

## CHAPTER V

### QUALITY DEPLOYMENT MATRIX ANALYSIS

#### 5.1 Introduction

From Kano model analysis, in last chapter, is to classify all quality requirements. The suggestion is to fulfill all must-be quality requirements and be competitive with market leaders, and also to regard the one-dimensional quality requirements. Moreover the attractive quality requirements must be included in order to delight customers. This chapter aims to identify the causal relationship among customer requirements, especially in the attractive requirements, and technical performance to improve customer satisfaction and delight customer again and again.

Focus of this chapter is the propose adapting the well-known quality management method which is Quality Function Deployment (QFD) identify true customer requirements in mobile phone industries thereby providing the basis for decisions on the product portfolio. QFD is a systematic process for motivating a business to focus on its customers. It is used by cross-functional techniques to identify and resolve issues involved in providing products, processes, services and strategies which will more than satisfy customers. A prerequisite to QFD is market research in this study use the focus group process as mentioned earlier in chapter 3. This is the process of understanding what the customer wants, how important these benefits are, and how well different providers of products that address these benefits are perceived to perform.

In terms of the QFD approach, it is achievable to use the methodology proposed by Kano (1984) to establish into which category requirements fall and apply the reason to support decision on what action to take. The information obtained from the Kano model analysis, regarding must be, one-dimensional, attractive, and indifference attributes, provides valuable input for the QFD process.

All decisions in the QFD process are base on consensus and involve in-depth discussion and brainstorming. Because all action that need to be undertaken are identified

as part of the process. Thus, each of relationship comes from, the expert system, which call QFD team consists of personnel from marketing, sale, product development, engineering, and quality management departments. Through the QFD process must have a QFD facilitator to lead team to achieve successful outcome. Keep teams focused on delighting the customer. Team meeting are very important in this process by measuring how well communicate each customer requirement to technical characteristic.

## 5.2 Structure of QFD

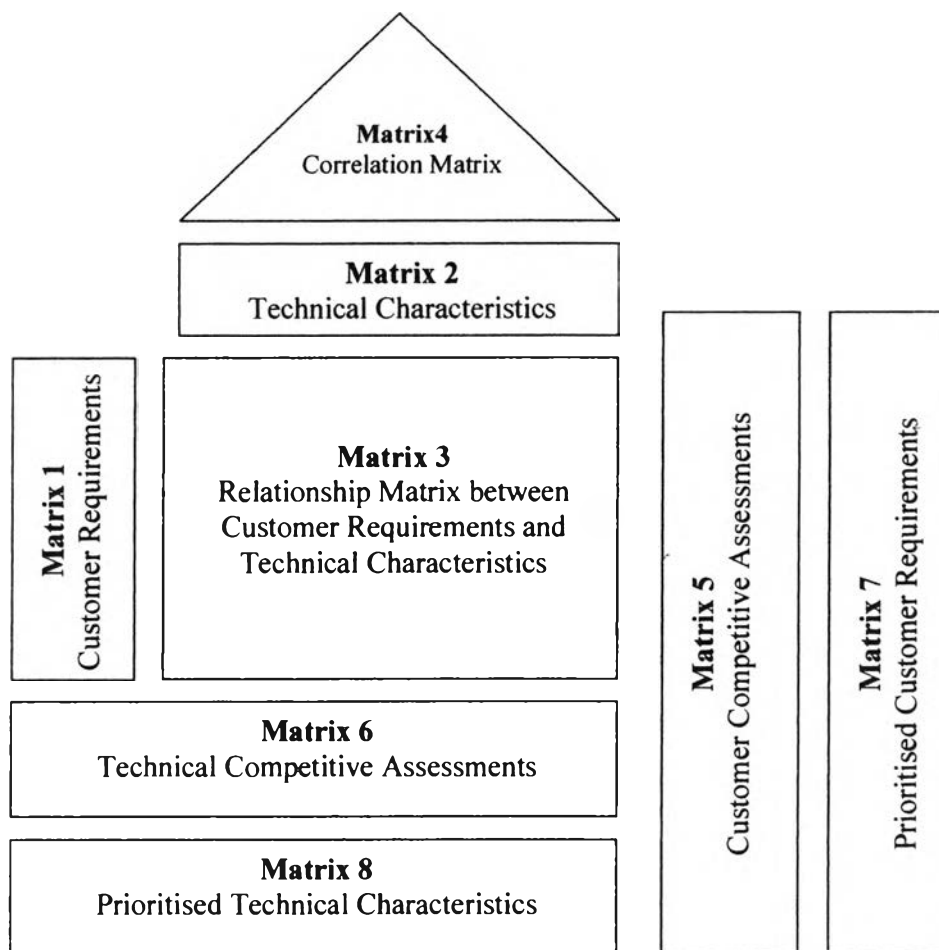


Figure 5.1: QFD Matrix Structure

The structure of QFD can be thought of as a framework that consists of eight matrices developed in a complete cycle of process. On the left side, matrix 1 are listing of the customer expects in the products and services to consolidate and analyse customer responses and requirements. To meet customer requirements, in QFD structure contains

the technical characteristics. Consistency of the product and service is provided through technical characteristics which revealed in matrix 2. Matrix 3 shows the relationships between customer requirements and the corresponding technical characteristics expressed in measurable. Matrix 4 is the interrelationship between technical characteristics. Trade off between similar or conflict technical characteristics are identified. The competitive assessments are pair of weighted graphs that separated in two categories, customer assessment and technical assessment as shown in matrix 5 and matrix 6, respectively. On the right side, matrix 7 is the prioritised customer requirements that can making decisions concerning improvements needs in the company. Finally, matrix 8, the foundation of the QFD matrix is the prioritised technical characteristics such as the technical benchmarking. From Figure 5.1 shows how QFD matrix is put together.

