

Sloan Management Review
Reprint Series

***Prescription for the Waiting-in-Line Blues:
Entertain, Enlighten, and Engage***

**Karen L. Katz
Blaire M. Larson
Richard C. Larson**

Winter 1991
Volume 32
Number 2

Prescription for the Waiting-in-Line Blues: Entertain, Enlighten, and Engage

Karen L. Katz
Blair M. Larson
Richard C. Larson

Index Group, Inc.
Index Group, Inc.
Massachusetts Institute of Technology

Sloan
Management
Review

44

Winter 1991

AS CONSUMERS experience a greater squeeze on their time, even short waits seem longer than ever before. If firms can improve customers' perceptions of the time they spend waiting to be served, then customers will experience less frustration and may feel more satisfied with the service encounter. This paper examines customer perceptions of waiting in line and investigates methods for making waiting more tolerable.

HISTORICALLY, SERVICE businesses interested in customer satisfaction have focused on hiring and training knowledgeable, pleasant servers. Today this approach is insufficient. Consumers not only demand quality, they also demand speed. They do not tolerate waiting in line for long periods of time. Firms must respond to this change if they wish to remain competitive. In this paper, we argue that improving customers' *perceptions* of the waiting experience can be as effective as reducing the actual length of the wait, and we focus on methods for managing perceptions.

Why Is Speed Important to Consumers?

Americans today work longer, more varied hours than they have since World War II. The past decade has seen stagnating wages and drastic unemployment shifts. Consequently, many Americans have been forced to work overtime or hold second jobs in order to maintain middle-class lifestyles. The average work week has risen from 40.6 hours in 1973 to 47 hours a week in 1988.¹ During the same period, U.S. leisure time has declined from 26.2 hours to 16.6 hours a week.² Furthermore, as the service sector expands, the structure of the

traditional forty-hour work week erodes. Today, weekends are workdays for many people, and twenty-four-hour service operations are commonplace. These changes have shifted consumer values. Since workers have fewer nonworking hours, they place a greater value on their free time—witness the increase in time-buying and time-saving services,³ and the concept of “quality time.”

As consumers experience a greater squeeze on their time, short waits seem longer and more wasteful to them than ever before. The lesson for managers, then, is that transactions should seem brief. There are two basic ways to approach that goal: through operations management and through perceptions management.

The logic behind perceptions management—the focus of this research—is that when it comes to customer satisfaction perception is reality. If customers think that they are satisfied, then they are satisfied. Similarly, if customers think that their wait was short enough, then it was short enough, regardless of how long it actually was. A major benefit of perceptions management is that it is often very inexpensive to implement.

Previous Work in Queue Psychology

Empirical research into the psychology of waiting dates back to at least 1955, when I.J. Hirsch et al. studied the effects of auditory and visual backgrounds on perceptions of duration. They asked subjects to replicate a tone heard in either a quiet or a noisy environment. Short durations tended

Karen L. Katz and Blair M. Larson are consultants at Index Group, Inc., Cambridge, Massachusetts. Richard C. Larson is Professor of Electrical Engineering and Computer Science at the Massachusetts Institute of Technology. This article is based on an MIT Sloan School of Management master's thesis written by Ms. Katz and Ms. Larson; Professor Larson was their thesis advisor.

to be overestimated, while long durations tended to be underestimated. In addition, subjects thought they heard the tone for a longer time in a quiet environment than in a noisy environment.⁴

A more recent study focused on the perceptions of commuters waiting for and traveling on a train in the Boston subway system. Arnold Barnett and Anthony Saponaro found that, while recent construction had not disturbed the trains' operations, it had disturbed perceptions. The authors concluded that riders experienced an asymmetry in perceptions: although they were quick to sense a decline in service quality, they were far slower to recognize when the problem had been corrected.⁵

David Maister has developed a theory of queue psychology that focuses on a combination of perceptions and expectations management.⁶ In particular, he has defined a concept he calls the "First Law of Service":

$$\text{Satisfaction} = \text{Perception} - \text{Expectation}$$

According to Maister,

If you expect a certain level of service, and perceive the service received to be higher, you will be a satisfied customer. . . . There are two main directions in which customer satisfaction with waits (and all other aspects of service) can be influenced: by working on what the customer expects and what the customer perceives.

Maister proposes eight principles that organizations can use to influence customers' satisfaction with waiting times:

- Unoccupied time feels longer than occupied time.
- Preprocess waits feel longer than in-process waits.
- Anxiety makes waits seem longer.
- Uncertain waits are longer than known, finite waits.
- Unexplained waits are longer than explained waits.
- Unfair waits are longer than equitable waits.
- The more valuable the service, the longer people will wait.
- Solo waiting feels longer than group waiting.

