

# Chapter 4

## Game Modelling

From the prototype business analysis, major characteristics of retailing business are revealed. In this chapter, those characteristics are going to be transformed in to variables. The generic strategies, value chains model and retail marketing concept are also brought in to form relationships among each variables.

### 4.1 Game Scenario

A player assumes the management of a store that sells *home decoration products*. This store is in a very competitive home decoration industry. Each company is competing within the same market area, a domestic market. At the beginning, every company has the same general structure: product types, inventory capability, sale force number, production technology and capital. A company has to make a profit in order to survive in the industry.

### 4.2 Decisions To Be Made

A player makes decision in the following categories:

- Business Strategy: Product differentiation, low-cost leadership, niche market.
- Marketing Mix: Product styles, product price, product positioning, promotion schemes and market research study.

- Operations Management: Inventory policy, investment in design process technology.
- Financial Management: Cash management.
- Human Resource Management: Training and development.

### 4.3 Generic Model Implementation

The game is designed to give a player an idea about business-level strategy, in this case, generic strategies. A player has to decide which strategy a company will use to compete in the industry: cost leader, differentiation, or focus on niche market.

To be a low cost leader, a company must produce a mass product aiming at a mass market. It should its product price low to compete mean while sales volume need to be big to cover their expense and make profit.

A company that want to target to a different type of customer, a customer that wants product uniqueness, may produce a higher quality product. A company must invest in research and development as well as develop its employee quality. These should help it create a different product from their competitor. However, because a company has more expense, its product price could relatively expensive compared to others.

A company that want to focus on niche market, in this case “artistic”, is needed to produce a very-high quality product. It should improve its design, brand awareness, product quality and invest in R&D. However, a company can set its product price to be very high to match the customer perception.

## 4.4 Value Chain

After a player has developed their strategy to compete in the industry, there are different kinds of value chain model that they need to consider and implement them to reflect the chosen strategy.

The first one is a value creating activities associated with the cost leadership strategy. The model is illustrated in the following figure:

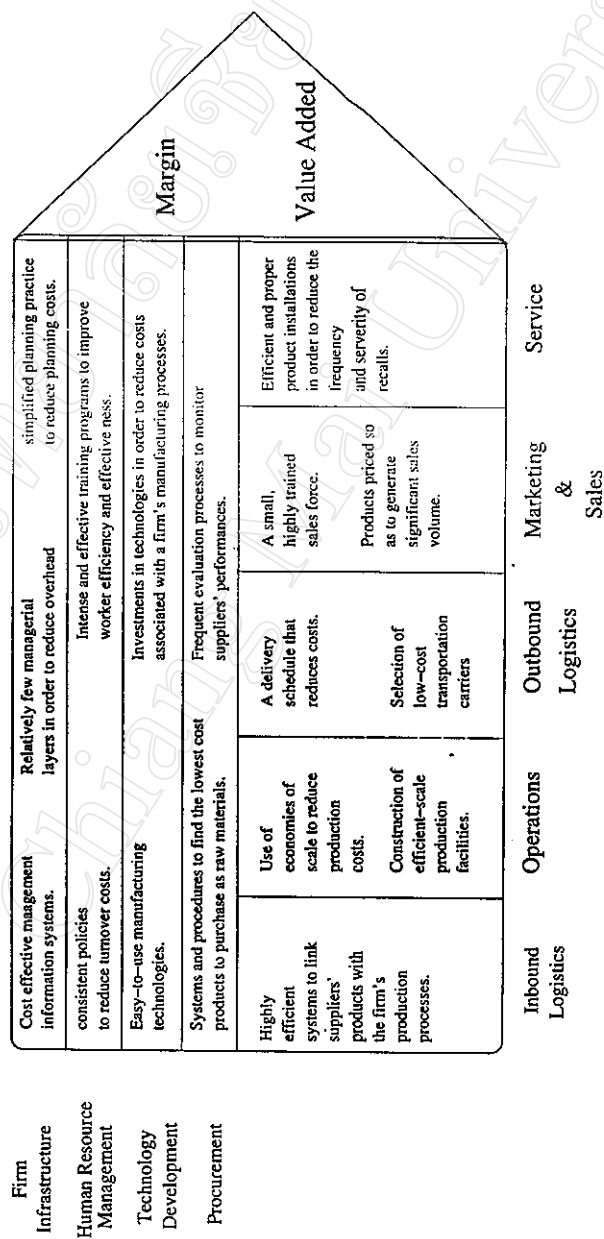


Figure 4.1: Value chain associated with the cost leadership strategy

The second model is a value chain that associated with the differentiation strategy:

