Customer Service Quality Management in the Construction Industry: A Comparative Study of the U.S. and Japan

by

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Submitted to the Department of Civil Engineering in Partial Fulfillment of the Requirements for the Degree of MASTER OF SCIENCE in Civil Engineering at the Massachusetts Institute of Technology

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Abstract

The objectives of this thesis are to explore the applicability of the
conceptual model of service quality developed in other industries to the
construction industry and examine how the differences in market conditions
between the U.S. and Japanese construction industries affect the management
of service quality within the context of the model above.

There are traditionally three values in services offered by companies in
the construction industry: price, schedule, and quality of work. However, the
construction industry is saturated by companies offering the same level of
services with respect to these three traditional values. It is imperative for
companies in the construction industry to offer another value, that is
customer service, to gain a new competitive edge, given the trend where more
owners are choosing a contractor based on a negotiated contracting process
rather than picking a contractor offering the lowest price.

The Gap model, which is being developed through empirical studies in
other industries and helps identify causes of service problems within a service
provider, is presented with ten determinants of service quality. The
application of the Gap model and the determinants of service quality to the
construction industry focuses on distinct characteristics of the industry, using
services provided by design-build contractors. Based on the conceptual
framework applied to the construction industry, the five most remarkable
differences between the U.S. and Japanese construction industries, which are
the decision-making process, employment pattern, subcontracting system,
contractual relationships with the owner, and labor unions, are discussed to
examine how these differences influence service management.

The analysis holds that the Gap model is applicable to the construction
industry. The thesis then concludes with some findings, including the
distinguishing nature of service quality in the construction industry and the
strengths and weaknesses of the U.S. and Japanese construction industries as
they relate to particular service problems.

Thesis Supervisor: Fred Moavenzadeh
Title: Director, Center for Construction Research and Education
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I am sincerely grateful to my thesis supervisor, Professor Fred Moavenzadeh, who has given me relevant and knowledgeable comments in the course of this work.

I also thank the JDC Corporation for providing the funds to support my two years at MIT.

I would like to express my gratitude to Mr. John I. Carlson, Jr., who has kindly answered my questions and given me profound comments based on his experience.

Special thanks go to my parents and sister for continued support and love.
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1. Introduction

1.1 Service Quality in Other Industries

We are today in a service-dominated economy and cannot live without services. We are totally dependent on some kinds of services in almost every aspect of our daily life, whether we like to be involved in services or not. For instance, in the U.S., approximately three-fourths of the GNP and ninety percent of new jobs the economy creates come from services (Zaithaml et al., 1990: p. 1).

Service quality is regarded as vital a marketing tool as pricing strategy not only in the service industry but also in the manufacturing industry. Today, organizations in all industries are competing to some extent on the basis of service quality. Even in the manufacturing industry, the way complaints from customers are handled and what type of warranty is needed by customers have become the key marketing issues in the same way as the development of new products used to be. Most dissatisfied customers just switch from the company without complaining about poor service quality. According to 1988 data from the Marketing Science Institute, the largest percentage of respondents (40%) listed "poor service" as the reason for switching to another competitor. Moreover, an IBM study found that customers who were satisfied with complaint handling told three other people about their experience while customers who were dissatisfied told seven other people about their dissatisfaction (Richards, 1991). Another study also found that "Only 4% of the customers with problems actually complain to companies. The other 96% stay dissatisfied, telling an average of 9 to 10 other people of their dissatisfaction (Bitran, 1991: p. 293)." The fact that satisfied customers refer to new customers
and continue to receive the service lowers the cost of marketing new products or services. Thus, retaining the customers once acquired is the ultimate goal of service quality management. Reichheld (Business Week, October 25, 1991: p. 102) states that increasing the customer retention rate by 2% can be equivalent to cutting costs by 10% in the banking industry.

However, even in the service industry, only 10% of American companies have quality management programs (Business Week, October 25, 1991: p. 100). The main reason for this low rate is that measuring service quality is more difficult than measuring the quality of physical goods. In the case of quality management of physical goods, it is easier to count defects, find the cause of defects, and lower the defect rate. In addition, improvement can be easily measured quantitatively, and goals can be set by exact numbers. On the other hand, because of the nature of service quality, measuring the quality improvement of service and its effect on profit is tougher. In addition, service cannot be inspected before it is delivered like physical goods. Service depends on employees, and after the delivery, it disappears. However, in The PIMS (Profit Impact of Market Strategy) Principles, Buzzel and Gale (1987) prove the positive relationship between perceived service quality and profitability. They conclude that a quality edge boosts profitability in two ways: 1) In the short run, excellent quality sustains premium prices. 2) In the long run, excellent quality leads to both market expansion and gains in market share. In short, successful quality management ultimately pays off.

Many firms, whether they are in the manufacturing industry or in the service industry, are now realizing the importance of service quality in a tight economy. Many customers today are experiencing high quality service offered by competitors. Once they are exposed to excellent service, they
cannot stand anything less than that level. Thus, the management of service quality is imperative for the company's future success.

Gunneson Group International Inc. predicts that by the year 2000, the percentage of service companies with more than 500 employees that install service programs will rise to 70% (Business Week, October 25, 1991: p. 100).

1.2 Why Service Quality Management in the Construction Industry?

The construction industry is characterized by its fragmentation and low productivity. There are more than enough companies in the industry, and they are fiercely competing with one another to get a project, mainly by lowering the price. Thus, lower price currently dominates in the industry as the primary competitive advantage along with schedule compression.

Some companies in the industry, especially Japanese general contractors, started introducing Total Quality Management (TQM) in the past ten years, and some owners started paying attention to the quality of work to gain an additional competitive edge. Especially in industrial projects, whether the contractor's TQM program meets the owner's specifications has become a critical factor in selecting the contractor. In this regard, there are three competitive advantages in the industry today: lower price, shorter schedule, and better quality of work. However, many companies are suffering from the reality that all three factors can not easily be achieved at the same time. It has been the common rule that the sum of price, schedule, and quality of work remains constant: Constant = Price + Schedule + Quality of Work. In addition, the construction industry is saturated by companies offering the same level of services in terms of price, schedule, and quality of work. Therefore, these
three competitive advantages will soon no longer be valuable as today to companies in the construction industry. It is time for companies in the construction industry to offer another value, that is customer service, in order to break the equation above and keep the price higher. Excellent quality of customer service will make the industry’s productivity higher.

Construction industry has two aspects in its business nature: the manufacturing-related aspect and the service-related aspect. Manufacturing-related activities include planning and designing a project, purchasing materials and equipment, and performing the construction of the project. Service-related activities comprise a part of all activities mentioned above such as preconstruction negotiations and change orders in construction. Service-related activities mean how the manufacturing-related activities are performed rather than what the outcome is. Carolyn Corbin claims that "the formulas of productivity that traditionally measure efficiency will soon be outmoded. They will be replaced ... by measures of effectiveness involving the process of accomplishing a task (ENR, March 9, 1992: p. 70)." Yet, no company in the industry has paid attention to the process of accomplishing a task.

There are some reasons preventing companies in the industry from managing customer service quality. The major reasons among them are:

1. Adversarial relationships among participants of a project: The common practice that each participant, such as the owner, architect, and contractor, tries to pass over as much responsibility as possible to the other creates litigious relationships. Because of the competitive bidding process, which has long dominated in the industry, there is no incentive for improving service quality.
2. Prototypical nature of projects: Unlike manufacturing and service industries, the construction industry usually produces one-of-a-kind units, which hinders the repetition of the same improvement program (Rosenfeld, 1992).

However, these causes listed above seem to be addressed because of the following reasons:

1. Increase of negotiated contracting: More public sectors are starting to choose a contractor based on a negotiated contracting process rather than picking a contractor offering the lowest price. And, more private owners are starting to evaluate their contractors based on qualitative criteria.
2. Construction operations are repetitious: Although construction projects are prototypical as mentioned above, their required tasks are similar. Effective service quality management can be applied at least partly to other projects, which multiplies the effect of improvement (Rosenfeld, 1992).

Therefore, management of service quality is required by the industry's future trends, and its effects will be positive. Edward Scoville says, "We see it as the way of the future. If we don't pay attention to what our customers want, as opposed to what we think they want, and improve our process and the quality of our services, then we won't be around in five or 10 years (Building Design & Construction, 1992, March: p. 9)."

A conceptual model of service quality which seems to be suitable to the construction industry is the Gap model, which is intended to be applicable to all industries and is introduced in Chapter 2. The Gap model consists of four gaps which create service quality problems within a service provider and
another gap, which is the difference between customer expectations and perceptions. A service provider can identify causes of service problems on its side by analyzing the Gap model.

1.3 Objectives of the Study

Objectives of this study are as follows:

1. Explore the applicability of the Gap model, developed through empirical study in other industries, to the construction industry.
2. Examine how the differences in market conditions between the U.S. and Japanese construction industries affect service quality management within the context of the Gap model.

1.4 Contents and Methodology of the Study

This thesis is comprised of four main chapters: Chapters 2 through 5. Chapter 2 summarizes the natures of service and service quality, which have been discussed in much of the literature, compared to the quality of physical goods. Then, it introduces the concept of service quality and the Gap model being developed by Zaithaml, Parasuraman, and Berry, which help a service provider measure their service quality and find out causes of service problems within the service provider side.

In Chapter 3, the applicability of the Gap model introduced in Chapter 2 to the construction industry is explored by using a design-build contractor's organization, relationship with an owner, and services. First, a project is divided into three phases, Planning and Design phase, Contract phase, and
Construction phase, and required services are defined in each phase. Then, the most important determinants of service quality in each phase are defined. Classification schemes of the determinants, organizational constructs, and services are discussed with the linkage of services to identify the uniqueness of the industry and investigate the effective way of managing services in the industry. The determinants and organizational constructs are classified into two types: Ability-related and Attitude-related. Services are also classified into two types on the basis of the degree of customer contact: High customer-contact services and Low customer-contact services. Finally, each Gap pertaining to the contractor side is defined and possible problems attributable to each Gap are discussed within the context of the construction industry.

Chapter 4, using the framework introduced in Chapter 2 and adapted to the construction industry in Chapter 3, investigates how the five main differences in market conditions between the U.S. and Japanese construction industries influence customer service management. The differences discussed are the management style, subcontracting system, contractual relationships between the owner and contractor, and labor unions. The differences in management styles include the decision-making process and employment pattern. Influences of these differences on Gaps and the determinants of service quality are examined.

Finally, Chapter 5 clarifies the relationships among the determinants and their attributes in the industry, and what five differences discussed in Chapter 4 specifically affect what organizational constructs by summarizing Chapters 3 and 4. I then conclude with some of the most significant findings derived from the analysis in the study.
2. Understanding Service and Service Quality

We have been in a service economy for more than four decades, and today our economy can be characterized as service-dominated. This is proven by the fact that while some 70 percent of U.S. GNP was from service industries in 1955, it rose to 79 percent in 1985 (Johnston and Packer, 1987). In addition, service-related jobs and personnel are increasing even in manufacturing industries and playing a key role in successful corporate management. For instance, more than half of the employees of IBM, which is considered a computer manufacturer and classified so in statistics cited above, are in charge of some kind of customer service.

Buzzel and Gale (1987) find in a study covering both the manufacturing and service industries that high quality improves both profitability and market share for both kinds of industry.

Despite the fact that we live in a service economy, and excellent quality of services pays off, conceptual service-quality models which are applicable for all industries are still being developed. Among them is the Gap model being developed by Zaithaml, Parasuraman, and Berry. Such a model will help management measure service quality and find out causes of service problems.

In this chapter, I discuss the definition and general characteristics of service, compared to physical goods. Then, the concept of service quality developed by Zaithaml et al., its attributes, and the Gap model are presented and described briefly. Finally, the relationship between each Gap and its influencing factors are summarized.
2.1 The Nature of Service

Although there is quite a little amount of literature discussing the nature of services, and today's service activities are diversified, fundamental characteristics cited in the literature are essentially the same. However, before talking about the nature of services, we had better answer this fundamental question: What is service? Answering this question will make it easier to discuss and understand the nature of services.

There are various definitions of service suggested by researchers and practitioners. Most of those are strictly based on the so-called service industry, and narrowly focus on selling-buying activities. Grönroos (1990: p.27) blends some of the previously suggested definitions and put it this way: "A service is an activity or series of activities of more or less intangible nature that normally, but not necessarily, take place in interactions between the customer and service employees and/or physical resources or goods and/or systems of the service provider, which are provided as solutions to customer problems." Lovelock (1991: p.263), referring to marketing aspects of service, defined it as follows: "Customer service is a task, other than proactive selling, that involves interactions with customers in person, by telecommunications, or by mail. It is designed, performed, and communicated with two goals in mind: operational efficiency and customer satisfaction." Both agree that whoever has contact with customers, by whatever means and for whatever purpose, affects the customer's evaluation of service. They become a part of customer services whether or not they are considered service personnel or essential for service.

For instance, although when you subscribe to a newspaper by phone or mail, face-to-face interactions with a service representative does not occur,
you can still evaluate the quality of service based on the service representative's attitude or the promptness of the start of delivery. Promptness of the start of delivery involves not only service representatives, who actually have contact with customers, but also so-called back-office personnel in billing or delivery sections who do not keep in touch with customers on a normal basis. Another example is a car repair shop. Suppose that you bring in your car with problems to a repair shop, and later pick it up by yourself. In this case, you may neither interact with a mechanic who actually takes care of your car, nor be able to evaluate the quality of his/her work at once. But you might think the quality of work better if the shop's facilities look good or the clerk's attitude is warm. Everything you can think of attributable to the service provider's side can be potential elements of service.