### **5.3 QFD Process**

#### **5.3.1 Matrix 1- List Customer Requirements (WHATs)**

In the first step, customer input often referred as the WHATs that the customer needs and expects in products and services. These WHATs can be ascertained by either asking representatives of the focus group survey through the knowledge and judgment of the QFD team participants. It will also demand a lot of continuous concentration from customers. The initial QFD usually takes from three to six full days of intensive team meetings, and no matter how well the facilitator has streamlined the process. The team met to compile all of the requirements, there were 27 statements of customer needs. In order to understand better the customer requirements and structure to a large amount of disparate linguistic information, the team use simple quality tool which called the 'affinity diagram'. Affinity diagram generates a hierarchy of primary, secondary and tertiary customer requirements needed to support the primary customer requirements. Because of the items on the list of tertiary customer requirements represent greater detail than those the list of secondary customer requirements. Thus, QFD deals with tertiary customer requirements since these are most closely related to the action the company can take to satisfy its customers. The process of grouping requirements strongly assists the development of the company to understanding of the customer requirements. Affinity diagramming is a useful tool to assist with this effort will make it easier to identify any redundancy and serves as a basis for organising the customer needs for the first QFD matrix.

Three primary customer requirements might be products, services and privileges. Secondary customer requirements under products are system and network and airtime refill. The others secondary customer requirements under service are value added service and call center. Finally, secondary customer requirements under privileges are customer relationship activity and discount. Furthermore, the tertiary customer requirements are shown in Figure 5.2.

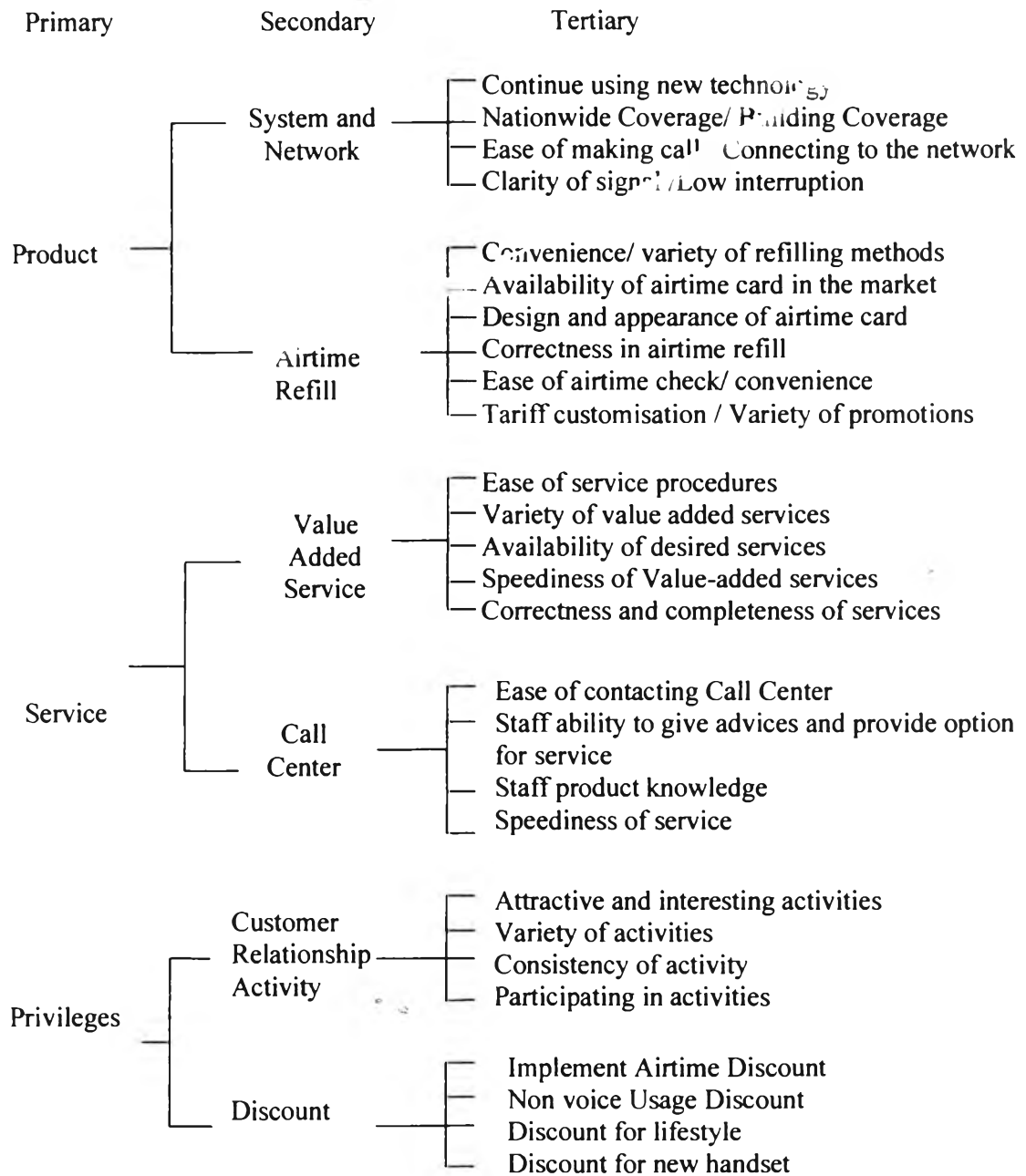


Figure 5.2: Affinity diagram for customer requirement of One-2-Call!

### 5.3.2 Matrix 2 – List Technical characteristics (HOWs)

The customer needs and expectations have been expressed in terms of customer requirements; the company must come up with technical characteristics that will affect the customer requirements. The QFD team must determine a means by which to satisfy these WHATs. In QFD terminology, these will be the “HOWs,” and will consist of the items or attributes of the product under development. Each technical characteristic must directly affect the customer perception and be expressed in measurable terms. Technical characteristics should be meaningful, measurable, and stated in a way to avoid implying a particular technical solution so as to constrain engineers. Through the structured QFD process, these engineers are forced to first consider what the customer wants, then the means of achieving that end. Explicitly including the comment of the engineer in the form of product functions is important to identify each of technical characteristics. One of the advantages of having a good technical characteristic is that it allows the engineering team to test sections of the design as go along to see if the particular component meets the needs of the customer. Correspondingly, each of the technical characteristics is broken down into the detail by listing of the tertiary technical characteristics that represent greater detail than those the list of primary and secondary customer requirements.

