Measuring Information Systems Service Quality: Lessons From Two Longitudinal Case Studies[1]

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Abstract

IS service quality was measured three times in an information management consulting firm and an information service business. After the first measurement, IS management initiated several actions to improve service quality. The second measurement indicated that service quality improved in the intervening period. When service quality was measured a third time, it had returned to the levels of the first measurement. The evidence suggests that management's attention to service quality waned after about a year, and IS management needs to recognize that service quality is not a fad but an ongoing commitment. The paper concludes by recognizing that delivering IS service quality requires action at three levels (strategic, tactical, and operational) and that the CIO must pay continuing attention to IS service quality. A model for building service quality into IS is described.

Keywords: IS management, service quality, longitudinal study, SERVQUAL

ISRL Categories: A104, E10206.03, GA03, GB02, GB07

Introduction

The core value of the U.S. trophy for outstanding quality, the Malcolm Baldridge award, is customer-driven quality (U.S. Department of Commerce 1993, p. 2). The award criteria state:

> Quality is judged by the customer. All product and service attributes that contribute value to the customer and lead to customer satisfaction and preference must be the foundation of a company's value system. Value, satisfaction, and preference may be influenced by many factors throughout the customer's overall purchase, ownership, and service experiences. These factors include the company's relationship with customers that helps build trust, confidence, and loyalty.

Consider some of the key concepts of this statement in light of the information systems (IS) unit. First, the people to judge an IS unit's quality are its customers, referred to here as *clients* to distinguish them from the organization's customers. Clients determine the quality and effectiveness of an IS unit. Second, service attributes and experiences contribute value to the client. An IS unit can add value to systems by enhancing service quality as well as software quality. Third, the IS unit must recognize it has a long-term partnership with its clients and understand that the quality of its personal interactions with them can sustain a successful relationship built on trust, confidence, and loyalty. The criteria for the Malcolm Baldridge award underscore the contribution of quality of service to the overall performance of an IS unit.

Following the introduction of personal computers, IS units now provide a wide range of services to their clients (e.g., hardware/software selection and installation, problem resolution, connection to a LAN, product training, and help desk) (Pitt et al. 1995). Traditionally, the role of IS has been to design, build, and install systems to improve organizational performance. Today, IS needs to look beyond systems building as its major contribution to organizational productivity. IS units need to examine how they can increase the quality of their service so that through better service they increase their clients' productivity and consequently that of the organization.

IS units can potentially increase client productivity in a number of ways: providing services dependably and accurately; giving service promptly and willingly; employing knowledgeable, approachable, and affable service personnel; having the equipment appropriate for clients' needs; and providing individualized attention. Effective service enables clients to accomplish their work more efficiently. Their performance is not hindered by unreliable IS systems and unresponsive or inexpert IS personnel. Upgrading IS service can be an effective means of adding value to clients' activities and increasing organizational productivity.

The paper initially describes successful attempts by IS units in two large organizations to improve service quality. Both organizations first measured IS service quality using SERVQUAL, an instrument developed by marketing academics for assessing service quality in general, and then undertook a series of actions to improve service quality. One year later, when service quality was reassessed, clients judged that service quality had significantly improved. However, when the organizations measured IS service quality a third time, there was a significant decrease in overall service quality. Indeed, overall service quality had returned to the initial level of measurement. The paper examines what these firms did to first improve service quality and then what happened to reverse the change. From this analysis, several lessons for improving IS service quality are extracted and guidance provided to IS practitioners on how to build service quality into IS.

Measuring Service Quality

Service quality is based on a comparison between what the customer feels should be offered and what is provided (Parasuraman et al. 1985). The difference between expected and perceived service is termed Gap 5 (Zeithaml et al. 1990). This customer-perceived service quality shortcoming, Gap 5, is the result of four service provider shortfalls (Gaps 1 through 4). In IS terms, Gap 1 results from the misunderstanding by IS of what clients want; Gap 2 arises when IS does not establish appropriate service standards; Gap 3 is the distance between established service quality standards and what IS actually delivers; and Gap 4 occurs when IS creates expectations beyond what it actually delivers (Watson et al. 1993).

The measurement of Gap 5 has been operationalized in the form of SERVQUAL (Parasuraman et al. 1988), a two-part instrument. The first part, consisting of 22 questions for measuring expectations, is benchmarked in terms of the performance of an excellent provider of the service being studied. Asking respondents to compare their organization to an

excellent service provider is the frame established in the generic version of SERVQUAL (Zeithaml et al. 1990, p. 180). The second part, also containing 22 questions, measures perceptions by framing questions in terms of the performance of the actual service provider.

Underlying SERVQUAL are five dimensions that are used by customers when evaluating service quality, regardless of the type of service. These dimensions are:

Tangibles   Physical facilities, equipment, and appearance of personnel.

Reliability   Ability to perform the promised service dependably and accurately.

Responsiveness Willingness to help customers and provide prompt service.

Assurance   Knowledge and courtesy of employees and their ability to inspire trust and confidence.

Empathy   Caring, individualized attention the service provider gives its customers.

Service quality for each dimension is captured by a difference score G (representing perceived quality for that item), where

$$G = P - E$$

and P and E are the average ratings of a dimension's corresponding perception and expectation statements respectively.

SERVQUAL has received considerable attention in the marketing literature. In particular, the gap approach of assessing service quality has attracted much debate. Before using SERVQUAL, readers should carefully review research on its use (e.g., Brown et al. 1993; Dabholkar et al. 1996; Parasuraman et al. 1993), examine its application in IS research (Kettinger and Lee, 1994; Kettinger et al. 1995; Pitt et al. 1995), and consult the discussion in

MIS Quarterly (Kettinger and Lee 1997; Pitt et al. 1997; Van Dyke et al. 1997).

