
Executive Summary

Thai people's consumption of noodles nowadays is very high, only being second to cooked rice. It can be said that noodles are a regular major type of food among Thai people, which can be cooked into several kinds of dishes. At the same time, noodles also contribute to occupation building for many groups of Thai people, including noodle producing entrepreneurs, sellers (both wholesale and retail merchants), restaurants, and shipping. However, since noodles are produced from a process of cooking rice flour, and are categorized as a high pH-value food, they are subject to spoilage from microorganisms, a reason behind their short shelf-life. Generally speaking, noodles are good for only 2-3 days after production.

At present, marketing competition in the noodle industry is very high. Sellers require goods that can be kept for a longer time. This inevitably leads to a lot of dependence on preservatives on the entrepreneurs' part. Meanwhile, noodle trading has become more and more industrial, expanding into many parts around the country. Sometimes, noodles are even transported from a province or region to another. This necessitates more shipping time, and so more preservatives are required. Additionally, selling, supplying and distributing of fresh noodles still do not have efficient means, resulting in tardiness from production system to product distribution, and impact on the product's life.

This research had an aim to improve the supply chain and distribution management of fresh noodles so that the goods can be shipped directly and quickly from producers to consumers and still retain the quality and freshness. Solution to quality management and lengthening of fresh noodles' life needs an analysis through product flow consideration, from procuring of raw materials, transforming these to fresh noodle products, rapid transportation and distribution to consumers. In order to achieve these objectives, the research team had selected a sample group by a stratified random sampling method and chosen suitable targets that were well scattered in the project site and represented multiple production amount. Then an interview form was designed and information collected through a 100% direct means from the sample group. Thirty markets were surveyed under this study in the target areas of 8 provinces in the Northeast, namely, Khon Kaen, Nakhon Ratchasima, Mahasarakham, Mukdahan, Roi-ed, Nongkhai, Udonthani, and Ubon Ratchathani. In addition, to make the survey of fresh noodle distribution reliable and precise, the research team also conducted another survey in two more central provinces, i.e., Bangkok and Ayuthya. The number of sample groups studied was 103 cases, classified into the following groups that were involved in fresh noodle supply chain (1) five producing factories, (2) two noodle distributing centers, (3) twelve wholesalers, (4) seventy-five retailers, and (5) nine independent sellers. It should be noted that in the real course of study, the research team increased 63 sample groups from what was said in the term of reference. The following conclusion can be drawn from the study of supply chain and distribution management of fresh noodles.

1. Conclusion of Survey on the Impact of Present Logistics Management and Product Distribution on Fresh Noodle Quality

The following causes of problems affecting fresh noodle quality were drawn from the survey:

1.1 Raw Materials

At present, most entrepreneurs are facing problems related to quantity, costs, and quality of raw materials as a result of rice products that depend on seasons and prices which follow the demand/supply rules as well as on suitability of plantation land. These limitations have brought about problems in collecting raw materials from various plantations for economy of scale and economy of distance. Besides, the most appropriate raw material to produce fresh noodles should be old harvested seasonal rice stored for a suitable period of time. This rice contains a relatively high amount of amylase yielding softly tough noodle texture that will not easily break, crashed and turn soggy. Such limitations require entrepreneurs to administer their stocks and accurately audit the rice quality (for example, amount of amylase, moisture content, and contamination) by accurate methods. However, it was found at present that most entrepreneurs still audit their rice through their own specific experiences and skills, which may not meet the standard.