Richard Larson has observed that a key determinant in waiting satisfaction is the degree of "social justice." Even when waiting times are very short, customers may become infuriated if the system violates the first in, first out principle.⁷ Larson's re-

search has also uncovered instances where perceptions of queuing have influenced satisfaction. For example, for fast food customers, satisfaction in a single-queue system (such as Wendy's) may be higher than in a multi-queue chain (such as McDonald's)—even though customers wait longer in a single-queue system.⁸

Two of the world's foremost test sites for queuing psychology experiments are Disneyland and Disney World. Disney management realizes that "there's a real art to line management," and does its utmost to make the waiting experience less psychologically wearing.⁹ Lines at Disney theme parks are always kept moving, even if only to dump customers into one of a series of pre-ride waiting areas. A *Newsweek* reporter observed that, to influence customer expectations,

the waiting times posted by each attraction are generously overestimated, so that one comes away mysteriously *grateful* for having hung around 20 minutes for a 58-second twirl in the Alice in Wonderland teacups.

Their effort appears to have paid off: even though Disney's theme park lines get longer each year, customer satisfaction, as measured by exit polls, continues to rise.

The Study

In November 1988, the Bank of Boston was contemplating installing two different technologies intended to influence customers' waiting line experiences. The first, by a firm called SilentRadio, is an electronic newsboard. One of these had been installed at an off-premise ATM site, and managers considered it a great success. They were interested in determining if customers waiting for human tellers would respond well to a similar installation. The second, by Camtron Corporation, utilizes "electric eyes" at the entrance and exit of the queue channel to estimate line waits and provide statistics for improving staffing and service levels.

The bank's managers had many questions they wished to answer before investing further. They wondered if the equipment worked accurately, how employees would adapt to the equipment, and, most important, how customers would perceive the improvements. Our own interests focused primarily on the psychology of queuing. We believed that if we could improve customer satisfaction by managing perceptions in a real-world setting, then

altering perceived waiting times would be further legitimized as a management tool.

The purpose of the study was to measure customer perceptions of waiting under different conditions. We tested the following hypotheses:

- As the perception of waiting time increases, customer satisfaction decreases.
- Increased distractions reduce the perception of waiting time, increase customer interest level, and may improve customer satisfaction.
- A wait where the length is known in advance is less stressful than an open-ended wait; such knowledge may improve customer satisfaction.

In addition, we explored differences between customers' perceptions of waiting and their actual waiting times, as well as what customers considered a "reasonable" waiting time.

Methodology

Our study site was the Bank of Boston's 60 State Street branch in downtown Boston. We gathered data on Wednesdays, Thursdays, and Fridays, when the branch had the heaviest traffic. In two of the three phases, our data-gathering days included the first or the fifteenth of the month, which are the most common paydays.

Two video cameras filmed customers as they entered the queue and as they left the queue to see a teller; the cameras recorded the time as they filmed. We and our research assistants then interviewed approximately one-third of the customers after they finished their transactions, and asked them about perceived waiting times. Later, when we identified each interviewed customer on the videotape, we were able to compare individual customers' perceptions with how long they actually waited. (To our knowledge, no earlier studies have matched individual perceptions to reality in this way. Most compare individuals' perceptions with *average* waiting periods.)

We also asked customers to rate their wait on three attributes: duration, boredom, and stress level. We asked an open-ended question of what a "reasonable" wait would be. We measured general satisfaction by asking customers to rate the branch's service overall, and on that day in particular.

The study took place in three phases. The first phase served as a control. In the second and third phases, we introduced variables that we hypothesized would alter the perceived waiting times and customer satisfaction levels. The second-phase variable was SilentRadio—implemented as a large, black electronic board that displayed two lines of bright red print in "Times Square" fashion. Everyone waiting in line could see the board, which transmitted fifteen minutes of up-to-date news and information, interspersed with Bank of Boston ads. During phase three, we removed SilentRadio and introduced Camtron's digital clock feature. The clock, positioned at the entrance to the line, gave an estimate of how long the customer's wait would be.

During the newsboard and clock phases, we asked customers whether they had noticed the new installations and, if so, whether they had read them.

Altogether we conducted 324 personal interviews, which were distributed fairly evenly over the three phases. In analyzing them, we omitted responses from 14 newsboard-phase respondents who had not noticed the installation and from 33 electronic-clock phase respondents who had not noticed the time indicated.

