COMPARING THE SERVICE QUALITY OF THE STATE AND PRIVATE PETROLEUM STATIONS IN BANGKOK

by

Mr. Somchai Pornthipsathean

A Final Report of the Three - Credit Course
CE 6998 Project

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Submitted in Partial Fulfillment
of the Requirements for the Degree of
Master of Science
in Computer and Engineering Management
Assumption University

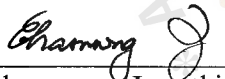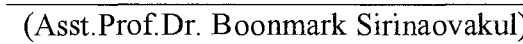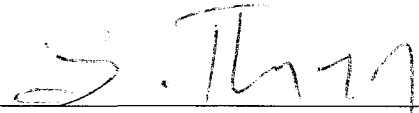July 2001

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The Graduate School of Assumption University has approved this final report of the three-credit course. CE 6998 PROJECT, submitted in partial fulfillment of the requirements for the degree of Master of Science in Computer and Engineering Management.

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ABSTRACT

Service quality in petroleum stations has become critical in a competitive market. Petroleum companies have introduced incentive service program to meet the ever changing requirements of customers. This research has applied the service quality "gap 5" model (perception-expectation) and an adapted SERVQUAL questionnaire of Parasuraman et al. (1994) as the instrument to measure and compare service quality of state and private enterprise petroleum stations in Bangkok. The results of this study will be used for development and adjustment of on-site operations to satisfy customer needs. Three steps of data collection were conducted in this research. There were preliminary interviews, a pilot study and surveys. The simple random sampling method was used in this study to sample 210 car drivers. Data analysis included factor analysis and T-test to test hypotheses. The results of this research do not support all hypotheses that private enterprise has significantly higher service quality than state enterprise petroleum stations in Bangkok. Based on customer belief, private enterprise has greater advantage and opportunity to provide more effective service quality for customer satisfaction than state enterprise than their expectation. While they perceived higher service quality as provided by state enterprise than their expectation. The implications of results will be useful for both academics and petroleum stations management.

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I. INTRODUCTION

1.1 The Significance of Service Quality

Service quality has become a critical competitive consideration. What we have come to know as service quality relies on a simple but powerful discrepancy paradigm: initial service expectations must be met or exceeded by perceived outcomes of the service experience. The work of Parasuraman, Zeithaml, and Berry (1985), develops an extensive theoretical base and offers a reliable and useful approach for measuring perceived service quality on the basis of this paradigm.

In many service organizations today, quality is considered the magic word in competition. Offering quality has a magical impact on present and future customers. "Quality is the best weapon to fight competitors" is the new-born slogan. It is important in all business to understand the meaning of "quality", before using it for the fight, whether it be in medieval times or the present market place.

Today, customers have more purchasing choices, because competing in the market lead to improve business quality. Creech (1994) stated that more competition, more choices, put more power in the hands of customer, and that, of course, drive the need for quality. It is important to understand that customers do not all have the same wishes with regard to their ideal quality level. In the different market segments, each might have comparable desired service-quality levels for standard and customized services. Market oriented service providers' try very hard to meet the individual expectations of their customers.

Parasuraman, Zeithaml, and Berry (1985) reached three primary conclusions from their literature review and a series of focus groups: (1) service quality is more difficult to evaluate than the quality of goods, (2) service quality results from the comparison of

actual service performance with the level of expected service, and (3) service quality perceptions involve the process of service delivery as well as the outcome.

Therefore, it is interesting to study and research the difference in service quality that has emerged. Particularly in petroleum service stations, the meaning of "customer convenience" is an essential variable. Smalley, Steven P. (1999) suggests that convenience can be understood in terms of barriers, and attempts to identity the various type of barriers encountered in undertaking a refueling operation. The determination of the convenience level of petroleum stations by using conceptualization and measurement of service quality is based on a flawed paradigm.

The petroleum station business in Thailand is wide open for opportunity to maintain and build momentum operational and service quality standards. High quality and environmentally friendly products with fair prices were not enough to ensure success in the current highly competitive market. Many petroleum stations tried to establish supplementary business such as automatic car wash, convenience store telecommunications equipment, customer service station, public telephone booths as well as payment by credit card. This plays an important part in enhancing high quality in their businesses.

There are two sector owners operating petroleum station business in Thailand as state and private enterprises:

(1)   State enterprise petroleum stations operate two petroleum stations brand named PTT and BCP.

(2)   Private enterprises petroleum stations operate around fourteen petroleum stations brand named Shell, Esso, Caltex, Susco, Pt, Mp, Cosmo, Mobil, Q8, SPC, JET, PA, TPI, PC and Independent. (Petroleum Institute of Thailand 2000)

SERVQUAL model is the technical measurement constructed by Parasuraman, Zeithaml, and Berry (1988). This survey instrument measures the difference between perceived and expected service. (Gronroos 1983)

State enterprise is the operation of commercial or industrial under-takings by the state. (A dictionary of economics and commerce 1965)

Private enterprise is an economic system under which property of all kinds can be privately owned and in which individuals, alone or in association with one another can own productive resources and undertake production. (A dictionary of economics and commerce 1965)

Customers is all people who drive cars and often refuel at state and private enterprise petroleum station.

1.5 Study Contributions

There are two parts of contributions:

1.5.1 Contribution to Theory

(1) Adoption service quality theory to apply for measuring perceived service quality in petroleum stations in Thailand.

1.5.2 Contribution to Practices

(1) Customers will omit benefit from this study. If petroleum companies use the outcome of this study and research to modify their quality of service operations to best fit customers' needs and expectations.

(2) Petroleum companies realize that service quality is an essential factor in distinguishing the company's brand for success in the Thai marketplace. So they can use the information from this research to develop and adjust on-site operations of gain international standard. This will lead the petroleum industry of the nation to excellence on a par with foremost firms.

1.6   Scope of the Study

The scope of this study was divided into two distinctive features of research framework as follows:

(1)   The scope of subject: the researcher aims to study in service quality gap theory to measure the quality level in petroleum stations and compare the difference in service quality between state and private enterprise petroleum stations in Thailand. In addition, this study used Parasuraman, Zeithaml, and Berry (1985) to measure service quality by comparison of actual service performance with the level of expected service.

(2)   The scope of sample arrangement: the researcher selects two petroleum companies in Bangkok for representative of state and private enterprise sector.

1.7   The Organization of the Paper

This study is divided into 6 chapters. Chapter 1 describes and discussed the background and objectives of the study. Chapter 2 reviews the relevant literature that leads to the formulation of the research methodology employed. Chapter 3 presents the original hypotheses setting. Chapter 4 presents a description of the research methodology. The findings are then presented in Chapter 5. Finally presents the discussion and conclusions of the study an implication drawn for theoretical contributions, petroleum station and Government and future research in Chapter 6.

II.   LITERATURE REVIEW

This chapter looks briefly at the evolution and concept of quality through the contribution of state and private enterprise petroleum stations in Bangkok. This is divided into three parts. Literature streams concerning the service quality in petroleum stations, an approach to the gaps in research studies from the literature review.

Awareness of the importance of quality is everywhere today because it can be the difference between success and failure in this competitive world.   Quality is definitely here to stay and as Born (1994) stated, quality is a technical discipline, which is now top of the management agenda and is one of the key issues for competitiveness in the 1990s.

2.1   Service Quality in Petroleum Stations

In 1994, average monthly expenditure was 8,034 bahts per household in Thailand. Ninety point two percent (7,246 Bahts) was spent for consumables. This is included 32.1 percent for food and beverages and 58.1 percent for other consumption goods and services. The balance 9.8 percent was spent for non-consumable items, which included taxes, gifts and contributions, insurance, premiums and others. The relative monthly household expenditure was shown as highest by households in the Bangkok area in terms of transportation and communication costs. (National Statistical Office 1996)

Cars comprise the main private transport mode in Bangkok. The research of the National Statistical Office (1998) demonstrated domestic production of cars in Thailand evident at 1,431,485 in 1998. This included 331,483 cars registered in Bangkok. However, the high growth rate of car ownership has slowed down, especially since the economic down turn in July 1997. The high growth rate of car ownership lead to an increased number of drivers. The particular need was for regulated quality gasoline not only defined by octane number. Service station quality is the one important factor to encourage customer-refueling demand. Therefore the customers' need to perceive

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service quality in Petroleum Stations was much greater than before. Many oil companies tried to supply excellent service quality to meet customers' demands. Larger Petroleum Station companies were trying to introduce an incentive service program to meet the ever-changing requirements of customers. (WWW.caltex.co.th). Oil companies are aware of consistent delivery fast and friendly service in clean and modern facilities. It is a benefit for customers to have alternatives. Customers believed that they would get better value than they expected previously. Hence it was important for Petroleum Station companies to find out what their customers perceived and use this information to develop an effective service in the future. (WWW.ptt.cr.th)

The number of petroleum stations established in Thailand amounted to 14,913. Located in Bangkok are 1,331 stations and are operated by two sectors as state and private enterprise. See the Table 2.1. Petroleum Institute of Thailand (1997) compared the number of established Petroleum Station per the number of one thousand cars Thailand at proportion 0.43.

The state enterprise organization is managed by balancing commercial and government objectives in an efficient manner. They try to follow and fulfil government policy. At the same time they are still concerned about what people need. State enterprise nationwide include two oil companies under the name of Petroleum Authority of Thailand (PTT) and Bangchak Petroleum Public Company Ltd (BCP). They operate 421 stations around Bangkok and nationwide 2,661 stations. See Table 2.1.

Private Sector participation in the power retail business is expected in Thailand. They individually manage their businesses. The organizational structure is the implementation of varieties and many countries invest in this industry in Thailand. Output from research by the Petroleum institute of Thailand (PTIT) in 2000 indicated 15 oil companies and many other brands and grouping independently. See Table 2.1.

Private enterprise operates at total petroleum 910 stations in Bangkok and nationwide 12,252 stations.

Table 2.1. The Number of Standard Service Stations in BKK and THL, End of the Third Quarter, 2000.

Name	BKK	North	N/E	East	West	Central	South	THL	% share
PTT	225	289	293	154	133	155	257	1506	10.1
BCP	196	215	350	96	78	133	87	1155	7.7
State	*421*	*504*	*643*	*250*	*211*	*288*	*344*	*2661*	*17.8*
SHELL	241	142	114	107	52	65	104	825	5.5
ESSO	171	109	120	78	59	76	85	698	4.7
CALTEX	180	77	78	58	31	49	64	537	3.6
SUSCO	16	41	34	10	3	8	48	160	1.1
TP	12	47	141	16	34	25	67	342	2.3
MP	17	32	52	11	11	9	4	136	0.9
COSMO	3	84	65	3	12	12	0	179	1.2
MOBIL	39	0	4	10	10	14	3	80	0.5
Q8	72	19	5	13	4	17	0	130	0.9
SPC	0	1	64	4	0	1	41	111	0.7
JET	30	10	9	29	4	20	0	102	0.7
PA	11	18	6	25	21	23	1	105	0.7
TPI	22	21	41	20	3	13	0	120	0.8
PC	0	0	0	0	3	0	24	270	0.2
INDEP.	96	1722	3906	629	705	1007	635	8700	58.3
Private	*910*	*2323*	*4639*	*1013*	*952*	*1339*	*1076*	*12252*	*82.1*
TOTAL	*1331*	*2827*	*5282*	*1263*	*1163*	*1627*	*1420*	*14913*	*100*

Source:

Petroleum Institute of Thailand (2000).

Note: PTT owns and operates 34 stations, SUSCO owns and operates 88 stations, Mobil owns and operates 20 stations, PT owns and operates 24 stations, TPI owns and operates 37 stations, JET owns and operates all its stations.

The Petroleum Authority of Thailand's (PTT) main tenet is to conduct and support the petroleum business and other related businesses for the utmost prosperity as well as promoting energy stability within the country. The mission and aim of PTT as the national Oil Company, is to harmonize state policy and business entities. They have stated that "Quality is to satisfy the customers' need and expectations in product and service; thus, customers will acquire better products and service from PTT, than from competitors." As a result, the organization can attain sustainable growth. To meet customer demand in quality, cooperation from every employee is essentially required. (www.ptt.or.th)

Shell Services International Group of Companies (SSI) provides business consultation, enterprise-wide implementation, and ongoing operations—delivering value at every step. Shell's staff, graduate engineers and technical specialists offer expertise in metallurgical engineering, nondestructive testing, ISO 9000 lead assessment (accredited), and quality system auditing (certified). They provide service cover quality assurance and process planning, quality control testing and technical consultation. Shell Services International Group of companies apply a breadth depth of capabilities to the customers' advantage. (www.shell.com)

The rising demand for energy has competition in the market. Aiming to be a leading company in Thailand's petroleum industry, Esso (Thailand) Public Company Limited is proud to supply the local market with over 300 high quality products under the Esso and Exxon brand names and provide fully integrated services to its customers, Esso service stations, around 900 throughout the country, are clean and modern, offering high-quality products and services that meet customers' car-care needs. To complement Esso's range of services, the company opened "Tiger Food Mart" its service stations; Esso initiated "Beautiful Gardens" and "Clean Restrooms" campaigns.

In addition, Esso has established its retails training center on Soi Onnuj, Bangkok, to providing mobile training units, offering hands-on training to Esso's service station attendants throughout the country. And in order to offer the same quality service at all of its stations nationwide. The company provides owners and service station attendants with lesson on "5-step service," starting from initial greeting approaches and selling technical, fuel filling procedures, windshield cleaning, oil and water checks, to payment and thanking the customer.

Esso has also developed computer systems for increased efficiency and swift marketing operations The recent installation of Marketing Administrative Procedures System (MAPS) centralizes information and operation of all terminals via satellite, allowing product purchases or credit checks through any terminals, The Retail Investment Management System (RIMS) is yet another state-of-the-art computerized database system to facilitate construction and renovation developments of Esso service stations. (ESSO (Thailand) Public Company, Ltd. 1998)

Caltex has been well known to Thai people as "Star" gas station for over 50 years. Their long relationship with Thailand has been highlighted by strong growth and a commitment to sound business, workplace and environmental practices. They have the objective to become the "Brand of Choice" for motorists in Thailand. To achieve this objective they have used a combination of quality, professionalism, service and efficiency. Caltex focuses on service quality as the key to retail success launches, a Mystery Motorist program to gain customer feedback on-site. This program has the goal of encouraging Caltex retailers to focus on meeting their customers' needs and making visiting to a Caltex station a thoroughly enjoyable experience. Caltex realizes that service quality is an essential factor to distinguish the company brand for success in the Thai marketplace. "The Mystery Motorist program incorporates two keys objective.

First, it set the standard for operational and service quality for every Caltex service stations. We also gain valuable feedback from motorist about their experience in our service stations. The feedback will enable us to adjust on-site operations to best fit customers' need and expectations," (Barry Ashman, general manager Caltex Thailand) A well-train professional will visit participating Caltex service stations once a month without prior notice, posing as a normal customer to experience the service on the forecourt area while buying fuel, shopping at StarMart and visiting the toilet. There are incentive schemes for both retailers and on-site staff to reward them if the operation at the service station meets set standards. (www.caltex.co.th)

Alice, C. and Jean, H. (1998) reported that Tosco Marketing Co. is trying to harness the gasoline industry's move into selling conveniences, alliance of its 76 brand with Nascar in a campaign, which will begin in May 1998. The amount being spent; efforts of gas station chains to build customer loyalty; the addition of Foodini's, a Boston Market like shop at Chevron stations; Comments.