Service has been compared with physical goods in many studies to distinguish its characteristics from goods. Table 2-1 lists the differences between physical goods and service mentioned in those studies.
### Table 2-1 Differences between Physical Goods and Services

<table>
<thead>
<tr>
<th>Physical Goods</th>
<th>Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tangible</td>
<td>Intangible</td>
</tr>
<tr>
<td>Homogeneous</td>
<td>Heterogeneous</td>
</tr>
<tr>
<td>Can be inventoried</td>
<td>Cannot be inventoried</td>
</tr>
<tr>
<td>Can be displayed</td>
<td>Cannot be displayed</td>
</tr>
<tr>
<td>Can be communicated</td>
<td>Cannot be communicated</td>
</tr>
<tr>
<td>A thing</td>
<td>A activity or process or interaction</td>
</tr>
<tr>
<td>Products are things</td>
<td>People are part of products</td>
</tr>
<tr>
<td>Can be patented</td>
<td>Cannot be patented</td>
</tr>
<tr>
<td>Price setting is relatively easy</td>
<td>Price setting is relatively difficult</td>
</tr>
<tr>
<td>Can be sold to others</td>
<td>Cannot be sold to others</td>
</tr>
<tr>
<td>Needs physical distribution channel</td>
<td>Does not need physical distribution channel</td>
</tr>
<tr>
<td>Customers are not involved in production process</td>
<td>Customers involved in production process</td>
</tr>
<tr>
<td>Other customers are not involved in delivery process</td>
<td>Other customers involved in delivery process</td>
</tr>
<tr>
<td>Production, distribution, and consumption are separated</td>
<td>Production, distribution, and consumption are simultaneous</td>
</tr>
<tr>
<td>Buyer-seller interactions do not take place</td>
<td>Buyer-seller interactions take place</td>
</tr>
<tr>
<td>Can be mass produced</td>
<td>Cannot be mass produced</td>
</tr>
<tr>
<td>Easy to maintain quality standards</td>
<td>Difficult to maintain quality standards</td>
</tr>
<tr>
<td>Timeliness is less important</td>
<td>Timeliness is more important</td>
</tr>
<tr>
<td>Quality is not dependent on demand level</td>
<td>Quality is often dependent on demand level</td>
</tr>
</tbody>
</table>

Table 2-1 illustrates characteristics that make service management tougher than managing production of physical goods. These characteristics are attributable to one another. For instance, since a service process requires customers' participation, service cannot be inventoried. Therefore, when demand is high, customer-contact personnel become shorthanded unless new personnel are hired. This situation threatens the quality of services, because they may keep customers waiting for a longer time, which forces customers to go to another service provider. Moreover, they often may not be able to spend enough time with customers, which results in customers' needs or wants being ignored. Consequently, both lead to the loss of customers. Likewise, other characteristics are also woven together in complicated ways. These dynamics
make service management a tough challenge, compared to the quality management of physical goods.

These characteristics can be separated into four major categories cited consistently in many studies: Intangibility, Heterogeneity, Inseparability, and Perishability (See Table 2-2). These four characteristics will be discussed individually below.

Table 2-2 Four Major Characteristics and Attributes of Services

<table>
<thead>
<tr>
<th>Intangibility</th>
<th>Cannot be inventoried</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cannot be displayed</td>
</tr>
<tr>
<td></td>
<td>Cannot be communicated</td>
</tr>
<tr>
<td></td>
<td>An activity or process or interaction</td>
</tr>
<tr>
<td></td>
<td>Cannot be patented</td>
</tr>
<tr>
<td></td>
<td>Price-setting is relatively difficult</td>
</tr>
<tr>
<td></td>
<td>Cannot be sold to others</td>
</tr>
<tr>
<td></td>
<td>Does not need physical distribution channel</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Inseparability</th>
<th>People are part of products</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Customers involved in production process</td>
</tr>
<tr>
<td></td>
<td>Other customers involved in delivery process</td>
</tr>
<tr>
<td></td>
<td>Production, distribution, and consumption are simultaneous</td>
</tr>
<tr>
<td></td>
<td>Buyer-seller interactions take place</td>
</tr>
<tr>
<td></td>
<td>Cannot be mass produced</td>
</tr>
<tr>
<td></td>
<td>Difficult to maintain quality standards</td>
</tr>
<tr>
<td></td>
<td>Cannot be communicated</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Heterogeneity</th>
<th>People are part of products</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Difficult to maintain quality standards</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Perishability</th>
<th>Timeliness is more important</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Quality is often dependent on demand level</td>
</tr>
<tr>
<td></td>
<td>Cannot be inventoried</td>
</tr>
</tbody>
</table>

A characteristic cited most often is intangibility (Zeithaml et al., 1985). Because service is not an object but a phenomenon, it is difficult for customers to evaluate the quality of services like they evaluate physical goods. The fact that service does not need physical distribution channels implies that service providers have to manage production, delivery, and consumption all at one
time, at the same place. Unlike physical goods, service's distribution channels, such as telecommunications and computer onlines, do not involve the movement of persons or things.

The second most often cited characteristic is inseparability of production and consumption. Inseparability implies that service is simultaneously produced and consumed while physical goods are first produced, then sold, and finally consumed. Especially in labor-intensive services, most quality occurs during the service-delivery process, usually in an interaction between a customer and a customer-contact person (Lehtinen and Lehtinen, 1983).

Heterogeneity is the third most often cited characteristic. Service quality is often inconsistent with what it is intended to be. It varies from person to person, from customer to customer, and from day to day (Parasuraman et al., 1984). Even the same person offers various levels of service quality depending on his/her moods or skills. Also, even when a service provider is not a person, but a machine such as an ATM or a library's online catalogue, which are products of service standardization, this inconsistency happens when a customer has difficulties understanding the machine's commands. This fact that people are part of a product makes it difficult to standardize service quality.

Finally, perishability means that service cannot be stocked (Bessom and Jackson, 1975, Thomas, 1978). Restaurant tables not occupied, theater tickets not purchased, and customer-contact persons with no customer cannot be inventoried for later demand. Perishability also implies that a customer who requires a certain service now might find it unnecessary five minutes later. This is proven by the fact that service firms find it a serious problem to match demand with supply, regardless of type of firm (Zeithaml et al., 1985).
So far I have illustrated how complex most services are and what characteristics make it a tough challenge to manage service quality, compared with the quality of physical goods. Today, even manufacturers, which at a glance appear to use only state-of-the-art technologies to improve the quality of their products, are trying to attract new customers and to create a positive image for their products through services. So, it is imperative to establish the common formula for providing services. In the following section, I define the quality of service, which is as complex as defining service itself.

2.2 What is Service Quality?

Buzzel and Gale (1987: p.111) described quality as whatever the customer say it is and whatever the customer perceives it to be. This is the simplest definition of service quality. However, service has, as discussed in the previous section, such complicated and unique characteristics that the model to evaluate service quality needs to be more elaborate than that of goods. Especially since customers participate in the service delivery process, service cannot be perceived or evaluated based on only its outcome. Customers tend to rely more on the way it is delivered and problems are handled. In the case of an airline company, while the service outcome is to take passengers to the designated airport at the designated time, the way service is delivered means how courteous the ticket counter clerk's attitude is as well as the crew's, how good the food is, how the baggage is handled, and etc.

The most advanced research of service quality was conducted by Parasuraman, Zaithaml, and Berry (1984). Through focus group interviews, they identified ten determinants used by customers to evaluate service quality. The ten determinants are Reliability, Responsiveness, Competence, Access,
Courtesy, Communication, Credibility, Security, Understanding/Knowing the Customer, and Tangibles. These ten determinants are summarized in Table 2-1 with examples of customer's question.
<table>
<thead>
<tr>
<th>Determinant</th>
<th>Definition</th>
<th>Example of customer's question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reliability</td>
<td>- consistency of performance and dependability</td>
<td>- When a loan officer says she will call me back in 15 minutes, does she do so?</td>
</tr>
<tr>
<td></td>
<td>- the firm performs the service right the first time</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- the firm honors its promises</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- accuracy in billing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- keeping record correctly</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- performing the service at the designated time</td>
<td></td>
</tr>
<tr>
<td>Responsiveness</td>
<td>- willingness and readiness of employees to provide service</td>
<td>- Are charges for returned merchandise credited to my account promptly?</td>
</tr>
<tr>
<td></td>
<td>- timeliness of service</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- mailing a transaction slip immediately</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- calling the customer back quickly</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- giving prompt service</td>
<td></td>
</tr>
<tr>
<td>Competence</td>
<td>- possession of the required skills and knowledge to perform the service</td>
<td>- Is the bank tolerable to process my transactions without fumbling around?</td>
</tr>
<tr>
<td></td>
<td>- knowledge and skill of the contact personnel</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- knowledge and skill of operational support personnel</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- research capability of the organization</td>
<td></td>
</tr>
<tr>
<td>Access</td>
<td>- approachability and ease of contact</td>
<td>- Does the credit card company have a 24-hour toll-free telephone number?</td>
</tr>
<tr>
<td></td>
<td>- the service is easily accessible by telephone</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- waiting time to receive service is not extensive</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- convenient hours of operation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- convenient location of service facility</td>
<td></td>
</tr>
<tr>
<td>Courtesy</td>
<td>- politeness, respect, consideration, and friendliness of contact personnel</td>
<td>- Does my broker refrain from acting busy or being rude when I ask questions?</td>
</tr>
<tr>
<td></td>
<td>- consideration for the consumer's property</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- clean and neat appearance of public contact personnel</td>
<td></td>
</tr>
<tr>
<td>Communication</td>
<td>- keeping customers informed in language they can understand and</td>
<td>- Does my broker avoid using technical jargon?</td>
</tr>
<tr>
<td></td>
<td>listening to customers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- the firm has to adjust the language for different consumers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- explaining the service itself</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- explaining how much the service will cost</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- explaining the tradeoffs between service and cost</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- assuring the consumer that a problem will be handled</td>
<td></td>
</tr>
</tbody>
</table>

Continued.
<table>
<thead>
<tr>
<th>Determinant</th>
<th>Definition</th>
<th>Example of customer's question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credibility</td>
<td>- trustworthiness, believability, honesty</td>
<td>- Does a bank have a good reputation?</td>
</tr>
<tr>
<td></td>
<td>- having the customer's best interests at heart</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- company name</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- company reputation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- personal characteristics of the contact personnel</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- the degree of hard sell involved in interactions with the customer</td>
<td></td>
</tr>
<tr>
<td>Security</td>
<td>- freedom from danger, risk, or doubt</td>
<td>- Is it safe for me to use the bank's automatic teller machines?</td>
</tr>
<tr>
<td></td>
<td>- physical safety</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- financial security</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- confidentiality</td>
<td></td>
</tr>
<tr>
<td>Understanding/Knowing the</td>
<td>- effort to understand the customer's needs</td>
<td>- Does someone in the bank recognize me as a regular customer?</td>
</tr>
<tr>
<td>customer</td>
<td>- learning the customer's specific requirements</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- providing individualized attention</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- recognizing the regular customer</td>
<td></td>
</tr>
<tr>
<td>Tangibles</td>
<td>- physical evidence of the service</td>
<td>- Is my credit card statement easy to understand?</td>
</tr>
<tr>
<td></td>
<td>- physical facilities</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- appearance of personnel</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- tools or equipment used to provide the service</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- physical representation of the service</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- other customers in the service facility</td>
<td></td>
</tr>
</tbody>
</table>


Figure 2-1. Ten Determinants and Their Definitions

In the same research, Parasuraman, Zeithaml, and Berry (1984) support the generally accepted notion that service quality is a comparison between customer expectations and perceptions like other researchers and
practitioners do. They quoted the following definition: "Service quality is a measure of how well the service level delivered matches customer expectations. Delivering quality service means conforming to customer expectations on a consistent basis (Lewis and Booms, 1983)."

In this framework, the relationship between the ten determinants of service quality and perceived service quality is described as in Figure 2-2, including some influential factors on expected service. The difference between expected service and perceived service is termed GAP 5 in the GAP model, which will be introduced in the following section.


Figure 2-2. Elements of Perceived Service Quality
The ten determinants are arrayed along the continuum of ease of evaluation. While the important clues of evaluating goods fall into determinants in the upper end, those of services fall into the lower end. This fact illustrates that it is more difficult to evaluate the quality of service than goods, as mentioned earlier.

Expected service, which is formed by word of mouth, personal needs, past experience, and external communications to customers, means prepurchase expectations which heavily rely on tangibles and credibility. Perceived service consists of perceived process quality, which is customers' perceptions of how the service is delivered, and perceived output quality, which is customers' perceptions of the results of the service. External communications to customers influence both expected service and perceived service in that if a firm overpromises its service to attract new customers, it raises customers' prepurchase expectations more than necessary and consequently deteriorates the perceived service.

2.3. GAP Analysis Model

In spite of the growing concern among managers about the importance of service quality, only a few studies in generalizing the service quality concept have been done so far. This is mainly because the range of services to be covered is so broad. In fact, the number of types of services offered dramatically increased in the last ten years. It was impossible to imagine ten years ago that we can not only order a personal computer by mail but also receive it the same day with software and communication gear installed at low cost. Therefore, most studies focus on a specific industry and conclude with some guidelines to implement a service quality program.
Another aspect of the studies in this field is that they are developed through such empirical studies as focus group and executive interviews. In other words, such studies go through qualitative analysis first, and then make their point quantitatively through mathematical data analysis. These facts make it troublesome to establish a service quality concept applicable for all industries.

However, to establish such a general concept will be helpful in order for service firms to analyze causes of service problems and address marketing strategies systematically.

Parasuraman, Zeithaml, and Berry have been working on establishing a conceptual model of service quality through an exploratory study since the early 80s. Their model, called the GAP model, presented in Figure 2-3, was designed to be applicable for all industries (Zeithaml et al., 1984).
Source: Parasuraman et al., 1990, p. 4.

Figure 2-3. Conceptual Model of Service Quality
This model shows that customers' perceived quality of service is affected by Gaps 1-4, which belong to the service firm's side. Managers can identify causes of service quality problems within a service organization by examining each construct of Gaps 1-4. Gap 5, a gap between customer's perceptions and expectations, is a function of Gaps 1-4 in which discrepancies and directions of Gaps 1-4 determine Gap 5.

\[ \text{Gap 5} = f(\text{Gap 1, Gap 2, Gap 3, Gap 4}) \]

Each Gap's organizational constructs and possible problems are discussed below along with some findings suggested in their recent research (Parasuraman et al., 1990).

2.3.1 Gap 1: Marketing Information Gap

Gap 1 is the difference between what a customer really wants or needs and what the management perceives to be a customer's wants or needs. Because of service's unique characteristics, service firm executives tend to have more difficulties than tangible goods producer's understanding what a customer is looking for and what affects their service quality. Constructs influencing Gap 1 and each construct's specific problems are:

1. Marketing Research Orientation
   - The management does not make sufficient efforts to gather market information.
   - Market information gathered by the management is misinterpreted.
   - Marketing research is irrelevant to service quality.

2. Upward Communication
   - The management does not take into account the information from employees at lower levels.
The management does not try to collect the information from employees at lower levels.

The organization's culture prevents employees from reporting service problems to the management.

3. Level of Management

More levels than needed between the top management and contact personnel thwart the smooth flow of information between them.

Because most large companies are doing customer research extensively, Gap 1 is not, relatively speaking, a serious problem among large companies. This finding, however, does not necessarily mean that all managers in large companies know customers' expectations well. Another finding pertaining to Gap 1 is that Gap 1 is bigger when too many management levels exist between contact personnel and managers. This fact implies that managers have to keep in touch with contact personnel to be sure of what customers really expect.

2.3.2 Gap 2: Standards Gap

Gap 2 is the difference between management perceptions of customer expectations and service-quality specifications actually used to control service quality in an organization. Even though managers know exactly customers' wants, if they set up a wrong program, this gap will exist. In such a case, managers often encounter difficulties identifying service problems, since they do not want to think their program inappropriate. Constructs influencing Gap 2 and each construct's specific problems are:

1. Management Commitment to Service Quality

The number of personnel or budget assigned for controlling service quality is not appropriate.
- The management does not think their attempts to improve service quality is recognized and rewarded.
- The management emphasizes material aspects of the program rather than human aspects.