1.2 Production of Fresh Noodles

Due to great marketing competition in the noodle industry, **manufacturing factories are competing for market share and expansion of market in new areas**. This is done through an increase of benefits and warranty of goods in order to satisfy distributors. It is necessary for industrial factories to apply a production system that meets the Good manufacturing practice (GMP), for factories that are based on GMP will yield quality products and lengthen the goods' life. Nevertheless, many factories at present still rely on traditional methods where food production lacks good manufacturing practice. Certain production technology is still obsolete even though partial changes have been attained. These problems lead to low-quality fresh noodles; therefore, entrepreneurs seek to solve their problems by increasing stabilizers so as to retain the quality of noodles during the warranty period. Furthermore, **the increased fuel prices** have made it necessary for fresh noodle factories and goods distribution centers to adjust their transportation, decreasing shipping frequency. However, the fresh noodle marketing system needs sufficient products to meet the demand of consumers each day. Hence, manufacturing factories find it necessary to deliver the goods to retailers in great amount each time to cater for the days they are unable to do so. Therefore, in order that the fresh noodles can be kept for a long time, factories have to find a means to extend the products' life. Apart from the transportation factors affecting the product's quality, another major problem arising during transportation that also affects the quality is the unsuitable weather such as warm weather, stuffiness and rain. **If the transporting vehicle** uses plastic sheet cover or covers the roof and doors completely so that good ventilation is absent or goods are piled in many layers, then the fresh noodles may spoil more quickly. This is because the container of fresh noodles is ordinary polythene plastics (PP) with or without perforation. Perforated bags transfer air well from fresh noodles and can be easily stored; however, contamination may occur during

transportation, whereas non-perforated bags prevent contamination but the goods easily spoil due to missing of aeration.

1.3 Marketing System and Distribution of Goods

Besides producing quality goods demanded by the market, it is vital for factories to have trading strategies to deal with goods distributors in order to expand the market. Major problems in distribution system that render impact on fresh noodle quality include firstly ***profit orientation by selling the brand that makes more profit from the difference obtained from the factory***. The wholesalers, in particular, play an important part in buying fresh noodles from factories and determining the market share for each brand before selling to retailers and in turn, customers. Secondly, most wholesalers do not pay much attention on storage. They do not sell products ***in the first in-first out basis (FIFO)***. Selling of products mainly depends on convenience in obtaining the goods. Moreover, ***the market environment and storage are not hygienic***, another reason contributing to easy spoilage.

1.4 Food Shops and Noodle Consumers

Nowadays food shops and consumers of fresh noodles still lack knowledge and understanding of stabilizers or preservatives mixture during production. Thus, awareness of risks from such chemicals is low, especially at the grass-root level that buy goods without considering dangers that may arise from consumption and only consider the prices of goods. It should be noted that the marketing system of fresh noodles is freely competitive, allowing fresh noodle manufacturers from other areas to expand their market by using price and shelf-life tactics.

2. Logistics Management and Fresh Noodle Distribution Strategies

From the study of the present day logistics and fresh noodles distribution, the research team conducted the SWOT analysis of strengths, weaknesses, opportunities and threats in order to understand logistics situation and distribution of fresh noodles that led to problems in the use of preservatives and other additives in the products to lengthen the storage capacity together with various factors affecting the products' quality. The research team also conducted an analysis on factors that had impact on safety of consumption of fresh noodles in terms of logistics and product distribution by classifying them into the inbound logistics, internal logistics and outbound logistics. Following this, the factors affecting the criteria of fresh noodles were prioritized through the Analytical Hierarchy Process (AHP). The study took into account three criteria determined through consideration of the real situation of fresh noodle business, namely: (1) impact on fresh noodle quality, (2) impact on fresh noodle production costs, and (3) impact on fresh noodle implementation time. Priorities of factors affecting fresh noodle criteria are given from the most to the least in importance in Table 1.

Table 1 Priorities of Criteria Affecting Fresh Noodles, from the Most to Least Important Factors

Logistics systems	Criteria	Quality		Cost		Time		Priorities Total	Order
		70.34%	Sum	8.33%	Sum	21.33%	Sum		
It	Production that are in line with GMP	15.52%	0.11	28.30%	0.02	1.53%	0.00	0.14	1
Ob	Place of storage in the market	14.52%	0.10	14.43%	0.01	12.25%	0.03	0.14	1
Ib	Quality of raw materials	15.23%	0.11	6.79%	0.01	9.04%	0.02	0.13	2
Ob	Goods distribution	10.72%	0.08	7.45%	0.01	23.46%	0.05	0.13	2
It	Packages	9.90%	0.07	6.09%	0.01	12.00%	0.03	0.10	3
It	Transporting vehicles	7.59%	0.05	5.46%	0.00	11.81%	0.03	0.08	4
Ob	Selling by wholesalers/retailers	7.69%	0.05	7.81%	0.01	9.87%	0.02	0.08	4
Ib	Storing of raw materials	5.43%	0.04	2.66%	0.00	7.31%	0.02	0.06	5
It	Storing of goods in factory	7.14%	0.05	3.77%	0.00	3.27%	0.01	0.06	5
Ib	Raw material quality auditing device	4.14%	0.03	13.59%	0.01	3.20%	0.01	0.05	6
Ib	Transportation from raw material sources to factory	2.13%	0.01	3.64%	0.00	6.26%	0.01	0.03	7

