THE ROLE OF WAITING IN HEALTH CARE SERVICE QUALITY

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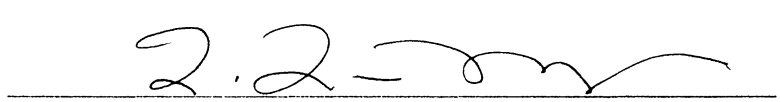
Scope and Method of Study: The study was a randomized field experiment which examined the effects of uncertain waits versus certain waits in preprocess delays on the perceived service quality of emergency room patients. Adult patients with minor conditions were chosen to participate. Patients were in one of two groups: those who were given no information about the expected wait before examination by a doctor or those who were told the wait would be about 35 minutes, the median wait for the categories selected. 399 surveys were mailed; 171 were returned.

Findings and Conclusions:

The study's hypothesis that "consumers will perceive higher quality of service when their expectations about a delay are established accurately at the outset" was not confirmed. Results did indicate, however, that subjects who thought they had been given a time, were more satisfied, regardless of whether or not they were actually given an expected time.

ADVISOR'S APPROVAL 

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SERVICE QUALITY

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CHAPTER I

INTRODUCTION

The growth of services in this country has led to considerable study of how consumer's perception of service quality affects satisfaction. There's good reason for all the interest. The behavioral intention to return or recommend a service has been highly correlated with the perception of service quality and satisfaction. With population growth slowing, competition increasing and the cost of promotion on the rise, it makes good sense for service providers to increase the likelihood of repeat business by satisfying current customers.

A consumer's satisfaction is based on several factors related to his evaluation of quality. Satisfaction has been defined as the state where experience exceeds expectations. (Parasuraman, A., Zeithaml, Valarie A., and Berry, Leonard L. (1985), "A Conceptual Model of Service Quality and Its Implications for Future Research," Journal of Marketing, 49 (Fall), 41-50.) Each of the variables identified by researchers as part of service quality are discussed here. One recurring element of service quality is defined as "responsiveness". Research has shown delays during the service process lead to a lower rating of responsiveness and

therefore of service quality. Consumers dislike waits beyond what they consider reasonable. Service providers are so certain waiting affects satisfaction they measure waiting time, advertise "no wait" services and give money back guarantees for delays. For example, airlines compute and publish "on time" percentages. Pizza delivery services offer 30 minutes for delivery or the pizza is free. Restaurants advertise five-minute lunch service. And amusement parks give estimates of waiting time in lines purposely setting expectations longer than the wait will be.

In health care, waiting is often considered a potential dissatisfier particularly in the ambulatory setting. Patients wait to be seen by the doctor, wait for test results or wait to be admitted to the hospital. The research here looks at how waiting affects satisfaction during the period of time before patients see a physician in an emergency room setting.

CHAPTER II

REVIEW OF LITERATURE

Service Quality

In all, service quality is attracting considerable interest from both academicians and practitioners. Service quality is defined as the consumer's comparison between service expectations and service performance. (Gronroos, Christian, "A Service Quality Model and Its Marketing Implications," European Journal of Marketing, 19 (1), 36-44.) "Every time a service organization performs for a customer, the customer makes an assessment of the quality of the service, even if unconsciously. The sum total of these repeated assessments by the customer and the collective assessments by all customers is the organization's service quality," according to Service America! (Albrecht, Karl and Zemke, Ron, Service America!: Managing in the New Economy. Homewood, Il.: Dow Jones-Irwin, 1985.)

Service Quality Characteristics

Academicians Valarie A. Zeithaml, A. Parasuraman and Leonard L. Berry, who are among the most published on the subject of service quality, identified three basic assumptions on services marketing from the literature. The first is that services entail a number of unique characteristics which separate them from tangible goods including "intangi-

bility, inseparability of production and consumption, heterogeneity and perishability". The second assumption states that these characteristics create problems for services marketers which are not faced by goods marketers. The third assumption is that services marketing problems require solutions and strategies different from those required by manufacturers. (Zeithaml, Valarie A., Parasuraman, A. and Berry, Leonard L. (1985), "Problems and Strategies in Services Marketing," Journal of Marketing, 49 (Spring), 33-46.)

Of the unique characteristics cited, the fundamental difference is intangibility. Because services cannot be seen, felt, tasted or touched in the same way goods are experienced, intangibility is the critical distinction from which all other differences arise, according to John Bateson. (Bateson, John E. G., "Why We Need Service Marketing," Conceptual and Theoretical Developments in Marketing, O.C. Ferrell, S.W. Brown and C.W. Lamb, Jr. eds., Chicago: American Marketing, 131-146.)

The second characteristic, inseparability of production and consumption, involves the simultaneous creation and usage of most services. For example, surgeries cannot be produced, then sold and then consumed. Since the buyer must be present during the production of many services, the buyer is part of the production process. (Carmen, James M. and Eric Langeard(1980), "Growth Strategies of Service Firms," Strategic Management Journal, 1 (January-March), 7-22.)

Service encounters are human interactions and as such "one cannot predict the quality of outcomes with knowledge

of only one actor's behavior. The quality of the objective product--the service experience--is the true outcome of a service interaction. This product is manufactured by both parties and must be approached as such." (Solomon, Michael R.; Surprenant, Carol; Czepiel, John A.; Gutman, Evelyn G. (1985), "A Role Theory Perspective on Dyadic Interactions: The Service Encounter," Journal of Marketing, 49 (Winter), 99-111.) Because services are consumed as soon as they are produced, bad lots cannot be sampled and rejected. (DeSouza, Glenn (1989), "Now Service Businesses Must Manage Quality," Journal of Business Strategy, (May/June), 21-25.)

The third characteristic, heterogeneity, involves the potential for variability in services. Because there are many different employees involved in providing a service and because the customer himself is part of the process, heterogeneity in service output is a problem for service providers. Perishability means that services cannot be inventoried. (Bessom, Richard M. and David W. Jackson (1975), "Service Retailing--A Strategic Marketing Approach," Journal of Retailing, 8 (Summer) 137-149.) Accountants services not used, airline seats not purchased and hotel rooms not booked, cannot be stored and used at a later time.

