SECTION 18
MARKET RESEARCH AND MARKETING

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INTRODUCTION

This section addresses the quality-related issues associated with the marketing function. The discussion is divided into two parts: market research for quality and quality activities within the marketing function.

Among the concepts and methodologies covered are the distinction between customer satisfaction and customer loyalty; concept of field intelligence; difference between customer needs, expectations, satisfaction, and perception; tools and techniques of market research on current and new products; importance of measuring customer satisfaction relative to competition; significance of determining the relative importance of various product attributes; role of sales and marketing in quality-related activities; applying quality concepts to improve the effectiveness of the marketing function.

We will follow the convention of using the term "product" to denote goods or services.

QUALITY IN THE MARKETING FUNCTION OF LEADING ORGANIZATIONS

As an overview to this section, we will examine how some leading organizations in quality transformed their marketing function from the traditional to the quality-focused. Hurley (1994) collected information through in-depth interviews at seven organizations: Federal Express, Globe Metallurgical, Marriott, Texas Instruments Defense Systems and Electronics, Toyota Motor Sales USA, Xerox Corp., and Zytec Corp. Five of these organizations were Baldrige Award winners. The findings revealed that the companies: (1) learn, in detail, the customer view of quality; (2) know the company core processes and how they relate to customer satisfaction; and (3) develop a culture with a strong external orientation. The findings suggest that some fundamental changes in marketing occur when quality management is initiated; e.g., an integrated organizational approach to marketing and selling replaces the traditional functional approach. In achieving this transformation, two frameworks are helpful—one strategic and the other tactical.

The concepts of strategic quality planning (see Section 13, Strategic Deployment) apply to the marketing function. A marketing group within the Digital Equipment Corporation started with a mission and developed six strategies to achieve the mission (Kern 1993). Working through several phases, a tree diagram relates mission, strategies, customers, and demands (Figure 18.1). This diagram focuses on the strategy of "customer-driven marketing and quality" and the "Sales" customer. Thus, the "demands" column represents the needs of the sales function as a customer of the marketing function. Follow-up activity includes rating the importance of each demand, and evaluating Marketing's current performance in satisfying the demands, performance of competitors, and the impact that an improvement would have in enabling Sales to meet goals with the end customer.

Going to the tactical level, we can identify the steps the marketing function must take to improve customer satisfaction. Stowell (1989) proposes the following steps:

1. Understand customer requirements (e.g., identify customers, document customer decision-making processes).
2. Identify Marketing's products and processes (e.g., brochures, market research, information delivery).
3. Match customer requirements to Marketing's products and processes.
4. Eliminate ineffective products and processes (of the marketing function).
5. Improve the remaining processes (e.g., use process management concepts and tools to improve marketing processes).
6. Add new marketing processes as required (e.g., a process to provide customers with certain information to make decisions).
7. Review the processes for each new product (i.e., examine marketing products and processes when the organization brings a new product or service to the market).