This is similar to the process of divide customer requirements, three primary technical characteristics which are product, service and privilege. These secondary technical characteristics can include system and network performance, airtime refill operation that beneath the product. Secondary technical characteristics under service are value added service performance and call center performance. Finally, secondary technical characteristics under privilege are customer relationship management and discount operation. Moreover, the lists of the detail in tertiary technical characteristics are necessary because each of technical characteristics affect more than one customer requirement and can even adversely affect one another. Thus, the list of the technical characteristics is divided into a hierarchy of the primary, secondary, and tertiary technical characteristics, as shown in Figure 5.3.

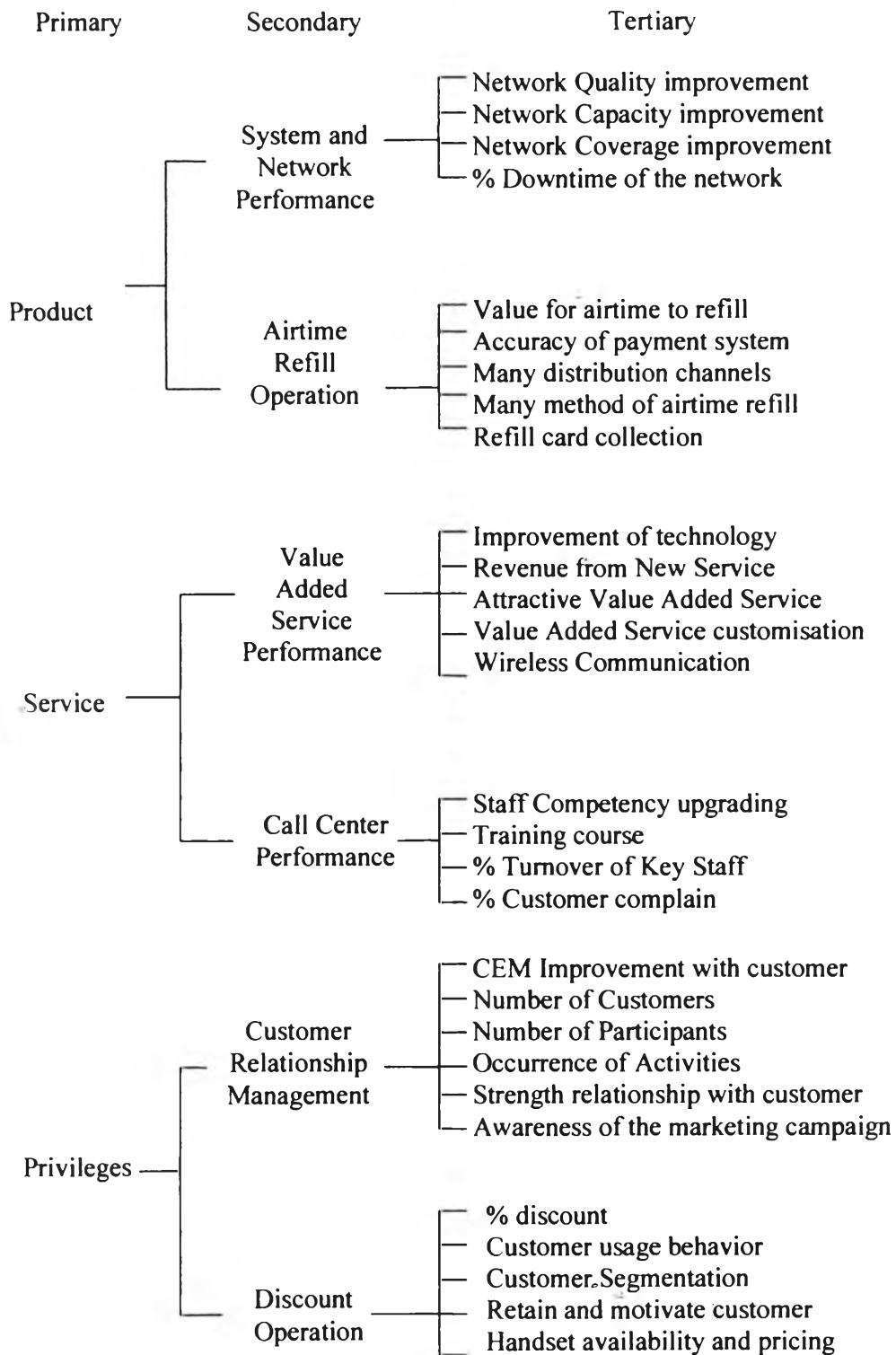


Figure 5.3: Affinity diagram for technical characteristics of One-2-Call!

### **5.3.3 Matrix 3 –Relationship Matrix between customer requirements and technical characteristics**

This matrix is built showing the relationships between customer requirements and the corresponding technical characteristics expressed in measurable, technical terms. The relationship matrix is used to represent graphically the degree of influence between each technical characteristics and each customer requirement. Each location correspond to a particular 'what / how' combination. The intensity of the relationship at each intersection of the matrix is then defined, bringing to light relative priorities and potential conflicts.

Several team members were involved in each of these meeting notes were summarized and distributed to all team members. In addition, these meetings were discussed in detail in subsequent team meetings to assure a complete understanding of each customer's perspectives. Contractual requirements were reviewed. A cross-functional team establishes a requirements matrix and assigns weights of customer importance to the requirements. This upfront planning assures a better process or product downstream.

The QFD team can organise the technical characteristics into groups, according to ownership. For example, system and network belong to engineering department, airtime refill belong to product development department, and CRM belong to marketing department.