2. Goal Setting
- Since the management does not set up a formal goal of a quality program, employees lose their motive to follow the program.

3. Task Standardization
- Task standardization does not comply with a quality program.

4. Perception of Feasibility
- Organizational capabilities and systems are insufficient to make a quality program work.
- The management does not think that the goal of a quality program can be achieved economically.

Parasuraman et al. (1990) found that the first three constructs above are particularly important, and the most influential factor among them is provision of the necessary resources. They also found that standardizing services to achieve a consistent level of service is not a significant factor. This suggests that even firms providing professional services which cannot be easily standardized have a chance to narrow Gap 2.

2.3.3 Gap 3: Service Performance Gap
Gap 3 is the discrepancy between service actually delivered and service quality specifications. This gap widens when employees are unable or unwilling to perform their tasks at the level required by the service quality
specifications. Constructs influencing Gap 3 and each construct's specific problems are:

1. Teamwork
   - Employees do not feel that they are cooperating with one another and with the managers.
   - Employees do not participate in decisions and share rewards.

2. Employee-Job Fit
   - The management does not pay much attention to hiring competent employees whose skills are suitable for the job.

3. Technology-Job Fit
   - Technology and equipment used to perform service is inappropriate.
   - Enough resources to select and introduce technology and equipment are not provided.

4. Perceived Control
   - Employees do not have the flexibility to control their performance.
   - Managers cannot predict demand level well.

5. Supervisor Control System
   - Procedure for measuring employees' performance is output-oriented rather than behavior-oriented.

6. Role Conflict
   - Employees' required tasks contradict tasks customers expect or employees like to do.
   - Employees are not evaluated through the measurement of service delivery process formally set forth by the management.
7. Role Ambiguity

- Frequency, accuracy, and quality of downward communication are not sufficient enough to eliminate any ambiguity about goals, strategies, procedures, job instructions, evaluation, and feedback.
- A firm does not train employees to give them confidence and understanding of their roles.

Parasuraman et al. (1990) found that each construct has an equally significant impact on Gap 3. However, through a regression analysis, teamwork was found the most consistent and critical factor of Gap 3. They concluded that "service quality can be improved by hiring the right employees for the job, giving them the tools and equipment they need, allowing them sufficient flexibility to serve customers effectively and, above all, fostering a work environment and culture conducive to their working well together as a team (Parasuraman et al., 1990: p. 36)."

2.3.4 Gap 4: Communication Gap

Gap 4 is the discrepancy between external communications to customers about service and service actually delivered. Advertising and other communications affect customers' pre-purchase expectations and service perceptions. Constructs influencing Gap 4 and each construct's specific problems are:

1. Horizontal Communication

- Since the coordination of departments or branches is not adequate, policies and procedures are inconsistent between them.
- Communication barriers exist between operations departments and customer contact departments.
2. Propensity to Overpromise

- A firm tends to overpromise to attract new customers and survive competition.
- A firm feels obliged to overpromise since its competitors seem to overpromise.

Parasuraman et al. (1990) found that effective communication and coordination within an organization is a must for consistency between service actually delivered and what is promised to customers. Effective horizontal communication also minimizes the tendency of overpromising.

2.3.5 Gap 5: Service Quality Gap

Gap 5 is the difference between customer prepurchase expectations of service and perceptions of service delivered. This gap is positively related to the sizes of Gaps 1-4, which are on the service-provider side. Parasuraman et al. (1990) proposed tentatively that Gaps 3 and 4 might have more significant impacts on Gap 5 than Gaps 1 and 2. Since the relative importance of each gap varies from industry to industry and from firm to firm, more extensive studies are required to prove this proposition.

The bigger Gaps 1-4 are, the bigger Gap 5 is. The factors influencing Gap 5 are the aforementioned ten determinants. Therefore, Gap 5 can be measured along with the ten determinants, while causes of service quality problems are identified through the Gap analysis. The relationship of each gap along with its constructs and ten determinants are described in Figure 2-4.
Source: Adapted from Parasuraman et al., 1990, p. 5.

Figure 2-4. Relationship between each Gap and Its Influential Factors
However, the relationship between the ten determinants and the constructs of Gaps 1-4 is yet to be studied. If we can identify which construct is most responsible for the most influential determinant for perceived quality, it is not so challenging to improve service quality with less time and cost.
3. The Gap Model in the Construction Industry

The applicability of the Gap model presented in the previous chapter to the construction industry is explored in this chapter by using a design-build contractor's organization and relationship with an owner. The design-build contractor is chosen over other types of construction companies because it offers the broad range of services and has many interactions with the owner throughout the project phase. Moreover, using the design-build contractor makes it easier to compare the service quality concept with Japanese construction industry since contractors of this type dominate in Japan.

A negotiated competitive bidding process is assumed in the preconstruction phase. Under this bidding system, the design-build contractor can obtain a competitive edge by providing excellent service quality in addition to the traditional values in the industry: time, cost, and quality of work.

First, services offered by the design-build contractor are identified in three project phases, and the most important determinants in each phase are defined based on kinds of services and the relationship with the owner. Then, the classification schemes of the ten determinants and organizational constructs are discussed along with the linkage of services to identify the uniqueness of the construction industry. Finally, Gaps 1 through 4 are defined, and possible problems pertaining to each gap are discussed.
3.1 Project Phases and Services of Contractor

Construction projects can basically be divided into three phases chronologically: Planning and Design phase, Contract phase, and Construction phase. Services offered by a contractor vary from phase to phase, and each service is classified into two types based on the degree of customer contact: High customer-contact service and Low customer-contact service. Table 3-1 shows each phase's services offered by a contractor and its classification. This categorization of services helps define the characteristics of each phase and examine how the degree of customer contact changes throughout the project.

How does the owner perceive service quality?

As mentioned in the previous chapter, the owner perceives service quality by comparing what he/she expected before the service is delivered with what he/she actually received, based on the previously mentioned ten determinants. In order to examine the applicability of the Gap model to the construction industry, it is necessary to know each determinant's definition according to the owner's objectives in each phase. In the following sections, determinants that seem to be most responsible for the owner's evaluation of service quality in each project phase are defined.

3.1.1 Planning and Design Phase

Services offered

During the Planning and Design phase, the contractor prepares a preliminary budget, design, and schedule, as well as a safety program, labor relation program, and organization plan complying with the owner's specification. After the preliminary plans described above are finished, they
Table 3-1
Services offered by a design-build contractor

<table>
<thead>
<tr>
<th>Planning and Design Phase</th>
<th>Contract Phase</th>
<th>Construction Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High customer contact services</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advise on scope definition</td>
<td>Cash flow projections</td>
<td>Conduct project meetings</td>
</tr>
<tr>
<td>Prepare milestone schedule</td>
<td>Prepare contract documents</td>
<td>Obtain permits from owner</td>
</tr>
<tr>
<td>Propose alternate methodologies</td>
<td>Finalize budget</td>
<td>Administer submittals</td>
</tr>
<tr>
<td>Review specification criteria</td>
<td>Finalize schedule</td>
<td>Negotiate change orders</td>
</tr>
<tr>
<td>Prepare preliminary budget</td>
<td>Finalize design</td>
<td>Arrange for inspections and testing</td>
</tr>
<tr>
<td>Site selection studies</td>
<td>Propose value engineering options</td>
<td></td>
</tr>
</tbody>
</table>

| **Low customer contact services**         |                                 |                                     |
| Conduct feasibility studies               | Survey labor maket               | Administer contracts of subs        |
| Environmental impact studies              | Analyze bids from subs           | Control cost and schedule           |
| Prepare zoning requests                   | Award contracts to subs          | Coordinate and inspect work         |
| Begin value engineering                   |                                 | Shop drawings coordination          |
| Identify long lead materials              |                                 | Safety management                   |
| Identify design interferences             |                                 | Labor relations management          |

are presented to the owner. If the owner does not have in-house design/engineering capabilities, the contractor may conduct feasibility studies on the owner's behalf. Feasibility studies include environmental impact studies, related regulatory studies, site selection, financial studies, and so forth.

**Owner's objectives**

Owner's objectives in this phase are as follows:

1. Evaluate Design-Builders' technical and financial capabilities for managing the project successfully.

2. Evaluate which preliminary plan is most suitable to the owner's interests or specifications.

3. Choose a contractor to negotiate the contract with, based on the evaluation of the objectives above.

**Most important determinants**

During the planning and design phase, competence, credibility, understanding/knowing customer, and tangibles seem to be more critical than other determinants considering the owner's objectives above. The definition of these four determinants in the planning and design phase follows.

**Competence**

Competence means capabilities to get the project done successfully. This includes both the technical and management skills of personnel as well as the support system that utilizes personnel organizationally.

Because of the construction project's inherent characteristics, specifically unpredictability, during the course of work, the owner tends to
see technical skills as less reliable than management skills, although they usually demand sophisticated technical skills. Also, the fact that construction management skills cannot be acquired only in the classroom makes the owner realize that they have no absolute criteria to measure competence, except the project manager's experience and the company's past performance. Therefore, the owner pays more attention to the project manager's experience and the company's past performance than to technical skills when evaluating competence. This proposition has been proved by a survey of the ENR in which owners answered that they chose construction managers 47 percent of the time because of more experience, 25 percent of the time because of technical skills (Murray, 1981).

Although technical skills are regarded less reliable indicators of competence by owners, technical skills become a key factor when the project requires special techniques that cannot be done by technologically inferior contractors or has rarely been done before. However, even in such a case, it is rational to imagine that the owner tends to see experience in the special area or in related areas will minimize risks of project failure.

Competence is related to tangibles in that state-of-the-art research facilities and equipment may make the owner imagine higher competence.

**Credibility**

Credibility is also important in this phase. No matter how hard the contractor tries to push its competence and ability to understand the owner's interests, the owner may not think that the contractor is credible.

Credibility has two aspects. One is trustworthiness, believability, and honesty that emerge from customer contact. The other is the company's name and reputation, which comes from outside the relationship between the owner
and contractor. A good reputation and name are difficult for a contractor to
manipulate since it heavily depends on word-of-mouth advertising. This is
one of the remarkable characteristics of the construction industry. The only
effective way of increasing the credibility of a contractor is to understand the
owner's wants and needs and not to unnecessarily try to insist on the
company's sales points. To understand the owner's wants and needs requires
listening to them well. This notion leads to the fact that a contact person's
attitude toward the owner, namely politeness, respect, consideration, and
friendliness, plays a significant role in determining credibility. These aspects
include courtesy, one of the ten determinants.

**Understanding/Knowing Customer**

This determinant is deeply related to other determinants.

Especially in the planning and design phase, it is more essential to
understand and know the owner's objectives than in any other phase. Once
the owner chooses a contractor, it basically means that the owner accepts its
preliminary plan. In addition, there is relatively less room to change the plan
later. It is also important for the contractor to know what the owner is more
concerned about. This requires prioritizing the owner's interests from the
owner's standpoint, and helps the contractor prepare some alternative plans.

Besides the owner's objectives related to time, budget, and design, other
procedure requirements such as a safety program, a labor relation program,
and an organization plan need to meet the owner's specification. Unless these
requirements are met, the owner tends to think that the contractor's
credibility is low.

Unlike in other industries, customers in the construction industry can
not be classified by types of products or buying behavior since each project is
different in nature depending on the customer's objectives as well as outside factors that can not be altered in favor of the contractor. However, a contractor has a chance to utilize past experience with the customer when dealing with a repeat customer. Therefore, the effort to stock customers' records in a certain, form from which a particular record is easily retrieved, is needed. This ensures delivery of a consistent level of services conforming to the customer expectations.

Tangibles

Tangibles can be an important factor in selecting a construction manager (Segura, 1991: p. 35). This notion is also true in the case of a design-build contractor.

This determinant needs more attention in this phase than in the later two phases. It helps impress the owner by introducing such technical advantages as a computer-aided design (CAD) system and state-of-the-art research facilities. Tangibles in this phase also means presentation materials such as easy-to-understand graphics in a preliminary plan. The major difference from other industries is that while in other industries good-looking facilities can increase the number of potential customers, in the construction industry such facilities can not be actually displayed or introduced publicly.

3.1.2 Contract Phase

Services offered

During the contract phase, a contractor negotiates the contract conditions that include general conditions, supplementary conditions, and cash flow projections. It is especially important that supplementary conditions to be included in the contract document are discussed in detail. The
contractor finalizes budget, design, and schedule while identifying long-lead materials and analyzing bids from sub contractors at the same time. After all the above activities are completed, procurement of materials and construction are started from the finalized parts of the project.

Owner’s objectives
1. Satisfy the project schedule constraints, completion priorities, and other scheduling information.
2. Satisfy budget constraints.
3. Determine that specifications and construction methods are met to the owner’s preference.
4. Make sure that the proposed operating procedures, including a safety program, a labor relations program, and an organization plan, are matched to the owner’s preference.

Most important determinants

Communication and security seem to play the most important roles in this phase, given the owner’s objectives above.

Intense communication, which often requires face-to-face interactions with the owner, is needed in this phase. Most services in this phase are classified as high customer-contact services (See Table 3-3). These high customer-contact services are vulnerable to the inconsistent level of services. The level of services offered is dependent on a customer-contact person's skills and attitude as mentioned in Chapter 2. Therefore, such management methods as "standardization of services" and "employee training" are indispensable to make service quality consistent in this phase. The importance of security is
paramount in this phase particularly when both parties arrange the conditions of performance and payment bonds.

Communication

An appropriate amount of communication helps the contractor understand the owner's specifications and priorities. It enables the contractor to convince the owner to modify some specifications in favor of the contractor without giving the owner a bad impression. It creates a chance for the contractor to increase the margin of profits.

It is necessary to avoid technical jargon and adjust the language depending on the owner's knowledge. This makes it easy for the owner to understand why the contractor is going to change something, and consequently leads to cost reduction and the avoidance of unnecessary reputation of, or duplication of work arising from misunderstanding. This benefits both the owner and contractor. However, as mentioned above, whether communication takes place face-to-face or via telecommunications, the degree to which each other's intention is understood depends on the contact personnel's skills and attitude, which requires both communication skills and engineering knowledge. These things can be enhanced through the employee training program or by establishing definite communication rules.

Another thing worth discussing here is the importance of explaining trade-offs between cost and service. This gives the owner accurate information about alternative designs or construction methods and makes the owner feel like they can make a choice. People feel satisfied when they feel the initiative is on their side. Also, this effect is enhanced if the explanation turns out to be right later in the project. It increases quality of services performed later in the project to discuss common possible problems such as
differing site conditions (i.e., existence of ledge, ruins) during construction and make clear each party's responsibilities in advance. This aspect of communication is related with security in that it reduces the degree of the owner's anxiety about possible problem situations.