Service Quality Measurement

Once the characteristics of services were identified, Parasuraman, Zeithaml and Berry created a model of service quality. They identified underlying service three themes:

1. Service quality is more difficult for the consumer to evaluate than goods quality.
2. Service quality perceptions result from a comparison of consumer service expectations with actual service performance.
3. Quality evaluations are not made solely on the outcome of a service; they also involve evaluations of the process of service delivery. (Parasuraman, A., Zeithaml, Valarie A. and Berry, Leonard L. (1985), "A Conceptual Model of Service Quality and Its Implications for Future Research," Journal of Marketing, 49 (Fall), 41-50.)

Parasuraman, Zeithaml and Berry conducted research to determine the key attributes of service quality. They chose four types of service businesses for their original investigation: retail banking, credit card, securities brokerage and product repair and maintenance. They conducted in depth interviews with executives and consumers to determine perceptions of both with the intent of developing a model explaining service quality from the consumer's standpoint.

The model for service quality developed included the following variables used by customers to determine quality of service:

RELIABILITY involves consistency of employee performance and dependability.

RESPONSIVENESS concerns the willingness or readiness of employees to provide services, e.g. quick call backs, set-

ting up appointments quickly. It is this attribute which is concerned with waiting where consumers experience delays beyond their expectations.

COMPETENCE means possession of the required skills and knowledge to perform the service.

COMMUNICATION means keeping customers informed in language they can understand and listening to them.

CREDIBILITY involves trustworthiness, believability, honesty.

SECURITY is the freedom from danger, risk or doubt.

UNDERSTANDING/KNOWING THE CUSTOMER involves making the effort to understand the customer's needs.

TANGIBLES include the physical evidence of the service.

Parasuraman, Zeithaml and Berry later refined the original study to develop "Servqual: A Multiple-Item Scale for Measuring Consumer Perception for Service Quality." (Parasuraman, A., Zeithaml, Valarie A. and Berry, Leonard L. (1988), "Servqual: A Multiple-Item Scale for Measuring Consumer Perception for Service Quality," Journal of Retailing, (Spring), 12-40.)

As a result of further study and refinement, the original ten dimensions, listed above, were reduced to five. Servqual identifies five variables: tangibles, reliability, responsiveness, assurance and empathy. Three of the original factors remain unchanged: tangibles, reliability and responsiveness while communication, credibility, security, competence and courtesy were collapsed into "assurance" and understanding/knowing customers is now "empathy." Of the

five Servqual dimensions, reliability is consistently the most critical in predicting overall quality. Assurance is the second most important dimension across all service types tested.

The Servqual instrument contains 22 items grouped into the five distinct dimensions. The instrument measures the consumer's expectations about firms in general within a service category and perceptions about the particular firms whose service quality is being assessed. The scale has been shown to have good reliability and validity. (Parasuraman, A., Zeithaml and Berry, Leonard (1986), "SERVQUAL: A Multiple-Item Scale for Measuring Consumer Perceptions of Service Quality," Cambridge, M.A.: Marketing Science Institute , No.86-108, 2-36.)

Service Quality and Customer Satisfaction

Servqual and the continuing work of Parasuraman, Zeithaml and Berry and others represent attempts to provide a tool for measuring customer's expectations and perceptions of service quality. Service marketers are beginning to understand the relationship between the customer's expectation of the service experience, his perception of the service provided and his intent to either refer a friend to the service or use it again himself.

The concept of customer satisfaction has been linked to service quality and intention to buy again. Customer satisfaction has been defined as the state in which customer

needs, wants and expectations are met or exceeded, resulting in repurchase and continued loyalty. (Goodman, John A., "Customer Expectations and the Bottom Line," Technical Assistance Research Programs, 1-12.)

Customer satisfaction has also been called a "postpurchase phenomenon reflecting how much the consumer likes or dislikes the service after experiencing it." (Bearden, William O. and Teel, Jesse E., "Selected Determinants of Consumer Satisfaction and Complaint Reports," (1983) Journal of Marketing Research, (February 20), 21-8.)

Peters and Austin in Passion for Excellence state that while measures of profit, growth, market share, etc. are excellent indicators of yesterday's performance, hard-nosed, quantitative, systematic measures of customer perceptions of service quality and satisfaction are the single best indicators of the organization's future health or lack of it. (Peters, Tom and Austin, Nancy, Passion for Excellence. New York: Random House, 1985.)

Service providers who either do the job right the first time or who have effective complaint management are rewarded with maximum customer satisfaction and brand loyalty. Poor service loses customers. In the health care field, 95% of customers who experience no problem with the service they receive indicate their intention to repurchase where as 75% of those who experience problems say they will buy again from the same provider. There are some who argue that customers who complain, allowing management an opportunity to deal with the service problem, are twice as valuable as

customers who don't complain at all. Customers whose complaints are quickly resolved are the most loyal. Satisfied complainants remain loyal 95% of the time, dissatisfied complainants 53% of the time and noncomplainants 22% of the time. (Goodman, John A., "Customer Expectations and the Bottom Line," Technical Assistance Research Programs, 1-12.)

Zeithaml, Berry and Parasuraman identified several gaps critical to understanding and delivering service quality.
Gap 1: Difference between consumer expectations and management perceptions of consumer expectations.
Gap 2: Difference between management perceptions of consumer expectations and service quality specifications.
Gap 3: Difference between service quality specifications and the service actually delivered.
Gap 4: Difference between service delivery and what is communicated about the service to consumers. (Zeithaml, Valarie, Berry, Leonard, Parasuraman, A. (1988), "Communication and Control Processes in the Delivery of Service Quality," Journal of Marketing, 52 (April), 35-48.)

The four gaps in service quality involve communication and control process and can help marketers understand the difference between consumer expectations and perceptions. Responsiveness and waiting can relate to several, if not all, of the gaps identified. For example, consider Gap 1 in a health care setting. A patient arrives at the emergency room with a relatively minor complaint expecting to be seen very quickly since his condition won't take much time to treat. However, management may assume the patient under-

stands that emergency room patients are seen on the basis of most critical need first. So the cardiac patient or trauma patient who arrives after the minor injury is whisked to a room and treated immediately while the patient with a minor problem may wait an hour or more to be seen.