QFD team filled in the matrix by comparing each metric to each need to determine where strong, moderate, weak, or no interrelationships exist. It is common to use symbols to represent the degree of relationship between what and how for strong, medium and weak relationships assigned numerical values of 9, 3, and 1. Moreover, the relationships are given numerical weighting according to their strength. The correlation weight matrices transfer importance weights of customer attributes to ones of technical characteristics. By traditional system, a double circle is a sign of strong relationship is weighted 9, a circle that a medium strength relationship, the weight is 3, and a triangle that only a possible or weak relationship is weighted 1. An empty row indicates that a customer requirement is not being addressed by any of the technical characteristics; however, an empty column indicates that a particular technical characteristic does not affect any of the customer

requirements. The relationship matrix for mapping the customer requirement and technical characteristics is shown in Figure 5.4.

Upon the formation of the QFD team, for instance, the relationship between the customer requirement of the correctness and completeness of service and the technical characteristic of network capacity improvement would be weak (1) because the correctness and completeness of service is require the quality of the network than capacity of network. Conversely, the relationship between the customer requirement of speediness of value added service and the technical characteristic of network capacity improvement would be strong (9) because speed of the service is regularly depend on the capacity of the network.

The results of the relationship matrix, highlight the most important elements of the new product. In addition to this competitor information can then evaluated for both the customer 'Wants' and technical features. These relationships define the degree to which as product requirement or technical characteristic satisfies the customer need. Consider the goal associated with the characteristic in determining whether the characteristic satisfies the customer need.



		System and Network				Airtime Refill				Value Added Service				Call Centre Performance		Customer Relationship Management				Discount Operation										
		Network Quality improvement	Network Capacity improvement	Network Coverage improvement	% Downtime of the network	Value for airtime to refill	Accuracy of payment system	Many distribution channel	Many Method of airtime refill	Refill card collection	Improvement of technology	Revenue from New Service	Attractive Value Added Service	Service Customisation	wireless communications society	Staff Competency upgrading	Training course	% Turnover of Key Staff	% Customer complain	CEM Improvement with customer	Number of Customer	Number of participants	Occurance of Activities	Streight relationship with customer	Awareness of the marketing campaign	% discount	Customer usage behavior	Customer Segmentation	Retention and motivation	Handset availability and pricing
Product	System and Network	Continue using new technology	⊙	⊙	⊙	⊙					⊙	⊙	⊙	⊙	⊙	⊙			△	⊙	⊙			⊙					⊙	
		Nationwide Coverage/ Building Coverage	⊙	⊙	⊙	⊙		⊙		⊙	⊙	⊙	⊙	⊙	⊙	⊙			△	⊙	⊙			⊙					⊙	
		Ease of making call / Connecting to the network	⊙	⊙	⊙	⊙					⊙	△	△	⊙	⊙	⊙			⊙	⊙	⊙			⊙					⊙	
		Clarity of signal /Low interruption	⊙	⊙	⊙	⊙					⊙				⊙	⊙			⊙	⊙	⊙			⊙					⊙	
	Airtime Refill	Convenience/ variety of refilling methods					⊙	⊙	⊙	⊙	⊙	△			⊙	⊙	⊙	△	△	⊙	⊙			⊙					⊙	
		Availability of airtime card in the market					⊙	⊙	⊙	⊙	⊙			⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙			⊙				⊙		
		Design and appearance of airtime card					⊙	⊙	⊙	⊙	⊙	△		⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙			⊙				⊙		
		Correctness in airtime refill	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	△			⊙	⊙	⊙	⊙	⊙	⊙	⊙			⊙				⊙		
Service	Value Added Service	Ease of service procedures	⊙	⊙	⊙	⊙		△			⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙			⊙				⊙		
		Variety of services	⊙	⊙	⊙	⊙		⊙			⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙			⊙			⊙			
		Availability of desired services	⊙	⊙	⊙	⊙					⊙	⊙	⊙	⊙	⊙	⊙	⊙	△	△	⊙	⊙			⊙			⊙			
		Speediness of Value-added services	⊙	⊙	⊙	⊙					⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙			⊙			⊙			
	Call center	Correctness and completeness of services	⊙	△	△	⊙	⊙	⊙			⊙	⊙	⊙	△	⊙	⊙	⊙	⊙	⊙	⊙	⊙			⊙			△	⊙		
		Ease of contacting Call Center	⊙	⊙	⊙	⊙					⊙				⊙	⊙	⊙	⊙	⊙	⊙	⊙			⊙			⊙			
		Staff ability to give advices and provide option									△				⊙	⊙	⊙	⊙	△	⊙	⊙			⊙			⊙			
		Staff product knowledge									⊙				⊙	⊙	⊙	⊙	△	⊙	⊙			⊙			⊙			
Privileges	Customer Relationship Activity	Speediness of service	⊙		△						⊙				⊙	⊙	⊙	⊙	⊙	⊙	⊙			⊙			⊙			
		Attractive and interesting activities									⊙	△		△	△					⊙	⊙			⊙			⊙			
		Variety of activities												⊙	△					⊙	⊙			⊙			⊙			
		Consistency of activity													⊙					⊙	⊙			⊙			⊙			
	Discount	Participating in activities													⊙					⊙	⊙			⊙			⊙			
		Implement Airtime Discount	⊙	⊙	⊙	⊙	⊙				△	△		⊙	⊙	⊙	⊙	△	△	⊙	△	⊙	⊙	⊙		⊙	⊙	⊙	⊙	
		Non Voice Usage Discount	⊙	⊙	⊙	⊙					⊙	⊙	⊙	⊙	⊙	⊙	⊙	△	△	⊙	△	⊙	⊙	⊙		⊙	⊙	⊙	⊙	
		Discount Shopping, Dining, Travel													⊙	⊙	⊙	⊙	△	⊙	△	⊙	⊙	⊙		⊙	⊙	⊙	⊙	
Discount for new handset	⊙	⊙	⊙	△					⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙	△	⊙	⊙			⊙			⊙	⊙	⊙	⊙		

Figure 5.4: Relationship Matrix between customer requirements and technical characteristics

#### 5.3.4 Matrix 4 – Relationship Matrix between technical characteristics

The triangular matrix which has been added at the top of the matrix is known as the correlation matrix, is used to identify any interrelationships between each technical characteristic. This matrix link requirements to technical functionality, and show how the overall product will be built up from parts and subsystems. Indicate the synergistic impacts of changes in the technical characteristics. Any technical interdependencies are further evaluated by the correlation matrix above the 'Hows'. These represent what the engineering can control. As the QFD team defines the technical characteristics, a determination must be made as to the direction of improvement for each descriptor.

