



CUSTOMER SATISFACTION WITH SERVICE
QUALITY OF A HOSPITAL

By
KUNTALEE KORKEATSIRIKUL

A Final Report of the Six-Credit Course
SCM 2202 Graduate Project

Submitted in Partial Fulfillment of the Requirements for the Degree of
MASTER OF SCIENCE IN SUPPLY CHAIN MANAGEMENT

Martin de Tours School of Management
Assumption University
Bangkok, Thailand

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November 2011

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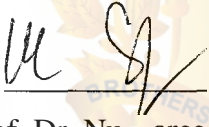
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ABSTRACT

With intense competition in the hospital industry in Thailand, customer service and service quality constitute the main driving force in the business world. The evaluation of hospital service quality is important in providing motivation and suggestions on the effectiveness of hospital plans and management.

The main purpose of this research is to determine the relationship between medical, hospital service quality, queuing quality and customer satisfaction at SS Hospital. The methodology used in this research is a questionnaire survey. The SERVPEERF dimension consists of tangibles, reliability, responsiveness, assurance and empathy in medical and hospital service quality and queuing quality. These factors were applied in designing the research questionnaire. All 250 respondents of SS hospital are defined as the target population of the study. The researcher uses descriptive statistics to analyze the respondents' demographic data. Multiple Linear Regression and One sample t-test were used as major data analysis method to test all three hypotheses in this research. The results showed that all three factors are positively significant to customer satisfaction, namely the factors of medical, hospital service quality and queuing quality. The highest influencing factor is queuing quality followed by medical and hospital service quality respectively. The result from this study would help SS hospital and also other hospital industries to concentrate on suitable factors to improve service quality and as well as also help in increasing customer satisfaction.

ACKNOWLEDGEMENTS

Firstly, I would like to express my deepest gratitude to Asst. Prof. Dr. Nucharee Supatn, my advisor, for all her dedication in giving kindly advice, valuable suggestions, grateful support, constructive comments, and encouragement throughout the research project. Without her my research could not have been completed successfully. Further, my deeply thankfulness to all committee members for their valuable comments and recommendations which were greatly added improvement to my research.

I also would like to thank my friends in the MSc. Supply Chain Management Batches 11 and 12, who always encourage and helped me in difficult times.

Finally, I would like to express my whole-hearted thanks to my family, and to all my friends who were in high school and the bachelor programme for their love, encouragement, understanding and contribution that gave me courage to fight all obstacles to achieve completion of this project.

Kuntalee Korkeatsirikul

Assumption University

November 2011

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CHAPTER I

GENERALITIES OF THE STUDY

1.1 Background of the Study

Private hospitals continue to expand in Thailand because there are many patients looking for medical care, dental care, physical check-up programs or surgical methods. Patients also require treatment and care from hospital staff, especially when they attend private hospitals. The quality of service has become a major source of competitive strength in building patient satisfaction and loyalty (Taylor, 1994). As a result, hospitals need to understand the strengths and weaknesses of the services they provide to best serve patients' needs.

Patient satisfaction is an important pointer for the hospital staffs service quality. Patient satisfaction takes the role of a positive asset for the hospital since it could give reassurance that it would lead to increased hospital profits by the return of patients and by positive word of mouth. Linder-Pelz (1982) pointed out that patient satisfaction is an attitude expression, an effective response of service, and a positive personal appraisal of healthcare service distinct dimensions.

In the past decade, SERVQUAL and SERVPERF have proven to be the most popular instrument for measuring service quality. They endeavors to measure perceptions of a service across five service quality dimensions composed of tangibility, reliability, responsiveness, assurance and empathy (Parasuraman, Zeithaml & Berry, 1985). The present study uses an adapted version of the SERVPERF instrument to evaluate customer perception towards the medical and queuing quality of SS Hospital.

SS Hospital was established in 1979. It is located in the heart of Bangkok and is famous throughout the country for its high quality healthcare services. It is one of the leading private hospitals in Thailand that offers high quality medical services to both Thai and international patients. During its 30 years of existence, the hospital has received many

awards from the Hospital Accreditation Board of Thailand and even UNICEF. The SS Hospital is also an accredited JCI hospital in Thailand and has received the Prime Minister Award for Most Recognized Service in the country.

Today the hospital is recognized as a provider of choice for the local residents and many of the foreigners living in Thailand. The quality of treatment care and services, medical equipment and the quality of the service are key factors that attract patients to the hospital. The hospital has a comprehensive range of facilities and service from cosmetic to tertiary care. With 270 beds, over 400 highly qualified specialists and over 1,200 caretakers, the hospital has long been recognized as a comprehensive facility of choice for locals, expatriates and tourists.

SS Hospital is facing intense competition in the hospital industry in Thailand. Patient's satisfaction provides information on the success of healthcare providers in meeting their expectation. Thus, not only SS Hospital, but other hospitals also should focus on excellent service to satisfy patients.

1.2 Statement of the Problem

Based on the observation from informal interviews with customers, even though SS Hospital is recognized as the leading private hospital, some patients have complained about service problems, especially on the waiting time or medical queuing. Queuing time is considered as a part of the service provided by the hospital. Good operation of the queuing process would lead to shorter waiting time which would directly affect customer satisfaction. Moreover, the short waiting time of the customers is linked to higher turnover of the customers from the waiting area. As such, new incoming customers would have more space in the waiting area. Thus, it would indirectly influence customer satisfaction of the entire hospital service. Although medical service quality is recognized as the major influencing factor of customer satisfaction, the quality of other hospital services, especially the queuing service quality, should not be overlooked. Since the main important key is customer satisfaction, managerial people

of the hospital should understand factor which influence the satisfaction of the customers in order to plan for higher customer satisfaction. As such the question,

"Does medical and hospital service quality influence customer satisfaction in SS Hospital?" should be answered.

Therefore, this research aims to examine the factors that impact on customer satisfaction at SS Hospital. Five dimensions of hospital and medical service quality are the focus, i.e. tangibility, reliability, responsiveness, assurance, and empathy.

1.3 Objectives of the Study

The objectives of this study are:

1.3.1 To measure hospital, medical and queuing service quality of SS Hospital.

1.3.2 To determine the influence of medical and hospital service quality, including queuing quality on customer satisfaction.

1.3.3 To compare and contrast the effect of medical and hospital service quality on customer satisfaction.

1.4 Scope of the Study

This research focuses on hospital, medical and also queuing service quality which is part of the logistic management of SS Hospital. The study uses five dimensions: tangibility, reliability, responsiveness, assurance and empathy. A questionnaire survey is designed to collect data from outpatients who experienced medical treatment at SS Hospital, including customer's relatives and friends.

1.5 Limitations of the Study

As the hospital service is complicated and composed of lots of detailed procedures, this study could not cover all processes. Therefore, customers who have to be admitted to hospital will be excluded from the study. The study focuses on customer satisfaction

with medical and hospital service quality of SS Hospital. The results of this research can apply only to SS Hospital and cannot refer to any other hospital.

1.6 Significance of the Study

The result of this study can be beneficial for the SS Hospital and other healthcare companies or related industries because it helps the hospital to understand customer's feeling toward the service that they received. Knowing the impact of each service quality dimension will help the hospital to create an action plan to solve or prevent any problem that may occur. Furthermore, the study also provides suggestions to improve the service quality within the hospital, and this research could give information about which factors may affect customer satisfaction.

1.7 Definition of Terms

Assurance	is the knowledge and courtesy of employees and their ability to inspire trust and confidence. Assurance encompasses the client's feelings of security, safety, and confidentiality. Moreover, personal information must be kept private to earn trust. (Parasuraman, Zeithaml & Berry, 1990).
Customer Satisfaction	is related to how happy that customers is from a product or service at a certain point in time (Cronin & Taylor, 1992). Customer satisfaction is an essential indicator of a company's past, current, and future performance.
Empathy	focuses on the caring and individualized attention that the firm provides to its customers. Empathy is able to enhance the firm to make a customer feel valued. Repurchasing happens when an organization remembers their names and there likes and dislikes. (Parasuraman et al., 1990).