Prior studies (Kettinger and Lee 1994; Pitt et al. 1995) indicate that SERVQUAL is appropriate for measuring IS service quality. Furthermore, research reports that practitioners find SERVQUAL a useful tool for assessing service quality and determining actions for raising service quality (Pitt et al. 1995). These earlier studies are extended by investigating the longitudinal measurement of service quality.

Longitudinal Measurement of Service Quality

Service quality was measured three times within two large organizations: the British national office of a major international accounting and information management consulting firm (henceforth called MCF), and a major division of a Fortune 500 U.S. information service business (ISB). The standard SERVQUAL questionnaire was administered, with the minor change suggested by Pitt et al. (1995), to each IS unit's clients. Details of the two studies are summarized in Table 1.

Data analysis

Preliminary examination indicated that many of the variables were not normally distributed, even after common transformations (e.g., natural log and reciprocal). Thus, multivariate analysis, such as MANOVA, was ruled out, and non-parametric tests were relied on for detecting overall differences between the studies.

The prime purpose of the analysis was to discern whether there had been an increase in service quality between the first and second measurements (a one-tail test) and any change between the second and third measurements (a two-tail test). A one-tail t-test was used to compare the first and second measurements because the general proposition was that service quality had improved since the first measurement. In comparing the

Table 1. The Two Longitudinal Studies

Measurement Period	MCF			ISB		
	Date	Response Rate (percent)	Sample Size	Date	Response Rate (percent)	Sample Size
1	Oct. 1992	22	174	July 1993	59	230
2	Oct. 1993	21	168	Sept. 1994	40	157
3	Sept. 1995	15	121	May 1995	54	208

Note: The response rate and sample size are based on the number of fully completed returned questionnaires.

second and third measurements, no change in the direction of service quality was assumed because discussions with the sponsors of each study suggested that the initial momentum to improve service quality had dissipated. Indeed, the sponsors requested a third measurement to verify their suspicions.

The sign test is a simple, versatile test of whether there is an overall difference between two sets of corresponding observations (Gibbons 1985, p. 94). In the case of SERVQUAL, there are 22 items to measure the five dimensions, and a sign test of the difference of the mean score of each of the 22 items was used to detect a difference between two measurements. The service quality index (SQI)[2] was also used to compare measurements. When SQI observations were normally distributed, a t-test was used and in other cases a Wilcoxon rank sum (Gibbons 1985; p. 123) was applied.

MCF

Respondents were the clients of the IS unit throughout the organization. The gamut ranged from partners to clerical staff, and they came from disciplines as varied as auditing and human resources. They were required to disclose their geographic location, position, extent of exposure to the IS unit, and an assessment of their own expertise in matters related to IS, IT, and computers. In each study, the questionnaire was dispatched to a random

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[2]SQI is the arithmetic mean of the score for each dimension.

sample of 800 clients (from a total of around 8,000) by means of the internal mail system. Response rates for the three data collections were around 20%, giving sample sizes ranging from 121 to 174 (see Table 1).

MCF response to initial use of SERVQUAL

The initial 1992 study received an extremely favorable response from the firm's managers. Some of their comments follow:

> I can't believe the value we have got from this survey. I was really skeptical at first, but let the project go ahead. It has given us insights into our users and our business that we have not had before. This is a worthwhile initiative which we can use to track IS service quality. We will do it again. (Managing partner with responsibility for IS.)

> The SERVQUAL study has given us meaningful service goals to strive for, and insights into targeting IS efforts, as well as a good indication of users' perceptions of the quality of service they receive. (The manager commissioning the study.)

> As the results were presented, we seemed to go through distinct phases:

> Anticipation—what are we going to get that we can use?

> Dismay—are we really this bad?

> Disbelief—we don't believe these results, there must have been something wrong in the way you did the study.

Acceptance—OK, we believe them.

Resignation—OK, we accept them.

Some optimism—we can do something about them. (A senior IS manager.)

MCF took several actions as a result of this first study. A conference of IS managers was convened to analyze the results and instigate plans for improving service and developing a service culture within IS. The managing partner for IS insisted that henceforth every IS management meeting should include "Service Excellence" on the agenda. The IS unit commenced drafting a "Mark of Quality Charter," which informed clients of what they could rightfully expect from the IS unit. Other actions included dissemination of the results of the initial study to all IS personnel and clients. The IS manager convened six meetings of what he called customer action teams. These were small groups (average size 10 members) of influential clients that met with managers of the IS unit to discuss service issues, problems, and the latest developments. IS managers also used these meetings to inform clients of the IS unit's plans and problems. The IS unit commenced the quarterly publication of a newsletter, with service quality issues featured in each edition.

An internal IS suggestion scheme was implemented, with pertinent ideas rewarded by book vouchers signed by the managing partner. He commented on the scheme:

> This is not to say that these are good or bad ideas, or theoretically sound. I think they are interesting and useful because at least they say something has been done.

The managing partner for IS believed that, if these actions were to have any benefit, they would result in an improvement in service quality. The second administration of SERVQUAL, a year later, was intended to determine whether these actions had improved service quality. The answer lies in comparing the data for the first and second measurements. For economy of exposition, the difference between the second and third measurements are also analyzed here.

Comparison of the three measurements at MCF

For each dimension, the expectation, perception, and gap scores were computed (see Figure 1). There was a significant increase in expectations between the first and second measurements (p < .0001) and no change between the second and third measurements (see Table 2).

After the initial measurement, the IS unit took several actions to improve service quality. It is likely these contributed to raising expectations because IS was signaling to clients that service quality would improve. What is probably surprising is that expectations were raised so little. This suggests that IS successfully managed to keep clients' expectations within reasonable limits, perhaps by communicating effectively with the customer action teams on problems experienced by the IS unit.

Perceptions increased significantly between 1992 and 1993 (see Table 2). Clearly, the firm's actions to improve service quality had an impact. However, between 1993 and 1995, perceptions significantly decreased.