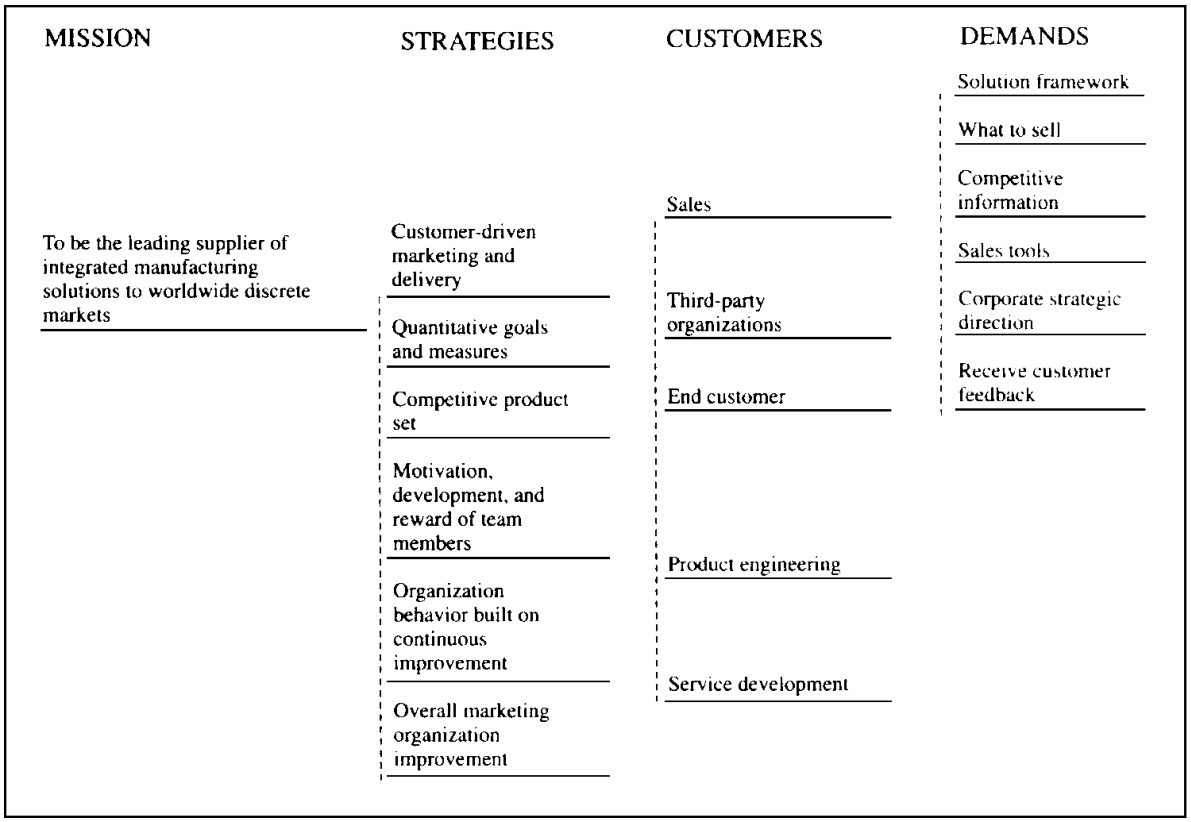

FIGURE 18.1 Final tree diagram. (*Kern 1993.*)

8. Improve the customer buying process (e.g., by making it easier for the customer to get and use information on products or services).

9. Involve employees in marketing quality (e.g., by participation in quality improvement teams as described in Section 5, The Quality Improvement Process).

From these frameworks for developing quality in marketing, we proceed to examine the role of market research and other roles of the marketing function to achieve both customer satisfaction and customer loyalty. Some books on marketing now discuss the integration of quality throughout marketing activities, e.g., see Churchill and Peter (1995).

CUSTOMER SATISFACTION VERSUS CUSTOMER LOYALTY

The importance of achieving customer satisfaction is a key theme of this handbook. That theme means not only meeting formal requirements on the product but also addressing other customer needs to achieve a satisfied customer. It is useful, however, to go further and make a distinction between customer satisfaction and customer loyalty (see Table 18.1) In brief, a satisfied customer will buy from our company but also from our competitors; a loyal customer will buy primarily (or exclusively) from our company. A dissatisfied customer is unlikely to be loyal but a satisfied customer is not necessarily loyal (see below).

Level of Satisfaction for Customer Loyalty. Sometimes acceptable levels of customer satisfaction still result in a significant loss of new sales. Table 18.2 presents two examples from the telephone service industry. For example, although 92 percent of the customers who rated AT&T as

TABLE 18.1 Customer Satisfaction versus Customer Loyalty

Customer satisfaction	Customer loyalty
What customers say—opinions about a product	What customers do—buying decisions
Customer expects to buy from several suppliers in the future	Customer expects to buy primarily from one or two suppliers in the future
Company aims to satisfy a broad spectrum of customers	Company identifies key customers and "delights" them
Company measures satisfaction primarily with the product for spectrum of customers	Company measures satisfaction with all aspects of interaction with key customers and also their intention to repurchase.
Company measures satisfaction primarily for the current customers	Company also analyzes and learns the reasons for lost customers (defections)
Company emphasizes staying competitive on quality for a spectrum of customers	Company continuously adds value by creating new products based on evolving needs of key customers

"excellent" will probably repurchase, 8 percent probably will not. (These are "customer defections.") Note that even when the customer view of quality is "good," a quarter or more of the present customers may not return. Thus, customer satisfaction is a necessary but not a sufficient condition for customer retention and customer loyalty.