The symbols describe the direction of correlation which are four symbols, indicating both the positive and negative of the relationship. Generally, positive and negative values are used to indicate the positive or negative impact. The positive correlation is where achievement of one design characteristic assists the achievement of the other. A double circle represents a strong positive relationship (+9) and a circle represents a positive relationship (+3). Nevertheless, the negative correlation is where achievement of one design characteristic interferes the achievement of the other. An x represents a negative relationship (-3) and an asterisk represents a strong negative relationship (-9). Too many positive interactions suggest potential redundancy in technical characteristics. It is importance to note that all tradeoffs should be made in favour of the customer such as favour of the highest overall importance rating. Tradeoffs between technical characteristics in order to determine what compromises may be required and how those compromises would be made. The benefit of this part of QFD matrix is that it forces the company to consider rigorously all possible interactions between design features, some of which may missed by less systematic approach.

An example of tradeoffs in this study, the interrelationship between the technical characteristics of % discount and revenue from new service would be strong negative (-9) correlation because % a large amount discount would a reduced amount of revenue from new service. Conversely, the interrelationship between the technical characteristics of % downtime of network and % customer complain would be strongly positive (+9) because a large amount % downtime of network that more effect % customer complain.



### 5.3.5 Matrix 5 – Customer competitive assessment

One of the main reasons for using QFD is to develop a product or service which will excite the customer and get the customer to purchase product or service. When the company captures the customer's perceptions of how well different products perform in the marketplace, the company can better understand what is driving the purchase decision. Customers choose between products of different brands. Therefore, it is important to know the strong and weak points of our product in relation to the products of our most important competitors. Benchmarking our product and others' products against the customer requirement which the company has established helps to define the level of real performance required to produce the desired level of perceived performance.

For the customer competitive assessments describe for how competitive products compare with current organisation product. A comparison with competitors at the requirements level is effective because customers can evaluate the competition's products as well. It becomes much clearer what level of performance is perceived to be inadequate, what level is acceptable, and what level of performance currently gets customers excited about a product. Benchmarking all of the competitive products is required to check representative products. Thus, representatives of competing products' customers would have to be consulted for such a comparison to be effective. Develop competitive evaluation of current company products and competitive products. Use focus groups survey to obtain feedback. Rate the company's and the competitor's products by assign ratings for each customer requirement from 1 for worst and 5 for best with 5 indicating that the product fully satisfies the customer's needs. Include competitor's customer input to get a balanced perspective. This matrix is a good way to determine if the customer requirements have been met and identify areas to concentrate on in the next design. Review the competitive evaluation strengths and weaknesses relative to the customer priorities. Determine the improvement goals and the general strategy for responding to each customer need. Perform a technical evaluation of current products and competitive products. Sources of information include focus group survey and benchmarking competitor's products. This discussion is based on the product functions, not the original customer requirements and their weights. Only when large changes are asked for the customer requirements will be reevaluated.

Product	System and Network	Continue using new technology	5	4	5	
		Nationwide Coverage/ Building Coverage	5	4	3	
		Ease of making call / Connecting to the network	4	3	2	
		Clarity of signal /Low interruption	4	4	3	
	Airtime Refill	Convenience/ variety of refilling methods	4	5	3	
		Availability of airtime card in the market	5	5	4	
		Design and appearance of airtime card	4	4	3	
		Correctness in airtime refill	5	4	3	
		Ease of airtime check/ convenience	5	4	5	
		Tariff customisation / Variety of promotions	3	4	5	
	Service	Value Added Service	Ease of service procedures	4	4	5
Variety of services			5	4	4	
Availability of desired services			5	4	4	
Speediness of Value-added services			4	3	5	
Correctness and completeness of services			5	4	3	
Call center		Ease of contacting Call Center	4	4	3	
		Staff ability to give advices and provide option	5	5	4	
		Staff product knowledge	4	4	3	
		Speediness of service	5	4	5	
Privileges		Customer Relationship Activity	Attractive and interesting activities	5	4	4
			Variety of activities	4	3	3
	Consistency of activity		4	3	2	
	Participating in activities		3	3	2	
	Discount	Implement Airtime Discount	4	4	5	
		Non Voice Usage Discount	3	3	4	
		Discount Shopping, Dining, Travel	4	3	3	
		Discount for new handset	4	3	2	
				Our product	DTAC	True Move
				Customer competitive assessment		

Figure 5.6: Customer competitive assessment

By implication it can be seen that areas where the customer is already well satisfied by all providers would not attract much effort such as variety of service means all of provider make available of service to customer additionally. However, would areas where customers are relatively indifferent to the requirement being satisfied, for example, discount for shopping, dinning, travel and also for new handset.

### 5.3.6 Matrix 6 -Technical competitive assessment

Develop a technical evaluation of prior generation products and competitive products. Get access to competitive products to perform technical benchmarking. Perform this evaluation based on the defined technical characteristics by engineering team. Similarly with the customer competitive assessment, the data convert to the number 1 through 5 to indicate rating. The technical competitive assessment is often useful in recognition gap in engineering judgment. Moreover, give the company to understand on where its technical stands in relationship to the market. Technical competitive assessment indicates how the company product compares with that of competitors against the objective target values set of the design requirements. This is a market focused technical assessment carried out in house by those involved with the product and service.