Note: Ib = Inbound logistics, It = Internal logistics and Ob = Outbound logistics

From Table 1, it can be concluded that under the three main decision criteria for fresh noodles for prioritization, the production factor that was in line with GMP and place of storage in the market are mostly important, or at 14.00%. The second priorities were raw material quality and goods distribution, at 13.00%. The factor related to packaging was third in importance or at 10.00%.

When considering decision criteria on impact on fresh noodle quality, it was found that the production factor that was in line with GMP was mostly important for the quality of fresh noodles (15.52%). As for impact on fresh noodle production cost, factors related to GMP was also mostly important for implementation cost (28.30%). In terms of impact on implementation time of fresh noodles, distribution factor had most impact on transportation time, making it most rapid (23.46%).

In order to make recommendations for logistics management strategies of fresh noodles so that the noodles have a longer shelf life, the research team stipulated the strategies through the TOWS Matrix. Two major means were considered: (1) Fresh noodle logistics management strategy and (2) Fresh noodle distribution strategy. However, for ease of understanding of logistics management of fresh noodles and distribution of fresh noodles, the research team will present the flow of products from upstream towards downstream positions, as in the following details.

2.1 Logistics Management of Fresh Noodles

2.1.1 Management of Inbound logistics

From Table 1, it can be seen that inbound logistics factors affect 4 criteria, namely, raw material quality, transportation of raw materials from the sources to factory, storage of raw materials, and raw material quality auditing device. Thus, problem solution to increase product quality, reduce costs at acceptable levels and reduce lag time before obtaining the products includes:

2.1.1.1 Raw Material Quality

Short-term: To solve problems related to quality, quantity, and costs of raw materials, the fresh noodle entrepreneurial association should cooperate to contract buying of quality raw materials in sufficient quantity for milling entrepreneurial association. This is important for the negotiation with raw material procurers and will enable fresh noodle entrepreneurs to obtain quality raw materials at required quantity and at lower costs. Such implementation will be beneficial to entrepreneurs in general, especially small entrepreneurs who have relatively small investment and low liquidity.

Medium- and long-term: the fresh noodle entrepreneurial association should force governmental units to promote procurement of quality raw materials at sufficient quantity. Farmers should also be encouraged to grow appropriate rice breeds for production into fresh noodles. This can be achieved through contract farming with farmer groups. Besides, development of a clear, precise and rapid means to audit raw material quality is also necessary to ensure suitable quality raw materials ready to enter manufacturing processes.

2.1.1.2 Storing Raw Materials at the Factory

The storage place should be enclosed and pest and animal proof so that the raw materials will not be destroyed and contaminated. Moreover, the place should be well ventilated to prevent molds and moth.

2.1.1.3 Transportation of Raw Materials from the Sources to Factory

In transporting raw materials from the sources to factory, the raw materials should be packed in a jute bag which is strong enough to endure loading and unloading. The bag should not be easily torn or damaged such that animals and pests can enter to destroy the materials. More importantly, entrepreneurs should make a suitable purchasing plan and transportation for their production in order to reduce transportation cost, storage problems and to increase business liquidity.