Ron, S. (1998) focused on the response toward advertisements for gas station pumps, which feature hi-tech devices that will make it all but impossible for its audience to escape. Reference to an Advanced Information System, products call the Fueling Talker; Comments from Tom Forkin, the company's Detroit regional sales representative.

Ann, C. (1997) reported on the pairing of gas-and-convenience stores and fast-food restaurants regarding the purchase or lease of property. Advantages of pairing, details on pairing, comments from Fred Stein, real-estate manager with chevron products, competition for the price of land, identification of drawbacks of the system.

Wang, K. H. (1997) examined a single removable service station queuing system with Poisson arrivals and Erlang distribution service times. Details on the service

station; provision of conditions for a stable queuing system; Details on the results; Conclusions reached.

Charles, K. (1997) surprises on gasoline cards: Many that hold them say they wind up buying less. Oil companies found that they may not be getting as much mileage from petroleum co-branded cards as they had hoped. Unlike gasoline cards issued by a petroleum company with which people can use their MasterCard and Visa at other gasoline stations. Oil companies are relative newcomers to co-branding, - the practice of issuing a MasterCard and Visa card in conjunction with a bank. Britain Associates conducted survey in Reports on finding of a survey on gasoline cards conducted by Britain Associates as of June 1997. Getty Petroleum Corp., shell Oil Co., and Unocal Corp. were among the first, teaming up with bank issues in 1993 Other oil companies followed in hope of increasing brand loyalty. Consumers typically earn gasoline rebates when they make any purchase with the card and bonus rebates when they buy the sponsor's gas.

2.2   Quality Characteristics and Definitions

Quality reflects customer satisfaction. It is the customer's perception of you and what you make as being first-rate. This might sound simplistic. But look at it this way. Quality is not a variable. There is no such thing as high quality or low quality. Quality is an absolute. Quality means doing it right the first time and all the time.

Pirsig (1987) stated that if a philosophical view is taken towards the term quality, quality is a characteristic of thoughts and statements believed to be taken from granted or are self-evident. Because definitions are the result of abstract and formal thinking, quality cannot be defined. Pirsig (1987) added this: "Although we cannot define quality, we know what quality is." In his opinion, it is thus impossible to define quality, because quality can never be considered independently, but only in relation to what is perceived.

Juran (1974) defined "Quality is fitness for use, the extent to which the product successfully serves the purpose of the user during usage."

Crosby (1983) defined "Quality is conformance to requirements."

Parasuraman, Zeithaml and Berry (1985) defined "Quality is zero defects-doing it right the first time."

Parasuraman, Zeithaml and Berry (1990) defined "quality is exceeding what customers expect from the service."

2.3   Five Approaches to Quality

Quality can be viewed from many aspects thinking of economics, marketing, psychology or operations research. Garvin (1988) formulated five approaches that differ strongly in definition of quality:

(1)   Transcendent approach (psychology); this approach claims that quality cannot be defined precisely.

(2)   Product-based approach (economics); maintains that differences in quality are caused by the quantity of features or attributes of a product, Abbott (1955), Garvin (1988).

(3)   User-based approach (marketing and operational management); quality is customer determined. The customer's judgement is always right., because every user has different thoughts and ideas about what quality is. In this approach, quality corresponds with Luran's definition: "Quality is fitness for use." This approach fits very well into the marketing philosophy (which also has strong customer focus).

(4)   Manufacturing-based approach (operation management); quality is considered from the supply-side point of view and mainly concerns conformance to requirements. Quality in service industries uses Total

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Quality Control (TQC) for definition as "an efficient system to integrate the efforts of several groups within an organization to develop, maintain and improve quality."

(5)   Value-based approach; quality is considered in relation to cost and price. Product quality is only considered good if the price is acceptable for (potential) buyers or costs are low.

Total Quality Management (TQM) as a strategy, Fisher (1992:44) said; by having effective quality management in place, productivity will improve when wastage is reduced. Poor quality management often results in unavoidable costs such as wastage use of materials due to poor design and inefficient business processes. TQM is the measurement system included to gauge performance.

A quality audit is one systematic examination of an organization's quality system with a view to determining whether objectives are achieved. There are three types of quality audits to be distinguished.

(1)   Internal audits are conducted by the managers of an organization themselves to evaluate their own performance.

(2)   External audits are conducted by an organization to evaluate the activities of its supplies, agents, licensees, etc.

(3)   Extrinsic audits arte conducted by a buyer, an independent authority or a regulatory agency to check whether an organization meets the standards applied by these bodies. Such as ISO 9000 certificate.

Thomas (1978), on the other hand described services via strategic management needs, where he observed that, generally service businesses evolved along the spectrum from people-based such as professional services to equipment-based such as dry cleaning services. Thomas illustrated his description of the nature of services.

Shostack (1977) noted the reality of service varies according to the thoughts of the beholder. When this happens it is obvious that an individual's perception of service quality differ greatly from another.

Service quality is often looked upon as experience and credence qualities where customers may need to except in good faith, professional advice, because services do not possess easily observed attributed such as color or hardness (Zeithaml 1981).

It has long been held that brand names are valuable assets, which project an image of quality and reliability. However, there is evidence that relationship may not hold for service firms (or for service activities of manufacturing firms) as brand names have not been found to be reliable indicators of service quality or customer behavior relating to perceived quality (Fox & Day 1988).

2.4 The Need for a User-based Approach to Service Quality

Parasuraman, Zeithaml, and Berry (1988) assumed that the user-based approach runs parallel to subjective perceived quality. Customer use basically similar criteria in assessing services regardless of the type of service. Garvin (1988) positioned the user-based approach clearly within the field of marketing theory.

Kordupleski, Rust, and Zahorik (1993); and, Neijzen and Trompetter (1989); gave a suitable definition of quality as the extent to which the service, the service process and the service organization can satisfy the expectations of the user.

It is important to remember that customers in most cases, expect the best from the service provider.

2.5 The Evidence of Service

Bitner (1993) has stated that much research suggests that customers rely on a variety of cues or evidence of service in choosing alternatives and also in judging quality. Traditionally, customer research has applied mainly to map customer needs.

Based on the outcome of such research projects, the service provider determines which service to offer. Today, more and more organizations practice customer-research to detect whether customers are satisfied with the service delivered. Evaluation of the service delivered can provide a lot of information, e.g. whether to change the service delivery, if needed. In this way, it is possible to really improve quality. Important indicators to be investigated are, for instance, loyalty, repeat purchase, cross selling, satisfaction, complaint received. Complains always a lot of attention in quality programs. In order to get this kind of information, customers should express their opinions, attitudes, satisfaction, dissatisfaction, etc. This knowledge must then be collected.
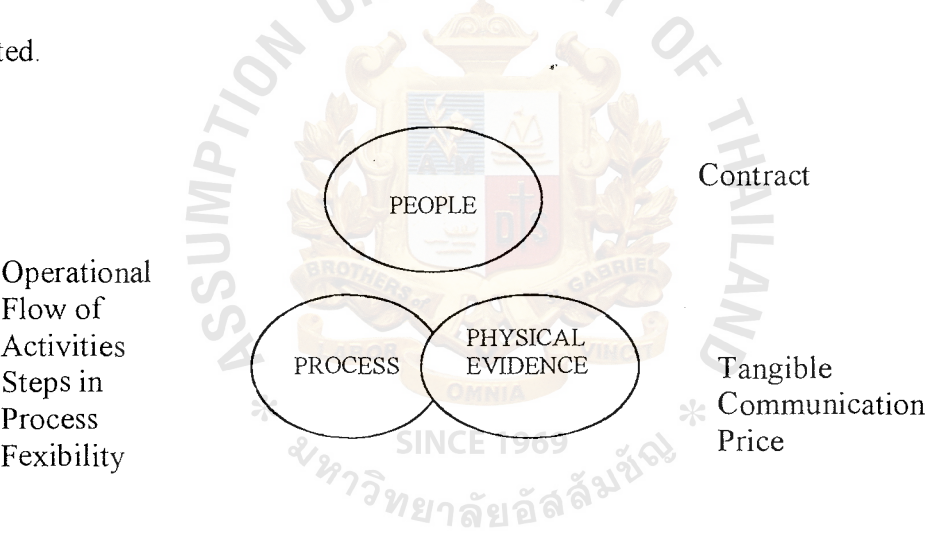
Figure 2.1. The Evidence of Service (Bitner 1993).

People: Employees and other customers' presence in the service environment provide cued to the customer regarding the nature of the service itself. Their dressing, appearances attitudes and behavior all affect and influence potential customer's perceptions of the service.

The observation of other customers' presence can also influence purchase decision of individuals where one would judge the type of customers patronizing a certain outlet.

Process: steps to arrange the operation flow of service and flexibility.

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Physical Evidences: due to the service nature it is intangible, customers therefore rely on tangible evidence of the service in judging quality.

2.6 SERVQUAL Gaps Model

The service quality gap theory (SERVQUAL), defined by Parasuraman, Zeithaml, and Berry (1985) and Brogwiczet et al. (1990) that customers perceive service quality as "Gap" between their original expectations and the actual service they receive. The instrument used was adapted version of the SERVQUAL questionnaire which Parasuraman, Zeithaml, and Berry have developed (1986) and subsequently refined (1991) as the basis for investigating customer perceptions in a range of service quality in petroleum stations.

The formula of the SERVQUAL framework:

Q= P-E

Q =Quality, P = Perceptions, E = Expectations

Kierl and Mitchell (1991), have also used a third series of items designed to measure the perceived importance of each attribute,

The SERVQUAL instrument has been used to assess the quality of wide range of services, including financial service operations, telephone services, repair and maintenance (Parasuraman, Zeithaml, and Berry 1988), professional services (Bojanrc 1991), public services (Carman 1990) and hospitals (Babakus and Mangold 1992).
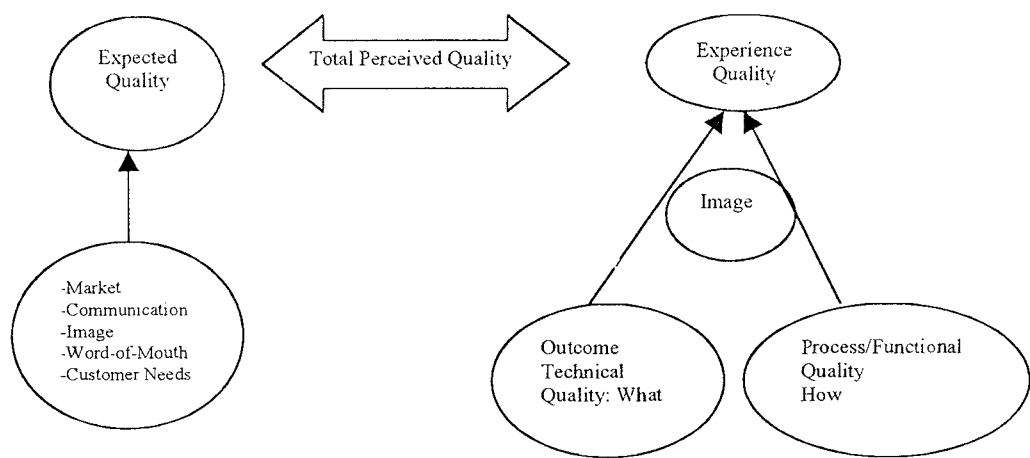
Figure 2.2.   The Perceived Service Quality Model (Gronroos 1990).

Gronroos (1998) introduced the Perceived Service Quality Model illustrated in Figure 1.1, where the quality of service, as perceived by the customer, is the result of a comparison between the expectations of the customer and his real life experiences. Thus if this experience exceeds the expectation, the perceived service is positive and vice versa.

The relationship between the external Gap 5 (perceived quality) and internal gaps 1-4 as Figure 2.2 show the SERVQUAL gaps model as follows:

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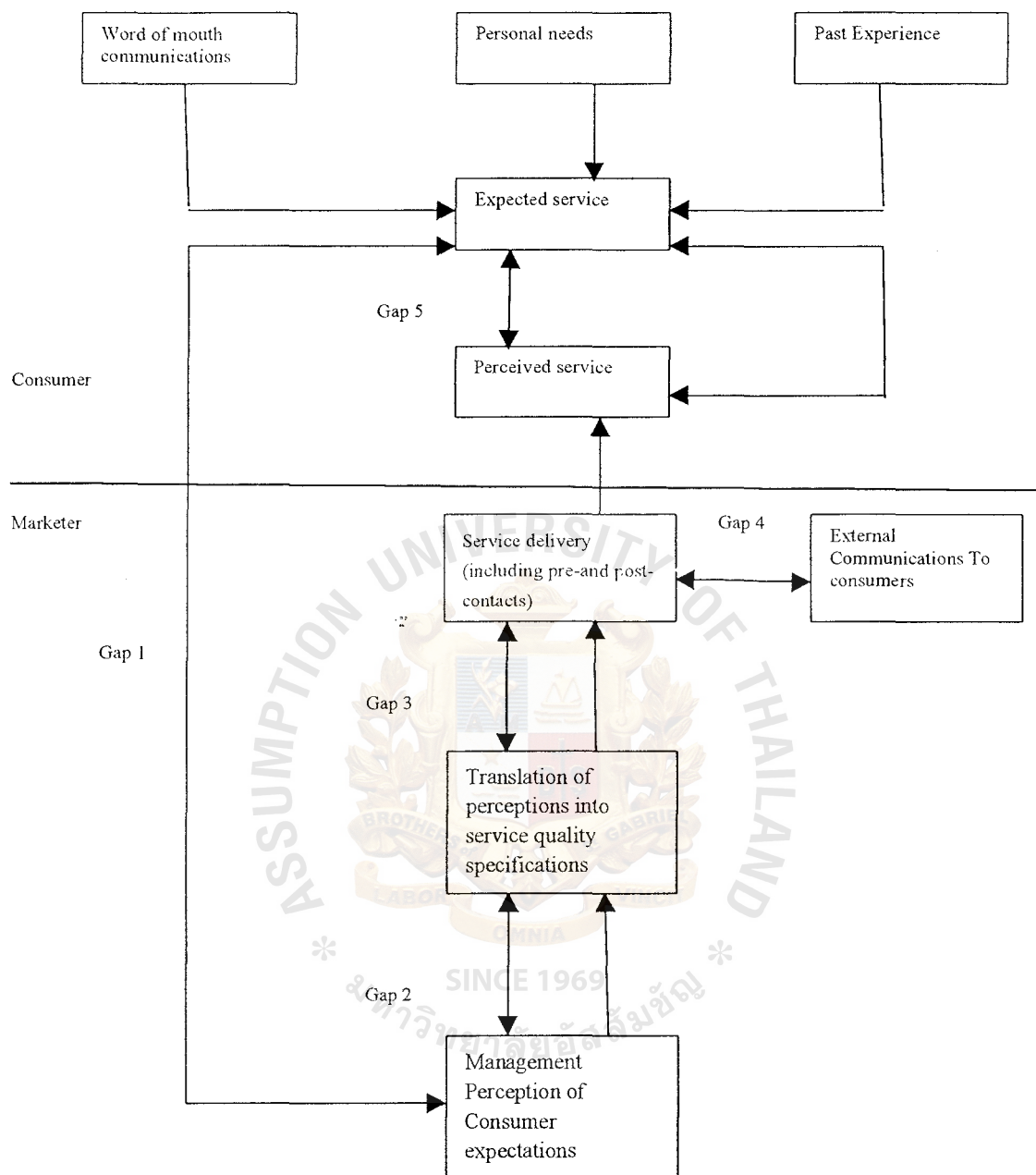
Figure 2.3. The SERVQUAL Model (Kasper 1999).