It is quite common to perform competitors' analysis on technical aspects. A comparison of the technical performance of our product with the performances of the products of our main competitors reveals our technical position with respect to the competition. Furthermore, this kind of technical benchmarking provides a check for the consistency of the interaction matrix and the competitive benchmarking data. Benchmarked the existing products to gain a good understanding of what level of actual performance is required in order to produce the desired level of perceived performance.

Moreover, it can be easier to analysis when these ranking plotted across from each of technical characteristic, using different symbols to represent for each product as shown in Figure 5.7. When comparing with the competitor to identify that which technical characteristic the company lagged behind the competitors and need to catch up. In opposition, which technical characteristic the company are ahead and need to maintain the lead. The technical competitive assessment for One-2-Call! prepaid mobile phone as shown in Figure 5.7.

		System and Network				Airtime Refill				Value Added Service				Call Centre performance			Customer Relationship Management					Discount Operation								
		Network Quality improvement	Network Capacity improvement	Network Coverage improvement	% Downtime of the network	Value for airtime to refill	Accuracy of payment system	Many distribution channel	Many Method of airtime refill	Refill card collection	Improvement of technology	Revenue from New Service	Attractive Value Added Service	Service Customisation	wireless communications society	Staff Competency upgrading	Training course	% Turnover of Key Staff	% Customer complain	CEM Improvement with customer	Number of Customer	Number of participants	Occurance of Activities	Streight relationship with customer	Awareness of the marketing campaign	% discount	Customer usage behavior	Customer Segmentation	Retention and motivation	Handset avability and pricing
Technical competitive assessment	Our product	5	5	5	4	4	5	4	4	4	5	4	4	3	4	4	4	3	3	5	4	3	4	4	4	3	4	5	5	4
	DTAC's product	4	4	4	3	4	4	3	4	3	4	4	3	3	3	4	3	3	2	4	3	2	3	3	4	4	4	4	4	3
	True Move's product	4	3	3	2	3	3	3	3	3	5	5	5	4	5	3	3	2	2	4	2	2	3	3	4	5	3	3	4	2

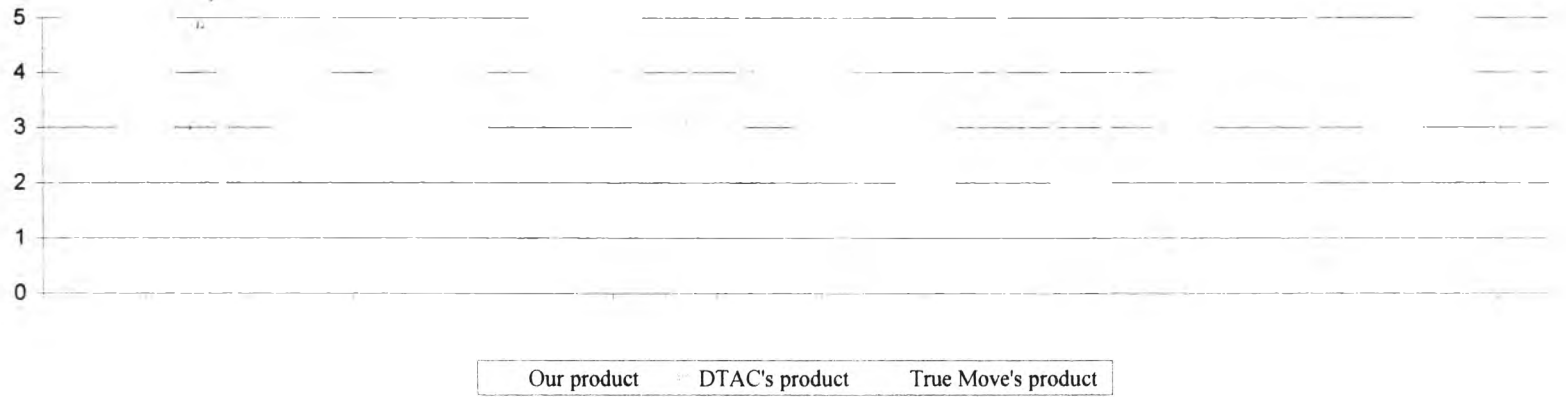


Figure 5.7: Technical competitive assessment

### 5.3.7 Matrix 7 – Prioritised Customer Requirements

The selection of priority items for increased customer satisfaction provides a company with a distinct product focus. The customer requirements that are currently satisfactory to customers can be handled using existing procedures and processes.

Use ranking techniques and paired comparisons to develop priorities. Ultimately, the QFD method translates customer priorities, as captured by a prioritised list of needs, into design priorities by identifying those product features that contribute the most to satisfying customers better than competitive offerings. Customer weightings are applied to prioritise the most important features and a relationship matrix is used to evaluate interdependencies between the 'whats' and the 'hows'. These prioritised customer requirements contain columns for importance to customer, target value, scale-up factor, sales point, and absolute weight.

#### *Importance to customer*

The importance to the customer column would contain the importance ratings as given by the customers. Its values indicate where the company should focus attention in order to address what is important to the customer and where the companies have to do a lot of work. Substituting a customer survey, one of the first meetings tries to ascertain customer needs and to classify the requirements in the chapter 3. These requirements are structured using weighted by as many members of the customer groups as possible under control of the customer representatives. The weights of the different groups are then used to calculate the average weight by calculating the average of the weights assigned by the customer groups weighted with the importance of the groups. If a new release of an existing product is developed, the customer representatives will evaluate according to the level of satisfaction with the current fulfillment of the requirements which measured on a scale ranging from 1 indicating total dissatisfaction to 10 indicating perfect satisfaction.

#### *Target Value*

Target value defines what level of a feature is right for the market under consideration by using scale 1 for worst to 5 for best. Besides, determined by evaluating the assessment of each customer requirement and setting a new assessment value as to improve the product and service and also make better than competitors.