2.1.2 Management of Internal logistics

Internal logistics factors affecting product quality include (1) production process that is in line with Good manufacturing practice (GMP), (2) packages, (3) storing of products at the factory, and (4) transporting vehicles. Solutions to problems arising from the four factors are given below:

2.1.2.1 Packages

Packages and packaging means have impact on the storing life of products. The research team conducted an experiment and found that both the packaging of products in vacuum packages and use of low temperature (8-10 °C) prevent the growth of microorganisms of the types that thrive on oxygen. This increases the storage life of products. The sample fresh noodles packed in sealed vacuum polythene bags and stored in a low temperature condition have 10 days longer of storage life, compared to fresh noodle samples packed in unsealed plastics bags and stored in a room temperature condition. However, vacuum packaging and low temperature storage increase costs. Entrepreneurs should apply what is appropriate to their business and use the following marketing strategies:

- In the case that the enterprises have a great quantity of demanded products and transport the goods to consumers every day or every other day, the package can be clear polythene plastics bags (PP) from which some air can flow out. Since consumption is high and the products are delivered to consumers every day, there is no necessity to keep stocks, or they can be kept for a short period. This is why such packages are widely used, in addition to their low costs. Nevertheless, the enterprises should have a suitable storage place before delivering to consumers. The storage for products in clear polythene plastics bags should have a temperature range of 22-25 °C and be well ventilated. The under part of the roof may be insulated to reduce the temperature even more, resulting in electric power saving. (Power bill is roughly 0.25 baht/kilogram higher per month.)

- In the case where the enterprises have a great quantity of demanded products, but transportation is done more than two days per time (with a longer distance), the package should be of a vacuum type that lengthens the storing time of goods and prevents spoilage. The cost of such packages is 1.25 baht/pack (1 pack = 1 kilogram). However, the cost of packaging will be decreased if the quantity of products sold and delivered to consumers is higher per trip. Products packed in this type of packages lead to reduced storage costs because the products can be stored at a room temperature condition.

2.1.2.2 Storing Goods in Factory

From what has been discussed, storing products in the factory directly results in expanding the life of fresh noodle products. If the enterprises find it necessary to deliver the products to customers every day, and the packages are common clear perforated plastics bags (PP), then the piling place before delivery should have a temperature range of 22-25 °C and be well ventilated. Hot and humid weather will spoil the products more quickly. On the contrary, if it is necessary for the enterprises to pile products more than 2 days before delivering, the place of storage should be of low temperatures, or 15-20 °C. If the package is a vacuum bag, the storing room may be a well ventilated place where the temperatures are from 24-26 °C.

2.1.2.3 Transporting Vehicles

To retain and lengthen the products' life, transporting vehicles should have a roof to protect against heat. It should also be well ventilated and not stuffy. Piling should be done

neatly so that the products do not press against each other. The vehicles may be adapted so that they have layers for storing stacks. Each layer should be divided into channels that allow products to be placed without pressing on the lower layers. This will also increase ease of loading and unloading of products.

At present, most entrepreneurs are aware of the problems, but fail to implement. This is because the vehicle's capacity to transport products will be less than usual and results in a higher cost of transportation. Nevertheless, overloading of product transportation may also lead to a higher cost from higher consumption of fuel and maintenance cost. Table 2 depicts relationship between loads of products and transportation distance.

Table 2 Showing Relationship between Product Weights and Transportation Distance

Vehicle types	Vehicle weight (ton)	Average transportation cost (Baht/kg.-ton)				Transportation distance (km./trip)			
		Considering Different fuel costs				Considering The entrepreneur's obtaining 40% profits from revenues			
		20 baht/liter	25 baht/liter	30 baht/liter	35 baht/liter	20 baht/liter	25 baht/liter	30 baht/liter	35 baht/liter
6 wheeled	5 - 6	0.69	0.80	0.90	1.00	850	680	570	490
	3 - 4	1.09	1.25	1.41	1.57	330	260	220	190
4 wheeled	3 - 4	2.04	2.27	2.50	2.73	170	135	110	95

Note: Calculation of transportation cost and distance from the average data of two cases of entrepreneurs, classified by types of vehicles. i.e., 6-wheeled and 4-wheeled vehicles

In addition, what entrepreneurs should consider to reduce problems of transportation both in terms of cost and product quality and for goods distribution is "Distribution Center (DC)", which may belong to the factory or a local distributor such as a wholesaler. The distribution place should be at a province that is central for trading and is convenient for distributing goods to various areas. The place should also be where demand is high so that the factory can store products before shipping to customers.