Hospital Service Quality	relates to other services that are provided to customers which exclude service from doctors (Taylor, 1994).
Medical Service Quality	is the quality of service received from doctors including skillful medical care, accurate diagnoses and error-free procedure (Zifko-Baliga & Krampf, 1997).
Queuing Quality	is the analysis of waiting lines which applies to any situation in which customers arrive at a system, the wait and receive service (Hall, 1991).
Reliability	is the ability to perform the promised service dependably and accurately. The firm has to realize how to do what it promised and do it at the promised time. The reliability aspects of service quality also include a sincere interest to solve the client's problems, accurate billing and record keeping (Parasuraman et al., 1990).
Responsiveness	is the willingness to help customers and provide prompt service. Responsiveness concerns the willingness of staff to provide prompt and attentive service and to quickly respond to customers (Parasuraman et al., 1990).
Service Quality	is a measure of how well the service level delivered matched customer expectations. Delivery quality service means conforming to customers' expectation on a consistent basis (Lewis & Booms, 1983).
SERVPEERF	a service quality measurement, which measures perceived service quality using an attribute approach to measure customers' experiences of the service quality only (Gronroos, 2000).
Tangibility	The appearance of physical facilities, equipment,

personnel, and communication materials (Parasuraman et al., 1990).



CHAPTER II

REVIEW OF RELATED LITERATURE AND RESEARCH FRAMEWORKS

This chapter discusses the definitions and characteristics of service quality, a review of the related literature and theory of service quality, the importance of customer satisfaction towards medical queuing, and previous research. The details are presented in the following sections.

2.1 Service Quality

Service quality is created in terms of the relationship between a customer and elements of the service organization. Service quality also has become a significant research topic because it represents an important relationship to cost and profitability. Service quality was defined by Parasuraman, Zeithmal and Berry (1988) as a generally accepted overall customer satisfaction and a judgment-like attitude towards a particular service.

2.1.1 Evaluating Service Quality

In evaluating service quality, a number of characteristics are used to measure service quality as the overall organization performance is not enough and provides little or no understanding of service quality strength parts. There were originally ten dimensions for service quality evaluation, but Parasuraman et al (1985) later combined the original ten dimensions of service quality (tangibility, reliability, responsiveness, competence, courtesy, credibility, security, access, communication, and understanding the customer) into five broad dimensions as below:

Tangibility: The physical facilities, equipment, personnel, and communication materials appearance.

Reliability: The ability to perform the promised service dependably and accurately.

Responsiveness: The willingness to help customers and provide prompt service.

Assurance: Knowledge and competence of service provider and their ability to inspire trust and confidence.

Empathy: Caring, individualized attention, which the firm provides to its customers.

From the above definition of service quality, service quality can create a competitive advantage to the hospital by emphasizing responsiveness and consistency of service delivery in order to improve the quality of hospital and medical service. The customer also can compare by using his or her expectation prior to experiencing the service with actual service delivery performance.

2.1.2 SERVPERF

Zeithaml, Parasuraman and Berry (1990) explained that the service quality (SERVPERF) measures only customer perception of service performance. The model for measurement of performance of service quality (SERVPERF) is a broadly used model that measures consumer satisfaction and service quality. SERVPERF uses only performance data because it assumes that respondents provide their ratings by automatically comparing performance perceptions with performance expectations. Thus, SERVPERF assumes that expectation is unnecessary for measuring performance. In addition, Zeithaml et al. (1990) stated that measurement is based importantly on consumers' perceptions of actual performance.

2.1.3 Hospital Service Quality

Within the hospital industry, a competitive advantage is best achieved to service quality through an attitude describing a long-term, overall evaluation and overall customer satisfaction which present a short-term and specific judgment relating to the whole service process (Taylor, 1994). It is very difficult to evaluate medical and hospital service quality, which classified in the highest level of reliable qualities such as medical diagnosis and medical treatment that are types of healthcare service. Furthermore, hospital service quality also includes hospital facilities such as the parking lot,

2.1.4 Medical Service Quality

There are two quality concepts which are 'perceived quality' and 'clinical quality'. In the medical aspect, clinical quality includes skillful medical care, accurate diagnoses and error-free procedures (Zifko-Baliga & Krampf, 1997). Hospital administrators find out that even for the most difficult medical procedures, a patient will rate a high score for overall satisfaction if the medical staffs smile at them frequently during their stay (Rust, Zahorik, & Keiningham, 1996). Medical service quality with an accurate medical analysis of patients' perception of service delivery is known as important factors that affect the satisfaction of the patient.

2.2 Queuing Theory

Queuing theory is the analysis of waiting lines which applies to any situation in which customers arrive at a system, wait, and receive service. Queuing theory was created by Erlang A.K. a Danish telephone engineer who began to study congestion in telephone service of the Copenhagen Telephone Company. He developed mathematical formulas to predict waiting times and line lengths. Over the years, queuing theory developed and expanded through many other service systems. The objectives of queuing theory are to improve customer service and reduce operating costs. As customers began to differentiate hospitals and queues by their service quality, reducing waiting times became a major consideration with many hospitals.

Waiting time has also become more important because of the increased time emphasis on quality, especially in service related to operations. The healthcare business also focuses on reducing waiting time as a component of quality improvement.

2.2.1 Queuing Model Characteristic

Over the past twenty years, people have expanded interest in patients' perception of health care (Sitzia & Wood, 1997). Patients' evaluation of service quality can be positive or negative, depending on actual waiting time and perceived waiting time. The

act of waiting has a significant impact on patients' satisfaction. Customer satisfaction is significantly affected by the number of time customers must spend waiting (Davis & Vollman, 1990).

Furthermore, research has proved that it is not only just waiting time that affects customer satisfaction but also the attribution of the waiting causes or customer expectations (Taylor, 1994). Consequently, Davis and Heineke (1994) claimed that one of the problems in queue management is customer's perceptions that the customer has to wait.

Stevenson (1999) and Russell (1998) concluded that a queuing system or waiting line is characterized by five major components which are: population source, number of server, arrival pattern, service pattern, and queue discipline.

- 1) The *population source* is where arrivals are generated. Arrivals of patients at the hospital may be drawn from either a finite or an infinite population. There are two possibilities: a finite population source refers to the limited size of the customer group. On the other hand, an infinite source is forever.
- 1) The *number of servers* describes the queuing systems capacity which is a function of each server capacity and the number being used. There is either a single or multiple-channel system; it is generally assumed that each channel can cope with customers one by one.
- 2) The *arrival pattern* includes arrival rate and distribution arrival. The rate at which during a specified period of time customers arrive at the service facility is called arrival rate. Furthermore, probability distribution is adjusted by service facility arrivals. A Poisson distribution could be defined from arrival; the arrivals number per unit of time at a service facility.
- 3) The *service pattern* in the queuing theory defines arrivals at the point and rate and service at a point of time. Queuing process service time can have different probability distributions with any one of a large number. The negative exponential distribution is for service time; service rate and arrival rate must be compatible with each other.

- 4) The *queue discipline* is the requirement with which waiting customers or patients are processed or served. First come, first served (FCFS) is the most general type of queue discipline; it serves the first item in line or queue. The queue is based on some order of priority or according to pre-appointment. Customers may also be selected from these e.g. a patient waiting at a dentist's office or diners at a restaurant where reservations are required.

Considering that the most important factor in healthcare is to control any resource, a planning context should be based on the limiting value of queuing characteristics rather than only average values. Moreover, controlling waiting time and the limiting value of a queue can help healthcare to improve queuing service quality and gain more positive feedback from customers.

2.3 Customer Satisfaction

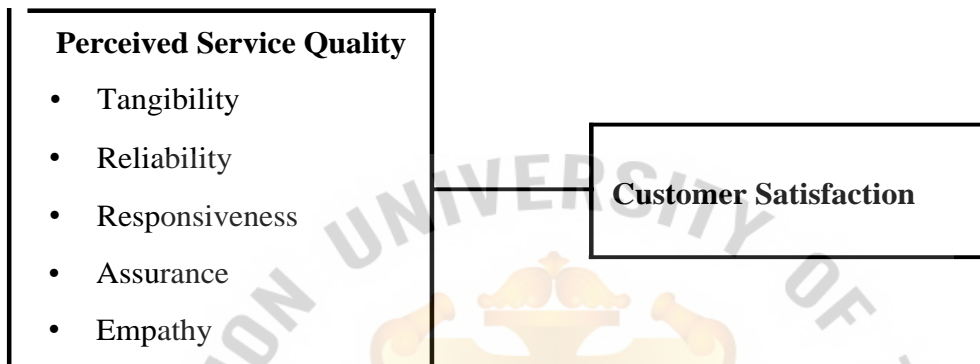
There are many definitions of customer satisfaction in literature. Customer satisfaction can describe when a customer is satisfied with a service or product that meets or exceeds their expectation. It is the best indicator when considered as one of the most important factors and can create company profitability (Muffato & Panizzolo, 1995).