A similar story exists in the manufacturing sector (Burns and Smith 1991). In one company, the Harris Corporation, satisfaction with specific attributes of the product and service is measured on a scale of 1 to 10; loyalty is measured as the percentage of customers who will "continue to purchase" from Harris (Figure 18.2). Again note the high level of satisfaction required to achieve a high loyalty. (It was reported that the fit of the data was greatly improved when separate plots were made for Harris commercial divisions versus government and military divisions.) Also, the linkage between loyalty (and satisfaction) to financial results was validated through separate plots of satisfaction versus return on sales (ROS). These plots showed that a change of one point on satisfaction corresponded to about a 10 percent change in the ROS for commercial divisions and about a 1.5 percent change in ROS for government and military divisions.

To generalize, satisfaction can vary from disloyal customers who are so unhappy ("terrorists") that they speak out against a service or product to loyal customers ("apostles") so delighted that they try to convert others (Heskett et al. 1994)

Economic Worth of a Loyal Customer. The sales revenue from a loyal customer measured over the period of repeat purchases can be dramatic, e.g., $5000 for a pizza eater, $25,000 for a business person staying at a favorite hotel chain, $300,000 for a loyalist to a brand of automobile.

To calculate the economic worth of the loyal customer, we can combine revenue projections with expenses over the expected life time of repeat purchases. (In highly dynamic high-tech industries, a limited period, say 5 years, may be appropriate to address uncertainties.) The economic worth is calculated as the net present value (NPV) of the net cash flow (profits) over the time period. The NPV is the value in today's dollars of the profits over time. This can be calculated by using a spread sheet that has an NPV function and applying an interest rate to the net cash flow estimates. With knowledge of the NPV, we can evaluate alternative marketing and other strategies to attract and retain customers.

Profits from loyal customers increase over time. Further, loyal customers represent a high customer "retention rate"; disloyal customers (those who switch to a competitor) contribute to the customer "defection rate." For example, a 60 percent retention rate corresponds to a 40 percent defection rate. Reichheld (1994) presents an example from the credit card industry. When a company is able to decrease the defection rate, the average customer life and the profits increase.

He also found that although retention/defection rates and NPV vary by industry, profits generally rise as defection rate decreases (retention rate increases). Figure 18.3 shows, for a variety of industries, the increase in NPV of the future customer profit stream resulting from an decrease of 5 per-

TABLE 18.2 Customer Satisfaction and Sales

Customer's view of quality	GTE business customers, of those who so rated quality who will recommend supplier, %	AT&T customers, of those who so rated quality, who are very willing to repurchase, %
Excellent	96	92
Good	76	63
Fair	35	18
Poor	3	0

Source: For GTE data, Gillett (1989); for AT&T data, Scanlan (1989).