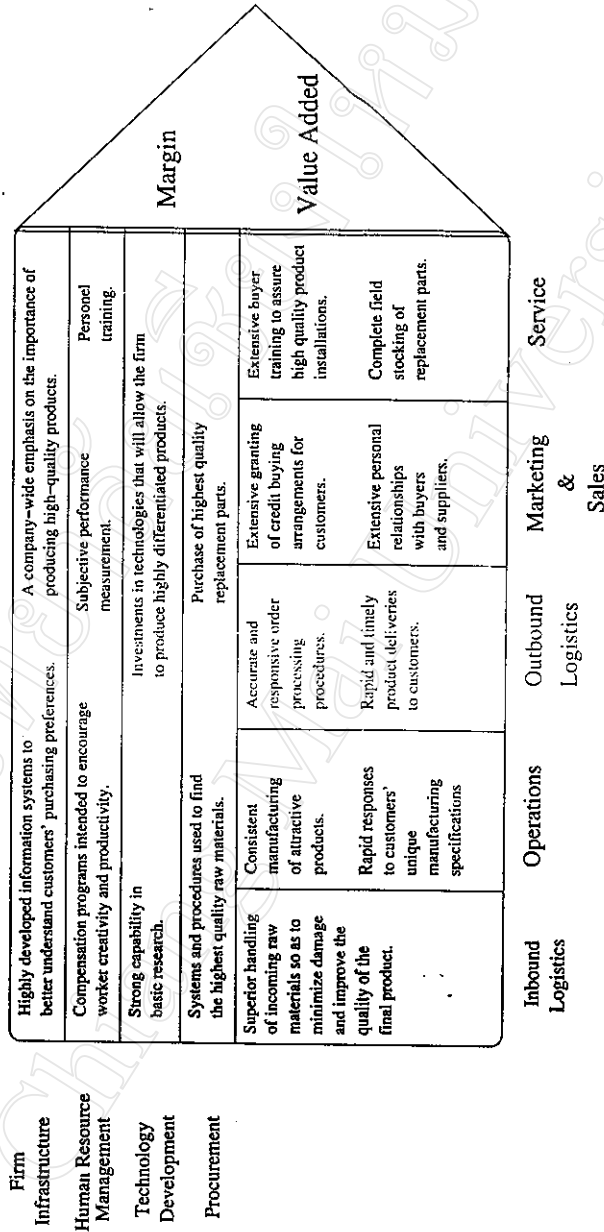


Figure 4.2: Value chain associated with the differentiation strategy

A player needs to consider a model that match their strategy and improve such activities to gain competitive advantages and core competency of a business.

## 4.5 Ansoff's Matrix Implementation

A player may use Ansoff's matrix to help they plan a marketing strategy.

- A company can choose to penetrate the current market by launching any promotion campaign to increase their sales volume.
- A company may also develop the current product quality to satisfy different market segments.
- A company may create a new product set for the current market, to let customers have more choices.
- A company may produce a totally new set of product and sells through the new market.
- Otherwise, a company may withdrawn from some of its current market and trying to focus on only some specific segments that it can make profit from.

## 4.6 Customer Demands

According to the industry environment, target market is categorised into 3 segments: general mass market, complete home decorated concept, and niche market or artistic market. The customers in these segments have different product price and quality in mind.

Also the prototype business divides its markets in to 3 groups: individuals, importer, and retailer. Each group has a different percentage in numbers and quantity of order. The following table show those figures:

From these two variables, the study create a *customer matrix* by taking industry market segments as columns and target customers as rows as illustrated in the following table:

Customer Type	Customer Percentage	Order Quantity
Individual	5%	10%
Importer	20%	40%
Retailer	75%	50%

Table 4.1: Customer numbers and order quantity

Type / Segment	Mass	Concept	Artistic
Individual	X	X	X
Importer	X	X	X
Retailer	X	X	X

Table 4.2: Customer Matrix

“X” is a demand for each type of customer in different markets.