2.1.2.4 Production System that Meets with Goods Manufacturing Practice (GMP)

In order to ensure that the production of fresh noodles is hygienic and yields quality goods that can be kept longer, both the governmental sector and other relevant units should accelerate promotion for standard production according to GMP. This can be in form of assistance by holding seminars, providing knowledge, or contracting a consultant for the enterprise. However, to enable an enterprise to follow GMP standard, feasibility and expense coverage should be taken into account if product quality is to be increased to meet the GMP standard. The "size of the enterprise", "type of production technology" and "age of the enterprise" should be the factors taken to consideration by the Thai Food and Drug Administration (Thai FDA) in order to create a

means to solve the problem. This will enable the enterprises to operate and produce their products according to the standard of Good manufacturing practice (GMP). Small factories that have been producing the goods for a long time and using simple technology should not be considered to alter their production system to meet GMP standard. However, the government should provide a guideline for these enterprises to solve their crisis of food contamination by a simple and inexpensive method.

2.1.3 Management of Outbound logistics

Outbound logistics factors affecting product quality include (1) distribution of goods, (2) wholesalers/retailers' selling, and (3) the storing place. The causes of problems in outbound logistics management of the three factors affect the quality of fresh noodles. The research team thus recommends the following means of solution:

2.1.3.1 Distribution of Goods

Since the market system of fresh noodles is freely and highly competitive, producers are competing in obtaining their market share and in expanding their market in new areas. The factories therefore apply strategies in trading, cost and long storage life of goods to compete against each other. One who is able to distribute the goods mostly in the supply chain is the wholesaler who plays a part in determining the market share of each brand and selling the goods to retailers and small consumers. Such implementation causes problems in profit orientation by emphasizing the brand that yields profits from the difference the factory offers which is more than the wholesaler's offer.

Hence, recommendations for the solution of this free competition are to determine a means for appropriate goods distribution. The size and production capacity of an enterprise are considered along with ability to manage transportation. If the factory is small with low production capacity or less than one ton per day, the distribution of goods should have a transportation system within a municipal area or a radius not exceeding 20 kilometers. A medium enterprise with a production capacity not over 5 tons per day should have a transportation distance within a province or a neighboring province within a radius not exceeding 330 kilometers. Nevertheless, medium entrepreneurs must have an independent trading strategy in being a supplier for distributing their factories' products. For large-scale enterprises with over 5 tons production capacity and greater transportation trips, distribution can reach provinces in the vicinity or a radius not over 850 kilometers. There should be a distribution center if small consumers are scattered in great numbers.

2.1.3.2 Selling of Goods by Wholesalers/ Retailers

Wholesalers/ retailers do not give enough importance to storage of goods. Supplying and placing the goods depends mainly on convenience of handling. There is no supplying system in which formerly produced batch of goods are supplied first (First In First Out: FIFO). This leads to long stocking period, which results in damage. Governmental and related units should accelerate promotion of knowledge provision both continuously as well as intensively so that wholesalers and retailers have knowledge and understanding of safety and quality of the products

they are supplying. They will become more aware of dangers arising from addition of preservatives in the products in excessive amounts. Various means should be used in the provision of knowledge including giving handouts, holding seminars and making campaign on proper storing and managing of stocks, based on the First In First Out basis.

2.1.3.3 Goods Storage Place

The storage places or fresh noodle stalls in most markets are still neither hygienic nor strong. In some places, the goods are even piled on the floor or placed with other goods, especially wet goods. Storing like this raises possibility for molds and fungi to grow and results in short life of the products. If the place is not well ventilated, the fresh noodles can rot more easily when the weather is hot and stuffy or rainy. Therefore, storage places should be improved so that they are appropriate and more hygienic. Municipal units and the Thai FDA should have a plan to support and improve the storage places in the market according to hygiene, and implementation should also be strict.

2.2 Strategies in Distributing Fresh Noodles

From the analysis of distribution system of fresh noodles, the research team recommends a means of goods distribution system that is appropriate to a factory through consideration of “the levels of distribution channels”, as follows.

2.2.1 One-Level Channel (Retailer)

2.2.1.1 Not passing DC

Goods Distribution Characteristic

The characteristic of the one-level channel includes distributing the goods from the factory to a retailer, who in turn distributes the goods to his consumers.

