



## CHAPTER V

### CRITERIA WEIGHTS

### AND COMPETITIVE STRATEGIES

As presented in chapter IV, the conceptual model for selecting tank farm operator is developed and the critical criteria affected to the customers' decision are identified. Next step is weighing the criteria by the company managers, which are the tank farm customers or potential to be customers, to assess these criteria which reflect the customer requirements.

The content of this chapter consists of the following steps. The first step is the preparation for data collection which starts from sample identification and selection, and questionnaire development. Second, the process of interview is conducted to obtain the data from each respondent. Third, the data is interpreted and analyzed by the calculation from the available software package EXPERT CHOICE. Fourth, the analysis is conducted by the researcher to obtain a consensus of the managers' decision. Finally, competitive strategies are established.

#### Data Collection

##### 1. Sample Identification and Selection

The respondents are divided into two groups by area their plants established, Map Ta Phut and Bangkok . In Map Ta Phut, the respondents are petrochemical industries but in Bangkok, they are chemical trading companies. The large scale companies which are being customers or potential customers are selected. Five companies are interviewed in each group.

## 2. Questionnaire Development

Questionnaire 3 is used for interviewing of this chapter. The questionnaire is developed by the following steps. First, the objectives and benefits of the study are briefly described including the overall conceptual model. Second, the instruction and example of how to answer the questionnaire are provided for an understanding of the respondents. Third, the criteria are identified for a better understanding to assess and compare them. The next step is to determine the relative importance of all the criteria. The complete questionnaire is attached in the Appendix A in both Thai and English versions.

### Criteria Weighing

After obtaining the data from the respondents, the calculation is made by using an available software package named EXPERT CHOICE. EXPERT CHOICE is a user software package that implements AHP on IBM or compatible micro computer. It allows the users to construct a graphical representation of the AHP hierarchy. It uses standard eigenvalue and eigenvector solutions for calculating priorities and inconsistency ratio. In addition, it provides the user with graphical tools to perform sensitivity analysis, but in this model some main-criteria nodes do not have plexus below them so sensitivity analysis can not be performed.

The following sections are the conclusion of all executive managers' judgments from the companies under study. The contents consist of two main parts according to the developed model, which begins with an comparing main-criteria, then, comparing sub-criteria according to their parents. There are interviewing five companies in Map Ta Phut and five companies in Bangkok. The detail of weights for each companies is attached in Appendix C.

Figures 5.1 to 5.8 shows the composite weights of the criteria. Five companies are interviewed in each group. The score 1 to 9 is interpreted and

analyzed for individual respondent by the calculation from the software package EXPERT CHOICE. Then arithmetic mean for each criterion are calculated and shown by the Figures.

### 1. Comparing Main-Criteria

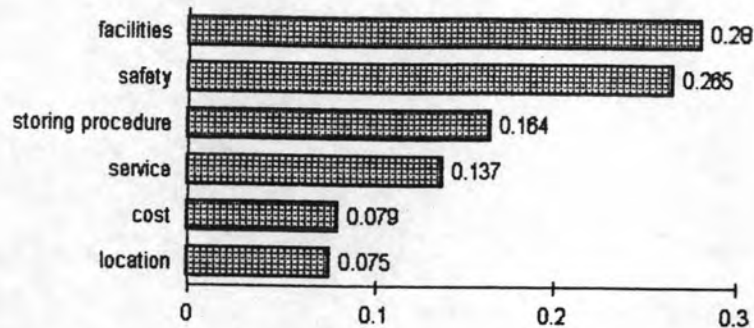


Figure 5.1 Overall Ranking of Main Criteria of Map Ta Phut Customers Judgment

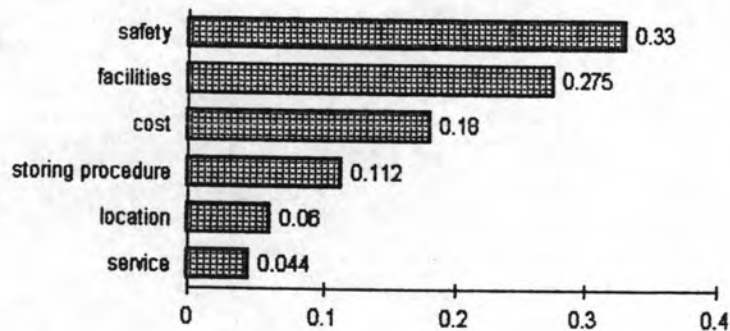


Figure 5.2 Overall Ranking of Main Criteria of Bangkok Customers Judgment

Figure 5.1 shows overall ranking of Map Ta Phut Customers. The order of priorities are facilities, safety, storing procedure, service, cost, and location. Facilities is the most important criterion for selecting tank farm, closely followed by safety. Some executive managers consider that safety is the most important criterion, because chemicals are flammable and explosive.