Therefore, there are now nine groups of customers. Each group of customer requires different product qualities. The product quality is based on the *product score* which will be explained later. The following tables illustrate the *product score* that satisfy each type of customers:

Customer Class	Product Score
Mass Market	1 - 7
Concept	8 - 12
Artistic	13 - 15

Table 4.3: Product Score

In order to generate demands for each customer group, the study assumes that a total market demand is 15 million Baht per session and also the following assumption are also taken:

- The prototype business average sales for each month is 3,000,000 Baht/month which is 20% of a whole market. This means that the total demand for the market is 15,000,000 Baht/month.
- When a company set up a *Grand Sales* a sales can increase up to 5,000,000 Baht in that month.

- The lowest sale figure is 3,000,000 Baht/month.
- The market life cycle is in a mature stage which a customer demand is stable.
- There is a random factor generated by the game engine. A base demand will be multiplied by a random factor which causes the demand fluctuation. Therefore, the demand is not too stable that a player can easily predict it. The random factor is generated within the range of -1.5 and 1.5.

$$\text{TOTAL DEMAND} = \text{BASE DEMAND} \times \text{DEMAND FACTOR}$$

## 4.7 Company

A company is a business unit that does all business activities, owned by a player. A player is limited to own only one company and vice versa. When a player starts a new company the following initial values are assigned:

- Cash - A company has 5 Million Baht of capital cash
- Employee - There are 40 employee in a company; 10 are sale forces and the 30 are office worker. There is no way of increase or decrease the number of employee. The study fixes to number to 40 from the beginning to the end of the game session. Each employee has equal salary which is 10,000 Baht/month.
- Inventory - A company has a warehouse to store up to 1500 product sets. The ware house cannot be expanded.
- Fix Cost - A company need to pay 500,000 Baht a month for a fix cost. It includes: salary, basic infrastructure cost, depreciation cost, office material, ware house cost, etc.

## 4.8 Inventory

Inventory is one of the key success factor of a retail business. In order success, a company need to keep an inventory level in a suitable number. To have more inventory means there is more carrying cost for a business. However, to have less inventory level can cause an opportunity cost since it cannot serve the customer demand sufficiently. The study has fixed the highest number of inventory to 1,500 product unit. The cost of warehouse is already included in the fix cost. Although there is a carrying cost for every unit in the warehouse. A company has to pay 100 Baht for every unit that left from the current session as a carrying cost.

## 4.9 Cash Management

A company is given an 5 million Baht as an initial money to run a business. There is no other source of funding. Therefore, a company needs to carefully manage how it spends its cash. It should spend money according to its strategy as was set when a company was started. Misuse of is money can lead to a low liquidity which will stuck a business.

## 4.10 Training

Sale force quality is one of key success factor. Therefore, a company may send its employee to two different kinds of training; sales technique training and office work training which affect a total sales amount and a product design score. A training duration is at least one month for each training.

**Sale Force Training** The game assumes that every salesperson is sent into the training at once. Each training will last 1 month. Each training increase sale volume by 5%. Not taking a training within 3 months after the last one affects the sale volume to decrease by 2.5%. The training cost 3,000 Baht per head

**Office Staff Training** The game assumes that every office staff is sent into the training at once. Each training will last 1 month . Each training increase



a “product design score” by one level. Not taking a training within 3 months after the last one affects the “product design score ” to decrease by 0.5 level.

## 4.11 Research and Development

To improve product quality, a company may do a *Research and Development* (R&D) in order to improve its product design process. A company is allowed to do R&D once a year. By doing R&D, a company can increase a “total product score” by 25% . An R&D costs 100,000 Baht each.

## 4.12 Marketing Research

A research system agent provide few types of researches which a company can buy. Therefore, a company can use such information to make decision or create a suitable strategy to compete in an industry. There are 3 researches types available:

- Customer Demand Research - It gives information about the demands of each customer group.
- Product Price List - It is a listing of prices of every product available in the market.
- Industry Average R&D Expense - It is an average expense of every company in the market that spend on R&D.