Appropriateness

- ◇ A small fresh noodle factory must have a stable financial status and is able to supply a lot of goods past retailers.
- ◇ Consumers are scattered.
- ◇ Preservative-free fresh noodles or fresh noodles with small quantity of preservatives lead to rapid spoilage.
- ◇ A factory with a production capacity of not more than 1 ton/day of which target consumers scattered near the factory. The factory has a transportation radius less than 20 kilometers. The appropriate means of transportation is by means of a motorcycle or a 4-wheeled truck.

2.2.1.2 Passing DC

Goods Distribution Characteristic

The characteristic of one-level distributing channel involves distribution of the goods from the factory to the distribution center and from the distribution center to retailers, who in turn distribute the goods to consumers.

Appropriateness

- ◇ Fresh noodle factories are medium to large sizes (with a production capacity of > 5 tons/day). It is necessary to transport/ distribute fresh noodles across the boundary. Such distribution of goods requires the enterprises to expand/ increase the level of service for their customers.
- ◇ Customers are scattered, but have a high demand for the goods.
- ◇ Inbound and outbound transportation of fresh noodles from the distribution center will use many types of vehicle sizes to suit the amount of transportation. Delivery of fresh noodles from the factory to the distribution center is mostly done by a 10-wheeled truck and/or 6-wheeled truck. The distance is not over 850 kilometers. Then transportation from the distribution center to retailers is achieved by a 4-wheeled truck, the distance of which depends on the amount of fresh noodles transported.

2.2.2 Two-level Channel of Distribution (Wholesalers – Retailers)

2.2.2.1 Not passing DC

Goods Distribution Characteristic

The distribution characteristic through the two-level channel involves distribution of goods from the factory to wholesalers and then to retailers.

Appropriateness

- ◇ There are a great number of retailers who are also scattered.
- ◇ The target customers (small customers/ consumers) are of a great number and scattered.
- ◇ The factory does not have an access to target customer groups, especially those who live in suburban areas. Thus, supply has to be done via wholesalers.
- ◇ The factory must have a capacity of at least 3 tons/day. Mostly, transportation is done by a 4-wheeled or 6-wheeled truck, depending on the amount of demand by customers, frequency of demand, and transportation distance. For example, if a 4-wheeled truck is used, 2-3 tons of goods can be transported in one trip every day with a distance less than 170 kilometers. Transportation by a 6-wheeled truck will deliver 4-6 tons of goods every other day in a greater distance, which should not be over 850 kilometers.

2.2.2.2 *Passing DC*

Goods Distribution Characteristic

The characteristic of distributing fresh noodles past two-level channel involves distribution of goods from the factory to the distribution center and from the distribution center to wholesalers and then retailers.

Appropriateness

- ◇ There are a great number of target customers (customers/consumers) who are scattered. The factory does not have access to target customers because they are in the suburb. It is thus necessary to supply goods via wholesalers.
- ◇ The factory wants to expand its market to cover a market share in many areas. Therefore, distribution of fresh noodles crosses regions. In such case, most factories are medium- and large-sized with a capacity of at least 5 tons/day. Most vehicles used are 6- and 10-wheeled trucks depending on quantity and frequency of demand (market shares). The distances are from 500 to 1,000 kilometers.

2.2.3 *Three-level Channel of Distribution*

Goods Distribution Characteristic

The characteristic of fresh noodle distribution by the three-level channel is similar to the two-level channel, but with independent traders added. In this type of distribution, the factory of distribution center will transfer goods to wholesalers, independent traders, and then to retailers.

Appropriateness

- ◇ The target customers and retailers are highly scattered.
- ◇ Independent traders in the channel arise from the “policy of fresh noodle factories to cover more market areas”, especially in the suburbs.
- ◇ The factory is not able to transfer goods/ and manage marketing directly. It is necessary to have independent traders, and most target markets have no fresh noodle producers, or factories are a distance away from target customers.
- ◇ The factory requires monetary stability (high investment money) so as to give credit to wholesalers and independent traders.

3. Recommendations

3.1 Development of Marketing Strategies for Fresh Noodle Entrepreneurs

Besides considering appropriate distribution channels of goods, entrepreneurs need to have suitable marketing strategies to run the business as follows.