### *Scale-up factor*

Identify the ratio of the target value to product rating given in the customer competitive assessment. The higher number means that more effort is needed. This is important consideration about the level where the product and service is now and what the target rating is and deciding whether the difference is within reason. For example, the tariff customisation / variety of promotions has a product rating of 3 and the target value is 5, then the scale-up factor is 1.7 that mean this attribute have to improve in order to delighted customer.

### *Sales point*

Identify the sales points that marketing will emphasise in its message about the product and service. Sales points are defined in a column of related data associated with a list and act as multipliers in calculating the overall importance of each requirement. There should be no more than three major and two minor sales points in order to keep the marketing message focused. Major sales points are assigned a weighting factor of 2.0 and minor sales points are assigned a weighting factor of 1.0. The traditional ratings are:

1.0 means not be emphasising this requirement in marketing efforts

1.5 means mention this in marketing literature

2.0 means emphasise satisfaction of this requirement in marketing efforts. It should be cautioned that there is great potential for abusing this rating and it should therefore be used very carefully.

### *Absolute weight*

The absolute weight is calculated by multiplying the importance to customer, scale-up factor, and sale point:

$$\text{Absolute weight} = (\text{Importance to customer}) (\text{Scale-up factor}) (\text{Sales point})$$

The rank of each customer requirement can be determined and guide for planning phase of product and service development.

Product	System and Network	Continue using new technology	8	4	0.8	1.0	6.4	
		Nationwide Coverage/ Building Coverage	9	5	1.0	1.0	9.0	
Airtime Refill	Ease of making call / Connecting to the network	8	5	1.3	1.0	10.0		
		Clarity of signal /Low interruption	9	4	1.0	1.0	9.0	
		Convenience/ variety of refilling methods	9	5	1.3	1.5	16.9	
		Availability of airtime card in the market	9	4	0.8	1.5	10.8	
		Design and appearance of airtime card	8	3	0.8	1.5	9.0	
		Correctness in airtime refill	9	5	1.0	2.0	18.0	
Value Added Service	Ease of airtime check/ convenience	9	5	1.0	1.5	13.5		
		Tariff customisation / Variety of promotions	9	5	1.7	2.0	30.0	
		Ease of service procedures	8	3	0.8	1.0	6.0	
		Variety of services	8	4	0.8	2.0	12.8	
		Availability of desired services	9	4	0.8	2.0	14.4	
Call center	Speediness of Value-added services	9	3	0.8	1.0	6.8		
		Correctness of Value-added services	8	5	1.0	2.0	16.0	
		Ease of contacting Call Center	8	3	0.8	1.0	6.0	
		Staff ability to give advices and provide option	7	3	0.6	1.5	6.3	
Privileges	Customer Relationship Activity	Staff product knowledge	8	3	0.8	1.5	9.0	
		Speediness of service	9	4	0.8	2.0	14.4	
		Attractive and interesting activities	8	4	0.8	2.0	12.8	
		Variety of activities	9	4	1.0	1.0	9.0	
	Discount	Consistency of activity	8	3	0.8	1.0	6.0	
			Participating in activities	8	3	1.0	1.0	8.0
			Implement Airtime Discount	9	5	1.3	2.0	22.5
			Non Voice Usage Discount	8	4	1.3	1.5	16.0
Discount Shopping, Dining, Travel	Discount for new handset	8	4	1.0	1.5	12.0		
		7	4	1.0	1.0	7.0		
		Importance to customer						
		Target Value						
		Scale up Factor						
		Sales point						
		Absolute weight						

Figure 5.8: Prioritised Customer Requirements

### 5.3.8 Matrix 8 – Prioritised Technical Characteristics

The important purpose of QFD is on setting prioritised development goals based on the most important technical characteristics. Classifies technical characteristics that are most needed to fulfill customer requirements and need improvement. The prioritised customer requirements consist of degree of difficulty, target value, absolute weight, and relative weight.

#### *Degree of difficulty*

Develop a difficulty rating 1 to 10 point scale, 10 being very difficult and risky for each technical characteristic. Consider technology maturity, personnel technical qualifications, business risk, manufacturing capability, supplier/subcontractor capability, cost, and schedule. Avoid too many difficult/high risk items as this will likely delay development and exceed budgets. Assess whether the difficult items can be accomplished within the project budget and schedule.

#### *Target Value*

This is an objective measure that defines value that must be obtained to achieve the technical characteristic. How much it takes to meet or exceed the customer's expectations is answered by evaluating all the information entered in to QFD matrix and selecting target values. Develop preliminary target values for technical characteristics. Consider data gathered during the technical evaluation in setting target values. Do not get too aggressive with target values in areas that are not determined to be the primary area of focus with this development effort.

#### *Absolute Weight*

Determining the weights is to assign numerical values to symbols in the relationship matrix symbols.

$$a_j = \sum_{i=1}^n R_{ij} c_i$$

Where

$a_j$  = row vector of absolute weights for the technical characteristics ( $i=1, \dots, m$ )

$R_{ij}$  = weights assigned to the relationship matrix ( $i=1, \dots, n, j= 1, \dots, m$ )

$c_i$  = column vector of importance to customer for the customer requirements

( $i=1, \dots, n$ )

$m$  = number of the technical characteristics

$n$  = number of customer requirements

### *Relative Weight*

- Technical characteristics could be defined and related to customer requirements in order to determine the relative value of a function towards satisfying the Customer Requirements.

$$b_j = \sum_{i=1}^n R_{ij} d_i$$

Where

$b_j$  = row vector of relative weights for the technical characteristics ( $j=1, \dots, m$ )

$d_i$  = column vector of absolute weights for the customer requirements

( $i=1, \dots, n$ )

These weights show the impact of the technical characteristics on the customer requirements. Higher relative ratings identify area where technical efforts need to be concentrated. The rating at the top of the list will be those where the company wants to achieve the best performance. On the other hand, the rating at the last of the list will be those on which the company should focus in order to provide what the customers most want and to implement the operational strategy.