The service quality gap is the only one of the five where the external customer comes into direct contact with the organization. Gap research showed that the customer was not receiving the service it expected.

Leading organizations initiate their quality service journey by first identifying their "service gaps." Such gaps occur when the needs and expectations of those who receive service are at odds with those who provide it. To locate service gaps, it is necessary to study customer needs, employee needs and the service delivery chain as perceived by both employees and customers.

It is now useful to consider the causes of possible quality differences. Therefore, not only user, customers, consumers and buyers are asked to answer the questionnaires, but also employees and (top) managers as well. They are asked to answer the questionnaires from the customer point-of-view: put themselves in the customer's position and answer the question. The model assumes that differences between the service desired by the customer and the service finally delivered by the service provider may be caused by the following four internal Gaps.

Gap1: consumer expectation-management perception gap.

In formulating does not correctly translate the service policy, management does not correctly perceive or interpret consumer expectations;

Gap2: management perception-service quality specification gap.

Management does not correctly translate the service policy into rules and guidelines for employees;

Gap3: service quality specification-service delivery gap.

Employees do not correctly translate rules and guidelines into action;

Gap4: service delivery-external communications gap.

External communications-promises made to customers-do not match the actual service delivery.

Gap5: Depends on the size and direction of the four gaps associated with the delivery of service quality on the market's side. If Gaps 1 to 4 are reduced, the service quality can

be improved. It is, however, of major importance to examine whether the organization's opinions (employees individually or groups of employees) are in line with customers' opinions about quality. If these opinions differ widely, the company will have opinions about service quality deviating from the customers'. This is a several managerial problem, to be solved immediately.

The SERVQUAL model defines quality as the difference between customer' expectations and perception.

(1)   Expectations

The concept of expectations has been widely used in many studies on consumer behavior. We know that people make demands on certain services, which are based on their own norms, values, wishes, needs, etc., so, we know expectations are very individualistic. Therefore, expectations will be domain specific and may alter under the influence of new situations. On the other hand expectations are not only determined by individuals themselves, but also by reference groups, external situations, norms, values, times, service provider and the like.

Berry and Parasuraman (1991) discussed two levels of expectations and concluded:

"Our finding indicate that customers' service expectations exist on two different levels: a desired and an adequate level. The desired service level reflects the service the customer hopes to receive. It is a blend of what the customer believes 'can be' and 'should be'. The adequate service level reflects what the customer finds acceptable. It is, in part, a function of the customer's assessment of what the service 'will be', i.e. the customer's predicted acceptable service level."

Carman (1990) mentions that "expectations are important, and the service marketer needs to collect information about them. Some alternative procedures for accomplishing this have been suggested."

(2)   Perceptions

"Perception is defined as the process by which an individual selects, organizes and interprets stimuli into a meaningful and coherent picture of the world."

Service providers must be aware of the subjective and selective character of perceptions in general and of quality perceptions of consumers in particular. Perceptions partly determine the reputation and image of the service provider. This is important to realize since reputation is key success factor in services and as issue consumers often use in their decision making process.

A quality judgement can be computed according to the following formula:

Perception-Expectation = Quality

Or   P-E = Q

This formula implies the level of service quality as the following:

If expectations exceed perceptions, quality obviously is poor.

If perceptions exceed expectations, quality is excellent.

Cronin and Taylor (1992) and Teas (1993) developed the SERVQUAL which offers a well-documented multidimensional approach for measuring service setting using a difference score approach. Along these same lines, a distinct effort to measure expectations and perceptions of outcome has been found to be less useful than measuring perceptions after the service

experience (Carman 1990, Babakus and Boller 1991, Cronin and Taylor 1992).

2.7 Evaluating Quality

The number of attributes to describe and analyze a service may differ with type of service. However, there is a particular group of features continually coming to the force. The first results from the qualitative studies of Parasuraman, Zeithaml, and Berry (1985) conducted in researching service quality with their model named SERVQUAL, which depicted ten dimensions of service quality.

Zeithaml, Parasuraman, and Berry (1985) found these ten dimensions:

(1) Tangible: appearance of physical facilities, equipment, personnel, and communication materials;

(2) Reliability: ability to perform the promised service dependably and accurately;

(3) Responsiveness: willingness to help customers and provide prompt service;

(4) Competence: possession of the required skill and knowledge to perform the service;

(5) Courtesy: politeness, respect, consideration, and friendliness of contact personnel;

(6) Credibility: trustworthiness, believability, honesty of the service provider;

(7) Security: freedom from danger, risk, doubt;

(8) Access: approachability and ease of contact;

(9) Communication: keeping customers informed in language they can understand and listening to them;

(10) Understanding the customer: making the effort to better know customers and their needs.

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Further and more quantitative research led these researchers to the conclusion that consumers use five underlying dimensions in judging service quality. They are general dimensions underlying the quality of many services. These five dimensions are a summary of the ten dimensions. Past research by Parasuraman, Zeithaml, and Berry, in the eyes of the consumer, quality service bears the following features:

(1) Tangibles: the physical facilities and equipment, and the appearance of personnel.

(2) Reliability: the ability to produce what was promised, dependably and accurately.

(3) Responsiveness: the willingness to help customers and provide prompt service.

(4) Assurance: knowledge and courtesy of employees and their ability to convey trust and confidence.

(5) Empathy: Caring, the individualized attention the firm provides to its customers.

The comparative relationship between ten dimensions and five dimensions of SERVQUAL shows in Figure 2.4.
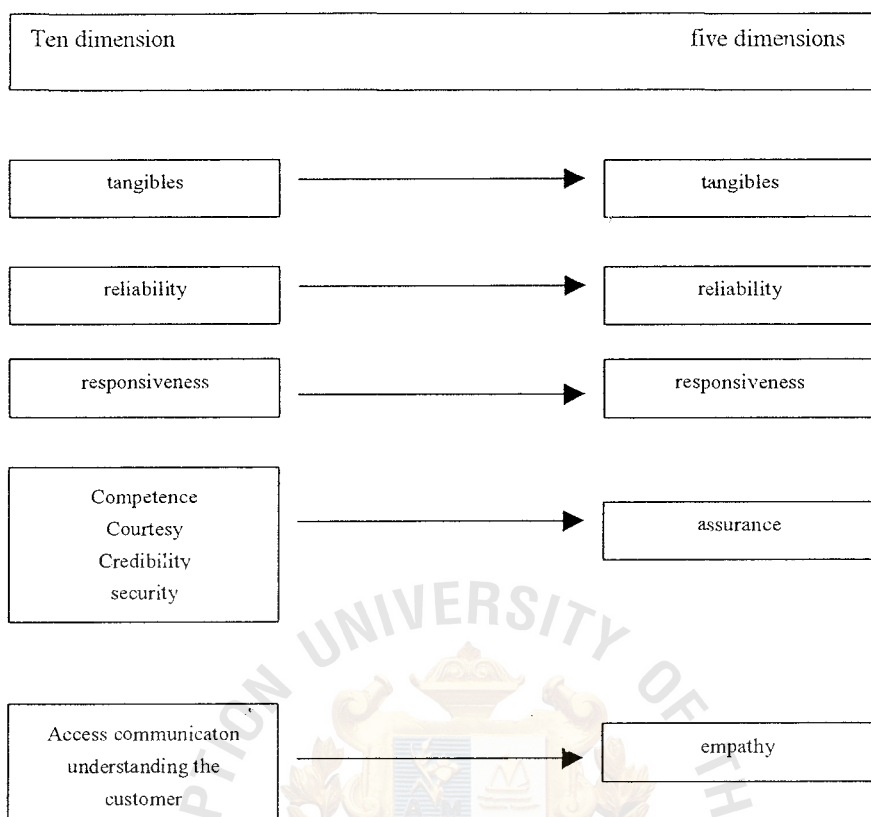
Figure 2.4. From Ten to Five Dimensions (Kasper 1999).

Parasuraman et al. (1995) stressed that it is crucial to detect how important each of the five dimensions is to the customer in general or specific target groups. This affects the decision on which dimension(s) a service provider should concentrate its efforts in various market segments.

The total service quality can now be measured, using the five dimensions mentioned before tangible, reliability, responsiveness, assurance and empathy. These five dimensions via 22 questions can measure Service quality. The expectation question concerns the excellent company in the industry. The perception question relates to the form, of which the service quality is examined. These 22 items show in Figure 2.4.

2.8 SERVQUAL and Factor Analysis

Parasuraman et al. (1988) analyzed data by using factor analysis and reduced the

original 97 items instrument to a final instrument of 22 items which were mapped from ten into the five dimensions of service quality: Tangible, Reliability, Responsiveness, Assurance and Empathy. These five dimensions have been accepted and referenced as the service quality.

Carman (1990) used the same analysis techniques as were conducted according to the methodology set by Parasuraman et al. (1988). The researcher found the number of factors that were quite similar to Parasuraman, et al. He also demonstrated the construct validity problems and suggested that SERVQUAL scales should add more items.

Said, R. (1998) researched on quality in Professional Consulting Services by looking into the characteristics and nature that distinguish goods and service products. The framework of this dissertation is divided into three main areas, namely the value of quality within an organization, the quality management system and also discussion on what the factors of quality are in the eyes of these companies. The approach of this dissertation is based on case studies that are built upon findings of three (3) professional consultation service companies and also a manufacturing company with an established quality management system in place. An inter and intra comparative study is made in identifying differences and/or similarities, which may exist in these companies. The conclusion may not be definitive suggesting the best approach for a professional service organization to address its quality issues.

Joseph, C. and Steven, T. (1994) researched the relative of performance-based and perceptions-minus-expectations measures of service quality. The research proposes to test a performance-based alternative to SERVQUAL's gap formulation of Parasuraman, Zeithaml, and Berry (1994). The research stated that their logic misses the point of analysis, which is to compare two models that are identical except that SERVQUAL is used in pest control and fast food industries and the SERVPERF model effect on

purchase intention in banking, pest control and cleaning industries. The point of this research suggests that overall service quality has statistical significance the result of this research is hardly surprising given that it has long been assumed that consumers do not always purchase the highest "quality" product due to cost, budget, availability, and other constrains.

Masoud, H. and Kelly, S. and Taylor, S. (1994) measured the service quality for strategic planning and analysis in service firms. The study demonstrated that the service quality assessment using importance-performance analysis may be a more useful strategic management tool than the gap measures recommended by the authors of the SERVQUAL scale, Parasuraman, Zeithaml, and Berry (1998). However, they caution strategic managers and researchers to consider the previously presented evidence suggests that the SERVQUAL methodology did not appear to be an appropriate conceptualization or operationalization of the service quality construct, consideration of price—performance—important relationship, or service value, should lead to a better understanding of service quality.

McAtarsney, D. (1999) researched the review of critique and assessment of customer care. This research objective was to ensure that the customer was perceived as the unequivocal epicenter of all organization operations. Total Quality Management (TQM) was the fundamental principal root cause. SERVQUAL identifies internal areas of improvement within the organization. The research found that the weighted scores for each dimension were determined by three elements critical to the determination of service quality: customers, management and training personnel. The true test of whether an organization can deliver service excellence is in the transformation of the virtual concept to reality and delivering the quality of service demanded and excepted by customers.

Headley, D. and Miller, S. (1993), Walbridge, S. and Delene, L. (1993), Nick, J. and Phil, T. (1996) Donnelly, M. and Shiu, E. (1999), adapted the SERVQUAL scale (22 item of questions), Parasuraman, Zeithaml, and Berry 1985) and relied heavily on process-oriented items to measure perceived quality. The research measurement yielded five dimensions by which customers evaluate service quality as tangibles, reliability, responsiveness, assurance and empathy. However all research presented different purposes as follows:

Headlep, D. and Miler, S. (1993) measured service quality compared with future consumer behavior. The research focused on measuring pre-encounter expectations and post-encounter perceptions of outcome at separate times, meaningful item-by-item comparisons can be made that allow microanalysis of service quality for each of the 22 items on the scale. The research did produce a significant relationship between perceived service quality and repeat purchase, complaining behavior, complimenting behavior and switching behavior. The low explanatory power of this relationship suggests caution in their based on assumed connections between perceived service quality and consumer behavior in the medical services areas have scientific grounds.

Walbridge, S. and Delene, L. (1993) measured physician attitudes of service quality. This study sought to explore the applicability of SERVQUAL (an instrument designed to measure customer perceptions of service quality) determinants when measuring physician perceptions of service quality and process quality determinants, such as "Reliability", "Assurance" and "Empathy" were rated higher in relative importance by physician than outcome quality determinants. This research suggests that physician perceptions of the determinants of service quality in medical practice are not congruent with the findings from service quality research in other industries. Quality

measures for physician services should process-related elements as well as traditional medical outcome data.

Nick, J. and Phil, T. (1996) used service quality gap theory to differentiate between foodservice outlets by assessment the performance of a contract catering service in relation to its competitors. Although reliability criteria for the instrument were encouraging the factor structure identified by previous researchers was found to be absent in the catering industry. Other considerations such as food and attitude of staff played a more important part in the meal experience. Nine study sites were evaluated on the basis of mean item scores, by discrimination and factor analysis, and by multi-dimensional scaling. This study found that the five-factor structure model, but items concerned with food, with service staff and with efficiency did seem to be grouped into distinct factors.

Donnelly, M. and Shui, E. (1999) assessed service quality by linking with value for money in a UK local authority's housing repairs. The focus of this study was the responsive repair service. The council operated the multi-category repairs service delivered by local repair teams. Finding the lack of data fit to the prior SERVQUAL dimensions and the prominence of the service-specific items make the application of the SERVQUAL approach and instruments problematic. As it is vital to develop a survey instrument from both the delivery and recipient perspective, the results of the study reported here suggest that further confirmatory research needs to be conducted if the approach is to be used with confidence in this service area.

Parasuraman, Zeithaml, and Berry (1994) reassessed expectations as a comparison standard in measuring service quality. They attempted to reexamine and clarify the key issues raised. The current approach for assessing service quality was refined, but, eventually abandoned it altogether in favor of the alternate, approach proffered by

Cronin and Taylor (1992) and Teas (1993) however this did not seem warranted. The collective conceptual and empirical evidence casts doubt on the alleged severity of the concerns about the current approach and on the claimed superiority of the alternate approaches. The fact that the validity and alleged severity of many of these concerns were questionable is demonstrated, and a set of research directions for addressing unresolved issues and adding to the understanding of service quality assessment is offered.

Suebnukarn, P. (1999) studied the factors affecting service quality in telephone service outlets in Thailand. The purpose of this research was to investigate the level of service quality of front line staff, to compare service quality of staff with different personal factors and to compare service quality of staff with different personality type. The sample group consisted of 120 employees from front line staff working at outlets. Findings were that the front line staff gave good level service quality, front line staff with different ages showed significantly different service quality and insignificant different service quality with different personality types.