For Bangkok Customers, Figure 5.2, the order of priorities are safety, facilities, cost, storing procedure, location, and service. Safety is the most important criterion for selecting tank farm, closely followed by facilities. It should be noted that the cost is higher rank than that of Map Ta Phut customers, some Bangkok customers said that tank farm service charge is high percentage compared to total expenses.

In the weighing of the same criteria by Map Ta Phut and Bangkok customers, some weighing are significantly different. The reason of the differences of some criteria are shown in Table 5.1.

Table 5.1 Reasons Behind the Different Weights of Some Main-Criteria

Criteria	Map Ta Phut customers give higher weight than that of Bangkok customers because of :	Bangkok Customers give higher weight than that of Map Ta Phut customers because of :
facilities	no significant difference	no significant difference
safety		locating in community
storing procedure	bigger amount of goods	
service	no significant difference	no significant difference
cost		higher percentage compared to total cost
location	no significant difference	no significant difference



## 2. Comparing Sub-Criteria for Cost

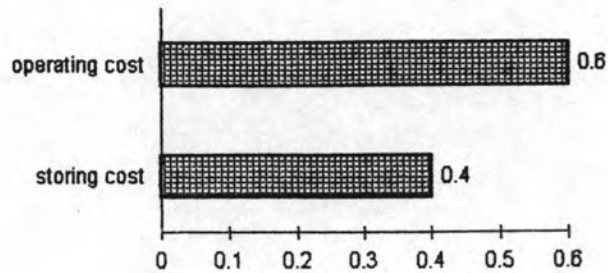


Figure 5.3 Overall Ranking of Sub-Criteria for Cost of Map Ta Phut Customers

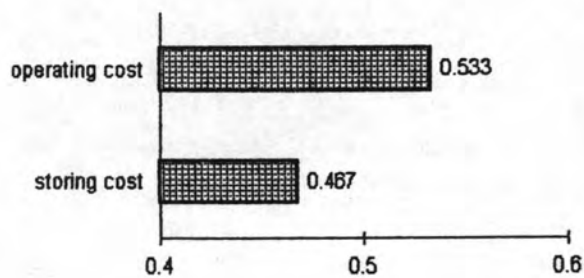


Figure 5.4 Overall Ranking of Sub-Criteria for Cost of Bangkok Customers

Figure 5.3 shows overall ranking of sub-criteria for cost of Map Ta Phut Customers which divided into operating cost and storing cost. Most of manager opinion is that operating cost is more important than storing cost, because some companies are served only through-put service, not included storing service.

Bangkok customers, Figure 5.4, operating cost is more important than storing cost like that of Map Ta Phut customers.

### 3. Comparing Sub-Criteria for Storing Procedure

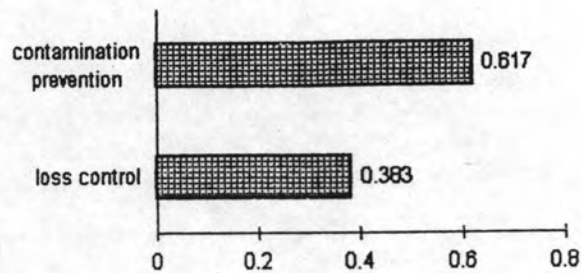


Figure 5.5 Overall Ranking of Sub-Criteria for Storing Procedure of Map Ta Phut Customers

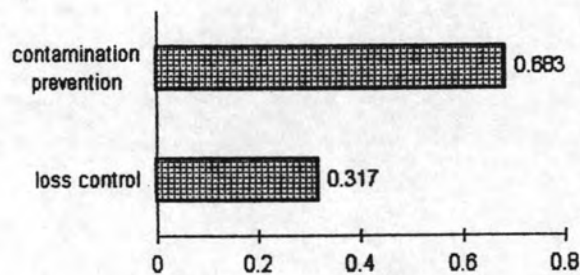


Figure 5.6 Overall Ranking of Sub-Criteria for Storing Procedure of Bangkok Customers

Figure 5.5 shows overall ranking of sub-criteria for storing procedure of Map Ta Phut customers. Contamination prevention is more important than loss control. The respondents said that contaminated chemicals affect the quality of products so it is the first priority.