Results

Table 1 provides summary statistics for the 277 questionnaires included in our analysis.

Table 1 Summary Statistics for All Respondents

	Phase I (Control)	Phase II* (Board)	Phase III** (Clock)	Total
# Responses	116	89	72	277
Actual Wait				
0-4 minutes	75%	40%	56%	59%
4-12 minutes	19%	60%	44%	38%
> 12 minutes	6%	0%	0%	3%
Average actual wait (In minutes)	3.6	4.8	4.3	4.2
Perceived Wait				
Average perceived wait (In minutes)	4.7	6.0	4.6	5.1
Average overestimate (In minutes)	1.1	1.2	0.2	0.9
Average % overestimate	78%	43%	22%	52%
Reasonable Wait				
Average reasonable wait (In minutes)	5.8	5.9	6.1	5.9
Description of Time in Line (Averages on 1 to 10 scales):				
Short/long	2.9	3.4	3.3	3.2
Boring/interesting	3.9	5.4	3.8	4.3
Stressful/relaxing	6.9	6.6	6.8	6.7
Overall Satisfaction (Averages on 1 to 10 scales):				
Today	9.1	9.2	9.0	9.1
Usually	8.1	8.1	8.0	8.1

* Respondents who noticed the newsboard.

** Respondents who noticed the time on the clock.

Actual Waiting Times

We determined actual waiting times by analyzing videotapes of customers entering and leaving the teller line. Figure 1 shows the distribution of actual waiting times for the 277 customers we interviewed. Nearly 60 percent of the customers we interviewed waited less than four minutes to be served, and only 3 percent waited over twelve minutes. On average, survey respondents waited in line 4.2 minutes before seeing a teller. Actual average waiting time for all customers was somewhat shorter because we did not interview customers who did not have to wait before being served.

Perceived Waiting Times

We asked subjects, "How long do you think you waited in line today (in minutes)?" Figure 2 shows the distribution of perceived waiting times for the 277 customers we interviewed. On average, respondents thought they waited 5.1 minutes to see a teller. Twenty-five percent of respondents believed they had waited five minutes. In general, we observed perceptual "anchor points" at five-minute intervals.

As we had expected, people tended to overestimate the amount of time they spent waiting in line. Figure 3 shows the distribution of differences between perceived and actual waiting times. Differences between perceived and actual waiting times were approximately normally distributed, with a mean overestimation of just under one minute and a standard deviation of 2.5 minutes. Waits of less than one minute typically were not perceived to be waits at all.

Reasonable Waiting Times

Customers had very different notions of how long a reasonable wait is. Many said that their concept of "reasonable" varied based on when they came into the bank; for example, they were willing to wait longest during lunchtime or on payday. Figure 4 shows the distribution of responses to the question about reasonable waiting times. On average, customers thought that 5.9 minutes was a reasonable amount of time to wait. However, as with perceived waiting time responses, descriptions of what constitutes a reasonable waiting time tended to anchor around five-minute intervals. More than

Figure 1 Distribution of Actual Waiting Times

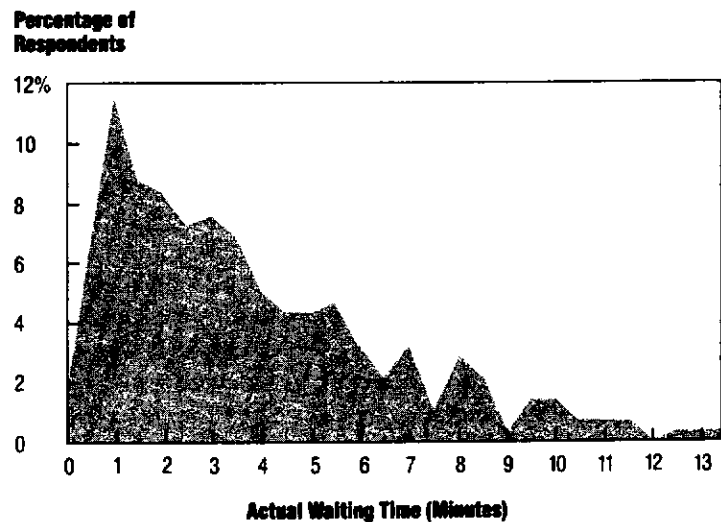
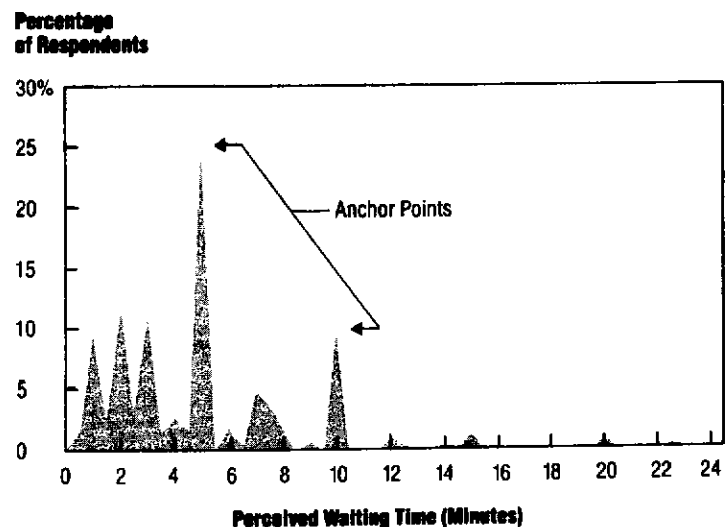