The literature review did not reveal any research study on service quality of the petroleum station business by using the SERVQUAL model for measurement. However some literature has been studied relevant to the petroleum business on different purposes as follows:

Kamlamlert, S. (1998) studied the Structure and Factors affecting the price of diesel oil in Thailand. The result revealed that the trade in diesel oil in Thailand has expanded largely according to increased demand. The trade structure for diesel oil has changed to use domestic production more than imported and also found that the main factors affecting the price of diesel oil is the world price of diesel oil and the currency exchange rate (Baht/US$).

Apisompinvong, J. (1996) studied foreign direct investment in Petroleum exploration and product in Thailand. The main objectives of this study were then to evaluate the investment factors, motives, impact and forecast of investment in this industry in Thailand. This study found that the encouraging internal factors are economic and political stability, energy demand, nature of petroleum concession agreement and the perceived potential of petroleum deposits. The discouraging factors include the recent petroleum legislation and the method of price determination. The domestic petroleum discover and production help to improve Thailand balance of payment by substitution the need to import oil and gather revenue from petroleum royalties, tax and other benefits. Greater investment was required on this production. It is expected that multinational oil companies will be the major investments.

Choochiprakarn, N. (1985) studied the demand for Petroleum Products in the Non-agricultural Sector in Thailand. The objectives were to study the structure of petroleum products in the non-agricultural sector in Thailand. To estimate the long-run response in petroleum product demand to change prices and levels of economic activities. To study the world oil industry and energy used in Thailand and recommended for a design for both energy and economic polity measures. The research found that fuel oil was more closely related to output than other fuel in this factor, and gasoline was more important to output than other fuels in the manufacturing industry sector. The increase in oil price has led to a decrease in oil used but oil used would increase with the level of economic growth. The estimates for price and income elasticity of demand have shown that they are relatively inelastic.

Wisittigars, B. (1998) studied feasibility of the two-storey service building business project in the Bangkok gas stations. The objective was to study both marketing and financial feasibility. The result of this study presented the location of gas station that

has marketing feasibility as the location near business area, office area or academic area. Service business that consumers need were convenience stores, bookshops and fast foods. The payback period was three years and one month compared with 20 years of project period. All the results have indicated that this project was viable for investment to the Bangkok Petroleum Public Company Limited.

2.9 Steps to Effective Service Strategy Formulation

To develop an effective service strategy – one that is sustainable and acknowledges each customer's peculiar preferences - you must know your:

(1) Competition

(2) Business environment

(3) Strengths and weaknesses as an organization: and

(4) Internal and external customers

2.9.1 Know Your Competition

(1) How carefully have you considered your competition? Who are they?

(2) Where are they now in terms of products and service. Where do they appear to be going and why?

(3) What is their service philosophy and methodology?

(4) What are their strengths and weaknesses?

(5) How are their management and staff seen by buyers?

(6) Who are their customers? And how loyal are they?

After answering these questions and comparing your practices with those of the competition, consider whether you need to modify your service strategy, or create a new one altogether.

2.9.2 Understand the Environment

By environment, I mean the constraints or "givens" an organization must monitor and to which it must adapt to survive. They can be inside the organization or outside in the marketplace. To understand your environment, you must know:

(1)   Demographics of your current and your potential customer base;

(2)   Customer preferences

(3)   Market segmentation

(4)   Customer buying patterns

(5)   The legal and regulatory factors that affect your industry: and

(6)   Business ethics practised in your industry.

Knowledge of your business environment will help you draw a roadmap on which to trace your service strategy.

2.9.3 Strengths and Weaknesses of Your Organization

Look at yourself as you looked at the competition:

(1)   Where are you now in terms of products and service, and where do you appear to be going and why?

(2)   What is your service philosophy and methodology? Is it clearly understood inside and outside your organization?

(3)   Where do you excel in service? Where can you?

(4)   How are your management and staff seen by buyers?

(5)   Have you been able to retain customers who have had thoughts of taking their business elsewhere?

Pay particular heed to where your competition has a service advantage over you. Many potential customers may be slipping through the tiniest gaps.

After you have looked at yourself, look at other companies. Throughout this report, I will stress continuous improvement. One key element of continuous improvement is ongoing benchmarking. Benchmarking allows you to compare your business processes with those of the best companies in the world. It is not simply a mater of looking at the best companies in your industry; that is no more than competitive intelligence.

2.9.4 Know Your Customers

There are three types of customers in a business, three precise sales targets:

(1)   Your existing customers;

(2)   Customers who no longer buy your product or service; and

(3)   Potential customers.

2.10 Summary

The literature review discussed in this chapter has addressed the service quality model (SERVQUAL) (Parasuraman, Zeithaml, and Berry 1988). They stated that "SERVQAUL" is a concise multiple-item scale with good reliability and validity" It can be used to study the expectations and perceptions of service quality of customers and can be adapted or applied to many research specifications. The SERVQUAL instrument has been used to assess the quality of a wide range of services in the United States such as financial service operations, telephone services, repair and maintenance (Parasuraman, Ziethaml, and Berry 1988) professional services (Bojanic 1991), public services (Carman 1990) and hospitals (Babakus and Mangold 1992). Fick and Ritchie (1991) have employed the SERVQUAL instrument to compare services provided by various types of organizations within the travel and tourism industry. In the hospitality sector, Saleh and Ryan (1991) have used gap theory as basis for studying the quality of hotel services. SERVQUAL-style questionnaires have also been used by Knutson et al. (1991)

to provide a service quality index for hotel and banqueting. Barsky (1992) has used a similar approach for assessing quest satisfaction in the hotel industry, while Oberoi and Hales (1990) have examined the SERVQUAL approach as a basis for measuring the quality of the conference hotel product. Donnelly, M. and Shiu, E. (1991) assessed service quality by linking with value for money in a UK local authority's housing repairs. Nick, J. and Phil, T. (1996) used service quality gap theory to differentiate between foodservice outlets by assessment of the performance of a contract catering service in relation to its competitors. Walbridge, S. and Delene, S. (1993) measured physician attitudes of service quality. Headley, D. and Miller, S. (1993) measured service quality compared with the future consumer behavior. Many researchers used the SERVQUAL model to study various industries but literature was not found on the Petroleum industry. However literature was found that many researchers had studied the Petroleum industry on other topics such as Kamlamlert, S. (1998) studied the Structure and Factors affecting the price of diesel oil in Thailand. Apisompinvong, J. (1996) studied foreign direct investment in Petroleum exploration and product in Thailand. Wisittigars, B. (1998) studied feasibility study of the two-storey service building business project in Bangkok gas stations. Jirajareansuwan, S. (1993) studied capital and return on investment in the petroleum in the Petroleum Station business. Sumlarnpooti, P. (1984) studied construction planning in the Petroleum Stations in Thailand. The purpose of this study is to modify the SERVQUAL model to measure the service quality of petroleum stations in Bangkok by comparative study between state and private enterprises. The original SERVQUAL measurement was adapted in some items into 22 items of five factors to be appropriate to petroleum stations in Bangkok.

III. HYPOTHESIS SETTING

This chapter presents the original hypothesis setting. The hypotheses are set for measurement of the gap in service quality between state and private enterprises Petroleum Station in Bangkok. Using the SERVQUAL service model of Parasuraman, Zeithaml, and Berry (1985) to assess five different dimensions of quality.

The goal of this research is to measure and compare the service quality of state and private enterprise petroleum stations in Bangkok. These stations are expected to use the information from this research to develop and adjust on-site operations of Petroleum Station in Bangkok as stated in Chapter 1. This study addressed the following research questions:

(1)   What is the customer perception of service quality in state and private enterprise petroleum stations in Bangkok?

(2)   What is the difference in terms of customer perception between state and private enterprise petroleum stations in Bangkok?

The five hypotheses were developed from the research questions of this study.

Petroleum Service Stations are highly concerned about the improvement in service quality. The success of managing this service business depends on the ability of all employees to understand customer requirements. This is based on a clear understanding of the assessment pattern of service quality in Petroleum Stations. Accurate assessment leads to a satisfactory customer approach.

This study follows the theories discussed in Chapter 2. Much literature was reviewed indicating several principles of the SERVQUAL instrument (Parasuraman, Zeithaml, and Berry 1985). The original instrument was developed and refined at some length to match with the different types of service operations.

Using the SERVQUAL of Parasuraman, Zeithaml, and Berry (1985) for the instrument of this research to measure service quality of Petroleum Stations in Bangkok. The SERVQUAL instrument has attracted considerable attention in recent years. The approach starts from the assumption that the level of service quality experienced by customers in critically determined by the GAP between their expectations of the service and their perceptions of what they actually receive from a specific service provider. The survey analysis of responses, focuses on service quality GAP scores which customers evaluated in each of the five dimensions of service quality. The result was used to support priority improvement in the organization. The following are the five dimensions of service quality:

(1) Tangible Dimension is the physical approachability of service buildings and surroundings, including the physical service physical facilities, equipment and tool appearance. It is modern, agreeable to attractive or pleasing to customers with suitably dressed employees.

(2) Reliability Dimension is the reliability and consistency of performance of service facilities, goods and staff. This includes punctual service delivery and the ability to keep agreements made with the customer in terms of dependably and accurate services.

(3) Responsiveness Dimension is the extent to which service, particularly of contact staff, either provide help to the customer or give the impression of interest in the customer and show a willingness to serve and provide prompt service. This includes, speed of throughput and the ability of the service providers to respond promptly to customer request, with minimal waiting or queuing time.

(4) Assurance Dimension is service skill, expertise and professionalism of employees and the ability to answer questions correctly on service procedures to customers. The warmth and personal approachability of service providers includes the ability to make the customer feel welcome.

(5) Empathy Dimension is the concern, consideration, sympathy and patience shown to the customer. Providers supply a convenient way to use the service and make customers feel emotionally comfortable. The greater availability of service facilities, staff and goods to service customers. Includes the correct setting of the communication processes which make the provider understand the specific needs of customers.

This research focuses on a comparison of service quality between state and private enterprise Petroleum Stations in Bangkok. As mentioned in Chapter 2, petroleum companies in Bangkok, are owned by two business sectors distinguished as state and private enterprise. Both sectors have different organizational structures. Private enterprise has more freedom of operation and self-promoting ability than state enterprise. Based on the literature of petroleum companies, it was found that the private sector implemented various quality services. Private investors have the advantage of a growing number of highly proficient people entering both local and foreign workforces. They have used many service strategies to set the standard service quality. This led to the discovery that private enterprise implemented better service quality than state enterprise in petroleum stations in Bangkok. Using five dimensions of service quality from the customers' viewpoint ranking as follows:

H_1: Private enterprise has significantly higher service quality in tangible service than state enterprise petroleum stations in Bangkok.

H_2: Private enterprise has significantly higher service quality in reliability service than state enterprise petroleum stations in Bangkok.

H_3: Private enterprise has significantly higher service quality in responsiveness than state enterprise petroleum stations in Bangkok.

H_4: Private enterprise has significantly higher service quality in assurance service than state enterprise petroleum stations in Bangkok.

H_5: Private enterprise has significantly higher service quality in empathy service than state enterprise petroleum stations in Bangkok.

The response to the growth of car drivers in Bangkok has caused in creased customer demand for petroleum stations. Many petroleum stations will be able to establish new capabilities to serve the demands in this industry. It is necessary for petroleum companies to understand the relationship between the different personal factors and individual purchase decisions. The difference in customer demographic characteristics (gender, age, occupation and income) can affect and influence potential customer perceptions of the service. This encourages studying of the relationship between customer demographic characteristic and customer demands as will be stated in the next chapter.

IV. RESEARCH METHODOLOGY

This chapter presents a description of the methodology of this study which includes construct operationalization, research design (population and sampling method), data collection (preliminary interviews, pilot study, survey) and data analysis.

4.1 Construct Operationalization

Based on the literature reviews discussed in Chapter 2. Many reserachers have focused on using the SERVQUAL instrument to measure service quality (Parasuraman, Zeithaml, and Berry 1985). The original SERVQUAL instrument constructed five variables with definitions as follows:

(1) Tangible is the appearance of the physical facilities, equipment, personnel and communication materials.

(2) Reliability is the ability to perform the promised service dependably and accurately.

(3) Responsiveness is the willingness to help customers and provide prompt service.

(4) Assurance is the knowledge and courtesy of employees and their ability to convey trust and confidence.

(5) Empathy is the caring, individualized attention the firm provides its customers.

These correspond to the 22 statement SERVQUAL questionnaire as follows: tangible (statements 1-4), reliability (statement 5-9), responsiveness (statements 10-13), assurance (statements 14-17), empathy (statements 18-22), (Parasuramen, Zeithaml, and Berry 1994). The evaluation of service quality conducted by using the SERVQUAL questionnaire is to measure the gap between customer expectation and perception of service quality.

As discussed in Chapter 2, Service quality (Q) is the Gap between customers' expectations (E) and perceptions (P), the meaning of the *E-P* specification can be presented by the *SERVQUAL* framework as the formula:

Q = E-P

The result of this formula implies the level of service quality as follows:

If *E* is higher than *P, Q* is obviously poor

If *P* is higher than *E, Q* is obviously excellent

This research focuses on the "Gap" in service quality, developing five hypotheses, which compare the quality of state and private enterprise Petroleum Stations in Bangkok as discussed in Chapter 3.

Below are shown brand name of Petroleum Stations in Bangkok separated into two business sectors.

(1)   State enterprise petroleum station named PTT and BCP.

(2)   Private enterprise petroleum stations named Shell, Esso, Caltex, Susco, Pt, Mp, Cosmo, Mobil, Q8, SPC, JET, PA, TPI, PC and Independent.

The questionnaire for this research was adapted from the SERVQUAL questionnaire of 22 items to fit with the petroleum stations business in Bangkok. The suggestions from preliminary interviews and a pilot study were used for re-wording, changing and adding some questions to relate to the business of this research. The questionnaire was then finalized to 23 items, to include both state and private petroleum stations rating in each question. These were simplified for one time reading and convenient answering on a comparison of service quality of state and private Bangkok petroleum stations. The extent rating scale was also included in each statement. It was simplified on five perceived service quality levels for asking respondents one time only after completion of service delivery, five perceived service quality levels (**E-P**) ranging

from (1) much lower than expected to (5) much higher than expected. Five perceived service quality levels of customers can be implied to be the **Gap** between customer expectation **(E)** and perception **(P).** On the other hand they are equal with the level of service quality as detailed below:

Table 4.1. The Level of Service Quality.

Five Perceived service quality levels of customers (E-P)	Quality(Q)
Much lower than expected	Much lower Quality
Lower than expected	Lower Quality
Expected equally	Equal quality
Higher than expected	Higher quality
Much higher than expected	Much higher quality

The service quality range is from five perceived service quality levels via the five variables (23) items). The measurement of service quality of petroleum stations is presented as follows:

4.1.1 Tangible Service consisted of 4 Measurements (item1-4):

    (1)   Measurement of the quality of physical facilities and tools. Is it modern in appearance? (Parasuraman et al. 1994).

    (2)   Measurement of the quality of Petroleum Station figure. Is it attractively designed? (Parasuraman et al. 1994).

    (3)   Measurement of the quality of tools capacity and quantity. Is it sufficient to serve customers? (Adapted from Parasuraman et al. 1994).