In a hospital, the patient's satisfaction is one of the important factors of medical and hospital service quality. As patient satisfaction in services is important for quality assurance in hospital and medical services, patients who are satisfied with the services are more willing to come back to a particular doctor and hospital.

Fournier and Mick (1999) mentioned that a customer is satisfied when the service performance matches customer expectation. A customer is highly satisfied or delighted when the service performance exceeds customer expectations. If the service performance is below customer expectations, the customer is dissatisfied. In other words, customer satisfaction can be described as meeting or exceeding customer expectations.

Cronin and Taylor (1992) proposed that customer satisfaction is based largely on how they perceive the quality of the service provided by the service providers. The details can be seen in Figure 2.1.

Figure 2.1 Relationship between Service Quality and Customer Satisfaction



Source: Cronin and Taylor (1992)

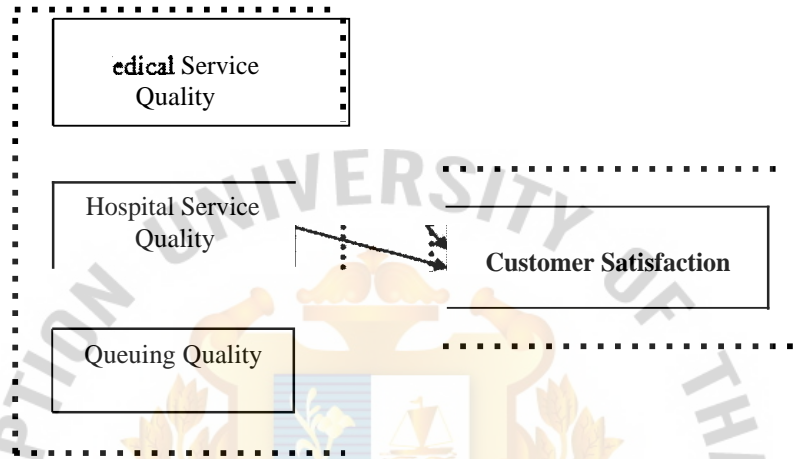
The relationship between service quality and customer satisfaction was confirmed by the study of Prasad (2003) who aimed to find the significant factors that influence the level of satisfaction of patients in international in-house patient departments (IPD) at a leading hospital in Bangkok Hospital. The results showed that patient satisfaction is significantly related to efficiency of the service performance, technology equipment, and human resource.

2.4 Conceptual Framework

In this study, the SERVPERF model as developed by Zeithaml et al., 1990 to measure service quality dimensions is the core of the research. The research framework was developed based on the related literatures. Three service performances, hospital, medical and queuing service quality were emphasized, and the influence of these factors on customer satisfaction on the SS Hospital is examined. The five dimensions of service quality which are tangibility, reliability, responsiveness, assurance and empathy were examined for each service. Medical service quality refers to the quality of service received from doctors; hospital service quality includes all other services provided by

the hospitals except services from the doctors and the queuing service. Finally, queuing service quality is the customer perception of the total lead time from customer arrival, waiting for and receiving all services. The relation between these factors and customer satisfaction are shown in the research framework in Figure 2.2:

Figure 2.2 Research Framework



2.5 Research Hypotheses

According to the research conceptual framework, this research studies the relationship and the impact of medical, hospital and queuing service quality on customer satisfaction in SS Hospital. The research hypotheses are:

- Hypothesis 1:** There is a relationship between medical service quality and customer satisfaction.
- Hypothesis 2:** There is a relationship between hospital service quality and customer satisfaction.
- Hypothesis 3:** There is a relationship between queuing quality and customer satisfaction.

2.6 Summary

In this chapter, Service quality (SERVQUAL) and the Service performance model (SERVPERF) of Zeithaml et al (1990) were reviewed together with the literature on customer satisfaction. In addition, queuing theory and queuing service quality were emphasized. The relationship between all dimensions and types of service quality and customer satisfaction were proposed. A conceptual framework stating the relationship between medical service quality, hospital service quality, queuing quality and customer satisfaction was proposed together with three related hypotheses.



CHAPTER III

RESEARCH METHODOLOGY

This chapter describes the research methodology. It includes research design, sampling procedures, questionnaire development, a pre-test, data collection plan, and data analysis procedures. The details are below.

3.1 Research Design

To identify the service quality and customer satisfaction of the SS Hospital, a survey is designed. Customer satisfaction is designated as the dependent variable of this study. The SERVPERF model will be used in this research, with its dimensions of service quality which are tangibility, reliability, responsiveness, assurance and empathy, as related to the three services, which are medical service quality, hospital service quality and queuing quality.

The research technique used in this study is the questionnaire survey method as the main primary data for SS Hospital. This kind of technique provides quick, inexpensive efficient and accurate means of assessing information about a population (Zikmund, 2000). The data will be collected from outpatients and their relatives and friends at SS Hospital.

3.2 Target population and Sample Size

The research intends to study the hospital customers' perception of medical service quality at SS Hospital. The target population is the patients and their relatives or friends who have experienced medical treatment at SS Hospital. A non-probability, snowball sampling method is used in the study to distribute questionnaires to respondents. This type of technique works like a chain referral as the researcher ask assistance from known people to help identify people with similar interests to distribute questionnaire.

To determine the sample size, the formula concerning proportion of success and failure recommended by Zikmund (2000) is:

$$n = \frac{Z^2 pq}{E^2}$$

Where

n	=	Sample Size
Z	=	z-score at the selected confidence level of 95% =1.96
p	=	proportion of success = 0.8
q	=	proportion of success = 1-p = 0.2
e	=	Error limit 5%

To determine p and q, fifty patients at the Out Patient Department (OPD) of the SS were approached. A question was asked regarding whether the waiting time spent queuing at SS hospital is important. Forty respondents (80 percent of them) indicated the high importance of the queuing issue, while the rest ten respondents (20 percent) indicated low importance on this issue. Hence, it could be determined that the proportion of success (p) equals 0.8, while the proportion of failure is 0.2. Therefore, the sample size could be computed accordingly.

$$\begin{aligned} \text{Hence } n &= \frac{(1.96)^2 * 0.8 * 0.2}{(.05)^2} \\ &= 245.86 \quad \mathbf{4} \quad 246 \end{aligned}$$

According to the result, two hundred and fifty questionnaires were distributed to the respondents.

3.3 Questionnaire Development

A Customer Satisfaction Survey Questionnaire was developed and used as the main data collection tool. The questionnaire is composed of two parts, as follows:

Part I: Measurement of Medical, Hospital Service Quality including Queuing Quality

This part aims to examine the factors that influence the customers' satisfaction toward SS Hospital. It asks respondents to express their perception of service quality dimensions and overall satisfaction with SS Hospital. Each service quality dimension in this study includes tangibility, reliability, responsiveness, assurance and empathy under hospital service quality, queuing quality and medical service quality.

A five-point Likert scale is applied, for the respondents to rate all three service qualities and customer satisfaction.

1 refers to "Strongly disagree"

2 refers to "Disagree"

3 refers to "Neutral"

4 refers to "Agree"

5 refers to "Strongly agree"

The questionnaire is developed based on the conceptual framework and reviewed factors in the literature review, which are hospital service quality, queuing quality and medical service quality. For part I, the questionnaire is separated into four parts:

Part A: Hospital service quality

Part B: Queuing quality

Part C: Medical service quality

Part D: Overall Satisfaction

For Part A, there are ten questions which relate to hospital service quality. It is emphasized that the measurement is of the other services provided to customers, which excludes service from doctors but includes facilities, decoration, medical staff's appearance, and parking space. These questions are quoted from the research of development of a multidimensional scale for healthcare service quality (HCSQ) in an Indian context, which was studied by Chahal and Kumari (2010), and also from a study

of perceived medical service quality at the acupuncture department in Shanghai First People Hospital of the People's Republic China (Yan, 2005).

In Part B, there are ten questions which are related to queuing quality. It is emphasized that the measurement is of customer satisfaction towards medical queue length (waiting line) such as in the waiting area, waiting time for medical treatment and examination, plus the readiness and willingness of medical staff to respond to customers. These questions are taken from the research of development of a multidimensional scale for healthcare service quality (HCSQ) in Indian context, studied by Chahal and Kumari (2010), and also from an investigation on patients' satisfaction in service quality dimension in Ramkhamhaeng Hospital, Bangkok, Thailand, studied by Lanying (2006).