In the same setting, Gap 2 may apply when management sets a specification that patients with minor complaints will be seen within 30 minutes assuming the patient expects to wait that long. However, if the 30 minute specification set exceeds the patient's expectations by 15 minutes, dissatisfaction may occur.

Gap 3 may be experienced when management sets a specification of 30 minutes but in reality it is consistently 45 minutes to an hour before patients are seen by the physician.

Gap 4 may be experienced when the emergency room triage nurse tells the patient he should anticipate a 30 minute wait and the wait is actually much longer.

The Service of Health Care

A number of medical field research studies have identified attributes of health care services, very much in line with the work done by Zeithaml, Berry and Parasuraman. One such study formed five dimensions: technical competence, environment, people skills (caring, attentiveness compassion, courtesy, respect), systems and amenities.

Dimension One, according to Wendy Leebov and Susan Afriat, is technical competence. This dimension relates to Zeithaml, Berry and Parasuraman's Servqual attribute of reliability. For years, this has been the primary focus of "quality" efforts in hospitals. Was the diagnosis correct? Were the lab tests accurate? Was treatment appropriate for the severity of illness? Although technical competence is important, it is not enough, because consumers cannot evaluate it as well as other attributes such as friendliness, access, attentiveness and convenience.

Dimension Two, the environment, is identical to the Servqual dimension of tangibles. The physical environment, its accessibility and aesthetics play a part in the patient's perception of the service. People skills is the third dimension and relates to Servqual dimensions of assurance and empathy. Dimension Four, as identified by Leebov and Afriat, is systems. The system dimension relates to responsiveness, of which waiting is a part, and reliability, both dimensions of Servqual. It addresses underlying systems problems, inconveniences and problematic practices that interfere with employees abilities to extend themselves to patients and their companions. Amenities is the fifth dimension and includes the extras organizations give to customers to make them more comfortable including coffee in the waiting room, play areas for children and valet parking. This dimension relates indirectly to the Serqual attribute of tangibles. (Leebov, Wendy and Afriat, Susan (1988), "Customer Service Excellence in Ambulatory Care Organiza-

tions," Journal of Health Care Marketing, Vol. 8, No.4 (December), 46-52.)

Another study, by Susie Linder-Pelz, identified 10 constructs that can be used to determine satisfaction in health care:

1. Accessibility/convenience
2. Availability of resources
3. Continuity of care
4. Efficacy/outcomes of care
5. Finances
6. Humaneness
7. Information gathering
8. Information giving
9. Pleasantness of surroundings
10. Quality/competence

(Linder-Pelz, S. (1982), "Toward a Theory of Patient Satisfaction," Social Science and Medicine 16(5):577-82.)

Availability of resources is directly related to the issue of waiting. As health care services become scare, queuing is a natural outgrowth. A look at the Canadian system of health care shows waits as long as several months for elective procedures and waits of several days for emergency room cases.

Gregory Pascoe's research gives a two part definition of patient satisfaction which considers expectations and that patients may not be fully able to judge a service encounter because of lack of clinical knowledge. In simple encounters, the patient enters the situation with expecta-

tions, and the perceived difference between expectations and experience offers net satisfaction. This is referred to as the contrast model, where experience is greater than expectations, the experience is satisfactory. It also relates directly to Parasuraman, Zeithaml and Berry's second underlying theme of services: Service quality perceptions result from a comparison of consumer expectations with actual service performance. But, according to Pacoe, when confronted with situations they do not fully understand, individuals may adjust their expectations downward if the experience falls short of their original expectations. This may mean patients will tolerate longer waiting periods assuming their original expectations were too high. This assimilation model may help explain why patient satisfaction with most clinical personnel is very high and satisfaction with food and parking for example have a wider variance and more negative ratings than for more clinical dimensions. (Pascoe, G.C. (1983), "Patient Satisfaction in Primary Health Care: A Literature Review and Analysis," Evaluation and Program Planning 6(3):185-210.)

MacGregor (1981) also observed a relationship between expectations and experiences in medical care. He suggested that unrealistic expectations, as well as failure to understand the patient's expectations and preference, may result in patient dissatisfaction with the outcome. Oliver (1980) proposed five theories about expectancy and satisfaction by suggesting adaptation level theory to account for the relationship between expectation and satisfaction.

One dimension noted throughout the literature both for health care services and other service providers is responsiveness. In health care, responsiveness most often brings to mind waits to see the doctor, waits for laboratory tests, waits for the call button to be answered, etc. Because waiting time is one of the few objective criteria the marketer can measure, it is often studied.

Waiting is a complex phenomenon to which a consumer often reacts in an emotional way, according to Laurette Dube-Rious, Bernd H. Schmitt and France Leclerc. Waiting is often psychologically painful, because it causes the consumer to give up more productive and rewarding ways of using time while it also may increase the investment required to obtain a product or service. (Dube-Rious, L., Schmitt, B.H. and Leclerc, F. (1989), "Consumers' Reactions to Waiting: When Delays Affect the Perception of Service Quality," Advances in Consumer Research, 16, 59-63.)

Maister suggested four propositions related to waiting:

1. Unoccupied time feels longer than occupied time;
2. Preprocess waits feel longer than in-process waits;
3. Uncertain waits are longer than known, finite waits; and
4. Unexplained waits are longer than explained waits.

Dube-Rioux et al tested Maister's propositions in a restaurant setting. They divided the visit into three phases: a

preprocess phase from a customer's arrival at the restaurant until he or she ordered the meal; an inprocess phase that included placing orders and consuming the meal and a post-process phase which covers the period of time from completion of the meal to paying the bill and departure from the restaurant. During each of these phases, according to the study, there is an "natural intermission" that customers expect. The research studied what happened when the natural intermission extended beyond the customer's expectations.

The experiment conducted by Dube-Rioux et al confirmed Kurt Lewin's field theory which predicted that a preprocess delay or a postprocess delay would lead to a lower rating and less likelihood that the consumer would return than would a delay inprocess.