Figure 2 Distribution of Perceived Waiting Times



40 percent of respondents specified exactly five minutes.

Descriptions of Time Spent in Line

Subjects tended to fall into one of three groups, which we called "watchers," "impatients," and "neutrals." "Watchers" enjoyed observing people and events at the bank. "Impatients," on the other hand,

could think of nothing more boring than waiting in line. "Neutrals," as their name indicates, fell somewhere in the middle.

- **Interest Level.** When customers were asked to describe how interesting their wait was, on a 10-point scale, with 1 being the least interesting, the three most frequent responses were 1 (26%), 5 (22%), and 10 (11%). Figure 5 provides the distribution of responses to this question.

- **Length of Time in Line.** When asked to de-

scribe the length of the wait on a 10-point scale (1=short, 10=long), most respondents described their waits as relatively short. On average, customers rated the length of their wait as a 3.2 out of 10. Eighty-five percent rated the wait as 5 or lower.

- **Anxiety Level.** We asked customers to describe the waiting experience on a 10-point scale (1=stressful, 10=relaxing). The majority of respondents did not find waiting in line stressful. The average response to this question was 6.7, and 83 percent of subjects responded with a 5 or greater.

Figure 3 Perceived vs. Actual Waits

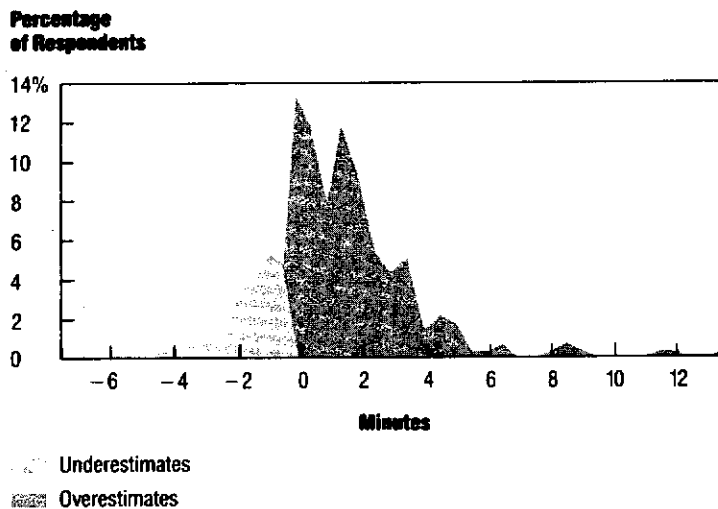
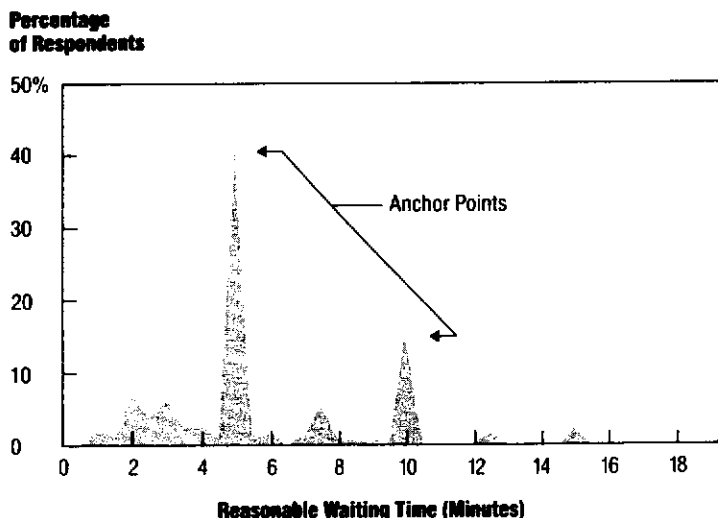