In the Questionnaire Part C, there are also ten questions which are related to medical service quality. It emphasizes measuring the quality of service received from doctors, including skillful medical care, accurate diagnoses and medical staffs and doctors' feedback to customers. These questions are taken from the research and development of a multidimensional scale for healthcare service quality (HCSQ) in Indian context, studied by Chahal and Kumari (2010), and also from an investigation on patient satisfaction in service quality dimensions in Ramkhamhaeng Hospital, Bangkok, Thailand, studied by Lanying (2006).

In the Questionnaire Part D, there are five questions which are related to overall satisfaction. The emphasis is on measuring customer satisfaction with overall service qualities from the hospital. These questions are taken from the research of customer satisfaction with the service quality of a sea freight forwarder in Thailand, by Jirasunantochai (2010).

Part II: Personal data of Respondents

This part consists of customer background, such as gender, age and waiting time of each visit.

3.4 Questionnaire Pre-test

The pre-test was conducted in order to test the reliability of the questionnaire by using thirty questionnaires. Pre-test refer to a trial basis on a small sample to decide the questionnaire content before being distributed to all respondents. If the Cronbach's alpha is more than 0.7, it can be concluded that the questionnaire is reliable and the researcher can continue distributing the questionnaire. If the Cronbach's alpha is less than 0.7, it can be concluded that the questionnaire is not reliable and it is not usable. Therefore, this research was necessary to do a pre-test to prove the questionnaire's suitability before it was used in the real study. After completing the pre-test, the researcher had to adjust or revise some question content, wording, sequencing, form, and layout to correct wrong presentations.

Pretest samples of thirty questionnaires were distributed in order to test the reliability of the questionnaire. The study made use of Cronbach's alpha coefficient to describe the reliability of the instrument. Nunnaly (1978) pointed out that the Cronbach's alpha level must be equal to or greater than 0.7 in order to be considered reliable.

Table 3.1 Reliable Analysis Result

Construct	Cronbach Alpha Coefficient
Hospital Service Quality	0.889
Queuing Quality	0.899
Medical Service Quality	0.932
Overall Satisfaction	0.922

According to the reliability test result in Table 3.1, the questionnaire is reliable because the value of Cronbach's alpha is equal to or greater than 0.7. Therefore, the questionnaire is sufficiently qualified for the data collection in the next stage.

3.5 Data Collection Plan

In this research, the data was collected from patients and their relatives or friends who had experienced medical treatment at SS Hospital. The Thai version of the questionnaire was distributed to Thai customers while the English version was provided to the foreign customers in order to avoid any possible language problem.

3.6 Data of Analysis Procedure

The researcher used Multiple Linear Regression in analyzing descriptive data, and regression analysis to measure the relationship of hospital service quality, queuing quality, medical service quality and customer satisfaction towards SS Hospital as proposed in the hypotheses.

3.6.1 Descriptive Data Analysis

Descriptive data analysis is explained as the transformation of raw data into a form that will be easy to understand and interpret, rearranging, ordering, and manipulating data to provide descriptive information (James & David, 2003). In this research, it is applied to summarize the demographic characteristics data of the respondents. The calculation of averages, frequency distribution and percentage distribution will be used for summarizing the data.

3.6.2 Regression Analysis

There are many techniques to measure correlation. In order to do the hypothesis testing, multiple linear regression analysis is focused. As an enlargement of a simple linear regression model is named as the multiple linear regression models. It is used when two or more independent variable affect the dependent variable (Zigmund, 2000). Furthermore, Barbara and Linda (2007) defined regression analyses as the set of statistical techniques that allow accessing the relationship between one dependent variable and several independents variables. Barbara and Linda (2007) also explained that the multiple linear regression analysis is a popular technique in many fields,

including studies of satisfaction acquired from many causes. Thus, the researcher explained that multiple regression analysis is a way to determine the relationship between a dependent variable and several independent variables. The factors of service quality are quantitative. So the method for testing them is multiple linear regressions.

The equation can be described as

$$Y = a + b_1 X_1 + b_2 X_2 + b_3 X_3 + \dots + b_n X_n$$

Where:

- V= the predicted value of the dependent variable
- a = the constant, where the regression line intercept the y axis
- b = the regression coefficients
- x = the independent variables

In this research, multiple linear regression is chosen as a tool to test the hypotheses which are mentioned above. The independent variables are hospital service quality, queuing quality and medical service quality. In contrast, customer satisfaction is defined as the dependent variable.

3.7 Summary

This chapter explains all the related research methodology and the plan which will be used to achieve the research propose. It includes research design, population sampling, data collection, questionnaire development, pre-test and data collection plan. The respondents are the two hundred and fifty persons of the target group for this research.

CHAPTER IV

PRESENTATION AND CRITICAL DISCUSSION OF RESULTS

This chapter provides the results of descriptive statistics and analysis of primary data collected from two hundred fifty customers who had experienced medical treatment at SS hospital. Multiple linear regression analysis technique is used to test all research hypotheses, while one-sample t-test is performed to test the significant level of the detailed quality of each service. The data analysis is divided into three sections;

1) Descriptive Analysis of Sample Profile; 2) Hypothesis testing; and 3) level of detailed quality of each service.

4.1 Descriptive Analysis of Sample Profile

In this research, descriptive analysis is used for presenting the general data of the respondents' profile and also to describe or summarize information about a population or sample. The respondent profile involved respondent's gender, age and how long customer is waiting in a medical queue for each treatment. The sample profile uses frequency and percentage to analyze data. The result is shown in the following Table.

Table 4.1: Respondents' Characteristics

Respondents' Characteristics		Percent
Gender	Male	48.0
	Female	52.0
Age	18-23	10.0
	24-29	30.5
	30-35	27.2
	36-41	23.6
	42 and above	8.8
Medical Queue Length	10 minutes	18.4
	15 minutes	30.0
	20 minutes	26.4
	More than 20 minutes	25.2

There are 250 respondents in the survey. Table 4.1 shows that females were the majority of respondents (130, or 52 percent). The remaining respondents were male (120, or 48 percent). The largest group of respondents' age ranges between 24 to 29 (30.5 percent), between 30 to 35 years old (27.2 percent), between 36 to 41 years old (23.6 percent), between 18 to 23 years old (10 percent), and 42 years old and above (8.8 percent). Meanwhile, most respondents spent 15 minutes waiting in a medical queue for each treatment (30 percent), 20 minutes for (26.4 percent), more than 20 minutes for (25.2 percent), and 10 minutes for (18.4 percent).

4.2 Hypotheses Testing

There are three research hypotheses that are tested on the significance level of relationships between influencing factors, including medical, hospital service quality and queuing quality, and customer satisfaction. The service quality consists of five factors which are tangibility, reliability, responsiveness, assurance, and empathy.

Table 4.2: Regression Analysis Results

Variables	Unstandardized Coefficients (B)	Standardized Coefficients (Beta)	t	p-value
(Constant)	0.187		0.719	0.473
Medical Service Quality	0.318	0.282	4.944	0.000
Hospital Service Quality	0.190	0.142	2.475	0.014
Queuing Quality	0.462	0.426	7.576	0.000

Remark:

- a. Dependent Variable: Customer Satisfaction
- b. $F = 92.635$; $p < .001$
- c. Adjusted $R^2 = .525$

According to Table 4.2, the F-score was 92.635 with the p-value less than 0.05 which indicated a significant relationship between the customers' satisfaction and hospital service quality, queuing quality and medical service quality. Adjusted R Square of 0.525 shown in the Table inferred that more than half of customer satisfaction with the

SS hospital (i.e. 52.5 percent) was explained by hospital service quality, queuing quality and medical service quality.

To test each hypothesis, the unstandardized coefficient of each factor together with the t-value and its significant is considered. The p-values were less than 0.05 which indicated that the individual relationship between hospital service quality, queuing quality and medical service quality and customer satisfaction are all significant. Details of all hypotheses testing are shown as follows:

Hypothesis 1: There is a positive relationship between medical service quality and customer satisfaction. The coefficient is 0.318, the t-value is 4.944 with p-value of less than 0.001, which show that there is a significant relationship between medical service quality and customer satisfaction.

Hypothesis 2 There is a positive relationship between hospital service quality and customer satisfaction. The coefficient is 0.190, the t-value is 2.475 with p-value of less than 0.05, which show that there is a significant relationship between hospital service quality and customer satisfaction.

Hypothesis 3 There is a positive relationship between queuing quality and customer satisfaction. The coefficient is 0.462, the t-value is 7.576 with p-value of less than 0.001, which show that there is a significant relationship between queuing quality and customer satisfaction.