Subjects in the study rated the experience more negatively when the delays occurred in the preprocess stage or the postprocess stage. The study did not show significant uncertainty effect. The consumers who were told nothing about the wait and others who were told it would be ten minutes and then kept waiting longer showed no significant difference in their ratings. The outcome could possibly be attributed, according to the researchers, to the type study conducted. "One reason for this negative result may be the fact that subject may have had some difficulty putting themselves, through mental simulation, in a condition of high versus low uncertainty."

Lewin's field theory states that an individual's behavior, feelings and cognitions are the result of psychological

forces acting upon the individual at a given time. (Lewin, Kurt (1943), "Defining the Field at a Given Time", Psychological Review, 50, 292-310.) Psychological forces correspond to a relation between at least two regions of the individual's life space. According to Lewin's theory, they depend on the strength of the individual's needs (internal forces) and on the nature of external forces and barriers. Changes in an individual's behavior, feelings and cognitions are the result of changes in the constellation of the psychological forces acting on the individual. The closer the individual is to a goal, the more pressing the forces. In 1946 Lewin went on to theorize that being in an unstructured surrounding is an unpleasant experience, because it is not clear whether a certain action will lead to or away from a goal.

In another study related to waiting time, Hornik (Hornik, J. (1984), "Subjective and Objective Time Measures: A Note on the Perception of Time in Consumer Behavior," Journal of Consumer Research 11, 615-618.) showed that individuals overestimate waiting time. Hornik's study was the basis for work done by Feinberg and Smith on the misconceptions of time in the sales transaction. The Feinberg and Smith study also considered work done by Cottle in 1976 which said individuals overestimate passive durations and underestimate active durations. In a sales transaction, the active salesperson may be underestimating the time the inactive customer may underestimate.

Kate Ahmadi examined the social psychologic aspects of time in a study which considered three social cues to time judgment under low physical temporal-cue conditions. Ahmadi studied the reactions of 72 college students in four combinations: alone-unexpected, alone-expected, interactive-unexpected and interactive-expected conditions. Students, left in a room with no watches, clocks, books etc, were asked to estimate a period of time. Those who waited alone estimated the time to be less than those who waited with another student. Those who were given a cue about how long a portion of the time would be had lower mean estimations than those who were not given a cue. Those students who waited together tended to reach agreement, after discussion, as to the time estimation further supporting the conclusion that social cues influence the judgment of time. (Ahmadi, Kate S. (1984), "Effects of Social Influences and Waiting on Time Judgment," Perceptual and Motor Skills, 59, 771-776.) Other researchers have looked at time estimation in relationship to the task being done during the period. Gupta and Cummings' study hypothesized task satisfaction is a function of the perceived speed of time passage while performing a task. The results of the experiment supported the hypothesis showing events that seem to occur quickly are perceived as pleasing. Gupta and Cummings said performers have an implicit causal theory about the perceived speed of time and task satisfaction. When the perceived speed of time is fast it implies by inference that task satisfaction is high and vice versa. Performers infer their attitudes

toward their tasks from their perceptions of the speed of time passage while executing the task. (Gupta, S. and Cummings, L.L. (1986), "Perceived Speed of Time and Task Affect," Perceptual and Motor Skills, 63, 971-980.)

A study which looked at the effect of "waiting with extremely high tension for something to occur" as opposed to "waiting with almost no tension for something to occur" is particularly interesting for health care marketers since much waiting in the health care setting is done under a condition of extremely high tension. The study conducted by Borg and Galinat also looked at other variable situations like pleasant versus unpleasant, many versus few, variable versus monotonous, and difficult versus easy.

Subjects felt that unpleasant stimuli extend the subjective duration of situations six times more than pleasant ones. Expecting with high tension is rated similarly. (Borg, I. and Galinat, W.H. (1987), "Ratios: Beliefs on Experienced Duration," Perceptual and Motor Skills, 74, 603-608.)

CHAPTER III

THE RESEARCH

In an emergency room setting, some delays are inevitable. It is vitally important then to determine how to achieve high quality ratings and high levels of satisfaction, despite waiting. The field experiment conducted involved emergency room patients with relatively minor problems. These patients typically experience waits in the emergency room but, according to health care professionals, delays of up to 24 hours in the care of these patients will not have adverse effects on medical outcome despite their potential for negative impacts on perceptions of quality and satisfaction.

The experiment tested the following hypothesis: Consumers will perceive higher quality of service when their expectations about a delay are established accurately at the outset.

Two research objectives were (1) to attempt to set patient's expectations as to waiting time and assess the impact of such perceptions on service quality and (2) to measure emergency room patients' perception of service quality and its impact on satisfaction.

The Experiment Design

In the randomized experiment, we attempted to set expectations of waiting time at the median wait for half of the patients. Only patients with "minor conditions" were included in the study. Waiting time expectations were set by the triage nurse, the first clinical employee to speak to the patient. He told the patient he or she could expect a wait of about 35 minutes before being examined by the physician. The other half of the patients with minor problems were told nothing about the possible waiting time. The 35 minute waiting estimate was determined by calculating the median for all patients in the categories selected over a five day period. The number of patients included in the calculation was 129. The rationale for using the median was that half of the patients would fall under the 35 minute time estimate while half would be over. The time between when the patients entered the emergency room and when they saw the physician was examined in the study.

This pre-process period of time was chosen to study for two reasons. First, previous research has shown pre-process delays to be critical to the consumer's rating of service quality and satisfaction. Secondly, there is more control in the emergency room over the period of time between arrival and examination by the doctor than over the inprocess or treatment time.

Emergency room employees, other than the triage nurse, were asked not to give estimates of times to patients in the designated categories during the three weeks the experiment was conducted. In addition to having minor problems or complaints, there were several other criteria for inclusion in the experiment. The subjects had to be adults, because they would be better able to complete the mail survey which followed. Adults were also chosen because they are the purchasers of health care services. The subjects were patients to be seen by emergency physicians on duty because patients requesting to be seen by their personal physicians sometimes experience much longer and unpredictable waits. Finally, the patients were those scheduled for release rather than those admitted to the hospital. It was felt a subsequent inpatient stay could taint the perception of the emergency room visit.

After their release from the hospital, subjects received a mail survey. Patients received a letter from the Center for Product and Service Quality of Oklahoma State University, along with a envelope with return postage to OSU, a 28 question survey and a one dollar bill as an incentive to increase response. The mail survey included at three least questions on each of the five Servqual constructs as well as questions pertaining to the experiment. The survey instrument is included in Appendix A.