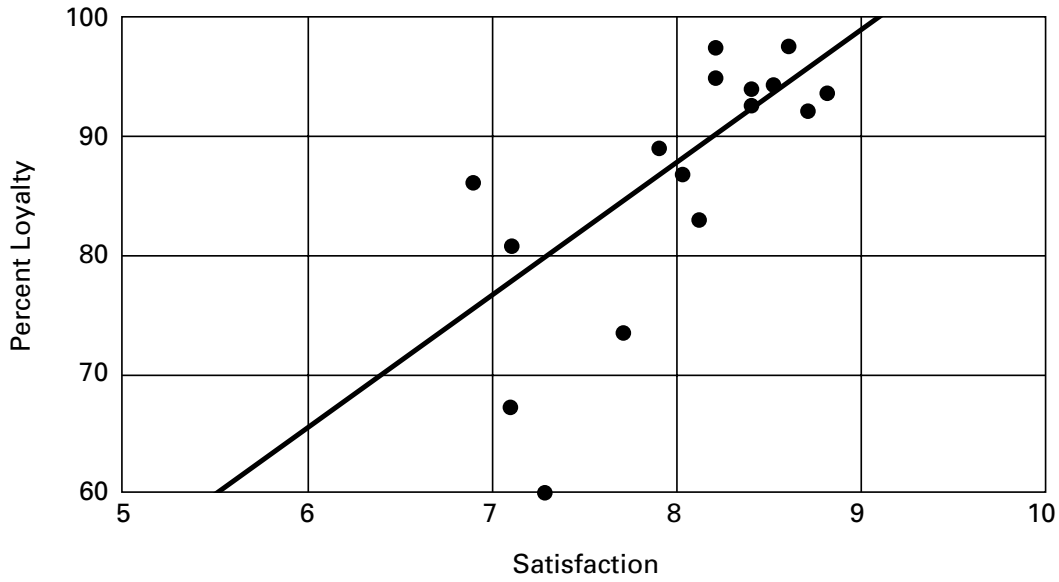

FIGURE 18.2 Relationship between loyalty and satisfaction rating (Harris divisions). (*Burns and Smith 1991.*)

centage points in defection rate (Reichheld 1996). He concludes that the 5-percentage-point decrease in defection rate can increase profits by 25 to 100 percent. In the same study, Reichheld also reports some sobering facts of the relationship between customer satisfaction ratings and customer loyalty. In some industries, more than 90 percent of customers report that they are "satisfied" or "very satisfied." Meanwhile repurchase rates are only about 35 percent. Also, about 70 percent of customers who defected had said on a survey just prior to defecting that they were satisfied or very satisfied.

Finally, Goodman (1991) points out other important marketplace phenomena that apply to many consumer and industrial products:

Most customers do not complain if a problem exists (50 percent encounter a problem but do not complain; 45 percent complain at the local level; 5 percent complain to top management).

On problems with loss of over a $100 and where the complaint has been resolved, only 45 percent of customers will purchase again (only 19 percent if the complaint has not been resolved).

Word-of-mouth behavior is significant. If a large problem is resolved to the customer's satisfaction, about 8 persons will be told about the experience; if the customer is dissatisfied with the resolution, 16 other persons will be told.

These business realities make it important to address customer satisfaction, customer retention, and customer loyalty by the collection of field intelligence through market research.