Bangkok customers, Figure 5.6, contamination prevention is also more important than loss control like that of Map Ta Phut customers

#### 4. Comparing Sub-Criteria for Facilities

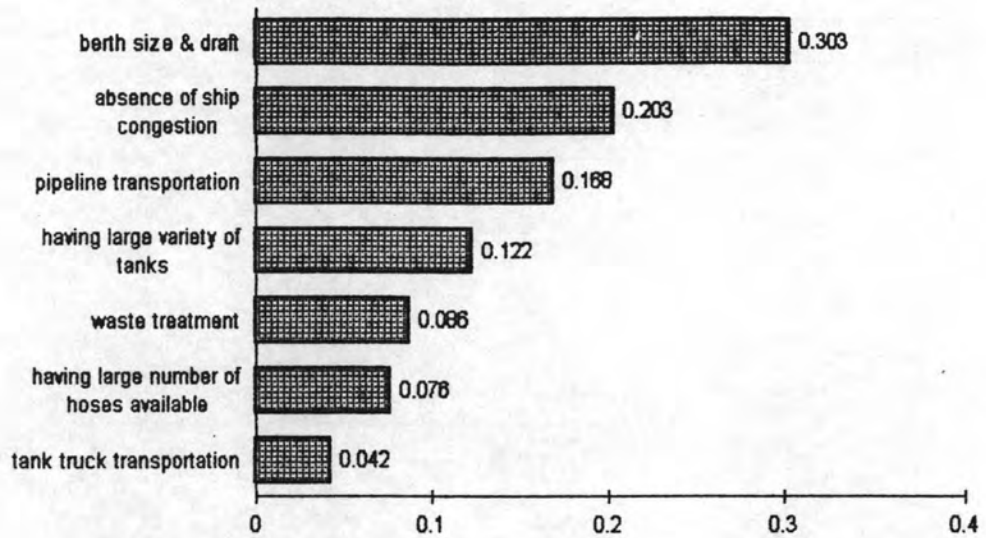


Figure 5.7 Overall Ranking of Sub-Criteria for facilities of Map Ta Phut Customers

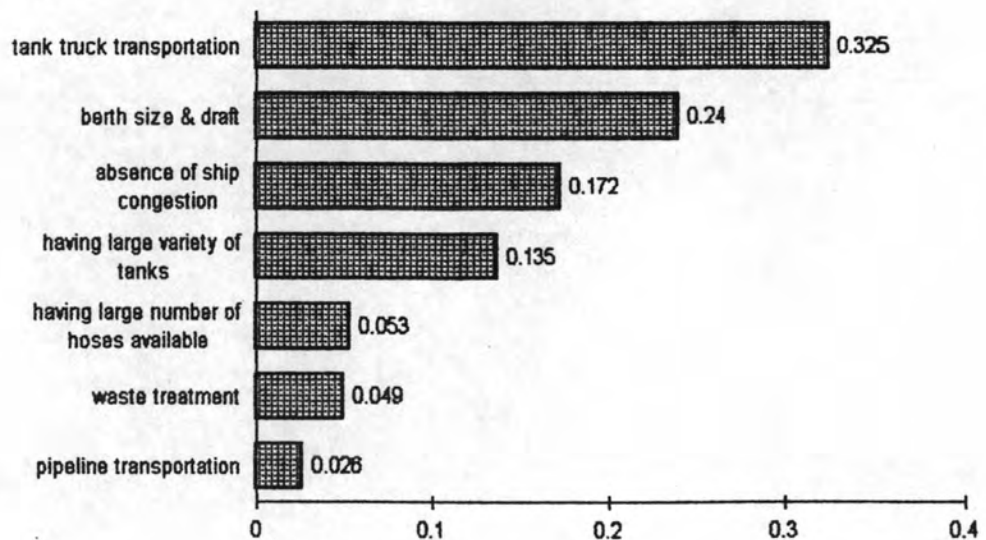


Figure 5.8 Overall Ranking of Sub-Criteria for Facilities of Bangkok Customers

Figure 5.7 shows overall ranking of sub-criteria for facilities of Map Ta Phut customers. The order of priorities are berth size and draft, absence of ship congestion, pipeline transportation, having large variety of tanks, waste treatment, having large number of hoses available, tank truck transportation.