The Sample

399 surveys were mailed. All were mailed within two to five days of the patient's visit to the emergency room. A follow-up phone call was placed to non-respondents to improve the percentage of return. 30 patients were dropped from the study because of return surveys due to bad addresses. 171 surveys were returned yielding a 46% return rate.

The Subjects

Forty-nine percent of the subjects were male. Given the hospital's location, it is not surprising that 85% of the subjects were white, 10% black, and 5% other races. The median age was just over 28 years and nearly 74% had some type of health insurance. The group was nearly evenly split on arrival time between the hospital's first and second shifts: 7 a.m. to 3 p.m. and 3 p.m. to 11 p.m.

The Results

Frequencies

On a five-point scale ranging from very good (1) to very poor (5), 37% of the respondents gave the emergency room experience a very good rating. An additional 34% more gave the visit a '2' and 23% gave it a neutral rating. About 6% said the experience was a '4' or '5.'

Fifty-eight percent of the respondents indicated they would be very likely to recommend the Saint Francis Hospital Trauma/Emergency Center to a family member or friend.

There were three questions in the survey which operationalized the Servqual construct of tangibles. Fifty-two percent strongly agreed the Saint Francis Hospital Trauma/Emergency Center has state-of-the-art medical equipment while 59% strongly agreed the physical surroundings were clean and pleasing. More than 66% strongly agreed the employees of the Center were neat and dressed appropriately for their jobs.

The Servqual variable of reliability was also measured by three survey items. Fifty-six percent of the respondents strongly agreed that the Trauma/Emergency Center doctors were competent in their ability to treat them. Fifty-eight percent gave a top rating to the nurses and their skill in caring for them while 54% strongly agreed they could depend on the Trauma/Emergency Center to provide good care.

Responsiveness was measured by four survey items. Fifty-four percent strongly agreed that care was provided within a reasonable length of time at the Trauma/Emergency Center. But only 29% said they would strongly agree the nurses did an excellent job of consistently stopping by to check on them. More then 35% strongly agreed, given their condition, they were seen by the doctor within a reasonable length of time. Thirty-four percent strongly agreed with the statement, "The Trauma/Emergency Room provides care within a reasonable period of time."

The assurance variable was measured in three survey items. When asked, "How fully did the doctors explain the medical procedures ordered for you?", fifty-eight percent said "completely." Fifty-four percent felt they could "completely" trust the doctors and staff in the Trauma/Emergency Center and 76% strongly disagreed that the staff at the Trauma/Emergency Center was discourteous.

In terms of empathy, three questions were asked. Forty-seven percent strongly agreed the employees of the Trauma/Emergency Center had the patient's best interest at heart. Nearly 49% strongly disagreed with the statement, "The doctors in the Trauma/Emergency Center do not give patients personal attention." Forty-three percent strongly agreed employees in the Trauma/Emergency Center understood their needs. Respondents were also asked several questions related to time and waiting which were used in the experiment.

The Experiment Results

A Chi-square was performed using two elements: the patient's answer to the question, "Did a nurse tell you how long it would be before a doctor could see you?" and the records kept by the triage nurse which indicated whether the patient was told nothing about time or it would be 35 minutes before he or she would be seen by a doctor.

In 38 cases, both the nurses' records and the subject's perception agreed that subjects were told about how long it

would be before they were seen by a doctor. In 56 cases, both the nurses' records and the patient's recollection was that they were were told nothing about time. However, in 35 cases the records indicated they were told the wait would be about 35 minutes but the patient did not perceive or recall being told. Thirty-six percent of the subjects recalled being told but, according to the records, received no information about the wait. The Chi-square probability was .097 which indicated the results were not significant. The results indicated that expectations of waiting time were not successfully set.

There are at least two possible explanations for the failure. It is possible the nurses did not deliver the information as instructed, or it may be that patients weren't able to process and retain the information accurately due to the stress of the situation.

Further analysis showed a correlation between patients who perceived they were given an estimated waiting time and a new variable, Overall Satisfaction. Three survey items were combined to produce Overall Satisfaction. The three items were: "Overall, how would you describe your experience in the Saint Francis Hospital Trauma/Emergency Center?" and "How likely are you to recommend the Trauma/Emergency Center to a family member or friend?" and "Overall, how would you rate your satisfaction with the service received at Saint Francis on these other occasions?" The probability was $p < .0001$ that a patient who perceived he had been given information about a wait will rate Overall Satisfaction positive-

ly. The correlation between Overall Satisfaction and the patient who perceived he was given information about the wait was .37749.

There were several other statistically significant correlations with Overall Satisfaction and time related survey items. "I did not receive care within a reasonable length of time at the Trauma/Emergency Center" has a probability of .0001 to be negatively correlated with Overall Satisfaction. "The Trauma/Emergency Room provides care within a reasonable period of time" also has a probability of .0001 to be positively correlated with Overall Satisfaction.

The patient's perception of the wait between arrival and examination by a doctor was also positively correlated with Overall Satisfaction, with a probability of .0001. And, there was positive correlation between the wait experienced between time of arrival and the time of examination by the doctor, as reflected in the patient's chart. The probability of positive correlation between this element and Overall Satisfaction was .0001. However, the time the patient expected to wait before he arrived and the total time he spent in the Emergency Room, as recorded on the patient's records, was not statistically significant. The probability that the patient's expectations of the wait before his arrival in the Emergency Room would be positively correlated with Overall Satisfaction was .8981 while the

probability of positive correlation with Overall Satisfaction for total time in the Emergency Room was .4480. These results have significant management implications.

Correlation with Overall Satisfaction

In further analysis, Overall Satisfaction was correlated with the Servqual items, the factors generated by the factor analysis and the difference between the patient's expectations of how long it would be between arrival and examination by a doctor and their actual estimated time between arrival and examination by a doctor.

The correlation between Overall Satisfaction and the Servqual variables show high correlation coefficients for the following survey items:

1. I found I can depend on the Trauma/Emergency Center to provide good care.

Correlation Coefficient = .67731. Probability = .0001.