There was a significant decrease in the gaps between the first two measurements, but then a significant increase between the second and third measurements (see Table 2). The change in service quality between the first and second measurements is also reflected by a significant increase (p = .03) in the service quality index (SQI), which went from −1.57 to −1.39. In the next period, SQI changed significantly (p = .03) to −1.63. The pattern is clear: a significant increase followed by a significant decrease.

MCF actions to change service quality, 1992–1993

The evidence presented demonstrates that the MCF IS unit successfully improved the quality of its service between the first and second measurements. Perceptions were improved despite an increase in expectations. The key

Table 2. MCF—Change in Expectations, Perceptions, and Gaps

Measurement Periods Compared	Expectations			Perceptions			Gaps		
	Number of Differences			Number of Differences			Number of Differences		
	Positive	Negative	p-value	Positive	Negative	p-value	Positive	Negative	p-value
1993 vs. 1992	21	1	< .0001*	21	1	< .0001*	1	19	< .0007*
1995 vs. 1993	11	11	1.00#	1	21	< .0001#	20	2	< .0001#

* one-tail test.
\# two-tail test.

question is: what particular actions were most effective in raising service quality?

The IS unit made many changes to improve service quality, and it is not possible to isolate, in a rigorous fashion, the change or changes that were most effective in raising service quality. After discussions with IS managers within the firm, the conclusion is that the following changes were probably most influential in closing the gap:

1. **Changed IS unit's attitude.** The findings of the first study were communicated to all members of the IS unit, the great majority of whom took them very seriously. The need to improve service quality was reiterated throughout the year.

2. **Changed clients' attitudes.** Continuous efforts were made over the year to inculcate an improved awareness among clients about what the IS unit was, what it did, and who worked in it. Managers believe that the customer action teams were invaluable and attribute the shrinking of the gap to the clients' improved understanding of the IS unit and its problems. This was simply because clients now grasped the fact that the IS unit had its problems like all other units within the firm and that it was generally doing its best despite resource, time, and human restrictions. Managers consider they were able to reach opinion leaders among clients. A better understanding of IS meant that clients' expectations were more in tune with what IS could deliver.

3. **Managers emphasized that staff should set expectations they could deliver.** Great care was taken to ensure that unrealistic promises were not made. Senior IS managers constantly told staff that they would prefer a disappointed client (i.e., one who wanted something today and was told they could get it next week) to an angry one (one who was told they would get it today and received it next week).

4. **Improved communications with clients.** IS managers believe that their communication with clients, through newsletters, bulletin boards, etc., has paid off: clients know who they are and how to contact them. In this case, familiarity has not bred contempt, but the opposite.

5. **Improved IS service.** IS management used the results of the first study to identify some causes of poor service and rectified these problems. Also, they had communicated successfully to IS personnel the need to improve service quality.

The interplay of these five changes and greater attention to service quality resulted in an increase in perceptions (service improved) and expectations (clients expected more), yet a compression of the gap. This outcome is more readily understood by examining the forces acting on perceptions and expectations (see Figure 2). Perceptions were raised by the change in IS attitudes and improved IS service. Expectations were raised by the overall
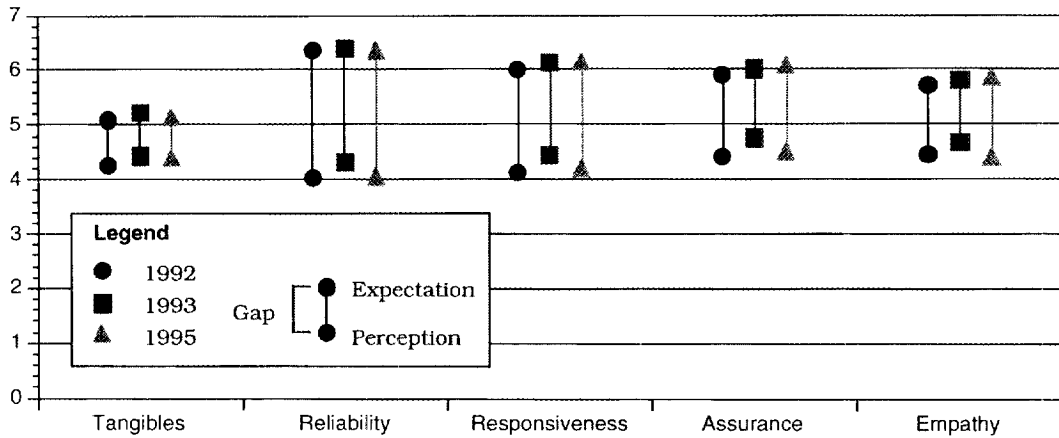
Figure 1. MCF—Expectations, Perceptions, and Gaps

greater attention to service quality. However, excessive expectations were dampened by other actions (e.g., improving communications with clients).

MCF actions to change service quality, 1993–1995

MCF did almost nothing after its initial efforts. The major reason for this reversal was that the senior partner for IS, the champion, became seriously ill and took premature retirement. Service quality as an item was still on meeting agendas, but frequently bypassed for more urgent issues. The communication efforts were delayed and sometimes simply ignored. Generally, the illness of the managing partner had a disheartening effect on the IS depart- ment's morale. As one of the IS staff, who was not at all surprised by the results of the third measurement, noted:

> In the resulting turmoil we did very little to consider customer care, and most of our efforts were either discontinued or given lip service.

Respondents' comments to an open-ended question mirrored the turn of events:

> You were doing great and then you stopped.

This was just a fad for you.

Flavor of the month, what's your next trick?

The simple truth is that MCF stopped thinking and acting about IS service quality when its managing partner for IS became ill and retired.

ISB

At ISB, respondents included all client levels (positions from data entry operator to regional officers) and all geographic locations in the United States. As well as completing SERVQUAL, they were required to provide similar demographic data to that collected at MCF.