Queuing quality significantly influenced customer satisfaction ($\beta=0.462$, $p<.001$), followed by medical service quality ($\beta=0.318$, $p<.001$), while hospital service quality marginally influenced customer satisfaction ($\beta=0.190$, $p<.005$). Moreover, the factor providing the highest influence on satisfaction is queuing quality, followed by medical service quality and hospital service quality (standardized $\beta = 0.426$, 0.282 , and 0.142 respectively).

4.2.1 Level of Customer Satisfaction with Service Quality

To obtain a clearer picture of the three services quality provided the SS Hospital, the t-test of each individual item measuring hospital service quality, queuing quality and medical service quality were performed. The service quality results are illustrated in Tables 4.3 to 4.5.

Table 4.3: T-test Results of the Medical Service Quality

Medical Service Quality	Mean	t-score	P-value
Doctors are knowledgeable and have specialty expertise	4.41	40.262	.000
Doctors provide accurate and reliable diagnosis and treatment	4.36	35.454	.000
Doctors are thorough in medical examination	4.15	28.710	.000
Doctors are always polite to you	4.13	26.151	.000
Doctors answer your queries satisfactorily	4.23	29.504	.000
Doctors are always helpful and supportive	4.07	24.974	.000
Doctors paid enough consideration to my concerns in deciding on a medical procedure	4.17	31.242	.000
Doctors are honest in their profession	4.34	34.150	.000
Doctors solve your problems independently and give you confidence	4.25	32.709	.000
Doctors are friendly and courteous when providing the service	4.08	28.659	.000

Note: t value is 3.00

From Table 4.3, there are ten items in medical service quality. Medical service quality is concerned with doctors' knowledge, treatment and diagnosis accuracy, doctors' politeness, appearance, friendliness, and treatment result. The result shows that the mean of each item was 4.41, 4.36, 4.15, 4.13, 4.23, 4.07, 4.17, 4.34, 4.25 and 4.08 respectively, which was higher than a test value of three. Significant t-score was explained (t=40.262, 35.454, 28.710, 26.151, 29.504, 24.974, 31.242, 34.150, 32.709

and 28.659, $p<.001$), meaning that each item of medical service quality was considered as significantly high.

Table 4.4: T-test Results of the Hospital Service Quality

Hospital Service Quality	Mean	t-score	P-value
Outer appearance of the hospital is good	4.23	31.270	.000
OPD is visually appealing with clean physical facilities including ventilation system	4.27	32.140	.000
OPD waiting area at Samitivej Hospital is clean	4.33	35.953	.000
Facilities in physical examination room are advanced and hygienic	4.26	36.037	.000
Medical equipment is advanced to provide modern diagnosis and treatment	4.36	38.032	.000
Medical store is well equipped with required medicines	4.29	36.112	.000
Medical staff's appearance is neat, with well dressed uniform	4.15	32.090	.000
When patients have problems, medical staff provide professional appearance	4.18	29.610	.000
Emergency services are good	4.27	34.306	.000
Parking lot of Samitivej Hospital is secure	3.66	13.360	.000

Note: Test value is 3.00

From Table 4.4, there are ten items in hospital service quality. Hospital service quality is concerned with hospital facilities, medical equipment is advanced, cleanliness of OPD waiting area, medical staff's appearance, emergency service and parking space. The result shows that the mean of each item was 4.23, 4.27, 4.33, 4.26, 4.36, 4.29, 4.15, 4.18, 4.27 and 3.66 respectively, which was higher than test value of three. With significant t-scores ($t=31.270, 32.140, 35.953, 36.037, 38.032, 36.112, 32.090, 29.610, 34.306$ and $13.360, p<.001$), this means that each item of hospital service quality was considered as significantly high.

Table 4.5: T-test Results of the Queuing Quality

Queuing Quality	Mean	t-score	P-value
Waiting area in OPD at Samitivej Hospital is comfortable	4.10	28.849	.000
Seating is comfortable while waiting for nurse calling	4.09	29.230	.000
Waiting time is not too long to receive treatment from doctors	3.63	12.018	.000
Waiting time is not too long to receive the medical examination such as blood test, X-ray, ultrasound, etc. from staffs	3.64	12.348	.000
Waiting time is not too long to receive medical service in emergency case	4.02	28.955	.000
Medical staffs are never too busy to respond to your request and answer your question quickly	3.82	19.255	.000
Medical staffs feedback to you in time if the appointment cannot be made at prompt time	3.96	24.984	.000
Nursing staff is available throughout their duty time	3.94	22.746	.000
The entire waiting time at the OPD is not too long	3.64	12.175	.000
Overall queue management at the OPD is proper	3.99	21.877	.000

Note: t value is 3.00

From Table 4.5, there are ten items in queuing quality. Queuing quality is concerned with comfort in the waiting area, waiting time to receive treatment and medical examination, medical staffs' and doctors' readiness and willingness to help and feedback to customer requests, and overall queue management. The result shows that the mean of each item was 4.10, 4.09, 3.63, 3.64, 4.02, 3.82, 3.96, 3.94, 3.64 and 3.99 respectively, which was higher than test value of three. With significant t-scores ($t=28.849, 29.230, 12.018, 12.348, 28.955, 19.255, 24.984, 22.746, 12.175$ and 21.877 , $p<.001$), this means that each item of queuing quality was considered as significantly high.

In conclusion all services' quality including medical service, hospital service, and queuing quality were perceived as high. All three explanatory factors, which are medical, hospital service quality and queuing quality were significantly related to customer satisfaction. All hypotheses testing results are summarized in Table 4.6.

Table 4.6: Summary of Research Hypotheses

Hypotheses	Statement	Result
H1	There is a positive relationship between medical service quality and customer satisfaction.	Supported
H2	There is a positive relationship between hospital service quality and customer satisfaction.	Supported
H3	There is a positive relationship between queuing quality and customer satisfaction.	Supported

4.3 Summary

All three predicted factors, medical service quality, hospital service quality and queuing service quality, were found to influence customer satisfaction significantly and positively, as expected. The proposed conceptual framework was a significant fit by analyzing using regression analysis. All three proposed hypotheses were supported by the data. However, the regression model indicated that the queuing quality provided the highest influence on customer satisfaction, followed by medical service quality and hospital service quality. Furthermore, the level of each item in hospital service quality, queuing quality and medical service quality were highly significant.

CHAPTER V

SUMMARY FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

This chapter presents the result of the research. There are four sections in this chapter which are conclusions and summary of findings, managerial implications and recommendation, and suggestion for further study.

5.1 Conclusions and Summary of the Findings

This research finding was focused on the SS Hospital. Two hundred and fifty questionnaires were distributed to customers who had experienced medical treatment at SS Hospital. The aim is to study the relationship between the three impacting factors which are medical, hospital service quality and queuing quality and customer satisfaction.

According the above data analysis result, the hypotheses testing shows that all three factors have an effect on customer satisfaction at SS Hospital: medical and hospital service quality and queuing quality. Furthermore, queuing quality is the highest influencing factor toward customer satisfaction, followed by medical service quality, while hospital service quality is only marginally significant. The reason why customers were highly satisfied with queuing quality is because medical and hospital service quality is at the level at which the customer is already satisfied with the service quality, while queuing quality does concern the level of customer satisfaction. However, customers had expected hospital service quality to be good in decoration and facilities as they can recognize these at their first step into the hospital. Medical staffs and doctors are also welcome and delighted to provide treatment to all kind of customers without any rejection. As a result, their services are able to meet customer expectation. Furthermore, customers have not expected or known how long they would have to wait in line for medical treatment. About queuing, if customers expect the queue to be long, but the actual waiting time is shorter than their expectation, then they are satisfied to wait for medical treatment. Hence, the relationship measures that queuing quality has

the highest positive relationship to customer satisfaction. The research findings are confirmed by the data gathered from the in-depth interviews with customers of SS Hospital. Customers reported that they have few expectations on a queue line as they do not know how long they are going to wait. When they find that they are in a short waiting line, they are delightful because it is beyond their expectation. Most of the customers know that medical and hospital service quality is good with pleasant amenities in the waiting area and in the hospital, so they still feel happy to wait longer.