2. I did not receive care within a reasonable length of time at the Trauma/Emergency Center.

Correlation Coefficient = .67731. Probability = .0001.

3. The nurses did an excellent job of consistently stopping by my room to check on me.

Correlation Coefficient = .47711. Probability = .0001.

4. Given my condition, I was seen by the doctor within a reasonable length of time.

Correlation Coefficient = .47711. Probability = .0001.

When Overall Satisfaction was correlated with the factors generated through factor analysis, Assurance, Responsiveness and Tangibles had the highest correlation coefficients. Respectively, the coefficients were .74451, .66938 and .33422.

Factor Analysis

A factor analysis was conducted and four factors were obtained. These factors consist of variables which can be used to predict Overall Satisfaction. Items were averaged for each factor to create indices.

Factor One consisted of six survey items. The six items are--

1. I did not receive care within a reasonable length of time at the Trauma/Emergency Center.
2. I found I can depend on the Trauma/Emergency Center to provide good care.
3. I feel I can trust the doctors and staff in the Trauma/Emergency Center at Saint Francis.
4. Employees at Saint Francis Trauma/Emergency Center have the patient's best interest at heart.
5. The doctors in the Trauma/Emergency Center were competent in their ability to treat me.
6. How fully did the doctors explain the medical procedures ordered for you?

Factor One was labeled trust/competence.

Factor Two, labeled responsiveness, was made up of three survey items.

1. Given my condition, I was seen by the doctor within a reasonable length of time.
2. The Trauma/Emergency Center provides care within a reasonable length of time.
3. The nurses did an excellent job of consistently stopping by my room to check on me.

Factor Three, labeled tangibles, included the following survey items:

1. The employees in the Trauma/Emergency Center are neat and dressed appropriately for their jobs.
2. The physical surroundings in the Trauma/Emergency Center are clean and pleasing.
3. The Saint Francis Hospital Trauma/Emergency Center has state-of-the-art medical equipment.

Factor Four, consisted of the following:

1. The nurses in the Trauma/Emergency Center showed a lack of skill in caring for me.
2. The staff at the Trauma/Emergency Room was discourteous.

The survey items "Employees in the Trauma/Emergency Center at Saint Francis understand my needs," and "The doctors in the Trauma/Emergency Center do not give patients personal attention," loaded on both Factor One and Two and were therefore eliminated.

The variance explained by Factor One was calculated to

be 4.39, Factor Two was 2.65, Factor Three was 2.40 and Factor Four was 1.55. Eigenvalues for the four factors are respectively: 6.82, 1.71, 1.34 and 1.09.

Regression Analysis

Using the four factors identified in the factor analysis, a regression analysis showed the total variance accounted for,in the regression equation was .6630.

The Beta coefficients for each of the four factors showed assurance and responsiveness to be the most important factors. Both the assurance and responsiveness factors had probabilities of .0001. The "service" factor had a probability of .1625 while tangibles had a probability of .3630.

CHAPTER IV

DISCUSSION AND MANAGEMENT IMPLICATIONS

At the current time, the Trauma/Emergency Department enjoys a high level of satisfaction from its customers but there are some areas where improvement is possible.

The regression analysis showed that the model accounted for more than 66% of the variance in predicting Overall Satisfaction. Factor One accounted for more than 63% of the variance in the model. This result is extremely high and indicates to management the importance of these elements in satisfying customers.

Factor One shows competence, responsiveness and empathy to be significant in the patient's opinion of the service. The survey items which formed Factor One were:

1. The doctors in the Trauma/Emergency Center were competent in their ability to treat me.
2. I found I can depend on the Trauma/Emergency Center to provide good care.
3. I did not receive care within a reasonable length of time at the Trauma/Emergency Center.
4. How fully did the doctors explain the medical procedures ordered for you?

5. I feel I can trust the doctors and staff in the Trauma/Emergency Room at Saint Francis.
6. Employees at Saint Francis Trauma/Emergency Room do not give patients personal attention.

The fact that waiting time was a part of Factor One supports researching the impact of waiting on the perception of service quality.

Two of the three items which measured reliability also showed up in Factor One. Parasuraman, Zeithaml and Berry defined reliability as the "ability to perform the promised service dependably and accurately." In the health care environment one would expect reliability to be vitally important to the customer's perception of service quality and the survey results support this expectation.

All three of the survey items in Factor Two were related to responsiveness. Factor Two had a Beta of .294838 and a probability of $p < .0001$. The three survey items were:
1. The nurses did an excellent job of consistently stopping by my room to check on me.
2. Given my condition, I was seen by the doctor within a reasonable length of time.
3. The Trauma/Emergency Room provides care within a reasonable period of time.

Factor Two again indicates the importance of responsiveness in achieving service quality and satisfaction in providing health care. From the survey results, the greatest opportunity for improvement for Saint Francis is in encouraging the nursing staff to check on and communicate

with patients frequently. Response to the question, "The nurses did an excellent job of consistently stopping by my room to check on me" was low compared to other survey items. Twenty-nine percent strongly agreed with the statement, 20% gave the next highest rating, 27% were neutral, 10% rated it next to lowest and 12% strongly disagreed with the statement.

This response represented the lowest rating of any of the survey items which were predictive of Overall Satisfaction. The results of this survey question may relate to Maister's proposition that "Unexplained waits are longer than explained waits." By checking on the patients frequently with some information about the reason for the wait, regardless of whether or not the wait is shortened, the length of the wait may seem shorter to the patient. Management should attempt to improve in this area by increasing awareness among nurses of the significant impact of this behavior on satisfaction through education and looking at ways to positively reenforce this behavior through the reward system.

The importance of providing care within a reasonable length of time coupled with the findings that time of arrival to physician exam is significant to the patient's evaluation of the care should lead management to increase the number of physicians on duty as patient volume increases. Knowing that total time in the emergency room does not have a high probability of predicting Overall Satisfaction indicates that patients may tolerate a longer wait in the de-

partment for x-rays and laboratory results without adverse effect on satisfaction. Improving turnaround time from ancillary departments is not likely to have a positive effect on Overall Satisfaction while adding doctors will.