ISB response to initial measurement of service quality

The IS manager at ISB, who clearly thought a great deal about service quality, reacted quite differently from the managers at MCF. This dif- ference is possibly because the CIO at ISB had advanced further than his MCF counterpart in realizing the importance of IS service. His com- ments reinforce this interpretation, reveal his
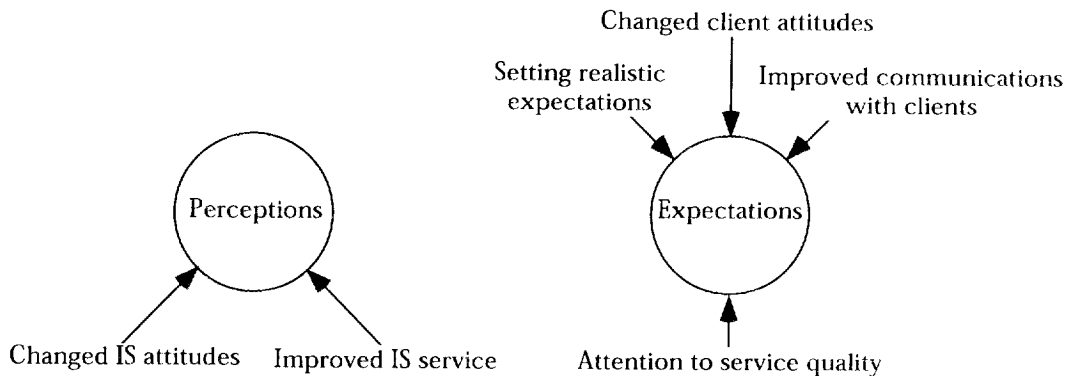
Changed client attitudes

Setting realistic
expectations

Improved communications
with clients

Perceptions

Expectations

Changed IS attitudes   Improved IS service

Attention to service quality

Figure 2. Forces Shaping Perceptions and Expectations at MCF

considered understanding of the topic, and the value of measuring service quality.

> Many companies compete on the basis of customer service. However, what is customer service? If you ask a dozen individuals, you will probably receive a dozen different answers. When you analyze all the responses, essentially customer service is information. Customers measure performance in terms of the product or service itself, but measure service in terms of the quality and timeliness of information provided.

Comparison of the three measurements at ISB

The data are presented in a similar manner to the MCF results (see Table 3 and Figure 3). ISB successfully lowered expectations between the first and second measurements (p < .001). This is in contrast to MCF, where expectations were raised. By the third measurement, however, expectations had significantly increased compared to the second.

During the period 1993 to 1994, perceptions increased, but then declined between 1994 and 1995 (see Table 3). The overall pattern of change with regard to the gaps is very similar in ISB and MCF. There was first an increase and then a decrease (see Table 3), which is confirmed by SQI. The change in service quali-

ty between the first and second measurements is also reflected by a significant increase (p = .01) in SQI, which went from −1.19 to −0.89. In the next period, SQI changed significantly (p = .047) to −1.13. Again, the pattern is clear: a significant increase followed by a significant decrease.

ISB actions to change service quality, 1993–1994

The approach to changing service quality at ISB was twofold: strategic and tactical. The tactical initiatives focused on improving the information flow between the IS unit and clients, in keeping with ISB's philosophy of *customer service as information.* On the strategic level, emphasis was placed on facilitating the creation of a strategic plan for the business, which was subsequently linked to the technology plan. This approach created an information systems plan that meshed with the business needs of the organization and permitted explicit communication of the link between business imperatives and IT projects.

Strategic Initiatives

At ISB, IS management used the strategic planning cycle as an opportunity to formulate a

Table 3. ISB—Change in Expectations, Perceptions, and Gaps

Measurement Periods Compared	Expectations			Perceptions			Gaps		
	Number of Differences			Number of Differences			Number of Differences		
	Positive	Negative	p-value	Positive	Negative	p-value	Positive	Negative	p-value
1994 vs. 1993	0	22	< .0001*	18	4	.0028*	21	1	< .0001*
1995 vs. 1994	21	1	.0001#	4	18	.0014#	2	20	< .0001#

* one-tail test.
# two-tail test.

statement of strategic direction, applying a process similar to multiple JAD sessions. Individual participants were members of the executive committee (i.e., all functional areas were represented), with IS management responsible for content facilitation and describing the outcomes. This ensured a relatively complete statement of business direction and the identification and resolution of key system development issues. Subsequently, all IS initiatives were tied back to this strategic direction statement.

As a result, a shared vision of the purpose of information technology (IT) emerged among the various stakeholders, which guided the building of the various IT components of the technology infrastructure (i.e., data, applications, communications, and classes of technology). The business plan also provided management with a tool to clarify and resolve key business issues as well as representing a "straw man" ideal architecture from which strategic options could be evaluated.

This business plan and resulting technology initiatives were summarized in a booklet disseminated to many employees. Additionally, over the following year, this plan and resulting initiatives were a major agenda topic at every regional and national management meeting, where at least one of the general managers (including IT) explained (or re-explained) the business strategy and corresponding initiatives. The purpose was to develop a clear understanding of the link between business goals and technology initiatives and ensure appropriate and realistic expectations.

Tactical Initiatives

By 1993, the IT organization at ISB had deteriorated to such a level that a former IT senior executive was recruited to return to the organization for one year, shortly before the first measurement of service quality. Since the executive was already familiar with both the organization and the market, rapid change was possible. He quickly concluded that recent downsizing and restructuring within the business had negatively affected IT service. Adequate processes for change determination and control had been allowed to fall between the cracks with all resources diverted to systems product delivery associated with the restructuring effort. Thus, the major tactical thrust was to put *order* back into processes and develop appropriate feedback mechanisms.