According to the level of customer satisfaction with service quality item analysis result, the result shows that each item under three variables (hospital service quality, queuing quality and medical service quality) is considered significantly high. The hospital service quality tested hospital facilities, up-to-date medical equipment, cleanliness of OPD waiting area, medical staff's appearance, emergency service and parking space. It can be concluded that hospital service quality is highly significant because customers are satisfied with the advanced medical equipment which provides modern diagnosis and treatment, the cleanliness of OPD waiting area, the medical store is well equipped with required medicines, emergency services are good, OPD is visually appealing and clean, physical facilities including the ventilation system, and lastly facilities in the physical examination room are advanced and hygienic.

With hospital facilities, decoration, cleanliness in waiting area, and the high technology of equipment are at a level of customer satisfaction which could lead SS Hospital to be the first private hospital that a customer is going visit. For queuing quality, it tested comfortableness in the waiting area, waiting time to receive treatment and medical examination, medical staff's and doctors' readiness and willingness to help and give feedback to customer requests, and overall queue management.

Queuing quality is highly significant because customers perceived that the waiting area in OPD at SS Hospital is comfortable, seating is comfortable while waiting for the nurse to call, waiting time is not too long to receive medical service in emergency case, overall queue management at the OPD is proper, and medical staff give feedback to a customer in time if the appointment cannot be made promptly. However, based on each

item of queuing quality, customers would feel happy to wait longer and be willing to wait in line.

For medical service quality, it tested doctor knowledge, treatment and diagnosis accuracy, doctors' politeness, doctors' appearance, friendliness, and treatment result. Medical service quality is highly significant because customers perceived that doctors are knowledgeable and have specialist expertise, doctors provide accurate and reliable diagnosis and treatment, doctors are honest in their profession, doctors solve customer problems independently and give customers confidence, and doctors answer customer queries satisfactorily. These are the reasons that make customers feel confident and trust the medical service quality of SS Hospital. Furthermore, customers perceived that each item under each variable is good, at a satisfactory level which makes them happy when visiting SS Hospital.

Moreover, the physical queuing line and queuing operation is related to customer satisfaction. A good queuing operation process would lead to shorter waiting time which would create positive customer feedback or customer satisfaction. Short waiting times for customers would lead to lower turnover of the customers from the waiting area, and customers would be willing to queue. Conversely, long waiting times and queue lines would lead to customer dissatisfaction and they might decide to receive medical treatment from competitors.

5.2 Theoretical Implications

This research was developed to measure only outpatients' customer satisfaction with service quality (medical, hospital service quality and queuing quality) of SS Hospital. Consequently other businesses can apply this research's concept and its model of customer satisfaction and service quality. If other researchers would like study other businesses, such as acne clinic or spa, they could use the customer satisfaction and service quality model and concept. They can adapt the main contributory factors of service quality which are tangibility, reliability, responsiveness, assurance and empathy, to make their own factors to measure customer satisfaction. The researchers can use

medical, hospital service quality and queuing quality factors for an acne clinic as an acne clinic and a hospital have a similar business nature. Thus, they may add marketing, promotion and equipment technology factors in order to measure customer satisfaction. For a spa, the atmosphere, professionalism of staffs, and marketing factors are illustrations of likely independent variables. Hence, the hospital industry is concerned with patients' sickness, health, life and death, so other businesses can apply only some of this study's concept to their business but not one hundred percent. Other businesses such as hypermarkets, movie theaters, convenience stores could be studied using other factors which match their business nature and customer cluster.

5.3 Managerial Implications

This study aims to comprehend the influence of medical and hospital service quality including queuing quality on customer satisfaction. The hospital could use this analysis and information to retain customers and improve customer satisfaction. Queuing quality is one of the important factors in creating positive feedback and customer returns to receive later treatment. The development and improvement of queuing quality can be done by shortening waiting time and improving services at waiting areas. Waiting time can be reduced based on managing staffs and doctors at idle and peak times. Medical staffs should be ready and willing to enthusiastically approach customers and give feedback to their requests on time. To improve service time, staff's working efficiency, working system and job design should be focused and managed to speed up service.

Customers should not have to wait for a long time for services. Moreover, waiting areas should be redecorated or provide more entertaining facilities which would make customers more willing to wait in line. In addition, the hospital should build movie rooms and place more reading material to make customers more relaxed, relieving their stress and anxiety. These suggestions are useful for making customers feel that waiting time is shorter than it is. Therefore, queuing quality can gain the satisfaction of customers.

5.4 Limitations and Recommendations for Future Research

This research was developed to measure only patients, their relatives and friends, who have experienced medical treatment at SS Hospital, which excluded customers who had to be admitted into the hospital. The research results in Chapter 5 demonstrate that all specific service attributes have an influence on the overall satisfaction of SS Hospital's customer with service quality. If the hospital knows the impact of each service quality dimension and customer needs, it will help the hospital to create the right action plan or strategy to solve or prevent any problem that may occur, and more importantly to satisfy customer. In addition, knowing the factors affecting customer satisfaction, the hospital could further study others requirement from customers while they are waiting in the queue, such as an entertainment facility in the waiting area in order to make them happy enough to return for more services in the future.

The next study may focus on other factors that could have an effect on customer satisfaction, such as financial service, reception counter, nursing schedule, and other facilities. As this study only concerned itself with three factors of service quality including medical service quality, queuing quality and hospital service quality, they may not be sufficient for measuring customer satisfaction in future research when the hospital has developed or improved some operation. Moreover, this research focuses only on hospital outpatients. However, experience of inpatients with the service quality also needs to be researched. Therefore, researchers could study inpatient's satisfaction with hospital service quality.

BIBLIOGRAPHY

- Barbara, G., & Linda, S. (2007). *Using Multivariable Statistics*. Boston: Pearson International Edition. 2' edition.
- Bolton, R.N., & Drew, J.H. (1991). A longtitude analysis of the impact of service changes on customer attitudes. *Journal of Marketing*, 55(1), 1-9.
- Bolton, R.N., & Drew, J.H. (1991). A Multistage model of customers' assessment of service quality and value. *Journal of Customer Research*, 17(4), 375-384.
- Cronin, J. J., & Taylor, S. (1992). Measuring service quality: a re-examination and extension. *Journal of Marketing*, 56, 55-68.
- Davis, M., & Heineke, J. (1998). How Disconfirmation, Perception and Actual Waiting Times Impact. *Unpublished Manuscript*.
- Davis, M., & Vollmann, T. (1990). A framework for Relating Waiting Time and Customer Satisfaction in a Service Operation. *Journal of Services Marketing*, 4(1), 61-69.
- Fournier, S., & Mick, G. (1999). Rediscovering Satisfaction. *Journal of Marketing*, 63, 5-23.
- Geyskens, I., Steenkamp, J-B.E.M., & Kumar, N. (1999). A meta-analysis of satisfaction in marketing channel relationship. *Journal of Marketing Research*, 40(5), 223-238.
- Gronroos, C. (2000). *Service Management and Marketing-A Customer Relationship Management Approach*. West Sussex: Wiley Books. 2' edition.
- Hardeep, C., & Kumari, N. (2010). Development of Multidimensional Scale for Healthcare Service Quality (HCSQ) in Indian Context. *Journal of Indian Business Research*, 2(4), 230-255.
- James, R., & David, L. (2003). *Statistic, Data Analysis and Decision Modeling*. 2' edition.
- Jidapa, J. (2010). *The Research of Customer Satisfaction with the Service Quality of a Sea Freight Forwarder in Thailand*. Bangkok, Thailand: Assumption University.
- Lam, S., Shankar, V., Erramilli, M.K., & Murphy, B. (2004). Customer value, satisfaction, loyalty, and switching cost: an illustration from a business-to-business service context. *Journal of the Acadamy of Marketing Science*, 32(3), 293-311.