Figure 4 Distribution of Reasonable Waiting Times



Overall Customer Satisfaction

In general, we found that customers were very satisfied with the bank. Overall satisfaction "today" received a rating of 9.1, with 64 percent of respondents indicating their satisfaction was at 10. Overall satisfaction with the bank's usual service received a rating of 8.1, with 41 percent rating it at 10. As a result, it became difficult to detect effects of the installation of the electronic newsboard and clock on customer satisfaction; there simply was not much room for improvement.

Correlations

Correlations between the variables were as expected. Changes in actual waiting time tended to influence customer perceptions: as actual waiting times increased, overall customer satisfaction tended to decrease and stress levels tended to increase. In addition, as actual waiting times increased, both perceived waiting times and "reasonable" waiting times increased. Thus, customers recognized that they were waiting longer, but also indicated that they were *willing* to wait longer. This correlation suggests that customers' definitions of a reasonable wait may be based on the length of the current service encounter.

Similarly, increases in perceived waiting times were associated with decreases in satisfaction and with increases in stress levels and definitions of a reasonable wait.

Overall satisfaction with the service received on the day of the survey was correlated with descriptions of what constitutes a reasonable wait and with usual satisfaction. Customers who had a longer definition of a reasonable wait tended to be more satisfied than customers with a shorter definition. In addition, customers who were usually satisfied

were more likely to be satisfied with the service on the survey date. Customers may have used their survey date satisfaction as a reference point for rating their usual satisfaction.

High interest levels and low stress levels were associated with high levels of customer satisfaction, both in general and on the survey date.

Customer satisfaction appeared to depend on how closely reality matched expectations. During the study, several customers commented that the teller lines were much shorter than usual, and thus that they were very satisfied.

Comparisons between the Three Phases

In order for us to make comparisons between the survey phases, actual waiting times needed to be equivalent across the three phases. We controlled for this by looking at two subgroups with comparable mean waiting times: those who waited less than four minutes, and those who waited between four and twelve minutes.

This division may have some operational significance. Since customers typically said they were willing to wait around five minutes, but tended to overestimate their waits by around one minute, they may actually be willing to wait only four minutes before the wait becomes "unreasonable."

- **Impact of the Electronic Newsboard.** Newsboard installation did not significantly affect perceived waiting times nor the amount by which respondents overestimated their waits. Nor did it affect how customers rated the length of the wait on a 10-point scale.

However, the newsboard did make the time spent in line more palatable. Interest level, measured on a 10-point scale, increased from 3.9 to 5.0 for customers who waited less than four minutes, and from 3.8 to 5.6 for customers who waited four to twelve minutes. Figure 6 shows the effects of the electronic newsboard on customer interest levels.

When asked to describe the wait in line on the boring-to-interesting scale, many respondents said that the line was usually very boring, but having the newsboard to watch made it much more interesting. After the newsboard had been removed, many customers noticed it was gone and said they wished the bank would reinstall it. Respondents who spent a greater percentage of their time in line watching the newsboard were more interested and relaxed than other customers and tended to overestimate the length of their wait by a smaller