A formalized mechanism to request changes was re-established with the requests routed to the functional area general manager for screening and justification prior to IT involvement. Thus, the general managers served as a front line filter to ensure adequate definition, adherence to business policy, and elimination of those requests determined to be economically unjustifiable. This process made functional management, rather than IT management, responsible for judging what should be done.

On a monthly basis, an inventory of all requests for services and their status was reported to the entire management team. This provided direct feedback on relative priorities, target dates, costs, and bottlenecks (i.e., awaiting some particular policy definition). Along with the monthly
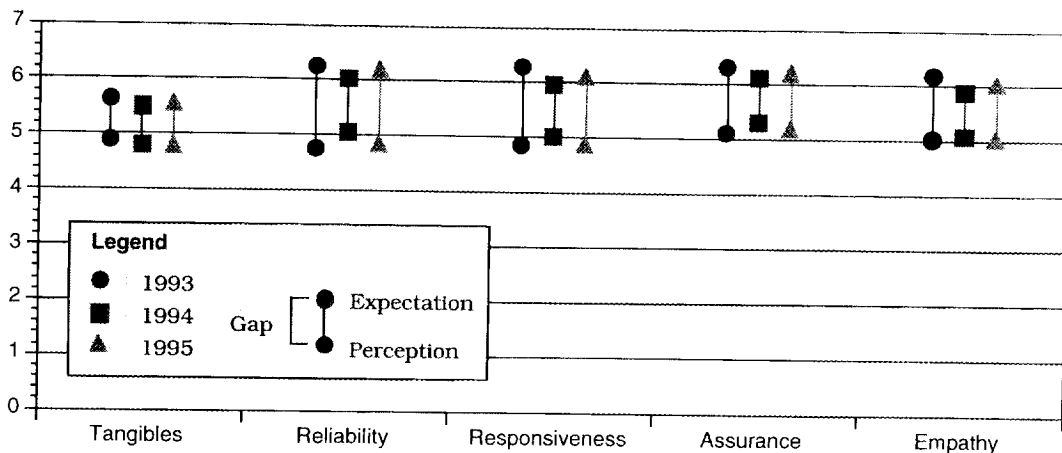
Figure 3. ISB—Expectations, Perceptions, and Gaps

priorities' list were basic service level statistics (e.g., system availability) as well as all system problem reports and their final resolution. This information was also available to field customer management.

A quarterly publication was developed that provided associates with an update on strategic initiatives. Also, a spotlight section on *success stories* was included. These stories highlighted individuals who used technology in a particularly creative or positive way with a client. Thus, it highlighted the positives rather than the negatives of the system. It also had a *focus area,* which contained more detailed information on some particular aspect of the current system and tips on getting the job done better. The newsletter was written in a non-technical manner.

ISB actions to change service quality, 1994–1995

After the initial year, the IS executive recruited his permanent replacement. Unfortunately, the communication procedures that had been implemented were again allowed to deteriorate. The new IS executive's priorities were not in line with the policies and philosophy of his predecessor. As a result, in mid-1996, ISB again brought back the prior IS executive on a

one-year assignment to readdress service quality issues.

Comparison of the Two IS Units

The prior discussion shows differences in the way the two IS units approached service quality. A comparison of SQI across the three periods (see Figure 4) illustrates that ISB was doing a considerably better job of service quality than MCF. For ISB, measuring service quality was a way of improving the management of a mission that was already on its agenda. In contrast, the reactions of MCF managers and the initial service quality measurement indicate that service quality was not a recognized issue for MCF. Indeed, their reaction to the results was literally to get service quality on the agenda of each IS meeting. Comparison of the second and third measurements reveals parallel behavior. Both units first improved their performance and then there was a decrease.

Both organizations decided that enhancing communication with their clients was critical to improving service quality. Their approaches, however, appear to have been driven by different perspectives. MCF was responding to a

problem of poor service. It instituted practices and policies designed primarily to change attitudes in IS personnel and their clients. For MCF, it was an attitude problem. In contrast, ISB's approach was based on ensuring that the firm's personnel understood the strategic direction of the organization and were well informed of the status of projects and problems. For ISB, it was an information problem. While the diagnoses were different, the solutions were similar.

Interpreting the Different Reactions

The three-phase model of organizational change (Lewin 1947) is a framework for understanding the different sequence of processes that facilitated the change in service quality in each organization. Change requires (1) unfreezing—being receptive to change, (2)

moving—making the change, and (3) refreezing—stabilizing the change.

Unfreezing

At MCF, results of the first study alerted IS management to the need to improve service quality, and they prepared their staff and clients for change by widely publicizing the results. At ISB, IS management was already aware of the need for service quality, but IS personnel had not been totally convinced. The results of the initial study were used to make IS personnel receptive to improving the delivery of service.