In Bangkok Customers, Figure 5.8, the order of priorities are, tank truck transportation, berth size and draft, absence of ship congestion, having large variety of tanks, having large number of hoses available, waste treatment, pipeline transportation. It should be noted that pipeline transportation is the least important because, in practical, pipeline transportation can not be performed in Bangkok.

In the weighing of the same criteria by Map Ta Phut and Bangkok customers, some weighing are significantly different. The reason of the differences of some criteria are shown in Table 5.2.

Table 5.2 Reasons Behind the Different Weights of Some Sub-Criteria for Facilities

Criteria	Map Ta Phut customers give higher weight than that of Bangkok customers because of :	Bangkok Customers give higher weight than that of Map Ta Phut customers because of :
berth size & draft	accommodation bigger ship	
absence of ship congestion	higher charging rate for waiting	
pipeline transportation	main transportation	
having large variety of tanks		trading of many kinds of products
waste treatment	many companies located in the Estate	



Table 5.2 Reasons Behind the Different Weights of Some Sub-Criteria for Facilities. ( continue )

having large number of hoses available	no significant difference	no significant difference
tank truck transportation		main transportation



### Competitive Strategies

The competitive strategies are established based on the criteria for selecting tank farm operators and other information which gathered during the interviews. The main information which conduct to establish competitive strategies can be concluded as follows :

1. Strengths. The strengths of the tank farm in the study are as follows :
  1. The tank farm is located at Map Ta Phut, which is an area promoted by the government to be the center of chemical and heavy industries
  2. The tank farm can accommodate big ships, up to 45000 DWT. Since the tank farm can accommodate larger berth size and deeper draft than that of tank farms in Bangkok, the trading companies may prefer to rent than tank farm in Bangkok.
  3. The tank farm achieves ISO 9002 certification. This means that the process of receiving, storing, and delivering conform to established international standards.
  4. The tank farm is located in reclaimed land so it is surrounded by water, which is outstanding in terms of safety.

5. The tank farm is established as a joint venture of a large Thai public company, National Petrochemical Public Co.,Ltd., and a well-known Dutch company, Paktank International B.V.. Paktank International B.V. is famous and well-respected world wide.

2. Weaknesses. The weaknesses of the tank farm in the study are as follows :

1. The tank farm does not serve tank truck transportation which is important for trading companies in Bangkok. Although the customers can be served by many tank truck transportation companies, they are not controlled by the tank farm operator.

2. The tank farm do not offer bonded warehousing which provide an important advantage in that the payment of the taxes is postponed until the cargo leaves the terminal.

3. The tank farm only have dedicated tanks, but chemical trading companies need spot tanks.

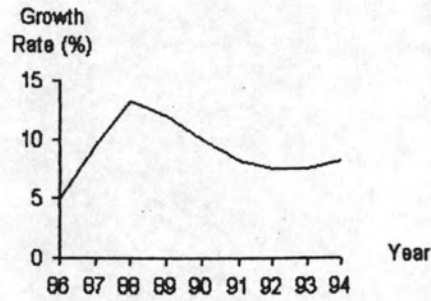
4. The tank farm is not well-known by the trading companies in Bangkok.

5. The tank farm is located at Map Ta Phut so the potential customers in Bangkok have the wrong impression that the tank farm is established for petrochemical industries in Map Ta Phut.

6. The ships can berth only during office hours. If a ship arrives the terminal at night, it has to wait until the office opens for berthing.