    (4)   Measurement of the quality of employee dress. Are they all wearing well-designed uniform? (Parasuraman et al. 1994).

4.1.2 Reliability Service consisted of 5 Measurements (item 7,9,10,11,12):

(1) Measurement of the quality of efficient queuing process provided. (Adapted from Parasuraman et al. 1994).

(2) Measurement of the quality of through flow traffic on site provided. (Adapted from Parasuraman et al. 1994).

(3) Measurement of the quality of customer problem care and immediate solution for customers. (Parasuraman et al. 1994).

(4) Measurement of the quality of a similar accurately provided service. (Parasuraman et al. 1994).

(5) Measurement of the quality standard provided in each station.

4.1.3 Responsiveness to Service consisted of 4 Measurements (item 14,15,19,21):

(1) Measurement of the quality of employee willingness to serve customers. (Adapted from Parasuraman et al. 1994).

(2) Measurement of the quality of how employees give a service impression.

(3) Measurement of the quality of windshield cleaning and tire inflation service offered.

(4) Measurement of the quality of care services provided.

4.1.4 Assurance Service consisted of 5 Measurements (8,16,17,18,23):

(1) Measurement of the quality of safety provided on site.

(2) Measurement of the quality of service expertise offered by employees.

(3) Measurement of the quality of employee friendliness and courtesy. (Parasuraman et al. 1994).

(4) Measurement of the quality of employee knowledge to answer customer questions on the Petroleum business. (Parasuraman et al. 1994).

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(5) Measurement of the quality of credibility offered to customers by acceptance of various credit cards.

4.1.5 Empathy Service consisted of 5 Measurements (5,6,13,20,22):

(1) Measurement of the quality of promotion of packages offered. Is it well designed?

(2) Measurement of the quality of cleanliness, tidiness and appearance of facilities provided.

(3) Measurement of the quality of stations throughtout Bangkok. Are there enough to serve customers?

(4) Measurement of the quality of fast food and convenience store offered on site.

(5) Measurement of the quality of opening hours as appropriate for customers (24 hours). (Adapted from Parasuraman et al. 1994).

The completed questionnaire is shown in Appendix A.

4.2 Research Design

This research is a comparative study. It was designed to identify differences in perceived service quality between state and private enterprise petroleum stations in Bangkok.