Moving

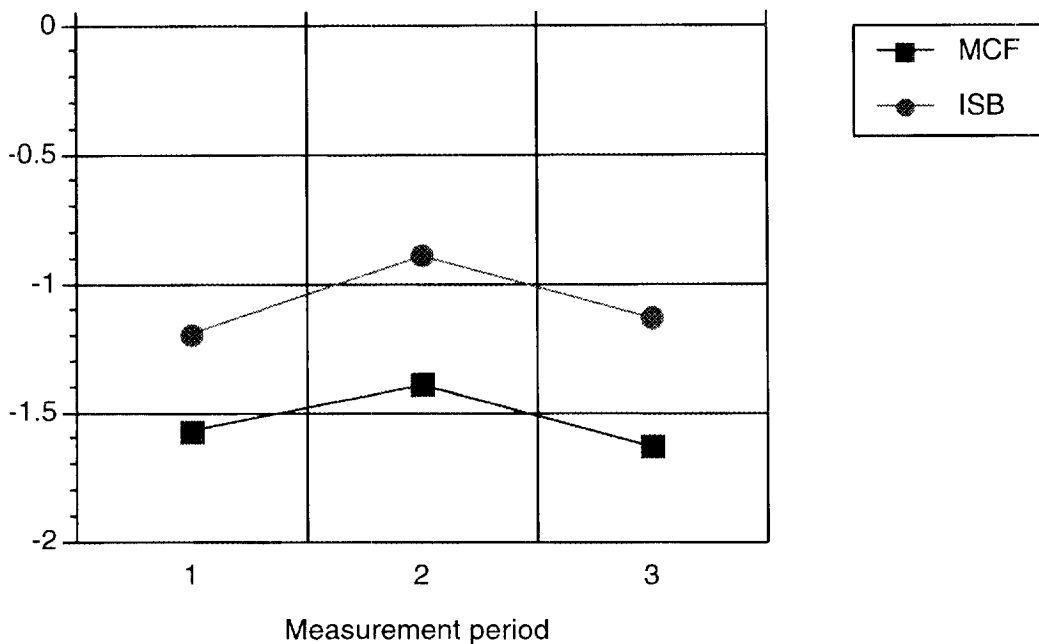At MCF, there were several actions to improve service quality. First, IS personnel were

Figure 4. Comparison of the Firms' SQI Scores by Measurement Period

instructed to set realistic expectations. Second, IS management rectified problems identified during the first survey. Third, continuous communication with clients was established through a variety of media and an enhanced level of cooperation emerged. Most of MCF's movement was taken at the operational level, which is not surprising since IS management had previously paid little attention to service quality.

At ISB, initiatives were taken mainly at the strategic and tactical level by developing an IT plan anchored to the corporate strategy and reintroducing reporting mechanisms. The difference between actions at MCF and ISB may, it is speculated, be due to prior attitudes to service quality. IS management at MCF was initially in denial; they expressed dismay and disbelief at the results before accepting them. In contrast, the results for the CIO at ISB were a confirmation that service quality had slipped and that broad remedial action was required.

Refreezing

In both cases, IS management established new attitudes toward service, but the third survey suggests that these attitudes were not deeply rooted. Without reinforcement, staff returned to their previous approach to service and the processes introduced to bolster service were allowed to lapse. Refreezing was not successful, which raises the question: why didn't refreezing occur?

A longitudinal study of two firms cannot draw causal conclusions, but some informed conjectures can be made on why refreezing failed. Two possible explanations are considered:

1. **Failure to institutionalize service quality.** Both organizations failed to institutionalize service quality. A changed attitude to service quality had not been completely infused, business processes to raise service quality had not grafted, and the reward system did not reflect IS management's professed concern for service quality. In the case of ISB, training cutbacks in response

to cost reduction pressure possibly had a threefold impact: (1) a permanent opinion change on service quality was not established; (2) development of service quality delivery skills was incomplete; (3) IS staff interpreted the reduction in training as a message that service quality was really not that important.

2. **Change in CIO.** In both firms, the CIO left or became inactive after the second measurement. As a result, the service quality movement lost its champion, who was also the person with the power to change attitudes and processes. Service quality became a lost cause. It was neglected in the turmoil at MCF during the illness of the managing partner. It was missing from the priorities of the new CIO at ISB. Changing IS employees' values, attitudes, behavior, and skills to give greater attention to service quality is a cultural change (Schein 1990) and as such takes time. Given the difficulty of undertaking cultural change, discontinuities in IS management, and shifting or neglected priorities, made this change more challenging.

Both cases demonstrate the importance of a service quality champion. Previous research has shown that a champion is often critical to IS development success (Beath 1991). Now there is evidence indicating service quality also requires a champion. Until service quality is part of the culture of an IS unit, there is a need for a senior IS manager to foster its acceptance.

Both IS units could have survived the loss of the CIO if their replacements were resolved to improve service quality, but they were not. They simply neglected to give service quality attention or resources. The interpretation arrived at in this paper is that the lack of an ongoing organizational commitment led to the decline in service quality. Outstanding service providers have found that service quality requires continuous attention (e.g., the enduring attention to service by the chairman of British Airways, Prokesh 1995) and the unwavering commitment of top management

(Zeithaml et al. 1990, p. 6). IS units need to remember this lesson.

Lessons for Improving Service Quality

The two studies provide some insights into how IS can improve service quality. In particular, interviews and observations during the research enabled identification of some of the key actions that a CIO can take to improve service quality. In the following discussion, the actions of MCF and ISB are considered and linked to the dimensions of service quality so that their influence is made explicit.

Link IT strategy to the business strategy

Working with relevant stakeholders, the CIO at ISB linked the business strategy to the IT strategy. In terms of service quality, this process had two purposes. First, it showed how the IS unit would respond to business needs; it demonstrated the collective *responsiveness* of the IS department. Second, it became a framework for *empathizing* with clients. When a client requested a new system or major change, the CIO used the IT plan to explain a rejection by pointing to the necessity to keep ISB's business strategy on track by adhering to the corporate IT plan.

Communicate with clients

MCF and ISB instituted regular, open communication with clients to ensure they had accurate information and realistic expectations of the IS unit. MCF established customer action teams to facilitate discussions with key clients. ISB's IT plan and resulting initiatives were a major agenda topic at every regional and national management meeting. In addition, both IS units established a newsletter. Frequent, candid communication should

inspire trust and confidence and provide *assurance* that IS is *reliable*.

Design service quality processes

At ISB, the CIO quickly reinstituted processes for change determination and control. His argument is that services are inherently process oriented, and IS must have visible processes and role definitions in place to ensure that services can be delivered. Standardized processes ensure *reliable* performance. Also, the ISB CIO maintains that *tangibles* are handled by processes (e.g., a capital replacement process ensures that there is a systematic plan for the replacement of desktop computers).