(1) Analysis of Consumers' Demand in terms of Supply Administration

The enterprises need to analyze customers' behaviors and reasons for buying the goods for the benefits in market and target customer expansion. Medium and large-scale entrepreneurs may find it necessary to set up distribution centers so as to distribute goods to target customers more rapidly. Small entrepreneurs, whose factories can not reach and cover all customer groups because they are at a distance and scattered, must consider selecting middlemen (wholesalers or independent traders) that are capable to supply and have true intention to sell goods so that the goods can reach a great number of consumers. Besides, the middlemen may have to take care of customers in a specific locality or at a distance away.

(2) Entrepreneurs should have marketing strategies that make the products known and raise reliability among consumers. The strategy that should be applied intensively is the marketing combination strategy (4Ps) which includes:

- **Product Strategy**

Fresh noodles must have a quality accepted by local customers or customers in the adjacent province. This requires entrepreneurs to create the product "brand" to make the product accepted. They need to consider many factors, from raw materials, production system, storage, to packages and transportation according to the conclusion above. Moreover, entrepreneurs need to develop their production system so that it is approved by governmental and related units. This will certify the product quality and build confidence in consumption of goods among customers.

- **Price Strategy**

To increase business competition potentiality, entrepreneurs must reduce the whole system costs while retaining the products' good quality. Reduction of energy cost, transportation cost and increase of production efficiency and management are significant factors leading to cost reduction and hence lower good price stipulation. This will result in a competitive advantage, and consumers can buy more products.

- **Place Strategy**

The supply channel of fresh noodles must provide convenience in customers' buying or receiving services in time and obtaining quality products. Therefore, entrepreneurs should consider a means to transfer goods to customers that is appropriate to their business, in the aspects of transportation, distribution points and distributors.

- **Promotion Strategy**

Entrepreneurs need to promote marketing which comprises advertisement, public relation, selling promotion, selling by selling assistants, and direct-mode marketing. Advertisements and public relations have an objective to publicize the products to wider groups of customers. Selling assistants should be employed to meet the customers, build up relationships and listen to their suggestions in order to improve the products. In addition, it is necessary to promote selling in order to encourage decision to buy, such as price reduction, etc.

3.2 Reduction of Overall Cost but not the Quality

Enterprises have potential to decrease their implementation costs in three aspects:

(1) Reduction of Energy Costs

Energy costs are considered vital costs in production of fresh noodles at present. Costs of energy have a tendency to be higher. If an enterprise can decrease energy costs, the costs of production of goods will be decreased a great deal. Energy costs can be reduced by the following means:

- Recycle heat in noodle steaming using the steam nozzle pump
- Change the fuel for boilers
- Audit combustion efficiency of boilers
- Insulate boilers

(2) Reduction of transportation costs

The means for entrepreneurs to decrease their transportation costs include:

- Transport appropriate load. Entrepreneurs should not transport overloaded goods, for it will waste the fuel and maintenance cost will be high.
- Transportation route should be shorter, through consideration of the amount of transportation. If possible, entrepreneurs should seek transporting other types of goods on the return route in order to minimize fresh noodle transportation.

(3) Increase of production and management efficiency

Entrepreneurs can reduce production costs by increasing production and management efficiency as follows:

- The economy of scale – Goods should not be over-produced until there are a great number of work in process (WIP). This increases storage costs and may lead to spoilage of goods.
- Reduction of loss from transportation – Entrepreneurs should have appropriate transportation means and equipment
- Reduction of loss from major production process includes:
 - Grinding process – to reduce loss of raw materials
 - Cutting into fresh noodle strips – to reduce loss of wrong-sized products and drops on the floor
 - Packaging process – to reduce loss of products and containing bags by human and machines
- Scheduling production time table appropriate to production orders – Entrepreneurs that produce their goods in two shifts, in particular, should consider suitable electrical tariffs in their operation.

If entrepreneurs consider appropriate goods distribution channels for their business, apply appropriate marketing strategies and reduce production costs appropriately, the enterprises will certainly have efficient and sustainable competitive business potential.