
  → depends on the nature of the product.
  → when the product is perishable, we have
    Vertical integration (eliminates hold-up problem).
  → when the product is not perishable (Dry products) we tend to observe vertical separation.
PROMOTIONAL STRATEGIES

• Promotional strategies are the most visible

➤ Aimed at reminding, informing, persuading
➤ Theme can be diverse (price, quality, availability)
➤ Type of promotion (advertisement, sales, promotion)
➤ Type of media used to carry the promotion (print, broadcast, mail, etc….)

• Critiques with respect to advertising campaigns

➤ It carries little useful information!
➤ It increases the final price paid by consumers!

• Food products are the most heavily advertised consumer products

➤ For $1 sale, 3 cents will be spent in advertising!
➤ Wide diversity of products: 230,000 different packaged food products!
FOOD PROCESSING INDUSTRY IS DIVIDED INTO TWO SECTORS

(1) A dominant core composed of very large firms with well-known brands and accounting for a high share of the industry sales.

(2) A competitive fringe of food processors, large number of smaller firms with less well-known brands, accounting for a smaller share of the industry sales.

Ex: US: Coke and Pepsi, and the competitive fringe of cola producers.

Europe: Nestle chocolate and “Cote d’Or” (Kraft Foods) and the competitive fringe of chocolate producers.

Trend:

(1) Advertise higher quality and brand.

(2) Price essentially

- Retailer controlled labels
• The food processing industry has had a big wave of mergers during the last 30 years.
  
  - Economies of scale
  
  - Market power is increased
  
  - Economies of scope

  **Ex:** Danon has reduced the number of brands no duplication of advertising cost!

  - Large processors are multiplant, multiproduct, multimarket and multinational.

→ Slide 5.2
TREND: CONCENTRATION OF FOOD PROCESSING INDUSTRY

→ In 1967, 50% of the largest FP accounted for 35% of food manuf. value added

In 1977, 50% —— 40%

In 1987, 50% —— 47%

In 1997, 50% —— 50%
Food Processing in the US

→ 1% Employment in 1998
→ 12% of the value added by all manufacturing in 1998
→ 21,000 food processing plants
→ Processors with higher value-added are breakfast cereal, bakery, pasta

• Size of food processing plant depends upon
  → Economies of scale
  → Perishability and transportation costs
  → Geographic concentration of raw farm product

Transportation costs and size – example:

\[
T_c = \$1 / \text{mile and } P^o \quad (T_c = \$.10 / \text{mile and } P^o)
\]
\[
F_c = \$4 / \text{plant}
\]
Solution

- The “symmetric” solution seems optimal when there are two plants.
- The “central” solution seems optimal when there is one plant.

\[
T_c = \$0.1 \text{ / mile}
\]

2 plants: \(TC = 2 \times \$4 + 2 \times 10 \times 0.10 = \$10\)

1 plant: \(TC = 1 \times \$4 + 2 \times 10 \times 0.10 = \$6.828\)

Transportation costs

1 plant is chosen

- \(T_c = \$1 \text{ / mile}\)

2 plants: \(TC = 2 \times \$4 + 2 \times 10 \times \$1 = \$28\)

1 plant: \(TC = 1 \times \$4 + 28.28 \times \$1 = \$32.28\)

2 plants are preferred
Conclusion: High transportation costs favor small size!

Is this conclusion true in reality?

The Location of Food Processing

The location of food processors is the result of several parameters.

- The location of the population and the place where raw products are produced.
- The transportation costs.

However, to understand completely the actual location of the processing industries, the historical dimension is important.

➢ Capacities are installed and cannot be moved easily!

Central Question: Should a food processor locate a plant in the farm areas (near the sources of raw farm products) or should the plant be located in the cities, near the consumers?
Food Processing Location Principle

• If raw products are more expensive to transport than final products, the location decision will be production oriented.
  ➢ This is true for flour milling, meat packing, butter and cheese manufacturing.

• If raw products are cheaper to transport than final products, the plant location will be nearer to consumers.
  ➢ This is true with baking or ice-cream plants.
  ➢ If processing is more labor intense
    ➢ cities

The Law of Market Areas (LOMA)
➢ This is a version of hoteling’s model of horizontal differentiation.
➢ The Law of Market states that the territorial boundary between two or more markets or plants in a locus of points such that the final selling prices, including transportation costs, are equal for sellers in each market.
Example

<table>
<thead>
<tr>
<th>Plant A’s Location</th>
<th>cost to consumer buying to B and located at 100 miles from A</th>
</tr>
</thead>
<tbody>
<tr>
<td>$8</td>
<td>$7 ($3) $6 ($4) $5 ($5) $4 ($6) Plant B’s Location</td>
</tr>
</tbody>
</table>

$8 Plant A’s Location $7 ($3) $6 ($4) $5 ($5) $4 ($6) Plant B’s Location

* * * * *

100 (mi) 200 300 400

Assume that Plant A’s price is $P_A = $2 / case and that Plant B’s price is $P_B = $3 / case. The transportation cost is $1 / 100 miles.

Where is the market boundary? Cost to a consumer buying to A and located at 200 miles from B.

Answer: The market boundary is at 300 miles.
Food Science and Marketing

- The developing techniques in food sciences have made possible the creation of new foods such as fat substitutes, low calorie and low cholesterol foods.

- It is now possible to obtain any food textures, smells, flavors...

- This introduces flexibility in the design of new foods and, as a result, more opportunities to differentiate...

- GMO foods are a new area of competition!