- Lewis, R.C, & Booms, B.R. (1983). *The market aspects of service quality, emerging perspectives on services marketing*. Chicago: American Marketing.
- Linder-Pelz, S. (1982). Toward a theory of patient satisfaction. *Social Science & Medicine*, 16 (5), 57-82.
- Lanying, M. (2006). *An Investigation on Patient's Satisfaction in Service Quality Dimensions in Ramkhamhaeng Hospital, Bangkok, Thailand*. Unpublished MSc report, Thailand: Assumption University.
- Assumption University.
- Muffatto, M., & Panizzolo, R. (1995). A Process based View for Customer Satisfaction. *International Journal of Quality & Reliability Management*, 12 (9), 154-169.
- Nunnally, J. (1978). *Psychometric Theory*. New York: McGraw Hill. 2nd edition.
- Oliver, R. (1980). A Cognitive Model of the Antecedents and Consequences of Satisfaction Decisions. *Journal of Marketing Research*, 17(3), 460-469.
- Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1985). A Conceptual Model of Service Quality and Its Implications for Future Research. *Journal of Marketing*, 49(4), 41-45.
- Parasuraman, A., Zeithaml, V., & Berry, L. (1988). SERVQUAL: A Multiple Item Scale for Measuring Customer Perception of Service Quality. *Journal of Retailing*, 65(1), 12-40.
- Parasuraman, A., Zeithaml, V., & Berry, L. (1990). *An Empirical Examination of Relationship in an Extended Service Quality Model*. Cambridge: MA: Marketing Science Institution.
- Prasad, M. (2003). *A Consultancy Project to Study International IPD Patient's Perceptions about The Service Quality of Various Department of Bangkok Hospital and Their Level of Overall Satisfaction with Bangkok Hospital*. Unpublished MBA report. Thailand: Assumption University.
- Russell, R., & Taylor, B. (1998). *Operations Management: Focusing on Quality and Competitiveness*. Upper Saddle River, New Jersey: Prentice-Hall Inc. 2nd edition.
- Rust, A., Zahorik, A., & Keiningham, T. (1996). *Service Marketing* New York: Harper Collins College Publishers. 1st editon.

- Sitzia, J., & Wood, N. (1997) Patient Satisfaction: A Review of Issues and Concepts. *Social Science & Medicine*, 44, 1829-1843.
- Soutar, G. (2001). *Service Quality Management in Hospitality, Tourism, and Leisure*. NY: The Haworth Press. Inc.
- Stevenson, W. (1999). *Production/Operations Management*. Burr Ridge, Boston: The Magraw-Hill Companies. Inc. 5th edition.
- Taylor, S. (1994). Distinguishing Service Quality from Patient Satisfaction in Developing Health Care Marketing Strategies. *Hospital and Health Service Administration*, 39, 221-36.
- Taylor, S. (1994). Waiting for Service: The Relationship between Delays and Evaluation of Service. *Journal of Marketing*, 58(2), 56-69.
- Woodruff, R.B., & Flint, D.J. (2003). Research on business-to-business customer value and satisfaction. *Advances in Business Marketing and Purchasing*, 12, 515-547.
- Yan, Y. (2005). *A Study of Perceived Medical Service Quality at Acupuncture Department in Shanghai First People Hospital of the People's Public China*. Bangkok, Unpublished MSc report. Thailand: Assumption University.
- Zeithmal, A., Parasuraman, A., & Berry, L. (1990). *Delivering Quality Service: Balancing Customer Perceptions and Expectation*. New York: Free Press.
- Zifko-Baliga, G., & Krampf, R. (1997). Managing Perceptions of Hospital Quality. *Marketing Health Services*, Spring, 28-35.
- Zikmund, W. (2000). *Business Research Methods*. Florida: The Dryden Press Harcourt Brace College Publishers. 6th edition.



APPENDICES



APPENDIX A

Questionnaire

CUSTOMER SATISFACTION SURVEY

Dear respondents,

This questionnaire is designed for a graduate project in the Master of Science Supply Chain Management Program at Assumption University. All information provided will be confidential and will be used for academic research purpose only. Your valuable time and answers are much appreciated. Thank you for your cooperation.

Part I: Perception of service quality of the Samitivej Sukhumvit Hospital.

Please indicate (✓) the level of your perception toward the service quality of the hospital.

Your opinion on.....		Level of Your Opinion				
		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Hospital Service Quality		5	4	3	2	1
1	Outer appearance of the hospital is good					
2	OPD is visually appealing and clean physical facilities including ventilation system					
3	OPD waiting area at Samitivej Hospital is clean					
4	Facilities in physical examination room are advanced and hygienic					
5	Medical equipment is advanced to provide modern diagnosis and treatment					
6	Medical store is well equipped with required medicines					
7	Medical staff's appearance is neat and well dressed uniform					
8	When patient have problems, medical staff provide professional appearance					
9	Emergency services are good					
10	Parking lot at Samitivej Hospital is secure					
Queuing Quality						
1	Waiting area in OPD at Samitivej Hospital is comfortable					
2	Seating is comfortable while waiting for nurse calling					
3	Waiting time is not too long to receive treatment from doctors					
4	Waiting time is not too long to receive medical examinations such as blood test, X-ray, ultrasound, etc. from staffs					
5	Waiting time is not too long to receive medical service in emergency cases					

Your opinion on.....		Level of Your Opinion				
		Strongly Agree	<-4	Strongly Disagree		
6	Medical staffs are never too busy to respond to your request and answer your question quickly					
7	Medical staffs feedback to you in time if the appointment cannot be made promptly					
8	Nursing staff are available throughout their duty time					
9	The entire waiting time at the OPD is not too long					
10	Overall queue management at the OPD is proper					
Medical Service Quality						
1	Doctors are knowledgeable and have specialist expertise					
2	Doctors provide accurate and reliable diagnosis and treatment					
3	Doctors are thorough in their medical examination					
4	Doctors are always polite to you					
5	Doctors answer your queries satisfactorily					
6	Doctors are always helpful and supportive					
7	Doctors paid enough consideration to my concerns in deciding on a medical procedure					
8	Doctors are honest in their profession					
9	Doctors solve your problems independently and give you confidence					
10	Doctors are friendly and courteous when providing the service					
Overall Satisfaction						
1	You have been satisfied constantly with Samitivej Sukhumvit Hospital					
2	You have a positive attitude towards Samitivej Sukhumvit Hospital services					
3	You have a very good impression of Samitivej Sukhumvit Hospital					
4	Overall service quality provided by Samitivej Sukhumvit Hospital meets the degree of satisfaction					
5	Overall treatment outcomes provided by Samitivej Sukhumvit Hospital meets the degree of satisfaction					

What area of the hospital services or employees would you like to be improved?

.....

.....

.....

Other comments/suggestions

.....

.....

.....

Part II: General Information (Please mark √ your answer)

1. Gender

- ☐ Male
- ☐ Female

2. Age

- ☐ 18-23
- ☐ 24-29
- ☐ 30- 35
- ☐ 36-41
- ☐ 42 and above

3. How long are you waiting in the medical queue for each treatment?

- ☐ 5 minutes
- ☐ 10 minutes
- ☐ 15 minutes
- ☐ 20 minutes
- ☐ More than 20 minutes

— — -Thank you for your kind cooperation— —

มหาวิทยาลัยอัสสัมชัญ

SINCE 1969

แบบสอบถามความพึงพอใจต่อโรงพยาบาลสมิติเวช สุขุมวิท

เรียน เอบแบบสอบถาม

งานวิจัยนี้เป็นส่วนหนึ่งของการศึกษาปริญญาโทมหาวิทยาลัย

ความเห็นของท่านจะถูกเก็บเป็นความลับและนำมาใช้เพื่อ

n 15

ข้อมูลส่วนตัวของท่านจะไม่ถูกนำมาเปิดเผยหรือส่งต่อไปยังบุคคลภายนอก ขอ

ความพึงพอใจของผู้ใช้บริการโรงพยาบาล สมิติเวช สุขุมวิท

กรุณาระบุ ()

ความคิดเห็น		ระดับความคิดเห็น เห็นด้วยอย่างยิ่ง ← → ไม่เห็นด้วยอย่างยิ่ง				
การบริการของโรงพยาบาล		5	4	3	2	1
1	โรงพยาบาลมีบรรยากาศภายนอกที่ดี					
2	แผนกผู้ป่วยนอกมีความสวยงาม สะอาด และครบครัน อาทิเช่น การตกแต่ง เก้าอี้สำหรับรอคิว ระบบถ่ายเอ็กซเรย์ แสงไฟ และอุณหภูมิที่พอเหมาะ					
3	บริเวณที่พักรอของแผนกผู้ป่วยนอกมีความสะอาด					
4	สิ่งอำนวยความสะดวกในห้องตรวจของแพทย์มีความพร้อม สะอาด และทันสมัย					
5	เครื่องมือแพทย์ มีความก้าวหน้าพร้อมที่จะทำการตรวจ และรักษาคอนไช้อย่างทันสมัย					
6	คลังยาใช้เครื่องมือที่ทันสมัยและมียาที่ครบครัน					
7	เจ้าหน้าที่ทางการแพทย์ดูดี แต่งตัวสุภาพเรียบร้อย					
8	เจ้าหน้าที่ทางการแพทย์ตอบคำถามคนไข้ได้อย่างมืออาชีพ					
9	บริการฉุกเฉินของโรงพยาบาลอยู่ในระดับดี					
10	ที่จอดรถของโรงพยาบาลมีความปลอดภัย					
การรับบริการ						
1	บริเวณที่พักรอของแผนกผู้ป่วยนอกของโรงพยาบาลมีความสะดวกสบาย					
2	ที่นั่งระหว่างรอพบแพทย์เรียกตรวจมีความสะดวกสบาย					
3	โดยปกติคนไข้ใช้เวลาไม่นานในการรอรับการตรวจ a in จากแพทย์					
4	คน .ไข้ใช้เวลาไม่นานในการรอตรวจทางการแพทย์เช่นตรวจเ a เอกซ์เรย์ อัลตราซาวด์ และอื่นๆ					