Training

Cutting training is one of the possible explanations for the failure to institutionalize service quality at ISB. IS personnel lacking the appropriate skills and attitudes are likely to have problems with dependably and accurately executing standardized service delivery processes. Inadequately trained personnel are also unlikely to have a mindset that concentrates on creating value for clients.

Reward system

MCF and ISB introduced incentives to motivate IS personnel to improve service quality. MCF rewarded service improvement suggestions with a book. ISB recently introduced a program where 25% of the bonus of some personnel is determined by service quality measures. To become a permanent feature, service quality must be embedded in the IS reward structure.

Building service quality into IS

The lesson from total quality management is that quality is built into the process, not some-

thing added by inspection (Deming 1981). This is particularly true in a service business, where shoddy quality cannot be "inspected out," as in manufacturing, before it reaches the consumer because the consumer is part of the service system. After considering the lessons previously discussed, the suggestion offered here is that IS service quality is built into the IS business. Service quality, however, is not the *raison d'être* for IS: its goal is to support corporate strategy. Thus, the core actions for delivering effective service quality are the result of the confluence of IT strategy and service quality concepts (see Figure 5). For instance, an IS training plan is based on the skills required to implement the corporate strategy and to service clients.

Limitations

There are three major limitations of this study. First, it does not have the precision of an experiment or the generalizability of a survey. The rich reality of a field study cannot overcome these shortcomings, and readers should treat the implied causality of the conclusions with caution. Second, the study assumes temporal stability of SERVQUAL. As far as can be ascertained, the test-retest reliability of SERVQUAL has not been assessed. Third, a Hawthorne (Mayo 1953) effect might explain

the differences between measurement periods. We believe, however, that the length of time between measurement periods was such that any such effect would have dissipated.

Future Research

There are two important issues that need further investigation. First, the two studies provide a list of actions for improving service quality, but the degree of effectiveness of these various actions is not readily apparent. Future research needs to move beyond providing a list of activities that may result in improved service. Those actions that have the greatest impact on improving IS service quality need to be identified. Second, neither company was able to institutionalize service quality. It is clear that they were both too dependent on the CIO leading the charge. Further research is needed to determine how service quality can be made an enduring aspect of IS.

Conclusion

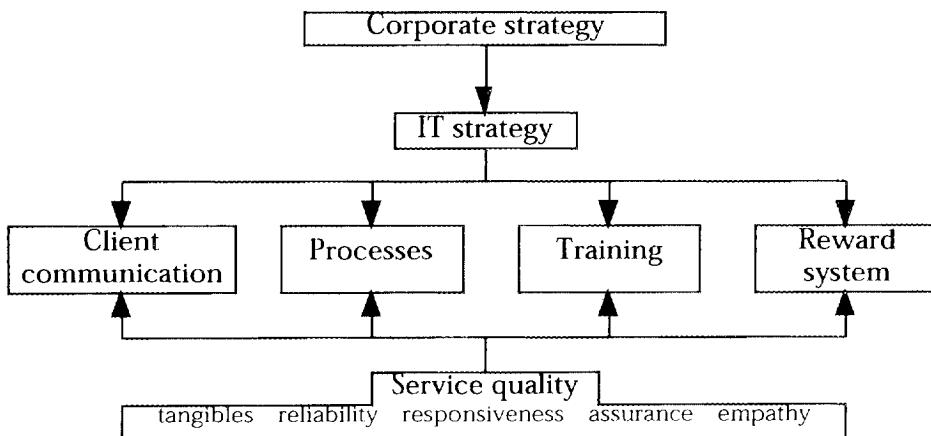The study makes four significant contributions. First, it provides examples of what firms can do

Figure 5. Building Service Quality Into IS

to improve IS service quality from a strategic, tactical, and operational perspective, and these actions are explicitly linked to the dimensions of service quality. The findings impel IS managers to recognize that IS service quality is more than an operational issue. Second, this is the first longitudinal study of service quality in the MIS literature, and thus it provides some insights to IS managers about what to do and what not to do. Third, the study reinforces the message that IS service quality requires ongoing attention. This may seem self-evident, managerial common sense, but a major consulting firm and Fortune 500 company forgot this maxim. Fourth, the research highlights the need for service quality to become part of the IS curriculum. Recent IS textbooks fail to mention IS service quality, let alone discuss what an organization must do to improve service quality.

There are two major lessons from this study. First, delivering IS service quality requires action at three levels: strategic, tactical, and operational. IS management lays the foundation for service quality by creating an IT plan that responds directly to the corporate strategy to ensure that the systems delivered are what clients need. At the tactical level, IS must design and implement processes to deliver service. Processes need to be standardized and assigned to roles to ensure reliable performance. At the operational level, IS service personnel must communicate honestly with clients so that clients' expectations and IS's promises coincide. The second lesson is that the CIO must pay ongoing attention to IS service quality until it is firmly embedded in the IS unit's culture.

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Appendix A

Service Quality Expectations

Directions: This survey deals with your opinion of the Information Systems Department (IS). Based on your experiences as a user, please think about the kind of IS unit that would deliver excellent quality of service. Think about the kind of IS unit with which you would be pleased to do business. Please show the extent to which you think such a unit would possess the feature described by each statement. If you strongly agree that these units should possess a feature, circle 7. If you strongly disagree that these units should possess a feature, circle 1. If your feeling is less strong, circle one of the numbers in the middle. There are no right or wrong answers—all we are interested in is a number that truly reflects your expectations about IS.