Figure 5 Overall Customer Interest Level

Percentage of Respondents

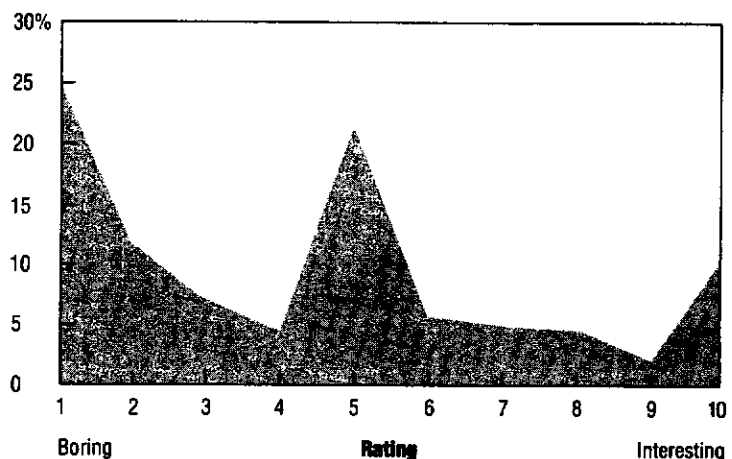
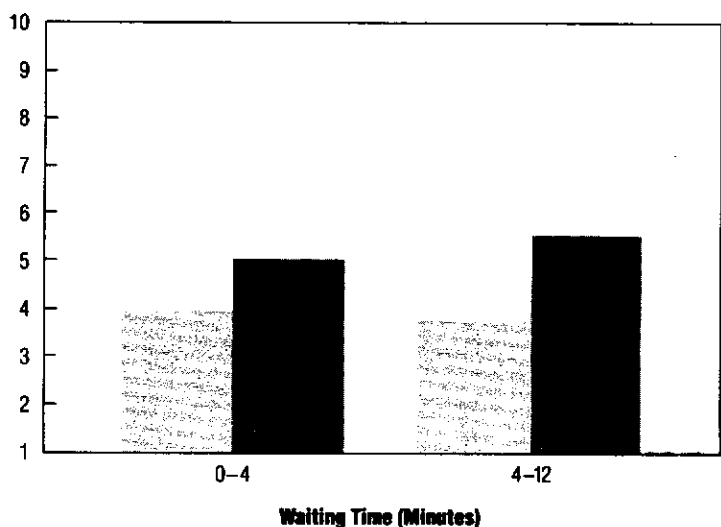


Figure 6 Effect of Newsboard on Customer Interest

Average Interest Level Rating



Control
Electronic newsboard

amount.

In addition, overall satisfaction with the service received from the bank on the survey date increased from 9.3 to 9.5 for customers who waited less than four minutes and from 8.5 to 9.0 for customers who waited from four to twelve minutes when the

newsboard was present. While the increase was not statistically significant, the trend was clearly in the hypothesized direction.

The newsboard had a noticeable physical effect on the line, as well. Normally, customers face the back of the person in front of them. This formation can have the symbolic effect of crowding, which is often linked to stress.¹⁰ In order to view the electronic newsboard, customers had to either twist their heads or turn their bodies so they stood shoulder to shoulder. In so doing, customers may have subconsciously felt less crowded.

In addition, customers tended to stand completely still with their arms at their sides while watching the newsboard. During other phases of the study, subjects were extremely fidgety; they constantly moved around and touched their faces and hair. We believe that a relaxed customer will have a more positive experience than a tense one.

- **Impact of the Electronic Clock.** Installation of the electronic clock appeared to influence perceived waiting times and overestimation of waiting times. Specifically, perceived waiting times were lower for clock-phase respondents than for control-phase respondents. Clock-phase respondents also

tended to overestimate their wait by less than control-phase respondents. While these differences are on the borderline in terms of statistical significance, they are clearly in the hypothesized direction (see Figure 7).

There are two reasons why the clock may have improved the accuracy of perceived waiting times. Customers may have believed what the clock told them about their waiting time and thus adjusted their perceptions. Alternatively, the clock may have made customers more aware of time, and thus more aware than usual of exactly how much time they spent in line.

We had hypothesized that a wait where the length is known in advance would be less stressful than an open-ended wait, so we hoped to find that the clock reduced stress levels. However, control-phase and clock-phase respondents did not rate their stress levels differently.

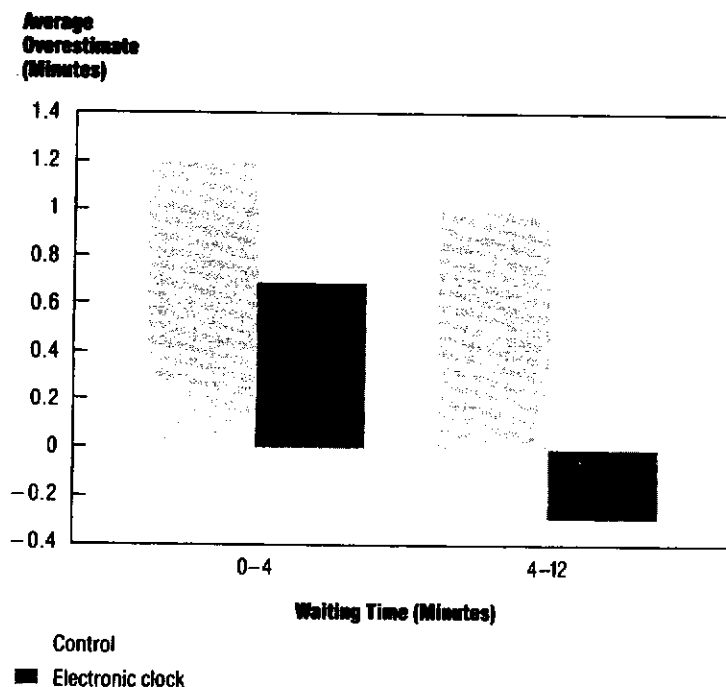
Nor did the clock improve customers' overall satisfaction with the service they received. This may be because the clock made respondents more aware of the time wasted standing in line.