	System and Network				Airtime Refill				Value Added Service				Call Centre Performance				Customer Relationship Management				Discount Operation								
	Network Quality improvement	Network Capacity improvement	Network Coverage improvement	% Downtime of the network	Value for airtime to refill	Accuracy of payment system	Many distribution channel	Many Method of airtime refill	Refill card collection	Improvement of technology	Revenue from New Service	Attractive Value Added Service	Service Customisation	wireless communications society	Staff Competency upgrading	Training course	% Turnover of Key Staff	% Customer complain	CEM Improvement with customer	Number of Customer	Number of participants	Occurance of Activities	Streight relationship with customer	Awareness of the marketing campaign	% discount	Customer usage behavior	Customer Segmentation	Retention and motivation	Handset avability and pricing
Degree of technical difficulty	9	8	8	7	7	9	6	6	6	8	8	9	9	8	7	6	6	7	8	6	7	6	8	8	9	7	8	9	5
Target Value	5	4	4	4	3	5	3	3	2	4	4	5	4	3	3	3	2	3	5	6	5	3	6	7	5	7	7	5	3
Absolute weight	687	545	491	511	213	401	261	251	144	540	533	402	466	503	501	396	728	781	788	475	299	249	611	620	279	509	738	842	90
Relative weight	957	766	733	809	403	860	384	486	212	899	824	766	806	773	822	702	917	999	1373	584	348	245	1171	1075	674	960	1303	1231	153

Figure 5.9: Prioritised Technical Characteristics



#### 5.4 QFD Matrix Analysis

Through company use QFD matrix that can gain a deep understanding of the marketplace, identify strategic outcomes which equivalent to customer requirements and predictive metrics which equivalent to product functions. QFD supports the company in understanding and analysing the system interrelationships, as well as obtaining optimal target technical characteristic values. The results suggest that it has the potential to help the company find improved customer requirement yielding higher customer satisfaction such as improving service customisation, tariff customisation while satisfying customers' requirements and delivering it at the right time.

Underneath the policy, AIS remains committed to providing customers with superior services by strengthening nationwide coverage areas. AIS network coverage is widespread while various services in addition to receiving and making calls are conveniently in place. Therefore, AIS is strong in the system and network requirements which is the must be requirement in Kano classification.

Moreover, AIS still got high performance in the one-dimensional requirement not only value added service requirements but also call center requirements. That can support by AIS has continuously enhanced and expanded its network in order to respond to the market and technological advances, whilst keeping abreast of consumers' growing demands and needs. It continues to integrate the latest in advanced technology and deliver more than just voice communication such as GPRS (General Package Radio Service) technology. AIS strongly believe that wireless communications bring changes to the way Thai people live their life, with endless communications possibilities, the quality of life is better. Defined by advanced technology, teamwork and the input of dedicated AIS personnel, AIS aims to generate customer satisfaction and happiness. For every question there is an answer, AIS Call Center 1175 always ready to answer questions whether they are about promotions, supplementary services or even the phone operation of each model. With information and services provided by our experienced and well-trained professionals. The education, training and experiences of staffs determine the skills available to the AIS, the adaptability of staffs contributes to the strategic flexibility of the firm, and the commitment and loyalty of staffs determine the capacity of the firm to attain and maintain competitive advantage.

In addition, continuously find the rights answer for the customers' need and behavior, AIS should attention in the attractive requirement, in the Kano model (airtime refill requirements and discount requirement) by the QFD process that efficiently focuses efforts on areas of ranking the importance of the information elements and working on those which are the most important that the company have to develop. Having identified key customer requirements possible to link these back to the most strongly related technical characteristics so that effort can be targeted in terms of what needs to be done rather than what the outcome needs to be.

From QFD matrix, the highest customer priority of the attractive requirement and greatest competitive advantage is the tariff customisation/ variety of promotion. AIS have to plan many tariff promotions for the customers to choose a suitable program according to their changing requirements. This was considered to be the first requirement created to really serve the needs of the customers. The company aims to ensure that customers are both satisfied and confident that they will receive quality products and services at a reasonable price. The company will also provide accurate, comprehensive and honest information relating to the goods and services it provides. Furthermore, AIS will be continuously developing various alternatives to meet requirements of the customers.

This means that a best rating from the customer on a particular requirement would be expected to correlate with best rating for the factors affecting that requirement in the technical assessment which is CEM improvement with the customer. The CEM subject has been a strategic focus for AIS to strengthen relationships with customers. Successful delivering of customer experience is complex and requires firm-wide support. Customer Experience Management has recently been recognised as a competitive weapon for a company to differentiate from competitors in the business front line. CEM is dealing with both physical and emotional components of customer experience where emotional part seems to be a key success of all. The successful CEM is to deliver a consistently exceeding expectation both physical and emotional to customers. Nowadays, physical experience such as product, service, and quality seems to be a ground rule that most companies have the same standard in common. However, the analysis points out that the emotional part takes more influence to the customer. Emotional experience such as feeling helps create bonding to customers. This mostly relates to brand attachment and also leads to the



establishment of customer long-term loyalty which consider as the competitive advantage to companies.

Organisations can apply QFD as a strategic planning tool. QFD has been successfully applied in quality management strategic planning. As a quality management strategic planning tool, QFD is efficient and effective in prioritising the weakness of an organisation that the organisation should take action for improvement. It prioritises the importance of the activities in the organisation that have much more concern for customers' satisfaction. Furthermore, the outputs from one QFD process become the input of another. This provides a process where markets requirements are systematically steered from product definition through development, based on this, develop an operational strategy. Consider the current strengths and weaknesses relative to the competition. Thus, QFD provide the means by which product focus and customer focus converge. As a result, effective means to deliver customer benefits, but some applications are too cumbersome reducing time to market and increasing development cost.