The research design includes population, sampling method, and data collection. Figure 4.1 shows the research design diagram for this research.

```
┌─────────────────────────────────────────────────────┐
│  ┌───────────────────────────────────────────────┐  │
│  │            1.  Population                      │  │
│  │ People who use cars and often refuel at state │  │
│  │    and private enterprise petroleum stations  │  │
│  │              in Bangkok                        │  │
│  └───────────────────────────────────────────────┘  │
│                        │                             │
│                        ▼                             │
│  ┌───────────────────────────────────────────────┐  │
│  │           2. Sampling Method                  │  │
│  │ Random sampling method used for car drivers   │  │
│  │              in Bangkok                        │  │
│  └───────────────────────────────────────────────┘  │
│                        │                             │
│                        ▼                             │
│  ┌───────────────────────────────────────────────┐  │
│  │         3. Preliminary Interviews             │  │
│  │ Individual interviews with two managers from  │  │
│  │ state and private enterprise petroleum        │  │
│  │ stations in Bangkok and five car drivers to   │  │
│  │ get insight views and to construct            │  │
│  │ questionnaire.                                 │  │
│  └───────────────────────────────────────────────┘  │
│                        │                             │
│                        ▼                             │
│  ┌───────────────────────────────────────────────┐  │
│  │            4. Pilot Study                     │  │
│  │ Forty-five samples were selected to conduct   │  │
│  │ the pilot study to ensure the interpretability│  │
│  │ of the questionnaire items and finalize the   │  │
│  │ questionnaire. (n=45)                          │  │
│  └───────────────────────────────────────────────┘  │
│                        │                             │
│                        ▼                             │
│  ┌───────────────────────────────────────────────┐  │
│  │              5. Surveys                        │  │
│  │ The questionnaires were delivered to          │  │
│  │ respondents by hand, fax and e-mail, then     │  │
│  │ date and time were set to receive results.    │  │
│  │ The telephone was used to follow up in the    │  │
│  │ case of late result. (n=210)                   │  │
│  └───────────────────────────────────────────────┘  │
└─────────────────────────────────────────────────────┘
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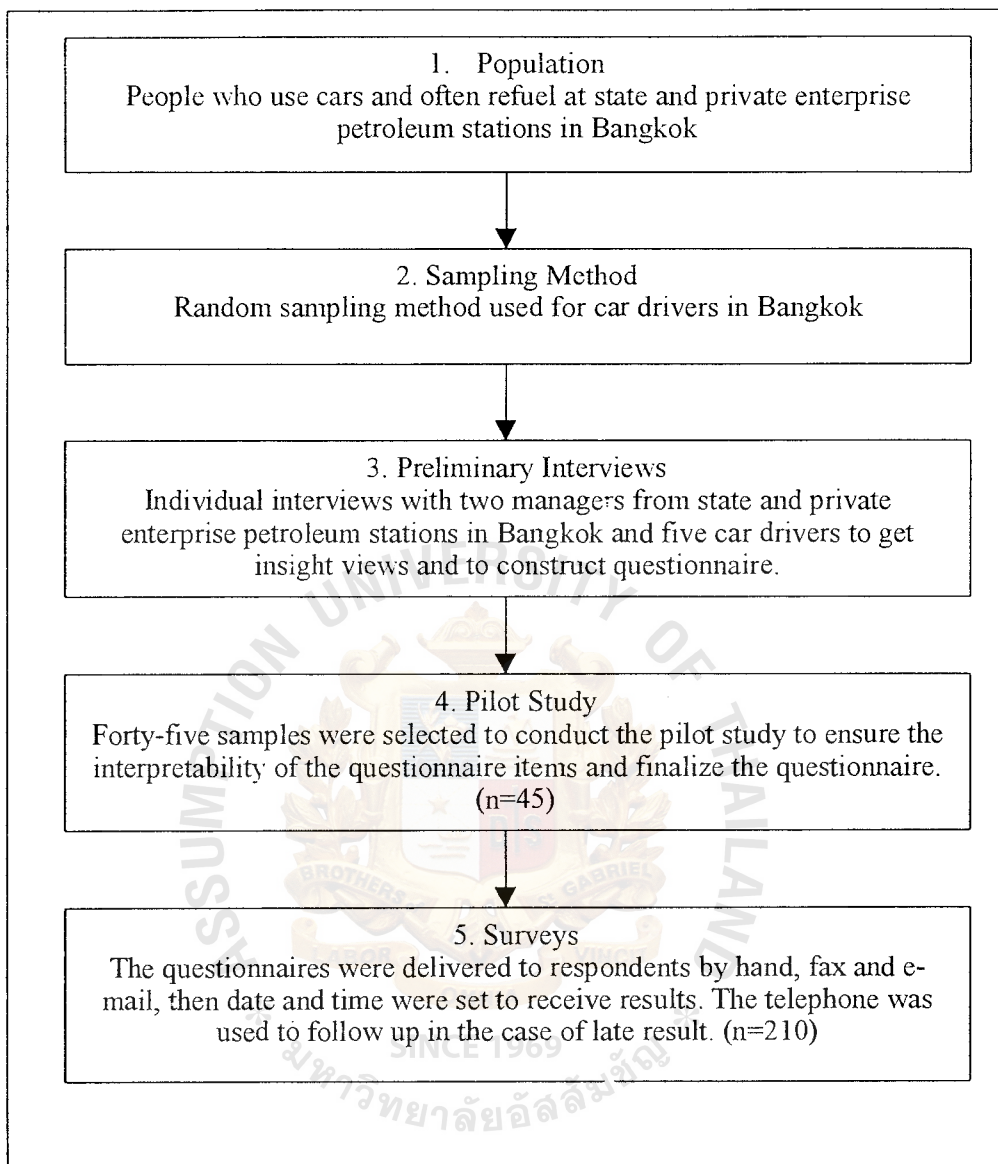Figure 4.1. Research Design.

4.3 Population

This research population is the group of people who use cars and often refuel at petroleum stations in Bangkok.

The National Statistical Office (NSO), (1965) and National Economic and Social Development Board (NESDB), (1985) reported respective increases in population in Bangkok from 4.7 million in 1980 to 5.9 million in 1990 and 7.1 million in 2000. The

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National Statistical Office reported the numbers of cars registered in Bangkok at 331,483 in 1998 (as discussed in Chapter 2) which were representative of the population in this research. The greatest population sizes as mentioned are scattered around Bangkok.

4.4   Sampling Method

The population of this study is scattered around Bangkok. Thus the simple random sampling method (Zikmund 1997) is preferred and best suited for the researcher's purpose. The simple random sampling method was used to sample drivers who work in various occupations (private and state employees, government, owner, housewife, student and others) and geographic. The simple random sampling method assures that each element in the population has an equal chance of being included in the sample. The sampling process is simple because it requires only on stage of sample selection.

Hair et al. (1995) confirmed by factor analysis techniques a requirement of 20 samples for each variable. This research has five variables, therefore it needs in total 100 samples for data analysis (20 x 5 = 100).

Several previous studies have used a sample size around 200. Parasuraman, Zeithaml, and Berry (1988) had a sample size for a bank equal to 177 customers, a credit-card company equal to 187 customers, a firm offering appliance repair and maintenance service equal to 183 customers, and a long-distance telephone company equal to 184. Cronin, Steven, and Taylor (1992) had a sample size for a bank equal to 188 customers, a pest control company equal to 175 customers, a dry cleaning company equal to 178 customers, and a fast food service equal to 189 customers. This research selected a sample size of 210.

The response rate was 100% because the research directly contacted the respondents.

4.5   Data Collection

This research used two major sources for data collection. Secondary data were obtained from academic journals and articles, textbooks, documents, internet and petroleum company published books. All data were used for the literature review. The primary data were obtained from the questionnaire surveys, and these data were used for measurement of the service quality in petroleum stations (Appendix A).

There are three steps in data collection:

4.5.1 Preliminary Interviews

Preliminary interviews were conducted with two managers from state and private enterprise petroleum stations and five car drivers in order to get insight views of each petroleum station and to construct the questionnaire. These interviews, along with extensive suggestions to compare with the original SERVQUAL instrument were used (Parasuraman, Zeithaml, and Berry 1994) to develop the questionnaire. Based on numerous open-ended discussions on petroleum station service requirements, the questionnaire was developed by modifying the SERVQUAL model to be suitable for petroleum stations in Bangkok. The summary of the interviews is attached in Appendix A.

4.5.2 Pilot Study

Pilot study was conducted with 45 car drivers to make sure of the interpretability of the questionnaire. Some questions, respondents could not understand, or did not perceive as relevant were reworded or discarded.

4.5.3 Surveys

The questionnaire instrument was developed by the SERVQUAL instrument, and modified according to comments from the advisor, preliminary interviews and the pilot study. Questionnaires were randomly delivered to 210 car drivers who often refueled at

both state and private petroleum stations in Bangkok. The researcher directly contacted respondents to collect all result. In case of late results the telephone was used to follow up.

4.6 Data Analysis

SPSS* for Windows Version 9 (Statistical Package for the Social Sciences) was used for computing the data collection form this research. An analytical method was used for data analysis data. The Data Analysis is composed of five steps as follows:

4.6.1 Descriptive Statistics

First, computing frequency table of all variables in order to check errors in keying data and report the frequency of the demographic characteristic (gender, age, occupation and income) variables by percent difference. Second, Ranking means arrangement of service quality by separate private and state enterprise petroleum stations in Bangkok.

4.6.2 T-test for 23 Items

The T-test was used to assess the significance difference in 23 items of service quality between state and private petroleum stations in Bangkok. All the relationships were tested at the .05 level of statistical significance.

4.6.3 Validity and Reliability Test

Multiple items were used to construct five variables in this study. The measurement scales were purified using principal component factor analysis to test empirical validity of predetermined constructs and to form new variables. Based on factor analysis results the reliability of each construct was assessed using Cronbach's coefficient alpha. All of the coefficient alpha should meet the minimum acceptable level recommended by Nunnally (1978) which is 0.7. However, Cronbach's coefficient alpha can be lower than 0.7 for a research that is exploratory in nature (Hair et al. 1995). This

study modified the SERVQUAL model appropriate to petroleum stations in Bangkok. Therefore, this is considered exploratory research.

The factor results are shown in Table 4.2, the factors were formed according to a predetermined model of five factors to three factors. Factor one included nine items, 1,2,3,4,5,6,12,13,and 23 which have Cronbach's coefficient alpha .8233. Factor two also included nine items, 11,14,15,16,17,19,20,21 and 22 which computed with strong reliability to Cronbach's coefficient alpha at .8764. Factor three was defined by the last factor. It included only five items 7,8,9,10 and 18. This factor was computed by Cronbach's coefficient alpha at .7944. All factors have Cronbach's coefficient alphas exceeding 0.7 with satisfy reliability and meet the validity test which have given values higher than 1.

With reference to factor one, this includes all questions of the Tangible service form SERVQUAL questionnaire (Parasuraman et al. 1994). The reseacher therefore determined to maintain the same Tangibles service name for this factor. Factors two and three were mixed for another four dimensions of the SERVQUAL questionnaire as Reliability, Responsiveness, Assurance and Empathy in both factors. So the researcher named factor two as Empathy and factor three as Assurance.

Table 4.2. Factor Analysis of Perceived Service Quality in the Petroleum Stations in Bangkok.

Item	Factors		
	1	2	3
1.Physical facilities and tools have modern appearance.	0.8054		
2.Petroleum Station Designed attractively.	0.8082		
3.Provided enough gas pumps to serve customers.	0.8002		
4.All employees wearing well designed uniforms.	0.8041		
5.Well designed promotional gifts.	0.8067		
6.Clean restrooms provided.	0.8041		
12.Provide the same standard of service at each station.	0.8057		
13.Large number of stations throughout Bangkok.	0.8042		
23.Wide range of credit cards accepted.	0.8115		
11.Accurately provided service.		0.8717	
14.Employees willing to serve.		0.8563	
15.Employees always give a service impression.		0.8625	
16.Employees offer service expertise.		0.869	
17.Employees always friendly and courteous.		0.857	
19.High-quality windshield cleaning and tire inflation service.		0.8555	
20.High-quality fast food and convenience store on site.		0.8615	
21.High-quality car care services.		0.8601	
22.Open 24 hours.		0.8716	
7. Efficient queuing process provided.			0.747
8.Safety performance on site provided.			0.7467
9.Clear IN-OUT signs and through flow traffic provided on site			0.7675
10.Customer problem solving and complaint.			0.7578
18.Employees have the knowledge to answer customer Questions on the petroleum business.			0.758
Eigen value	4.314	3.68	3.481
% of Variance accounted for	18.755	15.998	15.134
Cumulative % of variance	18.755	34.753	49.887
Cronbach's alpha	.8233	.8764	.7944

In this respect Babakus and Boller (1992) noted that the dimensionality of service quality may depend on the type of service under study. As this summary implies, the items under the five dimensions do not all contribute in like fashion to explaining the variance in overall service quality. Table3 shows the comparison items of SERVQUAL questionnaire and factor analysis reforming.

Table 4.3. Comparison Items of SERVQUAL Questionnaire and Factor Analysis Reforming.

Five service quality dimensions	Questions		
	SERVQUAL	Predetermine	Reforming
Tangible	1,2,3,4	1,2,3,4	1,2,3,4,5,6,12,13,23
Reliability	5,6,7,8,9	7,8,9,10,11,12	
Responsiveness	10,11,12,13,	14,15,19,21	
Assurance	14,15,16,17	16,17,18	7,8,9,10,18
Empathy	18,19,20,21, 22	5,6,13,20,22,23	11,14,15,16,17,19,20, 21,22

4.6.4 T-test for Three Factors

The T-test was used to test the hypotheses by using the results of the factor analysis to assess the significance difference of three reformed service factors named Tangibles, Empathy and Assurance to compare service quality between state and private petroleum stations in Bangkok. All the evaluations used a significance difference at 0.05 level as the threshold.

4.6.5 Analysis of Variance (ANOVA)

The difference in customer demographic characteristic (gender, age, occupation and income) can affect and influence potential customer perceptions of service. This statement encouraged the researcher to study response to customer demand in the

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Petroleum Station industry. This information will be used as a marketing guideline in terms of future development. Analysis of variance (ANOVA) was used to find service quality differences among gender, age, occupation and income of responses. All of the relationship was tested at the 0.05 level of statistical sufficient.

V.   RESULTS

This chapter presents the result finding from the procedures discussed in previous chapter. The presentation has been sequenced in the following steps:

5.1   Descriptive Statistics

The data in this part have been organized into three tables of distinctive characteristics for the variables under consideration. The data are shown in terms of frequency distribution.

5.1.1 State Enterprise Petroleum Stations in Bangkok

State enterprise Petroleum Stations in Bangkok from Table 5.1, which indicates that: Ptt was selected by 103 respondents (49.0%), while Bangchak was selected by 96 respondents (45.8%).

Table 5.1.   Frequency Distribution of the State Petroleum Stations in Bangkok.

State Petroleum Stations	Counts	Percent (%)
1. Ptt	103	49.0
2. Bangchak	96	45.8
Missing items	11	5.20
Total	210	100
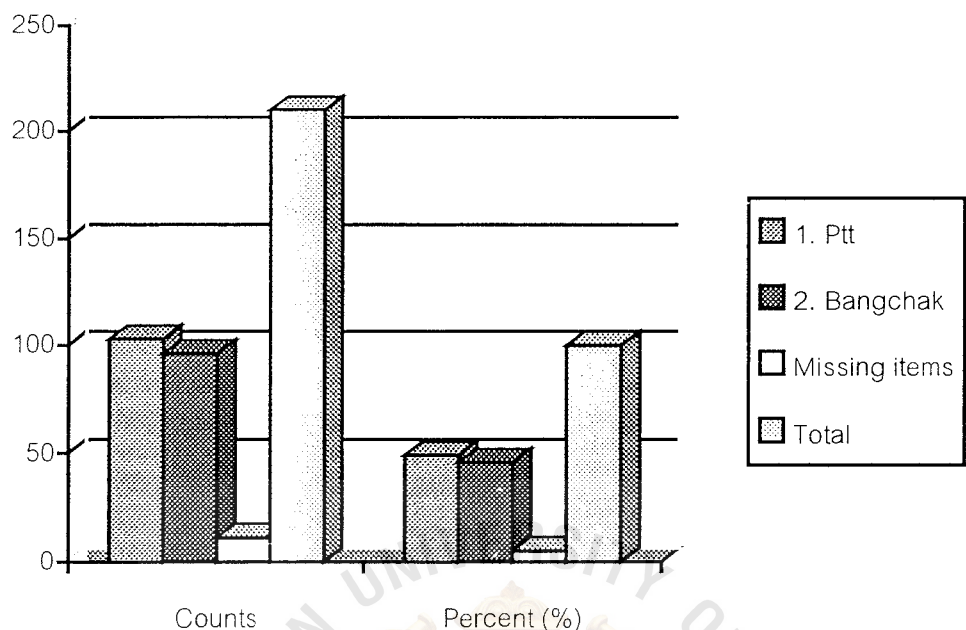
Figure 5.1. Frequency Distribution of State Petroleum Stations.

5.1.2 Private Enterprise Petroleum Stations in Bangkok

Table 5.2 shows high group numbers in private petroleum stations in Bangkok, selected from 210 respondents were indicated three big Petroleum Stations as follows: the highest number, Shell achieved 96 (45.7%). Caltex and Esso were chosen in second and third ranking at 43 (20.5%) and 34 (16.2%). Q8 was selected by 15 (7.1%) in this distribution. Only one (0.5%) respondent selected Mobil and remained thirteen (6.2%) selected other petroleum stations which excluded name in the distribution.

Table 5.2. Frequency Distribution of the Private Petroleum Stations in Bangkok.

Private Petroleum Station	Counts	Percent (%)
1.Shell	96	45.7
2. Caltex	43	20.5
3. Esso	34	16.2
4. Q8	15	7.1
5. Other	13	6.2
6. Mobil	1	0.5
Missing items	8	3.8
Total	210	100
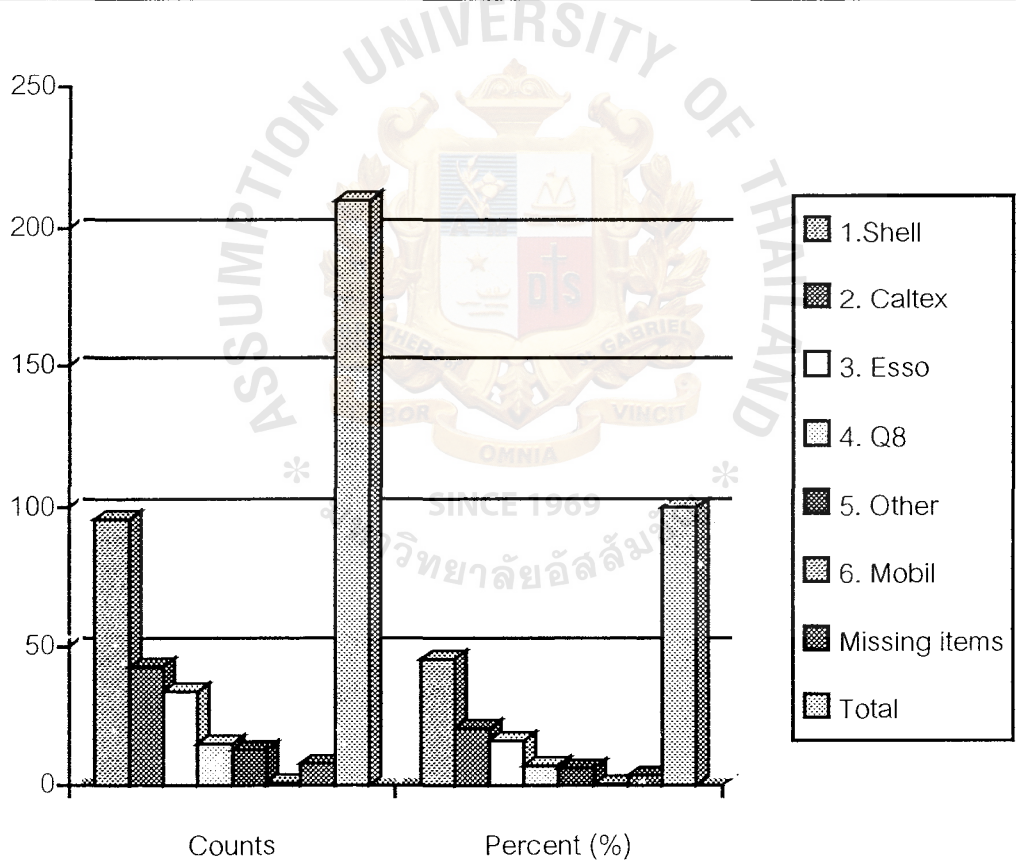
Figure 5.2. Frequency Distribution of the Private Petroleum Stations.

5.1.3 Demographic Characteristic

Chapter 3 mentioned the importance of understanding the different customer demographic characteristics (gender, age, occupation and income) and customer perception of service quality. This information can be used as marketing information in the future.

Table 5.3 summarizes all demographic characteristics of the 210 respondents. These include 58.6% male and 39.5% female in the gender category. Most respondents 44.85% were aged between 20 to 30 years old. The second, 41% was between 31 to 40 years and so on. Private enterprise employees were the majority respondent group 65.2% included in the occupation category. There was little difference distributed among another occupations in the survey. The majority of respondents 40% have a monthly income of less than 20,000 Bahts. Respondents who have a monthly income between 21,000 to 30,000, 49% and 21.4% of respondents have a monthly income between 30,000 to 50,000 Bahts. The group of respondents who the have highest monthly income, 50,000 Bahts up, 14.7%.

Table 5.3. Demographic Characteristic of Respondent.

Demographic Characteristic	Counts	Percent (%)
1. Gender		
- Male	123	58.6
- Female	83	39.5
Missing items	4	1.9
Total	210	100
2. Age		
- 20 to 30 years old	94	44.8
- 31 to 40 years old	86	41.0
- 41 to 50 years old	19	9.0

Table 5.3.   Demographic Characteristic of Respondent. (Continued)

Demographic Characteristic	Counts	Percent (%)
- 51 years old up	9	4.3
Missing items	2	1.0
Total	210	100
3. Occupation		
- Owner	13	6.2
- Private employee	137	65.2
- State employee	18	8.6
- Government officer	16	7.6
- Housewife	1	.5
- Student	15	7.1
- Other	7	3.3
Missing items	3	1.4
Total	210	100
4. Monthly income		
- Under 20,000 Baht	84	40.0
- 20,000-30,000 Baht	40	19.0
- 30,000-50,000 Baht	45	21.4
- 50,000-100,000 Baht	20	9.5
- 100,000 Baht up	11	5.2
Missing items	10	4.8
Total	210	100

Table 5.4 shows means of variable representing service quality in private enterprise petroleum stations in Bangkok. The higher means represent the higher service quality variable and vice versa on the lower means. Five higher service qualities on the customer's perception in private enterprise petroleum station in Bangkok indicated on the top listed of this table as the following items: (22) open 24 hours (3) provided