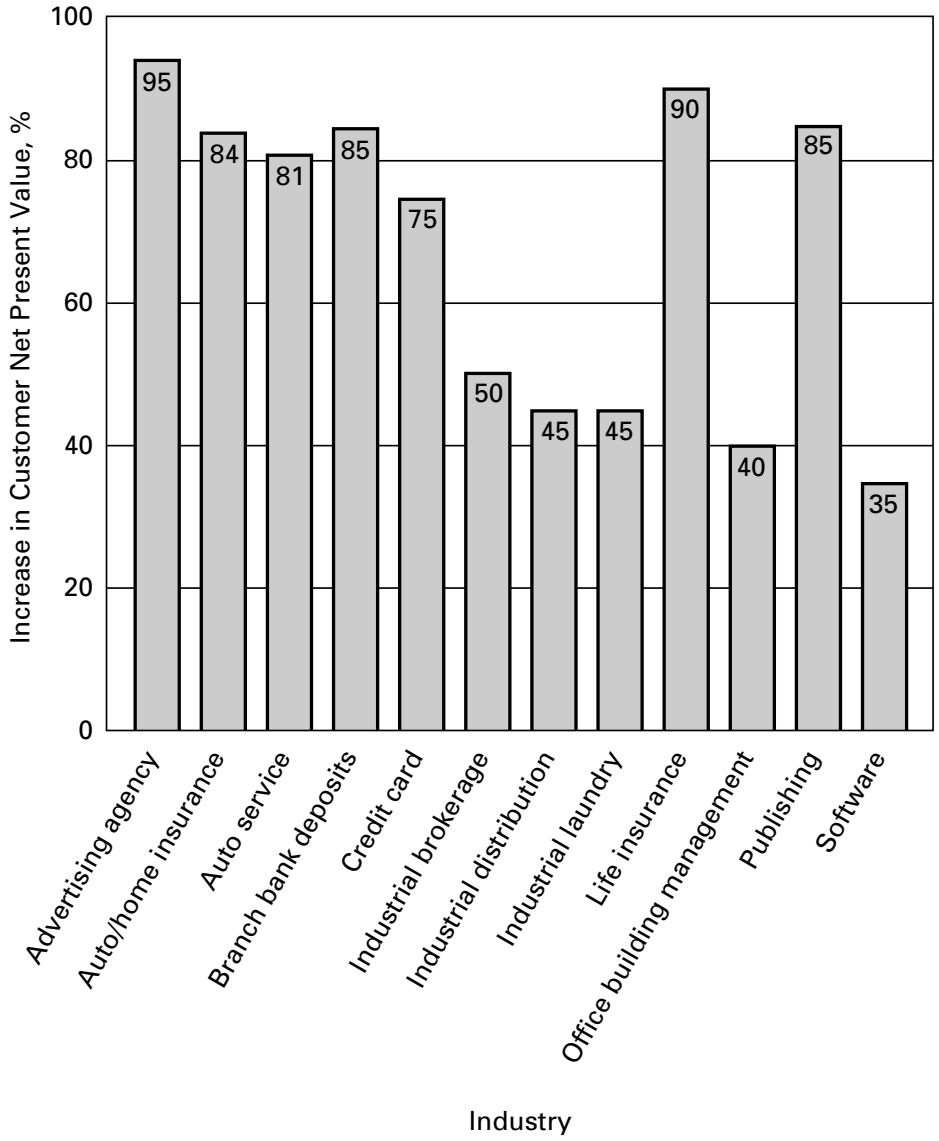

FIGURE 18.3 Profit impact of 5 percent increase in retention rate. [*From Reichheld (1996). Reprinted by permission of Harvard Business School Press.*]

CONCEPT OF FIELD INTELLIGENCE

The term "field intelligence" will be the label for all information on product use whether relating to in-house use (other departments, sister divisions) or external use (merchants, processors, ultimate users). It includes information about product performance and the impact of that performance on all concerned—the merchant chain, users, service shops, society, government, the press, and the advocates.

Sources of Field Intelligence Information. To develop and market its products, an organization requires information about quality in the marketplace. Some of this information is readily available in the form of feedback from customers. This feedback may include a chorus of complaints from customers or changes in market share due to product quality or other parameters. Such information helps to monitor the performance of current products but also serves as input to the development of future products.

The feedback on current products provides an important source of information both for designing future products and for monitoring the performance of current products. This feedback often

provides alarm signals that must be acted on to maintain good customer relations. The main effect of an individual alarm signal (a complaint from one customer) is to stimulate action that provides satisfaction to the customer. Collectively, these signals supply one measure of overall customer dissatisfaction. They are, however, a poor measure of product quality since many quality failures do not result in alarm signals. Several areas can be completely silent:

1. *Dissatisfied customers who silently switch to a competitor's product:* Current customers are certainly a main source of business for the future, but those customers will switch to a competing product if they believe that the other product is superior. Often, the customer has no complaint about the product currently in use, but discovers a competing product that has superior performance or value.
2. *Noncustomers:* A major gap is information on the needs and attitudes of people who are not customers. Intelligence is needed to learn why they are not customers, and what it would take to cause them to purchase the product.
3. *Product dissatisfaction beyond the warranty period:* All companies have extensive systems for keeping track of product performance during the warranty period. The warranty period, however, is usually between 10 and 20 percent of the actual product life expected by the customer. Once the warranty period is passed, the feedback of information from the customer to the company becomes sporadic at best, and thus the company lacks information about the complete history of the product. As fitness for use applies for the life of the product, field intelligence information is needed over the lifetime.