Please respond to ALL the statements

	Strongly disagree	Strongly agree
E1 They will have up-to-date hardware and software	1 — 2 — 3 — 4 — 5 — 6 — 7	
E2 Their physical facilities will be visually appealing	1 — 2 — 3 — 4 — 5 — 6 — 7	
E3 Their employees will be well dressed and neat in appearance	1 — 2 — 3 — 4 — 5 — 6 — 7	
E4 The appearance of the physical facilities of these IS units will be in keeping with the kind of services provided	1 — 2 — 3 — 4 — 5 — 6 — 7	
E5 When these IS units promise to do something by a certain time, they will do so	1 — 2 — 3 — 4 — 5 — 6 — 7	
E6 When users have a problem, these IS units will show a sincere interest in solving it	1 — 2 — 3 — 4 — 5 — 6 — 7	
E7 These IS units will be dependable	1 — 2 — 3 — 4 — 5 — 6 — 7	
E8 They will provide their services at the times they promise to do so	1 — 2 — 3 — 4 — 5 — 6 — 7	
E9 They will insist on error-free records	1 — 2 — 3 — 4 — 5 — 6 — 7	
E10 They will tell users exactly when services will be performed	1 — 2 — 3 — 4 — 5 — 6 — 7	
E11 Employees will give prompt service to users	1 — 2 — 3 — 4 — 5 — 6 — 7	
E12 Employees will always be willing to help users	1 — 2 — 3 — 4 — 5 — 6 — 7	
E13 Employees will never be too busy to respond to users' requests	1 — 2 — 3 — 4 — 5 — 6 — 7	
E14 The behavior of employees will instill confidence in users	1 — 2 — 3 — 4 — 5 — 6 — 7	
E15 Users will feel safe in their transactions with these IS units employees	1 — 2 — 3 — 4 — 5 — 6 — 7	

		Strongly disagree						Strongly agree

E16 Employees will be consistently courteous with users   1 — 2 — 3 — 4 — 5 — 6 — 7

E17 Employees will have the knowledge to do their job well   1 — 2 — 3 — 4 — 5 — 6 — 7

E18 These IS units will give users individual attention   1 — 2 — 3 — 4 — 5 — 6 — 7

E19 These IS units will have operating hours convenient to all their users   1 — 2 — 3 — 4 — 5 — 6 — 7

E20 These IS units will have employees who give users personal attention   1 — 2 — 3 — 4 — 5 — 6 — 7

E21 These IS units will have the users' best interests at heart   1 — 2 — 3 — 4 — 5 — 6 — 7

E22 The employees of these IS units will understand the specific needs of their users   1 — 2 — 3 — 4 — 5 — 6 — 7

Service Quality Perceptions

Directions: The following set of statements relate to your feelings about ABC corporation's IS unit. For each statement, please show the extent to which you believe ABC corporation's IS has the feature described by the statement. Once again, circling a 7 means that you strongly agree that ABC corporation's IS has that feature, and circling 1 means that you strongly disagree. You may circle any of the numbers in the middle that show how strong your feelings are. There are no right or wrong answers—all we are interested in is a number that best shows your perceptions about ABC corporation's IS unit.

Please respond to ALL the statements

	Strongly disagree						Strongly agree

P1 IS has up-to-date hardware and software   1 — 2 — 3 — 4 — 5 — 6 — 7

P2 IS's physical facilities are visually appealing   1 — 2 — 3 — 4 — 5 — 6 — 7

P3 IS's employees are well dressed and neat in appearance   1 — 2 — 3 — 4 — 5 — 6 — 7

P4 The appearance of the physical facilities of IS is in keeping with the kind of services provided   1 — 2 — 3 — 4 — 5 — 6 — 7

P5 When IS promises to do something by a certain time, it does so   1 — 2 — 3 — 4 — 5 — 6 — 7

P6 When users have a problem, IS shows a sincere interest in solving it   1 — 2 — 3 — 4 — 5 — 6 — 7

P7 IS is dependable   1 — 2 — 3 — 4 — 5 — 6 — 7

P8 IS provides its services at the times it promises to do so   1 — 2 — 3 — 4 — 5 — 6 — 7

		Strongly disagree		Strongly agree
P9	IS insists on error-free records		1 — 2 — 3 — 4 — 5 — 6 — 7	
P10	IS tell users exactly when services will be performed		1 — 2 — 3 — 4 — 5 — 6 — 7	
P11	IS employees give prompt service to users		1 — 2 — 3 — 4 — 5 — 6 — 7	
P12	IS employees are always willing to help users		1 — 2 — 3 — 4 — 5 — 6 — 7	
P13	IS employees are never be too busy to respond to users' requests		1 — 2 — 3 — 4 — 5 — 6 — 7	
P14	The behavior of IS employees instills confidence in users		1 — 2 — 3 — 4 — 5 — 6 — 7	
P15	Users will feel safe in their transactions with IS's employees		1 — 2 — 3 — 4 — 5 — 6 — 7	
P16	IS employees are consistently courteous with users		1 — 2 — 3 — 4 — 5 — 6 — 7	
P17	IS employees have the knowledge to do their job well		1 — 2 — 3 — 4 — 5 — 6 — 7	
P18	IS gives users individual attention		1 — 2 — 3 — 4 — 5 — 6 — 7	
P19	IS has operating hours convenient to all its users		1 — 2 — 3 — 4 — 5 — 6 — 7	
P20	IS has employees who give users personal attention		1 — 2 — 3 — 4 — 5 — 6 — 7	
P21	IS has the users' best interests at heart		1 — 2 — 3 — 4 — 5 — 6 — 7	
P22	Employees of IS understand the specific needs of its users		1 — 2 — 3 — 4 — 5 — 6 — 7	

Now please complete the following :

1. Overall, how would you rate the quality of service provided by IS? Please indicate your assessment by circling one of the points on the scale below:

Poor   Excellent

1 — 2 — 3 — 4 — 5 — 6 — 7

Note: Pitt et al. (1995) state:

> The first question was originally asked in terms of "up-to-date equipment." We changed the wording to "up-to-date hardware and software" because equipment could be perceived as referring only to hardware.

This change was incorporated for the version of SERVQUAL used in this research.