We observed that customers liked to play "beat the clock" and felt as if they were "winning" if they spent less time in line than the clock had indicated that they would. Since the clock tended to overestimate waiting times by about one minute, most respondents did beat the clock; however, some customers became annoyed when their wait turned out to be longer than estimated. In addition, the balking rate appeared to increase during the electronic-clock phase: more people looked into the bank, saw the clock, and left (presumably because the wait was too long) than did so when the clock was not there.

Further Observations

Throughout the electronic newsboard and clock phases, customers commented that service had improved dramatically over the last few weeks and that lines were much shorter than they had been in the past. Some even commented that they thought the improvements were due to the addition of new staff members (even though there were no additional staff at the time they made the comments!). These observations may have surfaced because the installation of the Camtron system affected teller productivity or because February was a slow month at the bank. Or these perceptions

Figure 7 Effect of Clock on Time Perception



may have occurred simply because customers were being entertained and interviewed, and they felt that the bank cared about their concerns.

Summary of Findings

In general, our findings supported our preliminary hypotheses. However, there were a couple of surprises. The major findings were as follows:

- In this setting, the average overestimate is about one minute, and waits of five minutes or less are considered reasonable.
- As perceptions of waiting time increase, customer satisfaction tends to decrease.
- Increased distractions make the waiting experience more interesting and tend to increase customer satisfaction.
- However, information on expected time in queue tends to improve the accuracy of customer perceptions of waiting but does not influence customer satisfaction.

Management Implications

Every line is different. Therefore, when attempting to manage customer perceptions of waiting, managers should consider the experience from the customer's point of view. Important issues include the following:

- **Fairness.** Can newcomers cut in front of customers who arrived before them, or is the line first come, first served?
- **Interest Level.** Are interesting things happening that the customer can watch?
- **Customer Attitudes.** What time pressures do customers face?
- **Environment.** Is waiting comfortable? Does the customer have to freeze in the cold or bake in the sun?
- **Value of Service.** How important is the result of the transaction to the customer? Could it easily be obtained elsewhere? Can the customer come back another time, or is the transaction urgent?

Suggestions

We have formulated ten suggestions for managers. Some are direct applications of our research results, while others are based on qualitative observations and previous work in the field of queue psychology.

1. **Do not overlook the effects of perceptions**

management: consumer concern about waiting is growing. There is no limit to the frustration that waiting can cause. Cities are becoming more crowded, the work week is expanding, the economy is worsening, and people need more free time to deal with their frustrations. Now, more than ever, excellent service is the key to success. Using perceptions management to improve customer satisfaction is only a tool, but it's a good tool.

2. **Determine the acceptable waiting time for your customers.** One minute of waiting in a bank will probably go unnoticed, whereas a minute on hold on the telephone can be infuriating. Determining an acceptable waiting period will help managers set operational objectives and, if those are met, will improve customer satisfaction.

3. **Install distractions that entertain and physically involve the customer. Keep the content lighthearted.** Piped-in music or live piano players may create a more pleasant atmosphere, but they do not effectively rope the customer into the activity. If the content of the distraction is light, fresh, and engaging, customers remain interested and entertained for many visits. Customers at the bank preferred horoscopes and tabloid headlines to more informative headline news.

The SilentRadio used in our study managed perceptions effectively. It was inexpensive, easy to operate, and did not disrupt normal operations. In addition, since most customers had to stand still to read the screen, they became physically involved with the distraction and did not mind waiting as much. Screen placement forced customers to turn slightly in order to read it; thus they stood shoulder to shoulder rather than front to back.

4. **Get customers out of line.** Whenever customers can be served without having to stand in line, both company and customer can benefit. For example, queues can be avoided by advance reservations, by mail or telephone service, or by better automation.

In banking, there are many ways to conduct transactions without using a teller—for example, direct deposit, ATMs, automatic loan payments, and check-cashing machines. The challenge is to increase customer awareness and use of these tools.