This finding supports another of Maister's propositions related to waiting: "Preprocess waits feel longer than in-process waits." It also supports Lewin's field theory which predicted that preprocess delays or postprocess delays lead to lower ratings and less likelihood that the consumer will return than would delays inprocess.

Another observation about Factor One and Two items shows the importance of the role of the physician in the evaluation of quality of service. There were five items in the survey which mentioned doctors specifically. Four of those five were part of Factors One and Two, both with extremely high predictability for Overall Satisfaction. The fifth loaded on both factors and was eliminated. Doctors' reliability, responsiveness, assurance and empathy were important variables for patients. Selection and indoctrination of competent, caring physicians appears to be vitally important to the success of the service.

Another outcome of the research suggests management should strongly consider directing the triage nurse to give each patient an approximate waiting time before he or she will be seen by a doctor. This study indicates when the subjects thought they were given a time, they were happier, regardless of whether or not they were actually given an expected time. This finding supports one of Maister's

propositions related to waiting which states that uncertain waits are longer than known, finite waits.

CHAPTER V

MANAGEMENT SUMMARY

A research project to examine the impact of waiting on the perception of health care service quality and satisfaction was undertaken in the Saint Francis Trauma/Emergency Center. The research objectives were (1) to attempt to set patient's expectations as to waiting time and assess the impact of such perceptions on service quality and (2) to measure emergency room patients' perception of service quality and its impact on satisfaction. Patients with relatively minor problems were chosen to participate in a randomized study.

The study showed the Trauma/Emergency Center earns a high overall level of satisfaction from their patients. However, the study's hypothesis that "consumers will perceive higher quality of service when their expectations about a delay are established accurately at the outset" was not confirmed.

Although overall satisfaction with the Trauma/Emergency Center is high, there are areas where improvement is possible. A factor analysis confirmed the importance of responsiveness in achieving service quality and satisfaction in providing health care. From the survey results, the great-

est opportunity for improvement for Saint Francis is in encouraging the nursing staff to check on and communicate with patients frequently.

The importance of providing care within a reasonable length of time coupled with the findings that time of arrival to physician exam is significant to the patient's evaluation of the care should lead management to increase the number of physicians on duty as patient volume increases. Knowing that total time in the emergency room does not have a high probability of predicting overall satisfaction indicates that patients may tolerate a longer wait in the department for x-rays and laboratory results without adverse effect on satisfaction. Improving turnaround time from ancillary departments is not likely to have a positive effect on overall satisfaction while adding doctors will.

Another observation from the research is in the importance of the role of the physician in the evaluation of quality of service. There were five items in the survey which mentioned doctors specifically. Doctors' reliability, responsiveness, assurance and empathy were important variables for patients. Selection and indoctrination of competent, caring physicians appears to be vitally important to the continued success of the service.

Another outcome of the research suggests management should strongly consider directing the triage nurse to give each patient an approximate waiting time before he or she will be seen by a doctor. This study indicates when the subjects thought they were given a time, they were happier,

regardless of whether or not they were actually given an expected time.

APPENDIX A

PATIENT SATISFACTION SURVEY

SAMPLE QUESTION

Here is an example of how to answer the questions in the survey. Use a recent restaurant experience for answering the following question.

How satisfied were you with the food?

1	2	3	4	5
Very Satisfied		Neutral		Very Dissatisfied

If you liked the food very much, you might choose '1' or '2'.
If the food was satisfactory, you might circle '3'.
If you thought the food was very bad, you would probably choose '5'.

Except where indicated, the questions below pertain only to your recent experience in the Saint Francis Hospital Trauma/Emergency Center.

1. Overall, how would you describe your experience in the Saint Francis Hospital Trauma/Emergency Room?

1	2	3	4	5
Very Good		Neutral		Very Poor

2. I am extremely unhappy with the service provided at the Trauma Emergency Center.

5	4	3	2	1
Strongly Disagree		Neutral		Strongly Agree

3. The Saint Francis Hospital Trauma/Emergency Center has state-of-the-art medical equipment.

1	2	3	4	5
Strongly Agree		Neutral		Strongly Disagree

4. The physical surroundings in the Trauma/Emergency Center are clean and pleasing.

1	2	3	4	5
Strongly Agree		Neutral		Strongly Disagree

5. The employees in the Trauma/Emergency Center are neat and dressed appropriately for their jobs.

1	2	3	4	5
Strongly Agree		Neutral		Strongly Disagree

6. The doctors in the Trauma/Emergency Center were competent in their ability to treat me.

1	2	3	4	5
Strongly Agree		Neutral		Strongly Disagree

7. The nurses in the Trauma/Emergency Center showed a lack of skill in caring for me.

5	4	3	2	1
Strongly Disagree		Neutral		Strongly Agree

8. I found I can depend on the Trauma/Emergency Center to provide good care.

1	2	3	4	5
Strongly Agree		Neutral		Strongly Disagree

9. I did not receive care within a reasonable length of time at the Trauma/Emergency Center.

1	2	3	4	5
Strongly Agree		Neutral		Strongly Disagree

10. The nurses did an excellent job of consistently stopping by my room to check on me.

1	2	3	4	5
Strongly Agree		Neutral		Strongly Disagree

11. Given my condition, I was seen by the doctor within a reasonable length of time.

1	2	3	4	5
Strongly Agree		Neutral		Strongly Disagree

12. How fully did the doctors explain the medical procedures ordered for you?

1	2	3	4	5
Completely		Somewhat		Not at all

13. I feel I can trust the doctors and staff in the Trauma/Emergency Room at Saint Francis.

1	2	3	4	5
Completely		Neutral		Not at all

14. The staff at the Trauma/Emergency Room was discourteous.

5	4	3	2	1
Strongly Disagree		Neutral		Strongly Agree

15. Employees at Saint Francis Trauma/Emergency Room have the patient's best interest at heart.

1	2	3	4	5
Strongly Agree		Neutral		Strongly Disagree

16. The doctors in the Trauma/Emergency Room do not give patients personal attention.

5	4	3	2	1
Strongly Disagree		Neutral		Strongly Agree

17. The Trauma/Emergency Room provides care within a reasonable period of time.

1	2	3	4	5
Strongly Agree		Neutral		Strongly Disagree

18. Employees in the Trauma/Emergency Room at Saint Francis understand my needs.

1	2	3	4	5
Strongly Agree		Neutral		Strongly Disagree

19. When you arrived at the emergency room, how long did you expect to wait before being seen by a doctor?
_____minutes

20. In your estimation, how long was it between the time you first spoke to a nurse and the time you were first seen by a doctor?
_____minutes or _____hours and _____minutes