Analysis of Available Field Intelligence.

Included are

Decline in Sales. In practice, it is not a simple matter to draw conclusions about a decline in sales. The analyses require a joint effort among Marketing, Quality, and other departments to draw the proper conclusions. A discussion of the effect of quality on sales income is provided in Section 7, Quality and Income.

Field Complaints. Most organizations have systems of collecting and analyzing information on customer complaints. (For a discussion of these systems see Section 25, Customer Service, under Strategic Intent.) A Pareto analysis of field failures, complaints, product returns, etc., serves to identify the vital few quality problems to be addressed in both current and future products.(See Section 5, The Quality Improvement Process, under Quality Improvement Goals in the Business Plan.) This type of analysis is in wide use.

Salespersons' Reports. Salespeople, distributors, and other people in the marketing process are a natural, though imperfect, field intelligence system.

Sale of Spare Parts. Despite the fact that many users put up with these replacements as a necessary evil, the manufacturers should analyze the sales of spare parts to identify major field problems from the viewpoint of the customer.

Data from Customers. Information from customers consists not only of complaints but can include other information on quality such as warranty cards returned by customers upon receipt of the product. These cards can provide some information about the customer's perception of product quality upon delivery.

Also, purchasers of expensive equipment usually have detailed data systems for recording maintenance and repair work. Examples include construction, transportation, and manufacturing processing equipment. These data systems become a gold mine of information for the manufacturers of the equipment.

Government Reports. Governments are increasingly involved in product evaluation, mainly in their capacity as regulators. An example of such information is the reporting on tests conducted to evaluate the safety of automotive vehicles.

Independent Laboratories. Some of these laboratories make comparative tests for competing lines of products. They then publish the results for the benefit of their subscribers as an aid to making purchasing decisions.

The Internet. Increasingly, the wide variety of information available on the Internet provides another input on industry intelligence.

Reasons for Incomplete Use. The raw data for some (not all) types of field intelligence are readily available, but full use is not made of the data for two reasons: (1) the data are not recognized as valuable in planning for future products and (2) the data are not in a form useful to product development and other functions.

Planning for Field Intelligence. The main needs are to:

1. Discover current customer dissatisfactions not evident from complaints or alarm signals.
2. Discover the reasons for customer defections.
3. Discover the relative priority of quality versus other product parameters.
4. Discover the status of quality in relation to competitors.
5. Determine the specific fitness-for-use needs of customers.
6. Identify opportunities for improving income by improving fitness for use.
7. Identify opportunities in new markets or market segments.

Such broad needs make it necessary to plan carefully the approach to collecting the intelligence information. This is done through market research. The usual steps are (1) formulate the problem, (2) determine the research design, (3) design the data collection methods and forms, (4) design the sample and collect the data, (5) analyze and interpret the data, and (6) prepare the research report. For elaboration, see Churchill (1991). The most important users of market research results are design and operations people—not marketing people. The discussion below centers on designing the market research. It is essential that all users of the market research have input to the research design to assure that the content and depth of the research results meets their needs. Market research should never be left solely in the hands of market research specialists.

The Data Plan. Field intelligence can be useful to the manufacturer in various ways to improve product design, processes, tests, field service, marketing strategy. An interdepartmental team is able to come up with a list of needs as discussed below:

The vital few quality characteristics on which information is needed

Product performance with respect to those vital few characteristics, expressed in agreed units of measure

Information on users' costs and satisfaction as well as dissatisfaction

Failure information, including exact failure modes

Environments of use, both for successful use and for failure

The team can, in addition, usefully face up to the problem of data communications by preparation of a glossary of terms and a system of code numbers to facilitate data entry to computers, and other matters to improve field feedback. The data plan is the blueprint of what intelligence will be gathered and how it will be used.

Data Sources. In addition to using the available sources of field intelligence previously discussed, other approaches to data collection may be necessary.