5. **Only make people conscious of time if they grossly overestimate waiting times.** There is a tradeoff between the accuracy of waiting time perceptions and the awareness of time. In the bank, perceptions were fairly close to reality, perhaps be-

cause customers had previous experience with the branch, or because the lines were short. For whatever reason, informing customers of their expected waiting time backfired. The clock made people more aware of the waiting time. It also appeared to increase balking rates.

However, there may be numerous instances in which information on expected waiting times is helpful. Airline passengers, for example, have no way of knowing when a plane sitting on the runway will take off unless they're told. In such cases, Maister's principle that an informed wait is better than an uninformed wait may still hold.

6. Modify customer arrival behavior. Customers are often aware of peak times before they arrive at a service location, but they show up then anyway. If some customers could be convinced to arrive at other times, everyone would be better off. To achieve this, signs that list off-peak hours could be posted in stores and banks. Servers could also mention off-peak hours to customers who have waited an inordinate amount of time. In addition, incentives could be used to encourage off-peak arrivals.

7. Keep resources not serving customers out of sight. Several customers commented that they do not mind waiting so long as the tellers seem to be working as hard as they can. Customers tend to become annoyed if they see several unstaffed teller windows or if tellers are present but not serving customers. To address this perception, managers can adopt several policies:

- Keep idle employees out of view.
- Conduct activities that do not involve customer interactions out of the customer's sight.
- Staff stations closest to the exit point of the queue first. This practice creates a better first impression for the customer.

- Keep unused physical capacity out of view (e.g., portable cash registers for the Christmas season).

8. Segment customers by personality types. The three types of customers we observed—watchers, impatient, and neutrals—want different types of service from the bank. Watchers find the bustle of the bank entertaining and prefer a friendly teller with a smile to a shorter line. The impatient group is more apt to emphasize the length of the queue in their definition of overall satisfaction.

The needs of the "impatient" can be met through innovative products, services, and educational programs that either avoid or reduce the waiting ex-

perience. The airline and hotel industries, for example, have developed club memberships that provide express check-in and check-out policies. Some retailers satisfy convenience-seeking consumers by creating express check-out cashier lines. The emergence of convenience-oriented businesses proves that people are willing to pay more for services that save them time.¹¹

9. Adopt a long-term perspective. In our research, respondents rated their overall satisfaction significantly lower on a historical basis than on the survey date itself. And, although daily satisfaction improved as the study progressed, historical satisfaction did not. It evidently takes a tremendous number of "good days" before customers' historical opinions change. Managers must take a long-term approach when attempting to improve perceptions.

10. Never underestimate the power of a friendly server. Although waiting is an issue worth addressing, managers should not lose perspective. Servers should continually be trained and rewarded for good service, since their efforts can overcome many negative effects of waiting. ■

References

This work was supported in part by the National Science Foundation, Grant No. SES 8709811.

- 1 "More Time Spent Winning Bread, Less Enjoying It," *Boston Globe*, 16 January 1989, p. 1.
- 2 J. Richard, "Out of Time," *New York Times*, 28 November 1988, Sec. L, p. A25.
- 3 C.L. Anderson, "Selling Time: Emerging Trends in the Consumer Service Industries" (Cambridge, Massachusetts: MIT Sloan School of Management, Master's Thesis, May 1988).
- 4 I.J. Hirsch et al., "The Effects of Auditory and Visual Background on Apparent Duration," *American Journal of Psychology* 69 (December 1956): 561-574.
- 5 A. Barnett and A. Saponaro, "The Parable of the Red Line," *Interfaces* 15 (March-April 1985): 33-39.
- 6 D.H. Maister, "The Psychology of Waiting in Lines" (Boston: Harvard Business School Note 9-684-064, Rev. May 1984), pp. 2-3.
- 7 R.C. Larson, "Perspectives on Queues: Social Justice and the

Psychology of Queuing," *Operations Research* 35 (November-December 1987): 895-905.

8

Several studies have examined the concept of the "time budget": How do consumers choose among numerous activities, given the constraint of limited available time? An excellent review of this literature is provided by M. Venkatesan and B.B. Anderson, "Time Budgets and Consumer Services," in *Service Marketing in a Changing Environment*, ed. T.M. Block et al. (Chicago: Proceedings Series, 1985), pp. 52-55.

9

C. Leerhsen, "How Disney Does It," *Newsweek*, 3 April 1989, p. 52.

10

B. Schwartz, *Queuing and Waiting* (Chicago, Illinois: University of Chicago Press, 1975), pp. 177-178.

11

Anderson (May 1988).

Reprint 3224

Sloan
Management
Review

53

Winter 1991