### 3. Opportunities

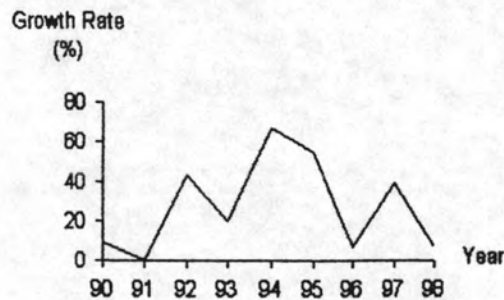
1. At present, there is a high economic growth rate in Thailand which encourages more importing of chemicals.



source : Pramote (1993)

Figure 5.9 Economic Growth Rate

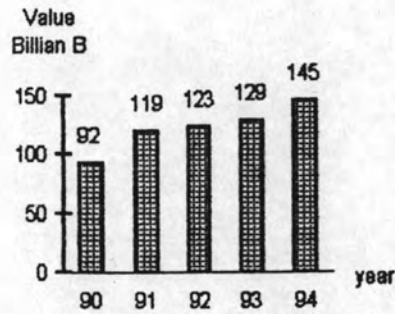
2. Petrochemical industry is growing rapidly, and the paint, plastic, textile, and adhesive industries, which are major customers of chemical trading companies, have also grown rapidly, as shown in Figures 5.10 to 5.12 . This implies rapid growth rate for tank farm demand.



Note the figures for the years' 96, 97, 98 are calculated from the plans made by the petrochemical companies.

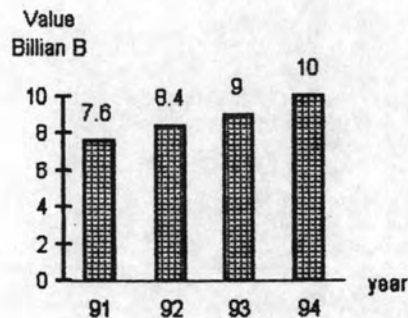
source : adapted from Bruining, (1995)

Figure 5.10 Petrochemical Industry Growth Rate



source : Market Analysis 1995 , Manager Media Group, pp 627

Figure 5.11 Value of Textile Exporting



source : Market Analysis 1995 , Manager Media Group, pp 318

Figure 5.12 Value of Paint Market in Thailand

3. The government is promoting Map Ta Phut Industrial Estate to be the center of petrochemical industry, a fact which should mean increases in tank farm demand.

#### 4. Threats

1. The large chemical trading companies are familiar with buying chemicals from Europe or middle east and see no need to be served by a tank farm at Map Ta Phut.

2. There are no railway connections between Map Ta Phut and Bangkok.

3. There are several tank farms at Map Ta Phut that have as big berth size and draft as that of the tank farm in the study. They are not independent tank farm but are also willing to rent to other companies. So they are potential competitors to the tank farm in the study.

### Strategies

The objectives of establishing competitive strategies are as follows :

1. To develop tank farm services to meet customer requirements.
2. To increase the number of the customers.

The strategies can be established according to the information about strengths, weaknesses, opportunities, and threats as follows :

1. The tank farm is located at Map Ta Phut and it is granted concession from the government to establish independent tank farm so it already dominates this business sector. Most of the customers in Map Ta Phut need dedicated tanks which are constructed after signing the contract. Therefore, the tank farm will construct to customers' requirements. The tank farm should reinforce its dominance by preparing the basic amenities such as areas for tank construction, and increasing the number of jetty.

2. Provide spot tanks at Map Ta Phut for Bangkok customers as suggested by tank farm managers in Bangkok. The suitable tank size should be 500 cubic-meters. Most of product lot sizes are 400 to 1000 tons, therefore the 500 cubic-meter size seems ideal to match the product lot sizes.

3. Provide tank truck transportation service carrying chemicals from Map Ta Phut to distribute to the users in Bangkok. This service is especially important for chemical trading companies.

4. Offer bonded warehousing. By way of bonded warehousing, the payment of the taxes is postponed until the cargo leaves the terminal.

5. Provide the laboratory for test sampling of products before receiving.
6. Provide 24 hour service for berthing, loading, and unloading of ships.
7. Provide extra services of adding additives and agitation service in order to improve the quality to suit local usage. The value-added services are especially needed by lube oil business.
8. Promote the right image for the tank farm by way of various marketing tools concerning what the services are about, who the target customers are, and how the tank farm at Map Ta Phut can serve the potential customers. Emphasis should be put on the strengths of the tank farm especially in terms of safety and quality of the services.