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enough gas pumps to serve customers (13) large number of stations throughout Bangkok (1) physical facilities and tools have modern appearance (4) all employees wearing well designed uniforms. Including five lower service qualities on the customers' perception in private enterprise petroleum station in Bangkok are shown on the bottom list of this table as follows: (21) high-quality car care services (10) great concern on customer problem solving and complaint, (23) wide range of credit cards accepted (19) high-quality windshield cleaning and tire inflation service.

Table 5.4. Means of Service Quality Variable in the Private Enterprise Petroleum Station in Bangkok.

Items	Compare Mean
22. Open 24 hours.	2.9381
3. Provided enough gas pumps to serve customers.	2.9048
13. Large number of stations throughout Bangkok	2.8952
1. Physical facilities and tools have modern appearance.	2.8905
4. All employees wearing well designed uniforms.	2.8762
2. Petroleum Station designed attractively.	2.8667
17. Employees always friendly and courteous.	2.8619
16. Employees offer service expertise.	2.8143
9. Clear IN-OUT sign and through flow traffic provided on site.	2.7952
11. Accurately provided service.	2.7905
14. Employees willing to serve.	2.7667
20. High-quality fast food and convenience store on site.	2.7476
7. Efficient queuing process provided.	207381
15. Employees always give a service impression.	2.7238
8. Safety performance on site provided.	2.6714
6. Cleaning restrooms provided.	2.6190
12. Provided the same standard of service at each station	2.5762
5. Well designed promotional gifts.	2.5714

Table 5.4. Means of Service Quality Variable in the Private Enterprise Petroleum
Station in Bangkok. (Continued)

Items	Compare Mean
21.High-quality car care service.	2.5381
10. Great concern on customer problem solving and complaint.	2.5333
18. Employees have the knowledge to answer customer questions on the Petroleum business.	2.5143
23. Wide range of credit cards accepted.	2.4524
19. High-quality windshield cleaning and tire inflation service High-quality windshield cleaning and tire inflation service.	2.3714

Table 5.5 shows means of variables representing service quality in state enterprise
petroleum stations in Bangkok. As the same pattern of Table 5.4, Five higher service
qualities on the customers' perception in state enterprise petroleum station in Bangkok.
These are indicated at the top of this table as the following items: (2) Petroleum Station
designed attractively (20) high-quality fast food and convenience store on site (13) large
number of stations throughout Bangkok (22) open 24 hours (3) provided enough gas
pumps to serve customers. For five lower items which were listed at the bottom of this
table as follows: (12) provided the same standard of service at each station (19) high-
quality windshield cleaning and tire inflation service (8) safely performance on site
provided (10) great concern on customer problem solving and complaint (18) employees
have the knowledge to answer customer questions on the Petroleum business.

Table 5.5. Means of Service Quality Variables in the State Enterprise Petroleum
Station in Bangkok.

Items	Compare Mean
2. Petroleum Station designed attractively.	3.5143
20. High-quality fast food and convenience store on site.	3.3762
13. Large number of stations throughout Bangkok	3.3667
22. Open 24 hours.	3.3048
3. Provided enough gas pumps to serve customers	3.2762
14. Employees willing to serve.	3.2762
15. Employees always give a service impression.	3.2619
1. Physical facilities and tools have modern appearance.	3.2190
23. Wide range of credit cards accepted.	3.2143
4. All employees wearing well designed uniforms	3.1857
17. Employees always friendly and courteous	3.1571
9. Clear IN-OUT sign and through flow traffic provided on site.	3.0857
16. Employees offer service expertise.	3.0333
5. Well designed promotional gifts.	2.9714
6. Clean restrooms provided.	2.9619
11. Accurately provided service.	2.9381
7. Efficient queuing process provided.	2.9286
21. High-quality car care service.	2.9190
12. Provided the same standard of service at each station	2.8762
19. High-quality windshield cleaning and tire inflation service	2.8190
8. Safety performance on site provided.	2.7524
10. Great concern on customer problem solving and complaint.	2.7476
18. Employees have the knowledge to answer customer questions on the Petroleum business.	2.6857

5.2   T-test for 23 Service Items

Table 5.6 shows a T-test analysis of 23 items of service quality comparison between state and private petroleum stations in Bangkok. There is shown all significant difference in 23 items of service quality at 0.05 level of statistical significance between state and private enterprise petroleum station in Bangkok. Moreover Table 5.6 shows all 23 mean of service quality items in private enterprise lower than on state enterprise Bangkok petroleum station. The results can be summarized in that private enterprise provided service quality lower that state enterprise in the perception of 210 car drivers.

Table 5.6.   T-test Analysis Comparison Significant Difference in 23 Items of State and Private Enterprise Petroleum Stations in Bangkok.

Items	Compare Mean		Var
	Private	State	Sig*
Tangibles			
1. Physical facilities and tools have modern appearance.	2.8905.	3.2190	P<S*
2. Petroleum Station designed attractively.	2.8667	3.5143	P<S*
3. Provided enough gas pumps to serve customers.	2.9048	3.2762	P<S*
4. All employees wearing well designed uniforms.	2.8762	3.1857	P<S*
Reliability			
7. Efficient queuing process provided.	2.7381	2.9286	P<S*
9. Clear IN-OUT signs and through flow traffic provided on site.	2.7952	3.0857	P<S*
10. Great concern on customer problem solving and complaint.	2.5333	2.7476	P<S*
11. Accurately provided service.	2.7905	2.9381	P<S*
12. Provide the same standard of service at each station	2.5762	2.8762	P<S*

Table 5.6. T-test Analysis Comparison Significant Difference in 23 Items of State and Private Enterprise Petroleum Stations in Bangkok. (Continued)

Items	Compare Mean		Var
	Private	State	Sig*
Responsiveness			
14. Employees willing to serve.	2.7667	3.2762	P<S*
15. Employees always give a service impression.	2.7238	3.2619	P<S*
19. High-quality windshield cleaning and tire inflation service.	2.3714	2.8190	P<S*
21. High-quality car care services.	2.5381	2.9190	P<S*
Assurance			
8. Safety performance on site provided.	2.6714	2.7524	P<S*
16. Employees offer service expertise.	2.8143	3.0333	P<S*
17. Employees always friendly and courteous.	2.8619	3.1571	P<S*
18.Employees have the knowledge to answer customer questions on the Petroleum business	2.5143	2.6857	P<S*
23. Wide range of credit cards accepted.	2.4524	3.2143	P<S*
Empathy			
5. Well designed promotional gifts.	2.5714	2.9714	P<S*
6. Clean restrooms provided.	2.6190	2.9619	P<S*
13. Large number of stations throughout Bangkok	2.8952	3.3667	P<S*
20. High-quality fast food and convenience store on site.	2.7476	3.3762	P<S*
22. Open 24 hours.	2.9381	3.3048	P<S*

*Significant differences at 0.05 level.

5.3   T-test for Three Factors

A T-test was used for test the hypotheses stated in chapter 3. The hypotheses involve issues focused on the service quality comparison between state and private

enterprise petroleum Stations in Bangkok. According to the results of the factor analysis reformed the predetermined five factors to three factors, all three factors meet the reliability and the validity levels as mentioned. This research readjusted the hypotheses to relate with the reliability factors computed. All the evaluations used a significance difference at 0.05 levels as the threshold.

Three hypotheses were used to compare the quality of state and private enterprise Petroleum Stations in Bangkok which were readjusted as follows:

H_1: Private enterprise has significantly higher Tangible service quality than state enterprises petroleum stations in Bangkok.

H_2: Private enterprise has significantly higher Empathy service quality than state enterprise petroleum stations in Bangkok.

H_3: Private enterprise has significantly higher Assurance service quality than state enterprise petroleum stations in Bangkok.

The three hypotheses were tested using T-test analysis to compare the significance of the difference in each factor. The results shows in Table 5.7.

Table 5.7. T-tests Analysis Comparison Significant Difference in Three Service Factors of State and Private Enterprise Petroleum Stations in Bangkok.

Factors	Compare Mean		Var
	Private	State	Sig *
Tangible service	2.7392	3.1762	P<S
Empathy service	2.7280	3.1206	P<S
Assurance service	2.6505	2.8400	P<S

*Significant differences at 0.05 level.

Hypotheses one stated that private enterprise has significantly higher Tangible service quality than state enterprise petroleum stations in Bangkok. The result indicated.

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there were statistically significant differences in Tangible service quality but the quality mean in private enterprise shows lower than state enterprise petroleum stations in Bangkok. Therefore, hypothesis 1 is not supported.

Hypothesis two stated that private enterprise has significantly higher Empathy service quality than state enterprise petroleum stations in Bangkok. The result indicated, there were statistically significant differences in Empathy service quality but the quality mean in private enterprise shows lower than state enterprises petroleum stations in Bangkok. Therefore, hypothesis 2 is not supported.

Hypothesis three stated that private enterprise has significantly higher Assurance service quality than state enterprise petroleum stations in Bangkok. The result indicated, there were statistically significant differences in Assurance service quality but the quality mean in private enterprise shows lower than state enterprises petroleum stations in Bangkok. Therefore, hypothesis 3 is not supported.

All factors indicate the significance at 0.05 level. The results obviously present a higher compared mean on each three factors in state enterprise petroleum station. These indicate that state enterprise has significantly higher quality service in three factors than private enterprise petroleum stations in Bangkok. The three hypotheses setting are not supported with the results of this study.

5.4   Analysis of Variance (ANOVA)

Using Analysis of Variance (ANOVA) to compare two or more means to determine if there are any reliable differences between them (Tabachnick and Fidell 1996). The Analysis of Variance (ANOVA) can be used for evaluation of the differences among means relative to the dispersion in the sampling distributions.

This research used three new factors (Tangible, Empathy, Assurance) service, which were formed by factor analysis as discussed in Table 2, then divided by number of items in each factor as an example.

Tangible factors included nine items, 1,2,3,4,5,6,12,13,23. Adding the nine items and then dividing by nine to get the average or mean of this factor and computed in the same way with Empathy and assurance factors. The outputs of three average factors were used for testing Analysis of Variance (ANOVA) by comparison with the demographic characteristics (gender, age, occupation and income). This research found that there were no differences in perceived service quality for all three factors when segments by gender, occupation and income except in age groups. Age of the respondent group between 41 to 50 years has significant differences in perceived service quality on factor 3 less than the respondents age group over 51 years old which is presented in Table 5.8. The mean differences of both age groups are significant by LSD test at 0.05 level.

Table 5.8. Demographic Characteristic of Age Groups.

Factors	20 to 30 years (1)	31 to 40 years (2)	41 to 50 years (3)	51 years up (4)	Significant Difference (LSD)
Tangible service	3.1359	3.2196	3.0643	3.3210	-
Empathy service	3.0934	3.1344	3.0351	3.3333	-
Assurance service	2.8234	2.8279	2.7158	3.1778	3<4

*Significant differences by LSD test at 0.05 level.

This research used the lease significant differences (LSD) approach to conduct post hoc comparisons. This method identifies which comparisons among groups have significant differences. It provides the analyst with tests for each combination of groups.

VI. DISCUSSION AND LIMITATION

This chapter consists of four sections. The first section is the discussion of results, followed by the result implications to academics, business, and government policies. The third section discusses the limitations of this study. The future research suggestions and conclusions will be presented in the final section.

6.1 Discussion

After computing all data in Chapter 5, there are two parts for discussion as follows:

6.1.1 Discussion from Analysis of Descriptive Mean Results

Table 5.4 shows highest means line up to lowest means of service quality provided by private enterprise petroleum stations in Bangkok. For these results, the top five items of customer perception in service quality are raised for discussion in details as follows: customers perceived high service quality provided by private enterprise in station opening hours to serve customers. They provide prompt 24 hours of service to customers at all times. They provide enough gas pumps to serve customers according to customer awareness time spent on refueling. Moreover they are concerned about customer convenience by providing a lot of stations throughout Bangkok. The facilities, tools and employee uniforms are of modern design and satisfactory. The reasons to support all top five items results may be that private enterprises have high capital and resources. Hence they concentrate on tangible service investment such as the petroleum station, facilities, tools and employee appearance. Private enterprise should maintain and highlight all top five items of service quality, which rank in customer perception. However it was found that some services need to be improved which also shows in the bottom five items of Table 5.4. Private enterprise should improve on windshield cleaning services, tire inflation services and car care service centers. These represent lower service qualities in

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customer perception. Also included is the problem solving concern when receiving complaints from customers, there is not enough employee knowledge to answer customer questions about petroleum business, plus a shortage of various credit card acceptance. The reasons support the lower bottom five items of customer perception in terms of service quality but may be encouraged by the fact that customers have high expectation of supplemental of service offerings from private enterprise. However service was provided at lower quality than customer perception. Private enterprise can use these research results to improve the service quality on the lower quality items.

Table 5.5 shows highest means line up to lowest means of service quality provided by state enterprise petroleum stations in Bangkok. The results indicate the top five items of customer perception in service quality as follows: petroleum stations are attractively designed and show their identity. The fast food and convenience store on site are ranked as high service and the state enterprise seems to be a leader in providing a complementary range of services such as convenience stores (lemon green) and various fast food centers (KFC, Pizza Hut, Banrai coffee ect.). Customers also perceived comfort in refueling at state enterprise. Because of stations, there are a lot of stations throughout Bangkok. The opening time maintains prompt service all 24 hours. The number of gas pumps provided are enough to service customers. Five items of service as mentioned ranked by customer perception in service quality of the state enterprise. To seems that customers still highlighted tangible service quality as the same as the ranking for private enterprises. Although, the limitation on organization management in state enterprise is more than private enterprise as discussed in a previous chapter. This outcome can assume that state enterprise is trying to develop their capability on the grounds of tangible services similar to that of private enterprise. They have changed their image in new feature creating and are concentration on increasing the complementary range of

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services. State enterprise should maintain this service to keep the market share in this industry. However state enterprise should speed up improvement of the service quality in the bottom five items, which from the survey customers perceived as follows: the state enterprise should provide the same standard of service at each station. Windshield cleaning and tire inflation services should be improved to offer customers. They should be more concerned about customer problem solving when receiving complaints from customers. They should support employees in enhancing their knowledge of the Petroleum business. This can build employees confidence in answer customer questions.

The model shows top five items and bottom five which ranking on the same questions by customer perception.
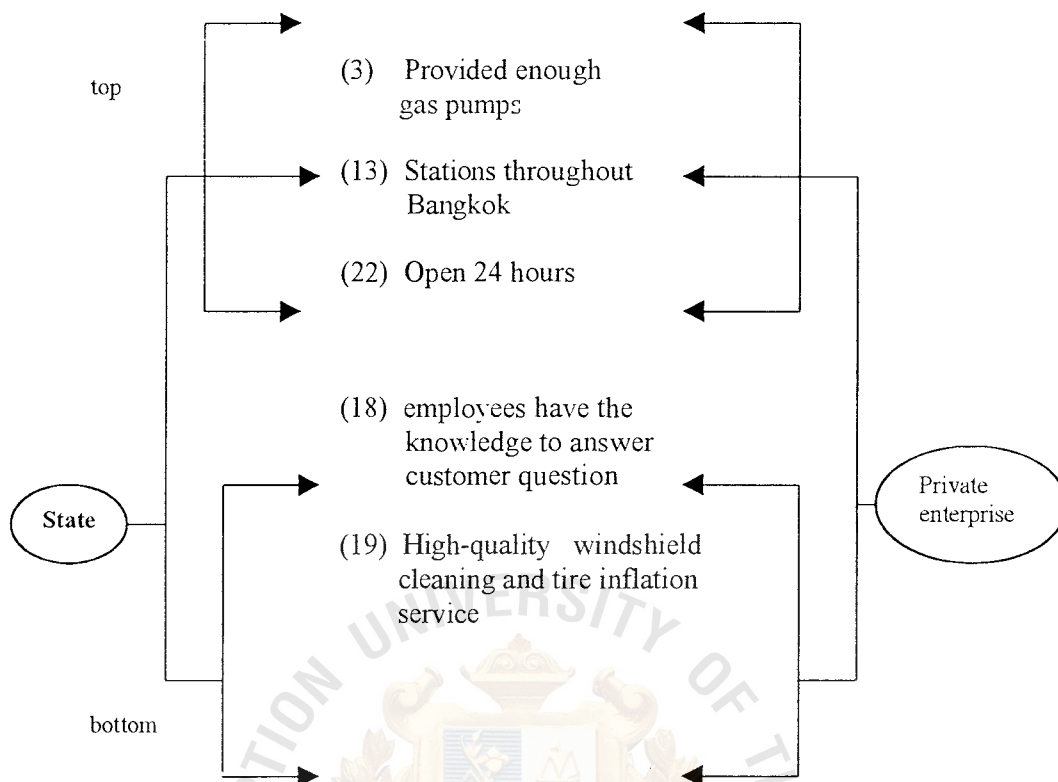
Figure 6.1. Service Perception Model.