**Security**

Financial security becomes an important factor when both parties negotiate about bonds and payment methods during construction.

### 3.1.3 Construction Phase

*Services offered*

During the construction phase, the contractor executes construction while complying with all specifications set forth in the contract phase and seeking the lowest cost and shortest time. The number of important determinants during the last phase of the project is larger than preceding phases (Segura, 1991: p. 38). This fact leads to a hypothesis that offering high quality service in this phase results in high customer perceptions of the entire project's service quality. There is also a time impact. "The perception for those services performed later in the project ... tend to have a greater impact on the overall service quality than the perception of the services performed earlier... (Segura, 1991: p. 30)." The reason for this notion is that the construction phase is usually longer than the preconstruction phase and the contractor can have many chances to correct mistakes made in the preconstruction phase (Segura, 1991: p. 30).

**Owner's objectives**

1. Inspect quality of work according to specifications.
2. Supervise budget and schedule.
3. Administer contract changes and claims.
4. Acquire a facility that is marketable.

Most important determinants

Most influential determinants in this phase are probably responsiveness, reliability, competence, communication, and credibility, given the owner's objectives above.

Responsiveness

Timeliness is one of three important factors for both the contractor and owner along with the budget and quality of work. During the construction phase, things that commonly occur and are time-sensitive are change orders and shop drawings. Whether the owner or contractor changes the contract or designs, the owner prefers that the procedure is done quickly (i.e., making necessary documents). This requires both operational efficiency and the correct contact person's attitude. In addition, each person's technical skills also have impacts on timeliness. If employees do not have enough skills to utilize sophisticated technology (i.e., CAD), which is installed to enhance quality of work, it may take longer than the time otherwise expected by the owner or communicated to the owner.

To increase operational efficiency requires appropriate organizational management plans such as "task standardization" and "communication control systems" that coordinate the communication between the site and home offices.
Reliability

High reliability in this phase means having the owner realize the consistent accuracy of shop drawings and other documents, and the consistent timeliness and accuracy of performance. Although high reliability can not be achieved immediately, it is true that offering high quality services continuously enhances this determinant in the later stage of construction, and reliability, once established, cannot be deteriorated easily. Therefore, the owner tends to evaluate this determinant mainly based on his/her impression of the last part of the project.

Competence

Competence is an important determinant in this phase as well as in the planning and design phase, in which the owner uses this determinant as a key in choosing a contractor. The difference of the meaning of competence from the planning and design phase is that the owner can evaluate competence by observing the actual performance of the contractor. Therefore, there is no way to achieve high competence except by actually performing in the manner communicated to the owner in advance. Discussing the firm's capabilities more than necessary leads to the low evaluation of competence.

This determinant also has to do with the management of subcontractors, since subcontractors actually perform the construction.

Communication

Communication becomes more important and necessary in the later part of construction, particularly right before the end of construction. At the later part of construction, the contractor needs to arrange the final inspection and
testing and check through all the documents, then closeout the contract. These services require more intense and accurate communication.

Intense communication is needed when change orders are negotiated, too. At this time, important aspects of communication are the same as in the contract phase.

_Credibility_

Once construction is underway, credibility has nothing to do with the company’s name and reputation, as in the planning and design phase.

This determinant has more weight when there is more face-to-face contact between the owner and contractor, which is usually the last part of the project. Also, by the end of the project, credibility is affected mainly by the performance of the field office personnel, especially a project manager. Credibility is affected by communication to a significant degree because each party’s misunderstanding leads to the deterioration of credibility accumulated through the course of the project.

_Other determinants_

Determinants that are not yet mentioned are access and courtesy. The fact that I did not mention these two determinants does not necessarily mean that they are irrelevant to service quality offered by a contractor. Although it means that they do not have direct impacts on service quality, they certainly play invisible roles in affecting the evaluation of the other eight determinants mentioned so far.
Access

Accessibility is less significant throughout the project because most services usually do not require the presence of the owner. Moreover, necessary information can be transmitted without meeting each other. However, when problems that require intense communication take place, the degree of accessibility becomes an important factor to service quality.

It helps increase the owner's evaluation of this determinant to clarify personnel's role at a field office. This enables the owner to contact the right person at once.

Courtesy

This determinant is dependent on the contact personnel's attitude and appearance. Since the project manager has the most contact with the owner during the construction, the evaluation of courtesy is affected by the project manager's attitude and appearance.

Although the owner usually does not contact lower level personnel, such as construction workers, their good attitude and appearance may affect evaluation of courtesy when the owner visits the site.

The courtesy of contact personnel affects the owner's evaluation of tangibles and credibility.

3.2 High and Low Customer Contact Services

"A high customer-contact service is defined as an owner-oriented service or one requiring heavy involvement by the owner or the owner's representatives in order to accomplish or provide the service." A low
customer-contact service is defined as a service-oriented service toward non-owner participants such as subcontractors and vendors (Segura, 1991: p. 28).

Based on the definition above, each service offered by a contractor can be classified into two kinds of services: High customer-contact service and Low customer-contact service as shown in Table 3-1.

High and low customer-contact services are well mixed in all phases. While high customer-contact services are vulnerable to the contact person attitude, low customer-contact services are vulnerable to organizational ability. This fact implies that the coordination of operational efficiency and education of employees are indispensable to managing service quality in the industry. During the first half of construction, although the degree of customer contact is low unless problems arise, once problems or disputes take place, the degree of customer contact becomes high. High customer-contact services are easily affected by the contact personnel's attitude and appearance. However, a Design-Build contractor can paradoxically handle these problems and disputes as opportunities of increasing service quality. This is a completely opposite idea from task standardization, by which consistency of service quality is improved by reducing the degree of customer contact.

As the completion of construction nears, the degree of customer contact becomes higher, as mentioned earlier. Failure to manage the relationship with the owner in this stage could be disastrous due to the fact that "the nature of construction is such that the final stage of work are what the owner will see, remember, and use or live with the most (Segura, 1991: p. 30)." However, it is unfortunately difficult to improve the impression of service quality in this stage if the owner feels that the quality of services received so far is more than his expectations. The reason is that such an evaluation tends to make the
owner's expectation higher as the end of the project nears. As long as the contractor keeps the minimum satisfactory level of service quality at the last part of the project, good impressions built up cannot be impaired.

3.3 Linkage between Services

In the construction project, most services cannot be completed in one phase. This implies that the failure of preceding services tends to result in the failure of following services. Figure 3-1 illustrates such linkage among services offered by the contractor. One important finding here is that two of the three owner's ultimate objectives, which are cost and schedule, are strongly connected with most of services in the preconstruction phases. Unlike manufacturing and service industries, in which each service is independently delivered and once service delivery ends, a service provider does not have to meet the same customer again unless problems arise, the contractor has to deal with the owner for a longer time and has to maintain consistent service quality throughout the project duration. Therefore, it is not a good strategy to put emphasis on one particular phase to improve service quality. For example, if the contractor misinterpreted a specification and finalized the design based on the wrong interpretation, no matter how good the performance offered, it will ultimately face design problems in the construction phase. This may result in failure to meet the budget and schedule. On the contrary, even though good jobs are done in the preconstruction phases, if the contractor fails to perform construction properly, this will make all efforts done valueless.
**Planning and Design Phase**

- High customer contact services
  - Prepare alternative methodologies
  - Prepare preliminary budget
  - Advise on scope definition
  - Prepare milestone schedule
  - Review specification criteria
  - Begin value engineering

- Low customer contact services
  - Identify long lead materials
  - Identify design interferences
  - Conduct feasibility studies
  - Environmental impact studies
  - Site selection studies
  - Prepare zoning requests

**Contract Phase**

- Cash flow projections
- Propose value engineering options
- Finalize design
- Finalize schedule
- Finalize budget
- Prepare contract documents
- Award contracts to subs
- Analyze bids from subs
- Survey labor market

**Construction Phase**

- Conduct project meetings
- Obtain permits from owner
- Manage owner-furnished items
- Administer submittals
- Negotiate change orders
- Arrange for inspections and testing
- Coordinate and inspect work
- Shop drawings coordination
- Control cost
- Administer contracts with subs
- Control schedule
- Labor relations management
- Safety management

**Figure 3-1**

Linkage between services
People remember what happens recently better than what happened long before. Moreover, the owner evaluates service quality after the project is finished, not during the project. This fact leads to a proposition that coordination of services linked together is a key to successful service quality management in the construction industry, because most services are strongly linked together.

Segura (1991: p. 30) stated that the longer service duration typical in the construction industry enables the service provider to correct mistakes or problems that manifested themselves earlier in the project. Although this is partly true, the impact of critical mistakes made earlier that cause significant time losses and higher cost cannot be reduced.

Another fact supporting this proposition is that more than 90% of the total project costs are determined by the end of preliminary design (Tenah, 1985, p. 133). Therefore, the significance of the preconstruction phases in terms of service quality can not be overemphasized.

3.4 Classification of Determinants

The abovementioned most important determinants in each project phase can be classified into two types based on the way they can be improved, namely attitude-related and ability-related, as shown in Table 3.2.
Table 3.2
Important determinants for each phase and its classification

<table>
<thead>
<tr>
<th></th>
<th>Planning and Design Phase</th>
<th>Contract Phase</th>
<th>Construction Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability-related</td>
<td>Competence</td>
<td>Security</td>
<td>Competence</td>
</tr>
<tr>
<td></td>
<td>Tangibles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitude-related</td>
<td>Understanding/Knowing</td>
<td></td>
<td>Responsiveness</td>
</tr>
<tr>
<td></td>
<td>Customer</td>
<td></td>
<td>Reliability</td>
</tr>
<tr>
<td>Neutral</td>
<td>Credibility</td>
<td>Communication</td>
<td>Communication</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Credibility</td>
</tr>
</tbody>
</table>

Ability-related determinants can be improved mainly by increasing individual's or organizational ability while attitude-related determinants can be improved mainly through good human interactions. This definition does not necessarily mean that attitude-related determinants have nothing to do with operational efficiency and ability-related determinants have nothing to do with human interactions. For example, responsiveness to a change order can not be achieved without competence, or technical abilities. As you can see from Table 3-2, both types are distributed almost evenly. This distribution pattern suggests that to increase service quality the improvement of the relationship with the owner is needed as well as the improvement of the operational and individual abilities throughout the project. Hence, both a physical improvement program of service quality (i.e., change of organization structure, R & D, budget allocation) and a philosophical improvement program (i.e., employee training) are necessary.

Credibility and communication are in between the two. Because credibility consists of both what results from customer contact and what results from outside of the customer contact, credibility can be said to be rooted in both attitude and ability. The former means trustworthiness, believability,
and honesty. The latter means the company's name and reputation. Communication depends on both individual's interpersonal skills and the company's external and internal communication capabilities. Thus, communication depends on both organizational ability and individual's attitude toward the owner.

As for the degree of customer contact, ability-related determinants are mainly influenced by low customer-contact services while attitude-related determinants are mainly influenced by high customer-contact services. This is consistent with the fact that high and low customer-contact services are well mixed throughout the project duration, in the same way attitude and ability-related determinants are.

3.5 Gaps within the Organization

The aforementioned Gaps 1 through 4 are attributed to the service-provider side, and the direction and magnitude of these gaps decide the amount of Gap 5, which is defined as a service-quality gap perceived by customers. Each organizational construct attributable to each gap can also be classified into two types - attitude-related constructs and ability-related constructs - like the ten determinants in the previous section. Table 3-3 shows this classification.
<table>
<thead>
<tr>
<th>Gap 1</th>
<th>Ability-related</th>
<th>Attitude-related</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gap 2</td>
<td>Marketing research orientation</td>
<td>Management commitment to service quality</td>
</tr>
<tr>
<td></td>
<td>Upward communication</td>
<td>Goal setting</td>
</tr>
<tr>
<td></td>
<td>Levels of management</td>
<td>Task standardization</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Perception of feasibility</td>
</tr>
<tr>
<td>Gap 3</td>
<td>Employee-job fit</td>
<td>Teamwork</td>
</tr>
<tr>
<td></td>
<td>Technology-job fit</td>
<td></td>
</tr>
<tr>
<td>Gap 4</td>
<td></td>
<td>Employee-job fit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Perceived control</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Supervisory control system</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Role conflict</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Role ambiguity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Horizontal communication</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Propensity to overpromise</td>
</tr>
</tbody>
</table>

As you can see, most ability-related constructs except "employee-job fit" and "technology-job fit" are included in Gaps 1 and 2 whereas all attitude-related constructs are included in Gaps 3 and 4. This classification implies that a service quality program should be a corporate-wide, total program that involves everyone from the top management to the end workers. Even though the management installs an excellent program, it cannot be achieved without the collaboration of employees. It is indispensable for the top management to have employees understand the intention of the program and offer necessary training. The following is my observation of the current situation of each gap in the construction industry. Gaps 1 through 4 seem to be nearly maximum due to the fact that no company in the construction industry has yet adopted any style of formal service quality program.
3.5.1 Gap 1

Gap 1 is the difference between the management perception of customer expectations and customer's expected service. There are three organizational constructs in Gap 1, marketing research orientation, upward communication, and levels of management. Marketing research means to study such current and future market's conditions as demographic data, economical data, peoples' culture, and competitors' movements. Although the construction industry can not rely on such data to construct customer profiles of individuals, it is also true that large construction companies are using such data to develop new technology suitable for future trends. For instance, if a company predicts that the population will grow older from demographic data, the company can develop project plans marketable in such a society. However, this kind of marketing method takes ten or twenty years. Given the situation that most companies in the industry cannot afford such investment well in advance, this is not a realistic method. Therefore, marketing research in the industry is based on personal knowledge and past experience with the owner. One advantage of the industry utilizing personal knowledge and past experience with the owner is that members of the project team can be familiar with the owner by the end of the project through regular project meetings. Data obtained from such interactions with the owner should be kept for future use.

As for upward communication and levels of management, construction companies generally have relatively few hierarchical levels between the management and workers at the lowest level (Gilly, 1987). This fact suggests that with an appropriate program, smoothness and quickness of information flow can be achieved within a company more easily than in other industries. One problem is that since there are usually some participants other than the
contractor and owner involved in a project, coordination of communication among participants is necessary. This coordination is much more difficult than coordination of internal communication. Therefore, inter-company communication is required to coordinate the project. This is the most difficult task in the industry since most of work is done by sub or sub-sub contractors, and contractual relationships with them tends to be adversarial.

3.5.2 Gap 2

Gap 2 is the difference between the management perception of customer expectations and the specifications that are established for service delivery. All companies in the industry seem to put emphasis on quality, timeliness, and cost savings of the project to keep owners satisfied. Customer service programs that have evolved in other industries will be required in the construction industry, given the situation that the industry is so fragmented and many companies offer the same level of services. Construction companies need to add one more value, service quality, to the traditional three values above to gain a significant competitive edge.