คว มคิดเห็น		ระดับความคิดเห็น เห็นด้วยอย่างยิ่ง ←→ ไม่เห็นด้วยอย่างยิ่ง				
5	คนไข้ใช้เวลารอแพทย์/การรักษาทางการแพทย์ไม่นาน ในกรณีฉุกเฉิน					
6	พนักงานไม่เคยยุ่ง จนไม่สามารถให้บริการและตอบคำถามคนไข้ได้รวดเร็ว Li/					
7	พนักงาน แจ้งให้ผู้ป่วยทราบทันเวลาในกรณีที่แพทย์/เจ้าหน้าที่ทางการแพทย์ไม่สามารถ รักษาตามนัด					
8	พยาบาลมีความพร้อมในการให้บริการตลอดเวลา					
9	เวลาที่คนไข้ใช้ในกรรอรับบริการทั้งหมดไม่นานเกินไป					
10	ในภาพรวมแผนกผู้ป่วยนอกสามารถจัดการการรอรับบริการของ 01 คนไข้ได้อย่างเหมาะสม					
การบริการทางการแพทย์						
1	แพทย์มีความ ุและความชำนาญเฉพาะทาง					
2	แพทย์วินิจฉัยโรคและให้การรักษาได้อย่างถูกต้องและ น่าเชื่อถือ					
3	แพทย์ตรวจโรค a till ละเอียดถี่ถ้วน					
4	แพทย์มีความ ุภาพตลอดเวลา					
5	แพทย์ตอบข้อสงสัยของผู้ป่วยได้อย่างดี					
6	LOAM ยให้ความช่วยเหลือและให้กำลังใจเสมอ a					
7	แพทย์ให้ความสนใจต่อการตัดสินใจเลือกวิธีการรักษาของคนไข้					
8	แพทย์มีความซื่อสัตย์ต่ออาชีพ					
9	แพทย์ให้การรักษาตามปัญหาเฉพาะของคนไข้ทำให้คนไข้มั่นใจในการรักษา					
10	แพทย์มีความเป็นมิตร สุภาพเว al คุยกับคนไข้					
ควมพอใจในภาพรวม						
1	ท่านพอใจในบริการของโรงพยาบาลสมิติเวชเสมอ					
2	ท่านมีทัศนคติในแง่บวกต่อการบริการของโรงพยาบาลสมิติเวช					
3	ท่านประทับใจกับการบริการของ al สมิติเวช					
4	ภาพการบริการโดยรวมของโรงพยาบาลสมิติเวชสามารถตอบสนองความต้องการของท นได้เป็นอย่างดี					
5	ผลการร ษาโดยรวมของโรงพยาบาลสมิติเวชอยู่ในระดับที่น่าพอใจ					

พนักงาน หรือกฎระเบียบต้นฉบับบ้างหรือไม่

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คำแนะนำอื่น

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.....

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2 ข้อมูลทั่วไป (กรุณาทำเครื่องหมาย (O) ลงในช่องที่ตรงกับคำตอบของท่าน)

1. LINO

) ชาย

2. อายุ

) 18-23 ปี

() 24-29 ปี

) 30- 35 ปี

() 36-41 ปี

) 42

3. ส่วนใหญ่ท่านใช้เวลารอคิวตรวจ แต่ละครั้งนานเท่าไร

) 5 นาที

) 10 นาที

) 15 นาที

) 20 นาที

) มากกว่า 20 WT

-----ขอขอบคุณในความร่วมมิตินี้ของคุณ-----



APPENDIX B

Pre-test Output

Reliability

Hospital Service Quality

Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded ^a	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.889	10

Queuing Quality

Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded ^a	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.899	10

Medical Service Quality

Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded ^a	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.932	10

Overall Satisfaction

Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded ^a	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.922	5



APPENDIX C

Data Analysis Result

Regression

Variables Entered/Removed

Model	Variables Entered	Variables Removed	Method
1	MED, QUE, HOS		Enter

a. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.728 ^a	.530	.525	.354

a. Predictors: (Constant), MED, QUE, HOS

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	34.802	3	11.601	92.638	.000 ^a
	Residual	30.806	246	.125		
	Total	65.608	249			

a. Predictors: (Constant), MED, QUE, HOS

b. Dependent Variable: SAT

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.187	.260		0.719	0.473
	HOS	0.190	.077	0.142	2.475	0.014
	QUE	0.462	.061	0.426	7.576	0.000
	MED	0.318	.064	0.282	4.944	0.000

a. Dependent Variable: SAT

One Sample T-test

Hospital Service Quality

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
hos1	250	4.23	.621	.039
hos2	250	4.27	.626	.040
hos3	250	4.33	.586	.037
hos4	250	4.26	.551	.035
hos5	250	4.36	.565	.036
hos6	250	4.29	.566	.036
has7	250	4.15	.568	.036
hos8	250	4.18	.632	.040
hos9	250	4.27	.584	.037
hos10	250	3.66	.786	.050

One-Sample Test						
	Test Value = 3					
				95% Confidence Interval of the Difference		
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
hos1	31.270	249	.000	1.228	1.15	1.31
hos2	32.140	249	.000	1.272	1.19	1.35
hos3	35.953	249	.000	1.332	1.26	1.40
hos4	36.037	249	.000	1.256	1.19	1.32
hos5	38.032	249	.000	1.360	1.29	1.43
hos6	36.112	249	.000	1.292	1.22	1.36
hos7	32.090	249	.000	1.152	1.08	1.22
hos8	29.610	249	.000	1.184	1.11	1.26
hos9	34.306	249	.000	1.268	1.20	1.34
hos10	13.360	249	.000	.664	.57	.76

Queuing Quality

One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
queue 1	250	4.10	.603	.038
queue 2	250	4.09	.591	.037
queue 3	250	3.63	.831	.053
queue 4	250	3.64	.825	.052
queue 5	250	4.02	.559	.035
queue 6	250	3.82	.673	.043
queue 7	250	3.96	.610	.039
queue 8	250	3.94	.656	.042
queue 9	250	3.64	.826	.052
queue 10	250	3.99	.714	.045

One-Sample Test						
	Test Value= 3					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
queue 1	28.849	249	.000	1.100	1.02	1.18
queue 2	29.230	249	.000	1.092	1.02	1.17
queue 3	12.018	249	.000	.632	.53	.74
queue 4	12.348	249	.000	.644	.54	.75
queue 5	28.955	249	.000	1.024	.95	1.09
queue 6	19.255	249	.000	.820	.74	.90
queue 7	24.984	249	.000	.964	.89	1.04
queue 8	22.746	249	.000	.944	.86	1.03
queue 9	12.175	249	.000	.636	.53	.74
queue 10	21.877	249	.000	.988	.90	1.08

Medical Service Quality

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
med 1	250	4.41	.555	.035
med 2	250	4.36	.607	.038
med 3	250	4.15	.634	.040
med 4	250	4.13	.684	.043
med 5	250	4.23	.660	.042
med 6	250	4.07	.676	.043
med 7	250	4.17	.593	.038
med 8	250	4.34	.622	.039
med 9	250	4.25	.603	.038
med 10	250	4.08	.596	.038

One-Sample Test

	Test Value = 3					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
med 1	40.262	249	.000	1.412	1.34	1.48
med 2	35.454	249	.000	1.360	1.28	1.44
med 3	28.710	249	.000	1.152	1.07	1.23
med 4	26.151	249	.000	1.132	1.05	1.22
med 5	29.504	249	.000	1.232	1.15	1.31
med 6	24.974	249	.000	1.068	.98	1.15
med 7	31.242	249	.000	1.172	1.10	1.25
med 8	34.150	249	.000	1.344	1.27	1.42
med 9	32.709	249	.000	1.248	1.17	1.32
med 10	28.659	249	.000	1.080	1.01	1.15