6.1.2 Discussion from T-test Results

Table 5.7 shows the mean of service quality comparison between state and private

enterprise petroleum stations in Bangkok. The mean represents higher service quality in

the state enterprise than in the private enterprise petroleum stations in Bangkok.

Apisompinvong (1996) stated that multinational oil companies are major

investments and construct excellent service stations for the Petroleum service industry.

Foreign multinational oil companies have more advantage in technology. Moreover they

are the main operations in petroleum exploration and production in Thailand. Other

supporting information shows that private enterprises should have more freedom and

flexibility to manage their organization than state enterprises, which have the

Government as a partner.

The results of this study completely eradicated previous statement. All respondents still perceived higher service quality in state enterprise rather than private enterprise. Especially in the Tangible dimension the highest difference mean is shown between state and private enterprise. This represents that customers mostly perceive the high quality of facilities and tools, provided by state enterprise, including clean surroundings provided and that the stations are standard in arrangement throughout Bangkok. Moreover customers still perceive that state enterprise understand customers better and design a complementary range of services such as convenience stores, food centers and car care centers to customer satisfaction.

There are reasons to support these study results in that the service quality provided by private enterprise is lower than the service quality provided by state enterprise in all items of measurement this may be because the customer expected higher service quality in private enterprise than in state enterprise. The main investors in private enterprise are the multinational Oil Companies. They have the capability to make high investments and construct excellent service stations in the Petroleum industry and have more advantage in technology (Apisompinvong 1996). This comes from national brand loyalty. Therefore, customers perceived higher service quality in private enterprise than in the state enterprise. While, private enterprise has not provided better service than their expectation. On the other hand customers' lower expectation of service quality of state enterprise is according to the understanding of the organization situation management of state enterprise, as Apisompinvong (1996) stated, is the limitation of freedom and flexibility in operations of state enterprises which have the Government as a partner. The outcome shows that customers still fulfilled the service provided by state enterprise. Therefore state enterprise has high service quality than private enterprise in customer perception.

6.1.3 Discussion from Analysis of Variance Results

Table 5.8 shows the significant differences in perceived service quality in factor three when segmented by age groups. The respondents age group (3) between 41 to 50 years has significant difference in perceived service quality than in the respondent age group (4) over 51 years old. This means that the higher the customer age group the more care is needed than in the customer lower age groups such as the queuing process design, high safety performance, clear IN-OUT signs, concern over problem solving and employee knowledge enhancement.

6.2   Limitations

This survey studies specifically only the petroleum stations in Bangkok. This may be the limitations on this study. The outcome from this study may be used for only the petroleum stations in Bangkok.

VII. CONCLUSIONS AND RECOMMENDATIONS

7.1 Conclusions

This research is designed for a comparative study of service quality between state and private enterprise Petroleum Stations in Bangkok.

This study originated from an interest in linking the SERVQUAL model with petroleum stations in Bangkok. This SERVQUAL theory is well known among strategic management scholars. Various researchers successfully used the SERVQUAL survey instrument adapted to a variety of applications, to study and research the difference in service quality. However, there has never been any researcher who used SERVQUAL model to measure service quality in Petroleum Stations.

This study stated two research questions in Chapter 1 as follows:

(1)   What is the customer perception of service quality in state and private enterprise petroleum stations in Bangkok?

(2)   What is the difference in terms of customer perception between state and private enterprise petroleum stations in Bangkok?

To answer research questions 1; Customer perceived service quality of private enterprise as low and state enterprise as high.

To answer research questions 2; Customer perceived service quality of state enterprise as higher than private enterprise.

These research results identified higher service quality of state enterprise when compared with private enterprise. According to customer belief, private enterprise has more advantage and opportunity to provide a more effective service quality for customer satisfaction than state enterprise, which has organization limitation. So the customer expected higher service quality in private enterprise than in state enterprise. The outcome represents that the customer perceived low service quality of private enterprise.

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while the customer perceived higher service quality in state enterprise. Therefore state enterprise has higher service quality than private enterprise in the customers perception.

Petroleum companies have tried to improve their service quality in petroleum stations to compete. The results of this study can be used to prepare a future plan. The government should support this competition to protect the oil market. It is expected that the multinational oil companies will be major private enterprise investors. It is very important that the government should motivate them to maintain or increase their investment and to implement the measures to improve the effectiveness of this investment. This research has confirmed the usefulness of the SERVQUAL survey instrument in supporting the claims of earlier researchers. We would add service value by offering a challenging agenda for further research on measurements.

The true test of whether an organization can service excellence is in the transformation of the virtual concept to reality and delivering the quality of service demanded and expected by customers. Organizations must learn from their customers. SERVQUAL enables the "voice of the customer" to be heard and enables an organization to determine where it is in relation to its customers and its competitors. The combination of these two tools strives to meet the ends of customer satisfaction.

The Petroleum industry trade in Thailand has expanded largely according to the increased demand for petroleum products. Moreover petroleum products are essential for the Thai economy. As mentioned, most investors in this industry are only from two business sectors, state and private enterprise. Private enterprise investment is by foreign multinational oil companies. At present, many countries are improving their Petroleum investment climate and providing incentives to make it more competitive to capture foreign investment. Service quality in petroleum stations is the one marketing strategy in

which many Petroleum companies have tried to improve their service quality in order to encourage customer purchase behavior.

7.2   Recommendation for the Academic

There are two recommendations for the academic as follows:

(1)   This study adapted the SERVQUAL survey instrument to study the measurement of service quality in Petroleum stations. This study modified three new dimensions, which were adapted from five SERVQUAL dimensions. They were reworded to include additional items to match with the petroleum station business.

(2)   The results of this study will be useful for scholars as a reference for future research.

7.3   Recommendation for Petroleum Stations

The objective of this study was to compare the service quality of state and private enterprises in Bangkok. The result of this study can be used by Petroleum companies to prepare and plan market in the future.

The results of this study found that state enterprise has higher service quality than private enterprise Petroleum Stations from the viewpoint of the 210 car drivers. The Tangible service factor is the group of items, which show the highest difference between them. This is important for private enterprise to concentrate and invest their service strategy by emphasizing comparison with these 23 item research results and to develop their service until gaining customer expectation. The summary of all service items, which this research highlights to improve private enterprise, is presented as follows:

Improving facilities and tools capability. The stations are standard in arrangement throughout Bangkok. The cleaning process should be improved for facilities and surrounding appearance. Increase the variety of complementary services such as

convenience stores, food centers and car care centers. Improve the communication process to better understand customer needs. Enhance their employee's knowledge and skill of service in the petroleum station business. Increase the purchasing opportunity for customers in payment option.

7.4 Recommendation for Government Petroleum Stations

State enterprise is managed by balancing private and Government objectives in an efficient manner. Government may use the results of this research to improve service quality in the state enterprise to gain market share in the petroleum industry.

7.5 The Future Research

In the future, research may be conducted as follows:

(1) Continue this research and extend the survey sampling around Thailand. The results will be more useful for the petroleum station business to develop their service to match with the difference Thai cultures in Bangkok and up-country customer characteristic.

(2) Use this model to apply to other industries or countries and compare of the findings with this research result. Make studies on other industries such as golf clubs and resort industry, which have different characteristics from the Petroleum Station in this study. Therefore, the results will be more useful and generalized.

APPENDIX A

QUESTIONNAIRE

QUESTIONNAIRE

Objective:

The purpose of this study is to compare service quality between state and private enterprise petroleum stations in Bangkok. Please select your Favorite State Petroleum Station and Favorite Private Petroleum Stations and compare their service qualities. The result of this study will lead improvement of service quality in the Petroleum Station industry. Thank you very much for your co-operation.

Please choose only on state and private Petroleum Stations:-

State Petroleum Stations   ☐ Ptt   ☐ Bangchak

Private Petroleum Stations   ☐ Shell   ☐ Caltex   ☐ Esso

                                ☐ Mobil   ☐ Q8   ☐ Other…

Part 1: The service quality in Petroleum Stations

Note: Please circles only one of your perceived service quality level in ranging on the five levels as follows:-

	Much lower than expected	Lower than expected	Equally expected	Higher than expected	Much high than expected
1.Physical facilities and tools have modem appearance	1	2	3	4	5
2.Petroleum Station designed attractively	1	2	3	4	5
3.Provided enough gas pumps to serve customers.	1	2	3	4	5
4.All employee wearing well designed uniforms	1	2	3	4	5
5.Well designed promotional gifts.	1	2	3	4	5
6.Clean restrooms provided	1	2	3	4	5
7.Efficient queuing process provided.	1	2	3	4	5
8.Safety performance on site provided.	1	2	3	4	5
9.Clear IN-OUT signs and through flow traffic provided on site.	1	2	3	4	5
10.Great concern on customers problem solving and complaint.	1	2	3	4	5
11.Accurately provided service.	1	2	3	4	5

	Much lower than expected	Lower than expected	Equally expected	Higher than expected	Much high than expected
12. Provide the same standard of service at each station.	1	2	3	4	5
13. Large number of Stations throughout Bangkok	1	2	3	4	5
14. Employees willing to serve	1	2	3	4	5
15. Employees always give a service impression	1	2	3	4	5
16. Employees offer service expertise.	1	2	3	4	5
17. Employees always friendly and courteous.	1	2	3	4	5
18. Employees have the knowledge to answer customer questions on the Petroleum business	1	2	3	4	5
19. High-quality windshield cleaning and tire inflation service.	1	2	3	4	5
20. High-quality fast food and convenience store on site	1	2	3	4	5
21. High-quality cars care services.	1	2	3	4	5
22. Open 24 hours.	1	2	3	4	5
23. Wide range of credit cards accepted.	1	2	3	4	5

Part 2: Personal information of respondents:

Gender   ☐ male   ☐ female

Age   ☐ 20-30   ☐ 31-40   ☐ 41-50   ☐ 51 up

Occupation   ☐ Owner   ☐ Private employee   ☐ State employee

         ☐ Government officer ☐ Housewife ☐ Student ☐ Other....

Monthly income ☐ under 20,000   ☐ 20,000-30,000   ☐ 30,000-50,000

         ☐ 50,000-100,000 ☐ 100,000 up

แบบสอบถาม

<u>วัตถุประสงค์:</u> การศึกษาครั้งนี้เพื่อเปรียบเทียบคุณภาพการให้บริการระหว่างสถานีบริการน้ำมัน (ปั้มน้ำมัน) ของรัฐวิสาหกิจและเอกชนที่ตั้งอยู่ในกรุงเทพฯ โดยเลือกปั้มน้ำมันที่ท่านพึงพอใจในบริการจากรัฐวิสาหกิจ 1 ปั้ม และจากเอกชน 1 ปั้ม เพื่อเป็นตัวแทนในการเปรียบเทียบคุณภาพบริการ ผลของการศึกษาครั้งนี้จะเป็นประโยชน์ต่อปั้มน้ำมันในการปรับปรุงคุณภาพบริการให้ดียิ่งขึ้น ขอขอบพระคุณอย่างสูงที่ท่านให้ความร่วมมือในการตอบแบบสอบถามครั้งนี้

√ <u>โปรดเลือกเพียง 1 ปั้ม สำหรับปั้มน้ำมันรัฐวิสาหกิจ และ 1 ปั้ม สำหรับปั้มน้ำมันเอกชน</u>

- ปั้มน้ำมันรัฐวิสาหกิจที่ท่านพอใจในบริการ คือ ☐ ปั้ม ป.ต.ท. ☐ ปั้มบางจาก

- ปั้มน้ำมันรัฐวิสาหกิจที่ท่านพอใจในบริการ คือ ☐ ปั้มเชลล์ ☐ ปั้มคาลเท็กซ์ ☐ ปั้มเอสโซ่

  ☐ ปั้มโมบิล ☐ ปั้มคิวเอท ☐ ปั้มอื่น ๆ.....

<u>ส่วนที่ 1</u> คุณภาพการบริการของปั้มน้ำมัน

คำชี้แจง : โปรดวงกลมระดับของการบริการที่ท่านได้รับจากปั้มน้ำมันเมื่อเปรียบเทียบกับความคาดหวังของท่าน

	ต่ำกว่าที่คาดหวังมาก	ต่ำกว่าที่คาดหวัง	เท่ากับที่คาดหวัง	สูงกว่าที่คาดหวัง	สูงกว่าที่คาดหวังมาก
1. ความทันสมัยของเครื่องมือเครื่องใช้ที่ให้บริการ					
• ปั้มรัฐวิสาหกิจ	1	2	3	4	5
• ปั้มเอกชน	1	2	3	4	5
2. การออกแบบปั้มน้ำมันดึงดูดผู้ใช้บริการ					
• ปั้มรัฐวิสาหกิจ	1	2	3	4	5
• ปั้มเอกชน	1	2	3	4	5
3. มีช่องจ่ายน้ำมันเพียงพอต่อการให้บริการ					
• ปั้มรัฐวิสาหกิจ	1	2	3	4	5
• ปั้มเอกชน	1	2	3	4	5
4. พนักงานทุกคนสวมเครื่องแบบที่ออกแบบได้อย่างเหมาะสม					
• ปั้มรัฐวิสาหกิจ	1	2	3	4	5
• ปั้มเอกชน	1	2	3	4	5

	ต่ำกว่าที่คาดหวังมาก	ต่ำกว่าที่คาดหวัง	เท่ากับที่คาดหวัง	สูงกว่าที่คาดหวัง	สูงกว่าที่คาดหวังมาก

5.ของแถมที่แจกให้ลูกค้ามีคุณภาพ

- ปั๊มรัฐวิสาหกิจ
  - 1   2   3   4   5
- ปั๊มเอกชน
  - 1   2   3   4   5

6. ห้องน้ำสะอาดถูกสุขอนามัย

- ปั๊มรัฐวิสาหกิจ
  - 1   2   3   4   5
- ปั๊มเอกชน
  - 1   2   3   4   5

7.ระบบการเข้าคิวถูกจัดไว้อย่างมีระเบียบและรักษาเวลาให้ลูกค้า
อยู่เสมอ

- ปั๊มรัฐวิสาหกิจ
  - 1   2   3   4   5
- ปั๊มเอกชน
  - 1   2   3   4   5

8. ระบบการรักษาความปลอดภัยภานในปั๊มถูกจัดไว้อย่างรัดกุม
และปลอดภัย

- ปั๊มรัฐวิสาหกิจ
  - 1   2   3   4   5
- ปั๊มเอกชน
  - 1   2   3   4   5

9.ระบบจราจรภายในปั๊มถูกจัดไว้อย่างชัดเจนและสะดวก

- ปั๊มรัฐวิสาหกิจ
  - 1   2   3   4   5
- ปั๊มเอกชน
  - 1   2   3   4   5

10.รับฟังคำเสนอแนะจากลูกค้าและแก้ไขทันทีที่ถูกตำหนิ

- ปั๊มรัฐวิสาหกิจ
  - 1   2   3   4   5
- ปั๊มเอกชน
  - 1   2   3   4   5

11.คุณได้รับบริการครบถ้วนและถูกต้องเสมอ

- ปั๊มรัฐวิสาหกิจ
  - 1   2   3   4   5
- ปั๊มเอกชน
  - 1   2   3   4   5

12.รูปแบบบริการของทุกสาขาเป็นมาตรฐานเดียวกัน

- ปั๊มรัฐวิสาหกิจ
  - 1   2   3   4   5
- ปั๊มเอกชน
  - 1   2   3   4   5

13.มีสาขาจำนวนมากกระจายอยู่ทั่วกรุงเทพ

- ปั๊มรัฐวิสาหกิจ
  - 1   2   3   4   5
- ปั๊มเอกชน
  - 1   2   3   4   5

	ต่ำกว่าที่ คาดหวัง มาก	ต่ำกว่าที่ คาดหวัง	เท่ากับที่ คาดหวัง	สูงกว่าที่ คาดหวัง	สูงกว่าที่ คาดหวัง มาก

14.พนักงานแสดงความกระตือรือร้นต่อการให้บริการทันทีที่คุณ
ไปถึง

• ปั๊มรัฐวิสาหกิจ	1	2	3	4	5
• ปั๊มเอกชน	1	2	3	4	5

15.พนักงานให้บริการได้อย่างประทับใจ

• ปั๊มรัฐวิสาหกิจ	1	2	3	4	5
• ปั๊มเอกชน	1	2	3	4	5

16.พนักงานมีความชำนาญเพียงพอต่อการให้บริการ

• ปั๊มรัฐวิสาหกิจ	1	2	3	4	5
• ปั๊มเอกชน	1	2	3	4	5

17..พนักงานอ่อนโยนและเป็นมิตรอยู่เสมอ

• ปั๊มรัฐวิสาหกิจ	1	2	3	4	5
• ปั๊มเอกชน	1	2	3	4	5

18.พนักงานมีความรู้เพียงพอสามารถตอบข้อซักถามทางด้าน
บริการน้ำมันได้

• ปั๊มรัฐวิสาหกิจ	1	2	3	4	5
• ปั๊มเอกชน	1	2	3	4	5

19.พนักงานจะบริการเช็คกระจกและเติมลมให้คุณอย่างมีคุณภาพ

• ปั๊มรัฐวิสาหกิจ	1	2	3	4	5
๏ ปั๊มเอกชน		2	3	4	5

20.มีบริการร้านอาหารและร้านขายสินค้าที่มีคุณภาพ

• ปั๊มรัฐวิสาหกิจ	1	2	3	4	5
• ปั๊มเอกชน	1	2	3	4	5

21.มีบริการดูแลรักษารถยนต์ที่มีคุณภาพ

• ปั๊มรัฐวิสาหกิจ	1	2	3	4	5
• ปั๊มเอกชน	1	2	3	4	5

22.เปิดให้บริการตลอด 24 ชม.

• ปั๊มรัฐวิสาหกิจ	1	2	3	4	5
• ปั๊มเอกชน	1	2	3	4	5

23.มีบริการชำระเงินโดยผ่านบัตรเครดิตที่หลากหลาย

• ปั๊มรัฐวิสาหกิจ	1	2	3	4	5
• ปั๊มเอกชน	1	2	3	4	5

<u>ส่วนที่ 2</u> ข้อมูลส่วนตัวของผู้กรอกแบบสอบถาม

1. เพศ　　　　☐　ชาย　　☐ หญิง

2. อายุ　　　☐　20-30　　☐ 31-40　　☐　41-50　　☐　51 up

3. อาชีพ　　☐　เจ้าของกิจการ ☐ พนักงานบริษัทเอกชน　　☐　พนักงานรัฐวิสาหกิจ

　　　　　☐　ข้าราชการ ☐ แม่บ้าน　　☐　นักเรียน/นักศึกษา ☐ อื่น ๆ

4. รายได้　　☐　ต่ำกว่า 20,000　　☐　20,000-30,000　　☐　30,000-50,000

　　　　　☐　50,000-100,000　　☐　100,000 ขึ้นไป

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