The most formidable obstacle for management to adopt service specifications in the industry is the misconception that construction industry is special and so different from other industries. For example, 1) every project is too unique to be standardized, 2) the duration of the project is long, 3) subcontractors finally do the actual job and, 4) owners are involved in the process. These arguments against installing service specifications have prevented construction companies from adopting service programs. The other three organizational constructs, management commitment to service quality, goal setting, and task standardization, are impaired by the same attitude. Thus, the result is a larger Gap 2 in the industry.
However, all companies are enhancing their technical ability to meet owners' requests, and such a movement can be a part of a service quality program as long as they try to meet owners' needs and wants. It looks relatively easy to incorporate the service quality program into the existing technical development program.

3.5.3 Gap 3

Gap 3 is the difference between service delivered and the service quality specifications. Members of the project team are usually chosen from each discipline at the home office and work together until the project is finished. Thus, the typical organization structure in the industry can be said to be a kind of matrix organization, while the organization style in other industries is discipline-oriented, dividing the organization vertically according to the tasks. Therefore, a contractor has the advantage over other industries of strong teamwork at the site level. However, this physical separation of the site and home offices tends to create an adversarial relationship between the site and home offices. The site office typically complains about tight budgets and schedules stemming from the estimator's inaccuracy or sales person's overpromises. Because of the reasons above, it requires a management commitment to create better corporate-wide teamwork.

The contractor usually assigns personnel, not necessarily based on their skills or the owner, but primarily based on the availability of personnel. When the new project starts, whoever happens to be available is assigned to the project team. In addition, there are many types of construction, so it is practically impossible for engineers to be competent in all areas. This characteristic of construction tends to reduce the degree of employee-job fit.
Even the project manager, who is supposed to coordinate and be responsible for all aspects of the project, does not have complete autonomy. For example, the cost of change orders he can negotiate with the owner by himself is usually limited, and every time the amount exceeds the limitation, he has to consult with his superior at the home office. This limitation of autonomy leads to the reduction of perceived control at the site level.

The fact that no contractor has researched how the owner feels about service quality or evaluates the process of service delivery supports the generally accepted impression about the industry -- that contractors put too much emphasis on controlling schedule and cost, or have been even ignoring the way services are delivered. As a result, job appraisal of the site personnel is solely based on time and cost reduction. This output-oriented job appraisal system makes employees feel that keeping good relationships with the owner by providing good quality of service, in addition to showing competent skills, does not pay off. This phenomenon makes "supervisory control systems" and "role conflict" affect Gap 3 adversely.

The matrix organization style typical at the site level creates role conflict unless the project team is completely isolated from the home office and is given full autonomy that is rare in the industry. Each personnel coming from each department has to report to both their superior in the department and the project manager. This practice increases the redundancy of reporting tasks and may promote role ambiguity.

3.5.4 Gap 4

Physical separation of the site office and home office creates the tendency toward lack of communication between the two. The lack of communication between the site office and home office increases the
propensity to overpromise. Because of the lack of horizontal communication, sales, estimating, design, and planning personnel tend to make a difficult promise to get the project, and this usually becomes a cause of complaints from site personnel. This kind of problems results from the lack or incompleteness of the service quality program.

Another distinct characteristic of the construction industry is the lack of advertising. Advertising a specific kind of project is not an effective way to get new projects because every project is different. In addition, owners often rely on personal or business relations when choosing contractors. Therefore, overpromise resulting from advertising is not a common problem in the industry.
4. A Comparison of the Gap Model between the U.S. and Japan

Noteworthy differences between the U.S. and Japan that seem to affect the customer service concept in the construction industry are the management style, subcontracting system, contractual relationships with the owner, and labor unions. The differences in management style include the differences of the decision making process and the employment pattern. In this chapter, I discuss that how these four differences influence service management by analyzing their impacts on Gaps 1 through 4 and the ten determinants.

Cooperation within a Japanese group is regarded more important than in American society. Japanese do not admire excessive individual freedom and initiative. So, group decision making is a common practice in Japanese companies and once a decision is made, everyone in a company follows the decision and never opposes it, since everyone concerned has participated in the decision making and understands the new decision. Therefore, although it takes a long time to make a decision, the acceptance and execution of the new decision is rapid. This system is completely opposite from the American decision making system, in which important managerial decisions are usually made by the top management, and the lower level workers are asked to follow them.

Another management difference is that the Japanese employment pattern is lifetime employment. Because of this employment pattern, employees tend to be so committed and dedicated to the company that they rarely switch companies and have a strong feeling that they represent the company.
The second difference discussed in this chapter is the subcontracting system. Most large Japanese contractors do not employ skilled workers and use their own subcontractors which are often subsidiaries as labor suppliers, while American contractors retain some skilled workers.

The third difference is the contractual relationships with the owner. This includes the differences in perceptions of contract and dispute solving. These differences originate in the difference of peoples' characteristics. Japanese people put more emphasis on harmonious relationships beyond the contract than Americans do.

The forth difference is the labor unions. The difference in the degree of the labor union's bargaining power affects the easiness in managing service quality.

These differences between the two construction markets create different perceptions of the customer service concept. These four points are discussed within the context of the Gap model.

4.1 Management Differences

4.1.1 Decision-Making Process

While the Japanese decision-making process is generally said to be bottom-up, that of the American is said to be top-down. The Japanese system is known as consensus management, in which responsibility is shared among all concerned and a leader is regarded as a facilitator rather than a planner or decision maker (Abegglen and Stalk, 1985: p. 209 and Bennett et al., 1987: p. 12). This system is symbolized by the *ringi* system in which "a memorandum summarizing the decision is circulated and signed by all concerned (Abegglen and Stalk, 1985: p. 208)." This process also dominates in the Japanese
construction industry. In this process, much attention is put on the informal face-to-face predecision discussion to make all concerned understand and agree with the decision. It is partly true in this system that managers do not push their ideas to lower levels; rather lower workers make suggestions to managers and discuss issues together until all involved reach an agreement. However, Yang (1984: p. 174) claims that workers at lower levels "generally propose what they believe to be the wishes of their superiors. ... [Therefore,] the bottom-up process merely disguises the true decision-making, which generally runs from the top down." Although this argument may sometimes be true, proposals from lower workers concerning customer service are today seriously considered by superiors since they know that it is impossible to know exactly how customers feel about the service without taking the customer contact personnel's opinions into account. Managers in both the U.S. and Japanese construction industries seem to agree that opinions from the contact personnel are important. The only difference, however, is the degree to which employees participate in the decision making process.

The degree to which employees participate in the operation and feel committed to the company's decision is also different. "Ownership in American corporations is clearly established, for it is in the hands of the shareholders. In Japan, however, company members rather than shareholders are deemed to be the "real owners." There is no literal direct translation in Japanese of employer and employee, or owner and employee; rather, ... *jyugyoin*, meaning the members engaging in the business, are used" (Lazer, 1985: p. 75)." This is due to the fact that the Japanese shareholders do not press for short-term profitability; rather they always look for the long range planning base on the philosophy that companies must thrive forever. So, employees can consider that they play a central role and participate in the
corporate operation, representing their companies, whatever their professions are. An employee usually refers to her/his company as "my company or our company." One is not an engineer but a Shimizu engineer or Kajima project manager. This practice is different from American employees who prefer to identify themselves based on their professions.

This Japanese decision making process is applied to the Japanese marketing decision process. "... members of the board, the president, and executives from nonmarketing areas may all participate very actively in marketing operations .... In gathering marketing information, the participation of marketing personnel from such diverse area as distribution and finance, in addition to marketing research specialists, is encouraged (Murata, 1983, p. 4). The information gathered by all groups is relayed to top management, and while it is usually less scientific, and its quality is probably not as good as that which might be collected by marketing research experts alone, its overall value may be high because of its breadth and scope (Lazer, 1985: p. 76)." It is clear, then, that Japanese companies believe that not all marketing wisdom resides at the top.

Finally, after reaching an agreement, the management introduces new procedures or policies. The advantage of this system is that by the time new policies are introduced, everyone who is supposed to be involved in the new policy knows what it is all about and there is no opposition, since everyone concerned has agreed. While it takes longer than within the American system to finalize new decisions, the execution of these decisions is quick.

Further effectiveness in implementing a new policy in a Japanese company results from middle managers. Lazer (1985: p. 77-78) claims that "..., middle managers and lower level employees play a substantial role in interpreting and carrying out the marketing philosophy. Characteristically,
Japanese companies have large numbers of dedicated middle managers who are carefully trained and promoted gradually from the lower ranks, ... and are thoroughly familiar with the company. They have internalized its philosophy and policies, are able to communicate without great formality, and translate them into effective marketing plans and programs (Tanouchi 1983, Toshitani 1982). While Japanese companies rely more on middle managers, U.S. companies rely more on top management to implement the marketing concept." Thus, U.S. management can use statistical facts and logic when making a decision. Japanese marketing style is implementation-oriented while that of U.S. is strategy-oriented. The implementation-oriented style tends to prevent innovative and creative marketing programs.

4.1.2 Influences of the Different Decision-Making Processes on Gaps

Gap 1

Conducting marketing research is only the first step of understanding the customer. Contractors in both countries, however, have not yet adopted any marketing research program concerning customer service. The bottom line is that the contractor must use research information effectively, and managers must know how to turn research findings into an effective service program that works. In this sense, the Japanese style of marketing discussion, in which employees from the broad range of departments are involved, is more likely to use marketing research findings effectively, since data can be analyzed from various points of view. In addition, during the predecision negotiation, there are more chances that the misinterpretation of the data is pointed out by subordinates. Another advantage of the Japanese contractor is that since most managers have experienced broad work assignments from a
site office to a sales department, whether they are engineers or designers, and they know how employees in other departments will feel about the service program, they can judge if the new service program will work well and without conflicts throughout departments. As for upward communication, although Japanese contractors seem to have more communication channels between managers and the customer contact personnel, the quality of communication is in question. Lower level workers tend to say what their superiors wish to hear, since Japanese people always try to keep harmonious relationships with others, especially within the company because they are employed for life. Even though an employee works especially hard for the company, he or she can only receive rewards as a team member, not as an individual. As a result, few employees make complaints or creative recommendations.

As for levels of management, the differences would be small since the organizational structures of construction companies are quite similar to each other, despite differences in the nature of their businesses.

Gap 2

Top management commitment is the key to setting up a service program while middle-management commitment is the key to making the program work (Zaithaml et al., 1990). Middle management must communicate the service standards to their work units effectively so that employees are motivated and feel committed to quality service. Since they are familiar with the company's culture and employees, Japanese middle managers have abilities to communicate and translate the top management service philosophy into effective programs, which contain appropriate goals and task
standardization, with relatively less friction among employees than in U.S. firms. This tendency also results from lifetime employment.

Companies which successfully deliver high service quality have established goals or standards that can lead the employees to providing a consistent level of service. Employees follow the standards only if they understand and accept the goals (Zaithaml et al., 1990). The degree of acceptance of goals by employees is probably an important point of difference between the U.S. and Japanese companies. By the time they are introduced officially, final decisions, or service goals in this case, have usually been accepted and thought feasible by the middle managers because of Japanese-style decision-making, during which predecision negotiation plays an important role. Moreover, employees in each work unit have already understood the new goals by the time they take effect, because of their discussions with the middle managers. Therefore, after the implementation of the service quality program, Gap 2, resulting from inappropriate goal setting, seems to be smaller in Japanese companies than in American companies.

Gap 3

One aspect of teamwork is the degree to which employees feel they are participating in the company's operations and committed to the company (Zaithaml et al., 1990). In this sense, because of their lifetime employment in the company which offers more than just employment, which will be discussed in the following section, Japanese employees tend to feel more committed to the company, and they feel more pride representing the company.

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Gap 4

Horizontal communication, which is the communication between departments within the company, is needed to achieve the common goals of the company (Zaithaml et al., 1990). Japanese style marketing research, involving managers from almost every department, enhances communications between departments. Especially in the construction industry, there are always conflicts resulting from the inadequate communication caused by physical separation between the home office and site office. This problem can be eased by having managers of all departments participate in the discussion of service quality. This kind of process reduces the propensity to overpromise by other departments, too.

4.1.3 Employment System

The Japanese employment system has been characterized by lifetime employment in one company, as opposed to an American concept of career step. The lifetime employment system is strictly tied to seniority promotion that rewards longevity with increases in wages and responsibilities. However, most younger employees today do not feel comfortable with this seniority system, and consequently many companies are now trying to change the system. More people are moving from company to company than ever, and more companies are looking for employees with skills as well as loyalty. Yet, Yang (1984) says, "Lifetime employment is probably the one "traditional" Japanese management practice that is likely to continue in the new environment."

In Japan, the company offers not only employment but also fringe benefits such as a home and a nurturing environment, and the most important of all, a lifetime commitment between employee and employer (Levy, 1990: p.
Most employees feel proud of their companies. This pride of, and dedication to, the company makes it easier to foster teamwork in the same way as the bottom-up decision making system does. Japanese employees tend to feel that they participate in corporate decision making and cooperate with one another and with the management.

Another common practice of Japanese employee management is job rotation. Most employees are moved around various departments every three to five years so that they can understand the company's total operations. This practice makes it possible for the company to assign more personnel to busier departments, and makes it unnecessary to hire new employees at mid-career. This system enables Japanese companies to foster teamwork and increase the degree of employee-job fit.

Most employees are hired directly from schools. They are hired for their general characteristics. This hiring practice leads to the meticulous examination of job candidates from educational background to family background. Because the open job market is not so rich as in the U.S., hiring new employees from schools is critical to the company's future success. Compared with U.S. companies, a disadvantage of this system is that the Japanese company's workforce cannot be quickly adjusted to the demand level in economic downturns. Another disadvantage of this system is that since the company does not dismiss unnecessary workers, some incompetent personnel have to be kept and assigned to some departments. This may create an imbalanced workload among workers, and consequently leads to a larger Gap 3, by impairing the degree of perceived control among employees.

Baba (1990: p. 359) describes Japanese hiring practices as follows. "In American management, the company employs the function of the employee, while in Japanese management, the company employs the individual as a
human being. ... A human being does not change as quickly as the business environment in a company. Therefore, long-term planning is necessary in order to match employee development and the company's actual function needs."

In most large Japanese construction companies, on-the-job training is an important part of a newcomer's orientation program. "New trainees, whether they are engineers or liberal arts graduates, spend some time at a construction site. No matter what the employee's position within the company ultimately ends up to be, he or she is first and foremost in the construction industry and must have knowledge of the company's product (Levy, 1990: p. 99)." After the orientation training, most newcomers are assigned to the site office for two or three years before being sent back to the home office. Then, they are assigned to various departments to understand the company's full operations. "At some point in the training program, a permanent position within the company will be determined, based upon a decision deemed best for employee and employer (Levy, 1990: p. 99)."