Costs of researches are in the following table:

Research Cost	
Customer Demand Research	50,000 Baht
Product Price List	30,000 Baht
Industry Average R&D Expense	10,000 Baht

Table 4.4: Research Cost

### 4.13 Product

A product is a concept designed and produced by each company. A company may produce more than one product in order to serve different types of customer. A concept has three properties that affect “product score”. Product score is a mechanism that the study uses to rate a product to customer attraction. These properties are:

- Material : A product can be made from two different materials; Terra Cotta or Stone Ware. According to the prototype business, stone ware is more preferred by customers and also more expensive than Terra Cotta products. A player who receives 3 points for using Terra Cotta and 5 points for using stone ware in “material factor”.
- Design : A product design means the quality of product design. A better designed product is more attractive to customers.
- Awareness : A customer brand awareness is another factor that affects customer buying decision.

Each product property has “0” as the lowest point and “5” as the highest. These three variables form the following formula:

$$\text{product\_score} = \text{material\_score} + \text{design\_score} + \text{awareness\_score}$$

The lowest point is “0” and the highest point is “15”. Higher score means higher product quality and attraction. To gain the *product score*, A company must setup some kind of promotion, send staff into training, or do a research and development programme. However, it may not choose to do such options if its target market is not concern about high product quality.

#### Broken Rate

When a company delivers products to customers, there is a chance that product will be broken in a transportation process. To increase the number of broken products, a

company must pay attention to a product packaging. A product is normally wrapped by an air bubble wrapper and put in a multiple-ply corrugated box. A product packaging can affect a *broken rate* as follows:

No. of ply	air bubble	NO air bubble
1	3%	6%
2	2%	5%
3	1%	4%

Table 4.5: Product Broken Rate

Note that: A product delivered to customer is  $\text{PRODUCT} \times \text{BROKEN\_RATE}$  factor.

### Product Cost

Product cost depends on product material:

- Terra Cotta: Product cost is 30% of its price.
- Stones Ware: Product cost is 35% of its price.

## 4.14 Promotions

A company may choose to launch a promotion campaign to increase a sales amount and gain customer awareness. There are four different ways that company may choose: setup a grand sale, create a web site, do customer relation activities or re-decorate a store.

A promotion can increase customer brand awareness.

**Grand Sale:** A “Grand Sale” festival is normally implemented only once a year.

A customer can get a discount on every item ranged from 20% to 60%. A player is allowed to chose how many percentage will be discount on each type of product they want to put into a “Grand Sale”.

**Web site:** A company can setup a web site to create customer brand awareness. If a player decides to setup a web site, they need to pay a setup cost only the

first time they starting to do the web. After that, they need to pay for maintenance cost every month to keep a web site up to date and maintain customer brand awareness level. A player may choose not to do a maintenance, but the customer brand awareness will decrease gradually. Firstly setup a web site increase an *awareness factor* by one level. However, not maintaining the web decreases an *awareness factor* by 0.25 level each month.

**Customer Relation Activities:** A company can setup an activity to educate customers ie., a home decoration workshop. This kind of activity creates customer brand awareness. An activity increase an *awareness factor* by 1 level in the month of an activity and the factor will automatically decrease back to the previous level at the beginning of next month.

**Store Redecoration:** A company may choose to re-decorate its store gain more customer attraction. This promotion directly affects product brand awareness. In the month of a redecoration, brand awareness is increased by 1 point.

Each promotion has different costs shown in the following table:

Promotion Types	Cost	Limitation
Grand Sale	30,000 Baht	Maximum: once a year
Web site	20,000 Baht	Only once
Web site Maintenance	5,000 Baht	Maximum: once a month
Customer Relation	30,000	Maximum: once a month
Re-Decoration	50,000 Baht	Maximum: once a month

Table 4.6: Promotions Table

## 4.15 Marketing Researches

A company may choose to do some kinds of marketing researches in order to get more precise information about market demand, competitor's prices, or average R&D expense. If a company choose to do so, it must pay for each type of research according to the following table:

Research Cost	
Customer Demand Research	50,000 Baht
Product Price List	30,000 Baht
Industry Average R&D Expense	10,000 Baht

Table 4.7: Research Cost

This chapter gave an information about the game modelling concept. The variables from the business-level strategy and prototype business had been extracted and formed relationship among each other. From this modelling, the next step is to design a programme that follows this game concept.