21. In your opinion, how crowded was the emergency room when you arrived?

1	2	3
low	medium	high

22. How would you rate the severity of the problem which brought you to the emergency department?

1	2	3	4
Life Threatening	Serious	Somewhat Urgent	Non-Urgent

23. The reason for the level of service given to me in the Trauma/Emergency Center was--

5	4	3	2	1
Circumstances beyond the control of the staff				Attitudes and feelings of the employees

24. How likely are you to recommend the Saint Francis Hospital Trauma/Emergency Center to a family member or friend?

1	2	3	4	5
Very Likely		Neutral		Not at all likely

25. Did a nurse tell you how long it would be before a doctor could see you?
_____Yes_____NO

If yes, how long did she say? _____minutes

26. How many other times have you been treated, for any reason, at Saint Francis Hospital?
0- 1 2--4 5 or more

27. Overall, how would you rate your satisfaction with the service received at Saint Francis on these other occasions?

1	2	3	4	5
Very Good		Neutral		Very Poor

Thank you for completing this survey.

APPENDIX B

Patient Satisfaction Frequencies

1. Overall, how would you describe your experience in the Saint Francis Hospital Trauma/Emergency Room?

1	2	3	4	5
Very Good		Neutral		Very Poor
37.1%	34.1	22.9	1.8	4.1

2. I am extremely unhappy with the service provided at the Trauma/Emergency Center.

5	4	3	2	1
Strongly Disagree		Neutral		Strongly Agree
6.0%	9.6	15	18	51.5

3. The Saint Francis Hospital Trauma/Emergency Center has state-of-the-art medical equipment.

1	2	3	4	5
Strongly Agree		Neutral		Strongly Disagree
52.1%	26.3	18.6	1.2	1.8

4. The physical surroundings in the Trauma/Emergency Center are clean and pleasing.

1	2	3	4	5
Strongly Agree		Neutral		Strongly Disagree
58.5%	25.1	13.5	1.2	1.8

5. The employees in the Trauma/Emergency Center are neat and dressed appropriately for their jobs.

1	2	3	4	5
Strongly Agree		Neutral		Strongly Disagree
66.7	27.5	4.7	0	1.2

6. The doctors in the Trauma/Emergency Center were competent in their ability to treat me.

1	2	3	4	5
Strongly Agree		Neutral		Strongly Disagree
56.2	27.8	10.7	3.0	2.4

7. The nurses in the Trauma/Emergency Center showed a lack of skill in caring for me.

5	4	3	2	1
Strongly Disagree		Neutral		Strongly Disagree
7.6%	2.9	13.5	18.1	57.9

8. I found I can depend on the Trauma/Emergency Center to provide good care.

1	2	3	4	5
Strongly Agree		Neutral		Strongly Disagree
53.8	28.7	10.5	3.5	3.5

9. I did not receive care within a reasonable length of time at the Trauma/Emergency Center.

1	2	3	4	5
Strongly Agree		Neutral		Strongly Disagree
53.8	28.7	10.5	3.5	3.5

10. The nurses did an excellent job of consistently stopping by my room to check on me.

1	2	3	4	5
Strongly Agree		Neutral		Strongly Disagree
29.4%	20.9	27.0	10.4	12.3

11. Given my condition, I was seen by the doctor within a reasonable length of time.

1	2	3	4	5
Strongly Agree		Neutral		Strongly Disagree
35.9%	25.3	19.4	8.8	10.6

12. How fully did the doctors explain the medical procedures ordered for you?

1	2	3	4	5
Completely		Somewhat		Not at all
58.1%	21.6	16.2	2.4	1.8

13. I feel I can trust the doctors and staff in the Trauma/ Emergency Room at Saint Francis.

1	2	3	4	5
Completely		Neutral		Not at all
53.8%	31.4	13.0	0.6	1.2

14. The staff at the Trauma/Emergency Room was discourteous.

5	4	3	2	1
Strongly Disagree		Neutral		Strongly Agree
3.0%	3.0	9.6	8.4	76.0

15. Employees at Saint Francis Trauma/Emergency Room have the patient's best interest at heart.

1	2	3	4	5
Strongly Agree		Neutral		Strongly Disagree
47.3%	32.0	16.6	3.6	0.6

16. The doctors in the Trauma/Emergency Room do not give patients personal attention.

5	4	3	2	1
Strongly Disagree		Neutral		Strongly Agree
4.2%	4.8	13.7	28.6	48.8

17. The Trauma/Emergency Room provides care within a reasonable period of time.

1	2	3	4	5
Strongly Agree		Neutral		Strongly Disagree
34.1%	25.1	17.4	10.2	13.2

18. Employees in the Trauma/Emergency Room at Saint Francis understand my needs.

1	2	3	4	5
Strongly Agree		Neutral		Strongly Disagree
42.9%	34.1	15.9	4.7	2.4

19. In your opinion, how crowded was the emergency room when you arrived?

1	2	3
Low	Medium	High
27.1	50.0	22.9

20. How would you rate the severity of the problem which brought you to the emergency department?

1	2	3	4
Life Threatening	Serious	Somewhat Urgent	Non-Urgent
4.1%	26.5	51.8	17.6

21. The reason for the level of service given to me in the Trauma/Emergency Center was --

5	4	3	2	1
Circumstances beyond the control of the staff			Attitudes and feelings of the employees	
18.0%	9.4	35.3	20.1	17.3

22. How likely are you to recommend the Saint Francis Hospital Trauma/Emergency Center to a family member or friend?

1	2	3	4	5
Very Likely		Neutral		Not at all likely
57.6%	24.1	11.8	2.4	4.1

23. Overall, how would you rate your satisfaction with the service received at Saint Francis on these other occasions?

1	2	3	4	5
Very Good		Neutral		Very Poor
47.1%	30.3	16.1	3.9	2.6

VITA

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