4.1.4 Influences of the Different Employment Systems on Gaps

Gap 1

The more information a customer contact personnel knows is passed to top management, the more top management knows about customers. This upward communication from contact personnel to management can be enhanced by the improvement of employees' pride of, and dedication to, the company. Because of the Japanese practice of lifetime employment, the degree of Japanese employees' pride and dedication is higher than that of Americans. Thus, upward communication is likely to take place more often in Japanese companies.

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Another point here is that the Japanese usually feel somewhat obliged to do whatever they think is good for their companies. Reporting to managers what is going on in interactions with the customer frequently is an example of the obligations. Japanese employees think that they can improve the company's service quality by doing so, and can consequently improve their status in the society and their quality of life, since most of them cannot easily move to other companies.

Gap 3

When employees are not well informed or trained to do their jobs, they feel role ambiguity. They are not sure of what managers want them to do and how to satisfy managers' expectations. This role ambiguity is less likely to take place in the Japanese company since employees internalize the company's culture and understand implicitly what they are expected to do, because of the lifetime employment system. On the other hand, American managers have to spend more time training employees to understand their roles because they are relatively unfamiliar with each other and need explicit instructions.

Another difference regarding role ambiguity is both people's characteristics. Generally speaking, Japanese people prefer ambiguous roles because they always have to share responsibilities. It is easier to share responsibilities by leaving each person's role ambiguous. What makes this ambiguous style work is that the Japanese always try to perform their tasks beyond what is expected in order to help increase the company's overall profit. This may seem strange to American eyes. For example, in an American company, if one of your colleague does your work, you would think your job is stolen and you are insulted. In a Japanese company, employees do not think
this way as long as they think they are doing good things for customers, and consequently for the company.

American employees probably do not feel role conflict as often as Japanese do since required tasks are usually well described and defined to employees in the American company. From my experience at the Japanese construction site, I often felt role conflict. I was responsible for submitting necessary documents to the owner. At the same time, I had to coordinate subcontractors' jobs and take survey measurements at the site during the day. Thus, I inevitably worked overtime to make those documents and was not able to submit documents as good as necessary on time. This practice results from the idea that the company does not hire employees as professionals, rather, employees are all-round players, as mentioned earlier. And, Japanese employees think it good to experience as many things as possible to be competent managers. At the construction site in the U.S., tasks among the project manager, superintendent, and engineer are clearly divided and they are sure of what they are supposed to do and what they are not.

Another advantage of the American system is that American companies can adjust their workforce according to market conditions more easily because of the rich, open labor market and the relationship between employee and employer, in which the company can easily lay off employees. This practice in the U.S. reduces the degree of role conflict.

Because of job rotation and seniority promotion described earlier, poor employee-job fit in Japan does not seem to take place so often as in the U.S. Unlike American companies, all employees in Japanese companies have to start their career from the very bottom level, which is often the site office in the construction industry, regardless of their background. The site office is the one most involved in the interaction with the owner. Unless they perform
their jobs at this level successfully, they cannot get promoted. In addition, they are evaluated based not only on their technical and managerial skills but also on their relationships with the owner. Although this evaluation style may also be true in the U.S., relatively speaking, the relationship with the owner is more important in Japan than in the U.S. In Japan, the owner and contractor are each equally concerned with saving face for themselves and each other. Thus, almost all employees are eager to acquire and polish their interpersonal skills. They, otherwise, are branded as incompetent employees for the rest of their career in their companies.

The last possible difference concerning the Gap 3 is teamwork. The differences between employment systems affect the extent to which employees view other employees as customers. Poor service to customer contact personnel results in poor service to customers. Because of job rotation and lifetime employment, employees in Japanese companies can get to know each other personally and understand other departments' jobs. Consequently, they know what is expected by other departments. In the construction industry, the combination of internal customers could be the sales staff and the engineering staff, the home office and the site office, or a project manager and a superintendent. Other attributes of this construct are employees' pride of, and dedication to, the company. The Japanese in general feel more of this pride than Americans, and it is not any different in the construction industry.

Gap 4

For the same reasons given above in Gap 3, the problems that arise from inadequate horizontal communications are probably smaller in Japanese companies. Good horizontal communications lead to smaller differences in policies and procedures across branches or departments.
4.2 Subcontracting System

Japanese contractors are totally dependent on subcontractors. Most large Japanese contractors do not retain their own skilled workers; they subcontract almost all the work, unlike many U.S. contractors that have their own concrete foundation crews and rough and finish carpenters on their payroll. A major difference in subcontracting between the U.S. and Japan is that Japanese contractors usually purchase all the necessary materials and equipment and subcontract the installation of them (Levy, 1990: p. 104). Figure 4-1 illustrates the typical Japanese subcontracting system.
There are two types of subcontractors in Japan. One is a subsidiary of the large contractor that has the relationship with the contractor for a long time and works for that certain contractor exclusively. This kind of subcontractor dominates in Japan. They specialize in such fields as general labor, steel erection, carpentry, and rebar fabrication and placing (Kakoto et
The benefit of this system for large contractors is that they do not have to control the number of workers according to the fluctuating demand level. They can subcontract the work project by project. Therefore, many prime subcontractors have their own second, third, and forth subcontractors to mitigate the impact of changes in demand level.

Another unique aspect of this system is that large contractors help subcontractors establish the safety program and quality control program. They know that it will pay off to educate their subcontractors, assuming the relationship will last for many years.

The contractual relationship between general contractors and subcontractors is the other different point. Although general contractors in Japan have a formal contract with subcontractors, like in the U.S., exercise of the contract is different. Japanese subcontractors hardly argue with general contractors about differing conditions from the contract. Even if they incur a loss, general contractors are supposed to negotiate the price after completion. In most cases, subcontractors are given what general contractors call "appropriate profit." This system is based on the structure and concept that the relationship between subcontractors and general contractors lasts for many years and subcontractors cannot survive without general contractors.

The other type of subcontractor is the specialty contractor that is not affiliated with large contractors and works for multiple contractors. Such workloads as soil injection, special measurement, foundation work, and utilities installation go to specialty subcontractors. In this case, the contractual relationship between the subcontractor and the general contractor is much the same as in the U.S.
4.2.1 Influences of the Different Subcontracting Systems on Gaps

The organizational constructs influenced by the difference in the subcontracting systems described above are "perceived control," "teamwork," "horizontal communication," and "propensity to overpromise." The following discussion is based on the assumption that a set of general contractors and subcontractors is an organization as long as it offers services to the owner as a service provider.

Because Japanese general contractors hire subcontractors in most cases as labor suppliers and purchase necessary equipment and materials by themselves, they are much more likely to feel that they have power to control the subcontractors' activities than U.S. contractors. Moreover, Japanese contractors are more flexible in changing the design and construction method once they are set forth in the contract since they do not have to spend more time to negotiate with subcontractors. Subcontractors usually do not oppose the decision made exclusively by the general contractors.

The degree of teamwork between the general contractor and the subcontractor is higher in Japan than in the U.S. because subcontractors continue to work for the same contractors and they can get to know each other. However, the multilayer subcontractor structure described in Figure 4-1 may impair the teamwork among subcontractors in lower layers. In the extreme case, workers from the third or forth layer subcontractors do not even know at what company's site they are working. They are just told to go to the site and do whatever the prime or second subcontractors tell them to do.

Another disadvantage of the Japanese system is that it may reduce the eagerness of subcontractors to work hard because subcontractors are not sure how much they will be compensated for their losses during the work. Japanese subcontractors neither negotiate with contractors about the
contractual changes during the work nor make written changes, rather they postpone the negotiation and try to keep the work ahead. Timeliness of completion of the project is more important than the cost in Japanese society, in order to save each other's face.

In the U.S., the lack of horizontal communication among subcontractors often causes problems. They complain about their scope of work strictly based on the contracts with the general contractor. Thus, coordination of work among subcontractors is one of the most critical and tough factors for the general contractor. However, this is not so important in Japan. Prime subcontractors have often worked together since they work for the same general contractor. In addition, as mentioned above, they tend to cooperate with each other to complete the project in a timely manner. They know that this attitude pays off later. General contractors evaluate the performance of subcontractors based not only on quality of work but also on willingness to expedite the project, and they sometimes pay more to subcontractors than contractually determined. Even though they cannot make enough profit to satisfy subcontractors, it is a common practice that the unpaid amount will be compensated the next time on the next project.

Because disputes between the general contractor and subcontractor rarely take place, the promised deadline is kept in most cases. In contrast, a promise to finish a project on time is often an overpromise in the U.S., where many owners suffer from the delay of the project caused by disputes with contractors.
4.3 Contractual Relationships with the Owner

Many Japanese companies have direct or indirect relationships with *kinyu keiretsu* (interindustry industrial groups) and *kigyo keiretsu* (interindustry enterprise group). The relationship of general contractor and subcontractor explained above makes a kind of enterprise group. Industrial groups are relatively loosely organized groups including a major bank, a major insurance company, a major trading company, and some manufacturing companies. Six industrial groups now account for about a quarter of total assets and sales of Japanese corporations (Lazer, 1985). The construction industry is not an exception. Most major Japanese contractors are affiliated with the *keiretsu* and it is the important project supplier. When a developer plans to build condominiums, design and construction work will be more than likely to go to contractors within the group. This relationship is one reason why the contractor tends to work for the client on a regular basis for many years. Another reason is that the Japanese owner believes that keeping the long term relationship creates efficiency. Since the contractor is familiar with the owner's requirements, quality levels, and preferred materials and equipment, the owner does not have to explain these specifications to the contractor. On the other hand, the owner knows what the cost, design, and construction details are likely to be from past projects with the contractor.

Another distinguishing characteristic of the Japanese construction industry is the perception of contracts, although in both systems construction contracts are highly valued and bilateral in nature. In short, the Japanese prefer vague language in the contract document and try to read between the lines based on trust between owner and contractor. Thus, the owner prefers to choose the contractor with whom he or she has experience rather than the
one offering the cheaper price. This is probably due to both the Japanese
people's character and perceptions of contract. The Japanese people's
character here is their historical reliance on good faith to solve problems

The difference in the perception of construction contract between the
U.S. and Japan comes from cultural differences. Baba (1990) described the
difference as saying that the Japanese read between lines while Americans
read each line. In the Japanese contract, each line and clause are not
carefully examined. It is thought more important to foster the trust and
confidence between the owner and contractor before signing the contract. In
Japan, the reliance on good faith and the long term relationship with the
owner is regarded as more important than written agreements. Therefore,
they prefer to leave details vague and expect the details will be filled in, based
on mutual understanding.

This harmonious Japanese contract style also results from the fact that
the Japanese are not litigious people. They find it embarrassing to consult
with lawyers about problems. One construction executive who happened to be
a lawyer said, "If it becomes common knowledge that our company has had
resort to legal action to resolve our disputes with clients, other owners may get
the feeling that we cannot manage our affairs properly and they might not
care to do business with us any longer (Levy, 1990: p. 167-168)." This
reluctance is illustrated by the numbers of lawsuits filed against the Tokyo
Municipal Government. In 1985, legal claims for negligent road repairs filed
against TMG totalled $19,000 while $20 million was filed against the City of New
York. There are approximately 13,000 lawyers in Japan, compared to 670,000
In the American system, the contract is interpreted based on a rational reading of each line and clause, and the construction company does not hesitate to resolve a problem legally. The owner and contractor always try to pass risks to each other and cause an adversarial relationship rather than a harmonious one like in the Japanese system.

The concept of change orders is also different between the two countries. The Japanese contractor seems to be more conscious about maintaining the quality of the relationship with the owner. It sometimes takes precedence over a loss of profit. The contractor thinks that in the long run adequate compensation will be awarded since the owner sometimes compensates for a loss in a future project.

Japanese people tend to believe that whatever customers say is true and avoid arguments with customers under any circumstances. This tendency comes from the Japanese people's distinguishing characteristics: mutual respect and the preference for harmonious relationships. Thus, in general, Japanese people tend to think about customers beyond their contractual relationship more often than Americans do. This characteristic seems to be prevalent in the construction industry, especially in public construction. The possible reason in this situation is that the Japanese construction industry is so much used to the old fashioned unilateral contract that was common before World War II. At that time, "construction contracts between contractors and owners, especially the Japanese government, local public entities, and large corporations, were unilateral in nature, where the owner gave orders to the contractor, or the owner did the contractor a favor at the contractor's earnest request (Kashiwagi, 1987: p. 109)." Although, after World War II, this unilateral contract was changed into today's bilateral contract, its spirit is still alive in the industry.
The last major difference is timeliness of completion. A higher percentage of projects completed on time is achieved in Japan than in the U.S.. This is due to the Japanese concept that timeliness and high quality of work are key factors of satisfying the owner since the overrunning cost will be negotiated and repaid anyway in the long run. This leads to the fact that the Japanese contractor does not like to sue the owner, and the subcontractor does not like to sue the contractor.

4.3.1 Influences of the Different Contractual Relationships with the Owner on Gaps

Japanese management in the construction industry can be said to have already been committed to service quality in terms of trying to satisfy the owner and achieving the owner's objectives, keeping a harmonious relationship. They know instinctively that it is quite possible to achieve quality service even in the industry from their long experience, although no Japanese contractors have not yet adopted any formal service program. This fact originates in what Baba (1990) calls the Japanese principle of management -- management by unconsciousness. Japanese employees do not need as much explicit expression or written instruction as Americans do to achieve something. This principle is applicable for customer service in the construction industry as described above. This system works within a closed society where people speak the same language and have the same values. This system is totally dependent on humanity, trust, confidence, and good faith between the owner and contractor fostered through some centuries. Therefore, it is not adaptable to American society.

A disadvantage of the Japanese system is that employees sometimes feel role ambiguity and role conflict. It is true especially among the young people
who have different values from the older. They are uncertain about what they are expected to do without explicit clarification of their roles. By the same token, because the management still evaluates the employees' performance based on their profitability, employees often face role conflict. They are pushed to make as much profit as possible and at the same time to make customers satisfied in the implicit way.

In summary, the difference in the contractual relationship with the owner between the two markets seems to account for the difference in the level of difficulty in installing a service program. American construction companies seem to be able to make a guideline of providing quality service with less internal friction than the Japanese. Because such a service guideline is totally new to their employees, if they succeed not only to have employees understand it and trained but also to set an appropriate reward system, it will probably work. The major and the most formidable challenge for the American contractor is to change the contractual relationship with the owner, although to do so is risky. On the other hand, Japanese construction companies may face difficulties in expressing what they have done for many years instinctively and standardizing the procedures. Without doing this, they cannot achieve the consistent level of service quality in a constantly changing society.

4.4 Labor Union

Japanese construction companies subcontract almost all the work to subcontractors, which are hired on a regular basis. Japanese subcontractors, except specialty contractors, only serve as labor suppliers in most cases. Moreover, Japanese subcontractors are not unionized (Hasegawa et al., 1988: p.
7). This means that they are not organized into a union that has bargaining power against contractors. Thus, Japanese construction companies do not depend on labor unions to supply construction workers, unlike in the U.S., where contractors often sign a contract with labor unions.

The functions of unions are also different in both countries. Oyama (1991: p. 101) states that "Roles of the unions in the U.S. are: providing job security and improving working conditions through collective bargaining with employer associations and the government, providing training opportunities for workers through apprenticeship, providing pension plans, insurance plans for unemployment, health, and job accidents. Since unions do not supply construction workers in Japan, the unions do not have collective bargaining power nor provide training programs. ... the power of the unions in wage negotiation are weaker in Japan than in that of the U.S."

A worker's strike hardly occurs in the Japanese construction industry. Abovementioned multi-layered subcontracting system thwarts the the occurrence of a labor strike. If one subcontractor strikes, another subcontractor will replace it, since subcontractors do not belong to unions. In addition, the workload is divided into many smaller job performed by lower tier subcontractors, so that the contractor does not solely depend on one subcontractor. Therefore, a labor strike is not an effective tool for negotiation in the Japanese construction industry.

4.4.1 Influences of the Different Labor Unions on Gaps

The difference in the power of unions might have impacts on gaps, in that strong unions in the U.S. create an adversarial relationship between contractors and workers, which leads to a lack of teamwork. The lack of teamwork results in inadequate goal setting and lack of upward
communication and perception of feasibility. The difference in the frequency of labor strikes also makes the propensity to overpromise different between the U.S. and Japan.

Although workers are not employees of the contractor in a strict sense, as long as they provide labor, they can be said to be a kind of employee of the contractors. The contractor cannot provide quality service without them. In this regard, it is indispensable that workers of the subcontractor, employees of the contractor, and the management of the contractor all cooperate together to achieve a common goal. The tense relationship between the contractor and workers in the U.S. hinders the creation of good teamwork. Poor teamwork leads to management giving up on making a customer service program involving subcontractors. Poor teamwork, and the accompanying poor communication, also results in management tending to set inappropriate goals for the end worker level. Furthermore, the management may feel that taking care of customer service in the industry is not feasible since it requires subcontractors' involvement. Owners are satisfied only when good performance is given to them at both the contractor level and the subcontractor level. The tense relationship also thwarts smooth upward communication from subcontractors. The smooth upward communication from the worker level often improves safety levels and constructability, which, in turn, improves contractors' profitability. Consequently, smooth upward communication allows contractors to allocate more time and money to pay attention to quality of work and service, and improve both.

The difference in the frequency of labor strikes affect the propensity to overpromise. Construction scheduling tends to be unrealistic in the U.S., since labor strikes take place more frequently in the U.S. than in Japan, which leads to higher propensity to overpromise.
In contrast, the harmonious relationship between contractors and workers in Japan, which mainly originates in the subcontracting system, helps create good teamwork at the end-level of the project team. They probably obtain smoother upward communication from the subcontractor level than U.S. contractors by taking advantage of the weak unions. This makes it easier to involve subcontractors in a service program, and they are, actually, already offering safety education and technical training to subcontractors, even though such services to subcontractors are aimed at the improvement of contractors' operational efficiency, rather than the improvement of customer service quality. Thus, the foundation for involving subcontractors in a service program can be said to have already been prepared in Japan.

Like the discussion about the U.S., this good teamwork at the subcontractor level improves upward communication, management perception of feasibility, and appropriate goal setting.

4.5 Influences on the Owner's Evaluation of the Ten Determinants

As for the ten determinants, according to the discussion above, a Japanese owner probably puts more emphasis on reliability, courtesy, credibility, and security. On the other hand, an American owner may think that competence, security, and responsiveness are more important.

The owner's high evaluation of credibility is based on the contact person's attitudes, which is specifically composed of politeness, respect, consideration, and friendliness. High credibility and reliability cannot be achieved at once; rather, they require continuous satisfactory performance.
The reason why Japanese owners seem to take credibility seriously is that they try to preserve a good relationship with the contractor made over many years when choosing a contractor. After the project starts, they try to avoid disputes with a contractor and work to preserve the good relationship for future projects. Another interesting aspect of Japanese owners, which is derived from a Japanese consumer characteristic, is the preference of a brand image. Even though a smaller and less famous contractor offers a cheaper price, unless the discount exceeds the difference of reputation, they tend to choose a bigger and famous contractor. In other words, a Japanese owner is, relatively speaking, not so price-conscious as an American owner.

In contrast, since American owners choose a contractor in most cases project-by-project, they seem to pay less attention to reliability and credibility. Instead, they seem to pay more attention to competence and responsiveness. Another reason for this tendency is that American owners can resolve disputes legally without staining their reputation and the availability of future projects. Thus, they do not so much weigh credibility and reliability as Japanese owners do.

Security means different things to a Japanese and American owner. A Japanese owner puts emphasis on the low frequency of disputes and accidents, rather than financial risks, when they examine the security of the contractor. If a contractor has a record of frequent disputes and accidents, the contractor faces serious difficulties acquiring new projects. A Japanese owner is also sensitive to neighborhood problems. Many Japanese projects are constructed in densely populated areas, where a small failure to comply with regulations often creates a huge dispute with the neighborhood. A Japanese owner fears that such a neighborhood problem will stain the owner’s reputation and affect the marketability of the project adversely. Financial risk is less significant in
Japan since a Japanese owner usually chooses a contractor he or she knows well. Moreover, in the case of relatively large contractors, banks within the same group intervene in the contractor's operation and try to rebuild the contractor when it is in danger of bankruptcy. Since this practice does not happen in the U.S., American owners carefully examine contractors' financial condition and determine the amount of the bid bonds and performance bonds. Therefore, a Japanese owner puts more emphasis on security in a different way than an American owner does.

Much of courtesy comes from the attitude and appearance of the contact personnel. Thus, courtesy is linked with credibility. Japanese contact personnel, as I mentioned above, cannot oppose whatever an owner says nor make complaints even though what an owner says is out of the contract. They know that compensation for the loss generated by such a change will be negotiated later. Although a Japanese owner may not be aware of the importance of courtesy, it is easy to imagine that the lack of courtesy affects the owner's service evaluation significantly, since many contractors offer highly courteous service. Therefore, a Japanese owner pays more attention to courtesy unconsciously.
5. Summary and Conclusions

Chapter 2 first illustrated the nature of service and service quality, compared to physical goods. Then, it introduced Zaithaml, Parasuraman, and Berry's Gap model and the ten determinants of service quality, which enable a company to manage service quality effectively and easily identify causes of service failure within a company.

Chapter 3 categorized a construction project into three phases: Planning and Design, Contract, and Construction phases. Then, it defined possible services offered by a typical design-build contractor and the owner's objectives in each phase. Based on these services and the owner's objectives, the most important determinants, on which an owner mainly relies to evaluate service quality, were assigned to each phase and given definition.

The linkages between each service and a classification scheme of ten determinants and organizational constructs, based on the way they can be improved or overcome, were also examined. This examination implies some strategic clues for a construction company trying to give an owner a feeling of high quality service and to prevent service failure. Finally, Gaps 1 through 4 were defined within the context of the construction industry.

In Chapter 4, the way market difference affects service quality management was analyzed using a comparison between the U.S. and Japan. This analysis was conducted along with four dimensions: the management style, the subcontracting system, the contractual relationship with owners, and the labor unions. Management style includes the decision making process and the employment system. This analysis serves as an example of how the market difference affects service management and which determinants and organizational constructs are influenced by what kind of market difference.

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This chapter presents further summary of Chapters 3 and 4, and then conclusions derived from the discussion in these chapters.

5.1 The Ten Determinants in the Construction Industry

I chose the most important determinants in each project phase in Chapter 3 as shown in Figure 5-1. In the following sections, I summarize the definition of the each most important determinants.

<table>
<thead>
<tr>
<th>Planning and design phase</th>
<th>Contract phase</th>
<th>Construction phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competence</td>
<td>Communication</td>
<td>Responsiveness</td>
</tr>
<tr>
<td>Credibility</td>
<td>Security</td>
<td>Reliability</td>
</tr>
<tr>
<td>Understanding/Knowing</td>
<td></td>
<td>Competence</td>
</tr>
<tr>
<td>customer</td>
<td></td>
<td>Communication</td>
</tr>
<tr>
<td>Tangibles</td>
<td></td>
<td>Credibility</td>
</tr>
</tbody>
</table>

Figure 5-1 The most important determinants in each phase
5.1.1 Planning and Design Phase

The most influential determinants to the owner's evaluation of service quality in this phase are competence, credibility, understanding/knowing customer, and tangibles. Figure 5-2 shows factors influencing these determinants and their relationships.

![Diagram showing the relationships between competence, credibility, understanding/knowing customer, and tangibles.]

Figure 5-2 Factors influencing the most important determinants and their relationships in the planning and design phase
Competence

Competence means being capable of getting the project done successfully. It includes both technical and management skills of personnel as well as the support system that utilizes those personnel organizationally. When evaluating the competence of technically equal construction companies, the owner traditionally relies on the project manager's experience and the company's past performance, rather than on pure technical skills. Personnel's management skills and the organization's support system can be evaluated by looking at past experience. However, the inferiority of technical skills must be a critical disadvantage. Again, competence stands on both technical and management skills. Neither can stand alone. The system that supports personnel's skills requires coordination and communication between departments.

Competence is related to tangibles in that the appearance of state-of-the-art research facilities and equipment may impress owners.

Credibility

Credibility includes the company's reputation and name, which is difficult for the company to manipulate since good reputation and name depend heavily on word-of-mouth. This advertisement method is a distinct characteristic of the construction industry. Listening to the owner's wants and needs is a must in getting high credibility. However, no matter how hard the contractor tries to make its competence and ability to understand the owner's interests appealing, the owner does not think that what the contractor says is true without feeling credibility. A contact person's attitude toward the owner, namely politeness, respect, consideration, and friendliness, plays an
important role in determining credibility. These four aspects are also constructs of courtesy.

**Understanding/Knowing Customer**

Understanding and knowing the owner's objectives in the planning and design phase is more essential than in any other. Unless the owner's preferences are met, high credibility cannot be achieved. Thus, it is necessary to try to understand the owner's interests from the owner's standpoint. Although owners can not be classified by types of projects or buying behavior, contractors have a chance to utilize past experience to understand the repeat owner's interests.

**Tangibles**

Tangibles can be an important factor in determining a construction manager (Segura, 1991: p. 35). Tangibles includes CAD, state-of-the-art research facilities and equipment, and good-looking presentation materials. In the construction industry, unlike other industries, such tangibles cannot be as easily displayed or introduced publicly.
5.1.2 Contract Phase

The most influential determinants to the owner's evaluation of service quality in this phase are communication and security. Figure 5-3 shows factors influencing these determinants and their relationship.

![Diagram showing factors influencing service quality in the contract phase]

Figure 5-3 Factors influencing the most important determinants and their relationships in the contract phase
Communication

An appropriate amount of communication helps the contractor increase the margin of profits. Important points to achieve good communication with the owner are to avoid technical jargon and to adjust language depending on the owner's knowledge. This attitude avoids unnecessary repetition of work resulting from misunderstanding, and consequently reduces the cost.

An explanation of trade-offs between cost and service is also important. It is necessary to have owners feel as if they have initiative in choice, by explaining the trade-offs honestly, since people feel satisfied when they feel the initiative is on their side. Thus, hard-selling attitudes should be avoided.

Good communication in this phase reduces the possibilities of disputes later in the project. In this regard, good communication contributes to security.

Security

In this phase, financial security plays an important role for the owner in choosing a contractor.
5.1.3 Construction Phase

The most influential determinants to the owner's evaluation of service quality in this phase are responsiveness, reliability, competence, communication, and credibility. Figure 5-4 shows factors influencing these determinants and their relationship.

![Diagram of factors influencing service quality]

Figure 5-4 Factors influencing the most important determinants and their relationships in the construction phase

**Responsiveness**

Responsiveness means timeliness, which is the most crucial factor, along with quality of work and cost, in the industry. During the construction phase, change orders and shop drawings are time-sensitive and can often extend the project duration. Both operational efficiency and the contact
person's sincere attitude to achieve high responsiveness is required. Task standardization and information systems that are designed to shorten the procedure time are also needed.

Reliability

High reliability means the accuracy of various documents submitted to the owner, and timeliness and correct performance on a consistent basis. Because it cannot be built in a day, high reliability takes longer for the owner to realize.

Competence

Competence in this phase means the actual high quality performance as communicated to the owner. It requires the involvement of subcontractors to achieve since they actually perform the construction.

Communication

Communication plays a significant role during the negotiation of change orders and right before the end of construction. At the very end of construction, the contractor has to arrange final inspection and testing and check through all the documents. Good communication influences competence, in that the latter can not be achieved without the former.

Credibility

Credibility in this phase is mainly affected by face-to-face contact between the owner and contractor. A project manager is key to increasing this determinant since he or she has the most contacts with the owner throughout the project. Credibility is influenced by communication, to a
significant degree, since each misunderstanding leads to a deterioration of the credibility accumulated through the course of the project.

5.1.4 Other Determinants

The following two determinants invisibly affect the other eight determinants mentioned above.

Access

Accessibility is less significant throughout the project because most services usually do not require the presence of the owner. However, once a problem takes place, this determinant becomes an important factor in service quality. In this regard, access seems to affect the evaluation of communication and responsiveness. Personnel's "role clarity" may help achieve the owner's high evaluation of this determinant.

Courtesy

Courtesy is totally dependent on contact personnel's attitude and appearance. The courtesy of contact personnel and workers affects the evaluation of tangibles and credibility.

5.2 Classification and Linkage of Services

Services offered by a design-build contractor can be classified into two types according to the degree of customer involvement. One, requiring high customer involvement, is called high customer-contact service and the other, requiring involvement of subcontractors and vendors, is called low customer-contact service.
In the construction project, most services cannot be completed in one phase. This fact implies that the failure of preceding services results in the failure of subsequent services. Classification of services in each phase and linkage between services are shown in Figure 3-1. Figure 3-1 suggests that cost and schedule control are strongly connected with most preceding services. Therefore, it is not a good strategy to emphasize only one particular phase to improve service quality; rather, high service quality requires continuous efforts to improve quality of almost all services throughout the project. Thus, coordination of services linked together is the key to a successful service quality management in the construction industry.

5.3 Classification of the Ten Determinants and Organizational Constructs

Ten determinants and organizational constructs were classified into two types; ability-related and attitude-related. The classification of determinants suggests that not only improvement of operational and individual ability but also improvement of the relationship with the owner is needed to increase service quality throughout the project. The classification of organizational constructs suggests that service quality should be a corporate wide, total program that involves everyone from top management to laborers.
5.4 Gaps 1 through 4 in the Construction Industry

The current situation of each gap and its implications in the construction industry were described in Chapter 3. The following is a summary of those descriptions.

5.4.1 Gap 1

Marketing research is based on personal knowledge and past experience with the owner. An advantage of the industry in closing Gap 1 is that members of the project team can get to know the owner and each other by the end of the project. Another advantage is that sufficient communication within a company can be achieved more easily than other industries since construction companies have relatively fewer hierarchical levels.

A disadvantage is that since there are usually multiple participants on the service-provider side, inter-company coordination of communication is much more difficult than intra-company coordination of communication.

5.4.2 Gap 2

The factors preventing construction companies from adopting service specifications are such misconceptions as 1) every project is too unique to be standardized, 2) duration of the project is long, 3) subcontractor's involvement is necessary, 4) owner's involvement is necessary. Since some companies have already adopted quality management programs that involve both the owner and subcontractor, it seems to be a shortcut to incorporate a service quality program into an existing quality management program.
5.4.3 Gap 3

A matrix organization structure typical at a site office enables a contractor to create stronger teamwork than other industries. However, physical separation of home and site offices tends to create an adversarial relationship between the two. In addition, this organization structure leads to the increase of role conflicts and the decrease of perceived control, since the site office usually does not have full autonomy. Perception of control may be impaired by the output-oriented job-appraisal system traditional in the industry. The way a typical contractor assigns personnel to a project team reduces the degree of employee-job fit.

5.4.4 Gap 4

The lack of communication resulting from physical separation of site and home offices increases the propensity to overpromise, which is a typical cause of conflicts between the two offices. An overpromise resulting from advertising is not a common problem in the industry because most of contractors do not often use advertisement.

5.5 Relationships between the Five different Factors and each organizational Construct

Chapter 4 discussed how various differences between the U.S. and Japan's construction industries affect Gaps 1 through 4. The differences discussed are the decision-making process, employment pattern, subcontracting system, contractual relationships with the owner, and labor unions. The following section summarizes the discussion of Chapter 4 and
concludes which organizational construct is specifically influenced by what differences.

5.5.1 Gap 1

The relationships between each construct and the abovementioned five different factors in Gap 1 are illustrated in Figure 5-5.

![Diagram showing relationships between factors and constructs]

**Figure 5-5** Relationships between the five different factors and each organizational construct in Gap 1

Marketing research orientation is possibly affected by differences in the decision making process. The Japanese style of marketing discussion, in which employees from a broad range of departments are involved, is likely to use marketing research findings effectively since data can be analyzed from various points of view. In addition, during predecision negotiations there is more chance that misinterpretation of data is corrected.
Upward communication is affected by differences in decision making processes, employment patterns, and labor unions. Although the quality of upward communication in a Japanese contractor is in question, it seems to be easier for Japanese employees to communicate with superiors, since employees know each other well because of lifetime employment. The reason why the quality of upward communication is in question is that the Japanese decision making process is not as good at promoting creative suggestions as decision making in American companies. Lifetime employment also affects this construct, in that Japanese employees' higher pride and dedication to their companies motivate them to make suggestions to superiors. The usual tense relationship between the contractor and subcontractor in the U.S., caused by labor unions, thwarts smooth upward communication from the subcontractor. In Japan, however, smooth upward communication from subcontractors resulting from the harmonious relationship between the contractor and subcontractor allows subcontractors to contribute to service quality.

As seen in Figure 5-3, levels of management are the same in both countries and are unaffected by any five differences discussed in this study.

Differences in the contractual relationships with the owner and subcontracting systems do not influence any organizational constructs pertaining to Gap 1.
5.5.2 Gap 2

The relationships between each construct in Gap 2 and the five different factors are shown in Figure 5-6.

![Diagram showing relationships between factors and constructs]

**Figure 5-6** Relationships between the five different factors and each organizational construct in Gap 2

Differences in management commitment to service quality is influenced by different contractual relationships with owners. Although there is no formal service control, the Japanese construction industry is traditionally committed to service quality by trying to satisfy the owner by keeping the harmonious relationship. In contrast, an American contractor's relationship with the owner tends to be litigious, which makes it difficult for American managers to maintain a harmonious relationship with an owner.
Effectiveness of goal setting is affected by the different decision making processes, employment patterns, and labor unions. Aggressive participation of middle management in a decision making process in Japan allows them to translate top management service philosophy into effective programs with appropriate goals. Lifetime employment also helps middle managers understand the management philosophy and corporate culture. This Japanese system tends to create service goals employees can easily understand and regard as feasible.

Levels of task standardization is affected by the different decision making processes and employment patterns. The Japanese decision making process tends to create better task standardization because of competent middle management involvement. Because they are experienced in various fields in the company and have climbed the promotion ladder from the very bottom in the lifetime employment system, they know the feelings and tasks of personnel who are in contact with the customer.

Differences in the perception of feasibility is influenced by the different contractual relationships with owner and labor unions. The unique relationship between the owner and contractor in Japan forces Japanese contractors to be more owner-oriented than American companies. Therefore, Japanese management has fewer difficulties regarding a service program as feasible than American management. The difficulty of involving subcontractors in a service program, which results from the adversarial relationship between the contractor and subcontractor because of labor unions, possibly makes American management conclude that the installation of a service program similar to those in other industries is impossible. A successful service program requires subcontractors' involvement.
Differences in the contracting systems do not make any significant differences in the organizational constructs pertaining to Gap 2.

5.5.3 Gap 3

The relationships between each construct in Gap 3 and the five different factors are shown in Figure 5-7.

![Diagram showing relationships between factors and constructs](image)

**Figure 5-7** Relationships between the five different factors and each organizational construct in Gap 3

All of the differences except contractual relationship with owner influence teamwork. One aspect of teamwork is the degree to which employees feel that they are participating in the company's operation and committed to
the company (Zaithaml et al., 1990). The bottom-up decision making style enables Japanese employees to feel more like they are participating in the company's operation, and the lifetime employment system has them being committed to the company. Also, the extent to which employees view other employees as customers is affected by the difference in employment patterns. Poor service to customer contact personnel results in poor service to customers. The Japanese company's job rotation and lifetime employment enhance employees' attitudes to internal customers. In this regard, teamwork within a Japanese company can be said to be achieved relatively easily.

Teamwork between the general contractor and subcontractor is higher in Japan than in the U.S., because subcontractors often continue to work for the same contractors and both can get to know each other. However, the multilayer subcontracting system may impair teamwork among lower layer subcontractors. Another disadvantage of the Japanese subcontracting system is that a subcontractor is not so eager to do a good job and make a profit as in the U.S., since the amount of money a subcontractor receives is solely controlled by a contractor. The strong power of U.S. labor unions often hinders the creation of good teamwork between the contractor and subcontractor. In contrast, harmonious relationships between the contractor and subcontractor in Japan makes it easier to involve subcontractors in service management. Thus, it can be said that the foundation for involving subcontractor in service management has already been prepared in Japan.

Lifetime employment has a positive impact on employee-job fit in that poor employee-job fit does not seem to occur so often because of job rotation and seniority promotion.

The differences in subcontracting systems probably affect perceived control. Japanese contractors are more likely to feel that they have enough
power to control subcontractors' activities than U.S. contractors, since Japanese contractors hire subcontractors in most cases as only labor suppliers. The non-existence of the labor unions that have bargaining power in Japan may also contribute to this construct, in that contractors do not have to deal with unions and can resolve disputes with subcontractors internally.

The lifetime employment system reduces role ambiguity since Japanese employees internalize the company's culture and can know what they are expected to do in an implicit way. On the other hand, American managers have to spend more time clarifying employee roles. American employees are relatively unfamiliar with the company and their colleagues because of high turnover rates, and the need for explicit instructions. American employees probably do not feel role conflict as often as Japanese do since tasks are usually clearly defined to employees. Another advantage of American companies is that they can adjust their workforce according to market conditions easily because of a rich labor market. This practice reduces the possibility of role conflict.

The Japanese contractual relationship with the owner may sometimes make employees feel role ambiguity and role conflict, too. This is because the values of young people are changing and the construction industry traditionally appraises employees' performance based on a project's profitability.

Two organizational constructs pertaining to Gap 3, technology-job fit and supervisory control systems, are not influenced by any five differences discussed in this study.
5.5.4 Gap 4

The relationships between each construct in Gap 4 and the five different factors are shown in Figure 5-8.

![Diagram showing relationships between factors and constructs in Gap 4]

**Figure 5-8** Relationships between the five different factors and organizational constructs in Gap 4

Japanese-style marketing research, involving managers from almost every department, enhances horizontal communication between departments, leading to a reduction of the propensity to overpromise. This practice can easily be applied to the situation when service quality is discussed. As I mentioned in the discussion of Gap 3 above, the fact that Japanese employees tend to view other employees as internal customers reduces chances of failure of both constructs. The differences in the subcontracting systems alter the degree of both horizontal communication and propensity to overpromise. The
Japanese subcontracting system, in which subcontractors usually continue to work for the same contractor, makes horizontal communication smoother. This continuous relationship helps avoid unnecessary disputes and increase the possibility of completing a project within a scheduled time. Construction scheduling is often unrealistic in the U.S., where many owners suffer from delays caused by disputes with contractors or between contractors and labor unions, and leads to higher propensity to overpromise.

Differences in the contractual relationships with the owner do not affect the organizational constructs in Gap 4.
5.5.5 Differences of Importance in the Ten Determinants

Figure 5-9 shows the transition of important determinants throughout a project and how differently American and Japanese owners see each determinant.

- Competence
- Credibility
- Understanding/Knowing Customer
- Tangibles
- Communication
- Security
- Responsiveness
- Reliability
- Competence
- Communication
- Credibility

Determinant Japanese owner sees more important than American owner does.

Determinant American owner sees more important than Japanese owner does.

Determinant American and Japanese owners see differently.

Figure 5-9 Important determinants for American and Japanese owners
5.6 Conclusions

Some of the most important conclusions obtained from the analysis in this thesis are listed below.

The Gap model is applicable to the construction industry. Each construct in the Gap model can be defined within the context of the construction industry. It was found that problems stemming from each construct affect each corresponding Gap the same way as in other industries. For example, the fact that better teamwork closes Gap 3 while worse teamwork widens Gap 3 in other industries is also true in the construction industry. The relative importance of the ten determinants is different from other industries. For example, tangibles and access, which are probably more important in other industries, are of less importance in the construction industry.

Important determinants change depending on project phases. Unlike other industries, a construction project requires a longer service period and includes a broad range of services. These characteristics of the construction industry make it ineffective for a contractor to take an action to emphasize only one particular determinant to raise an owner's evaluation of service quality.

High and low customer-contact services are well mixed in every phase. While high customer-contact service is owner-oriented, low customer-contact service is non-owner participants-oriented. This finding implies that the improvement of operational efficiency and employee's attitudes is needed to manage service quality in the construction industry.
Almost every service is linked together throughout a project. In a construction project, most services cannot be completed in one phase. The failure of the preceding service emerges as the failure of the subsequent service. This fact leads to a proposition that a contractor has to keep consistent service quality throughout a project and cannot emphasize only one phase. Most services are ultimately related to cost and schedule controls, two of the most important owner objectives along with quality of work. Thus, coordination of linked services is the key to successful service management in the construction industry.

The ten determinants can be classified into two types: ability-related and attitude-related. Ability-related determinants can be improved mainly by increasing individual or organizational ability, while attitude-related determinants can be enhanced mainly through good human interactions. Both types of determinants are dispersed throughout project phases. Hence, both physical improvement programs of service quality and philosophical improvement programs are necessary.

Organizational constructs are classified into the same two types the same way as the ten determinants. Most constructs in Gaps 1 and 2 are classified as ability-related and most of them in Gaps 3 and 4 are classified as attitude-related. This fact supports the finding above that both physical improvement programs of service quality and philosophical improvement programs are necessary. In addition, it implies that a corporate-wide service program that involves everyone from top management to laborers is a must.
Although Gap 2 tends to be larger in the construction industry, it looks relatively easy to close this gap by incorporating the service program into existing technical development or quality control programs. Many construction companies have been trying to improve technical ability to meet owners' requests, and some companies have adopted quality control programs.

Physical separation of the site and home offices typical in the construction industry leads to larger Gaps 1 and 4. This characteristic thwarts both upward and horizontal communications. Therefore, the coordination of communication between the site and home offices is the key to close Gaps 1 and 4.

At a glance, access and courtesy seem to be of less significance in the construction industry, but these two determinants play subtle but significant roles behind the scenes. Communication and responsiveness are supported by access and credibility, and tangibles are supported by courtesy. Moreover, many determinants are interrelated.

The way an owner evaluates service quality is the same in the U.S. and Japan. However, the degree to which they see one determinant as more important than another is different. Specifically, an American owner sees competence, security and responsiveness more important than a Japanese owner does. On the other hand, a Japanese owner sees reliability, courtesy, credibility, and security more important than an American owner does.
Security has two meanings in the construction industry. One is financial, and the other is safety and neighborhood-problem related. An American owner sees financial security more critical while a Japanese owner sees safety and neighborhood problems as more important.

The five different factors between the U.S. and Japanese construction industries discussed above affect all the organizational constructs except technology-job fit and supervisory control systems. Possible reasons why these two constructs are not influenced by the five different factors are: 1) Technology-job fit has nothing to do with the differences in business practices and people's characteristics, and construction companies in both countries are equally eager to close technology-job gap. 2) In both construction industries, a job appraisal system is traditionally output-oriented, and construction companies do not traditionally pay attention to quality of service.

All organizational constructs, except technology-job fit, supervisory control systems, marketing research orientation, levels of management, role conflict, and role ambiguity, appeared to be better in Japan. Levels of management are probably the same, since the organization structures of the construction company are almost the same. Because construction companies in both countries have advantages and disadvantages in role conflict and role ambiguity, it cannot be judged which country's construction companies have the advantage in avoiding service problems stemming from these two constructs. As for marketing research orientation, although Japanese construction companies seem to be good at
interpreting gathered data from various angles, they tend to ignore statistical facts. On the other hand, American construction companies seem to be able to judge statistics much more objectively. Thus, this construct also cannot be judged better or worse in either country.

Closing Gaps 2 and 4 appears to be easier in a Japanese construction company, compared to an American construction company because all constructs pertaining to these two gaps are favored in Japan. It is in question which country's construction companies have an advantage closing Gaps 1 and 3, since which construct is more influential to a gap is not clear. Therefore, although teamwork is strongly favored in Japan, it cannot be said that closing Gap 3 is an easier task in Japan since the degree of this construct's impact on Gap 3 is not clear.
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