1. *Natural field contacts:* Every company has some employees who are in direct contact with the field: the sales force, complaint investigators, technical service specialists, service shop personnel. It is feasible to secure some field intelligence through these contacts, but only if a detailed data collection plan is defined and the time is provided for acquiring the information.

2. *Controlled use:* In some cases a company makes enough use of its own products to provide a significant database on product performance. In other cases, the need may be to create an outside database by placing products in employee homes or with a consumer panel. In such cases it is feasible to design a data plan and to acquire useful field intelligence.

3. *Purchase of data:* Contracts may be made to buy data from users of the product. The arrangements specify the data plan to be followed. They also provide for such associated features as training of personnel, audit of validity of data, and return of failed samples. For example, one automobile manufacturer agreed to pay all of the repair expenses for its cars at a car rental agency in return for detailed data on the repairs.

4. *Product monitoring:* Technology is emerging which enables the "health" of products to be monitored during operation. In one case, instruments are now available to monitor the performance of computers. Users are asked to install the instruments as a means of collecting data on error rates. The data are then (*a*) used by clients to compare competing systems and (*b*) sold to manufacturers of the computers.

5. *Captive service center:* Some consumer product companies maintain service centers throughout the country at which repair work on their products is performed. Thus, information on product performance, failure modes, and the cost of repairs is accumulated as part of the process of providing the repair service. Some companies also repair competing equipment and gather competitive information in the process.

6. *Maintaining the product for the customer:* A variation of the captive service center is the mobile service center. In this form, a field force of repair people visits the customer's site and performs all preventive and corrective maintenance work on the product. Examples include computers and office equipment.

7. *Following progression of the product on site:* In this approach a company "staples itself" to its product and observes how the customer uses the product. The idea is to identify opportunities for improving fitness for use (see below under Market Research for New and Modified Products).

8. *Use of "mystery shoppers":* Some service industry firms employ an outside organization to pose as a customer and report back on the interaction with individuals in the service firm. For example, some banks use these "mystery shoppers" to obtain data on the interaction between bank customers and tellers.

9. *Continuing measurements to obtain customer perception of quality:* In service industries, and increasingly in manufacturing industries, companies employ a variety of tools to evaluate how customers feel about quality. See the discussion below under Market Research—Tools and Techniques.

10. *Special surveys and studies.* These are special market research studies conducted on an infrequent basis to obtain evaluations of quality versus the competition, answer specific questions about a product, or learn about customer perceptions of the relative priority of quality versus other product parameters. Examples of such studies are discussed below under Competitive Evaluations by Field Studies.

Clearly, it is important that field intelligence information and data be organized to make it easy for product development and other functions to easily and continuously access the information. This minimizes the need for special reports.

The Sampling Concept. A common and fatal error in the pursuit of field intelligence is to go after 100 percent of the data. Normally a well-chosen sample will provide adequate field intelligence at a cost which is reasonable rather than prohibitive.

For example, a vehicle maker tried to secure complete field data from its 5000 dealers. The data quality was poor and the cost was high. The company then changed its approach. It concentrated on data from a sample of 35 dealers who were well distributed geographically and who accounted for 5 percent of the sales. The result was more prompt feedback for better decision making, and at a much lower cost.

Section 44, Basic Statistical Methods, discusses methodology for determining the sample size required. For a full discussion of reliability and validity in market research, see Churchill 1991, Chapter 9.

CUSTOMER BEHAVIOR CONCEPTS

The American Marketing Association defines marketing research as "the function which links the consumer, customer, and public to the marketer, through information—information used to: identify and define marketing opportunities and problems; generate, refine, and evaluate marketing actions; monitor marketing performance; and improve understanding of marketing as a process."

As applied to the quality of goods and services, market research is the systematic collection, recording, and analysis of data concerning quality as viewed by the customer. The research should address both components of quality, i.e., product features and freedom from deficiencies. In explaining the concepts of market research applicable to quality, we will first define certain terms concerning customer behavior. The terms are needs, expectations, satisfaction, and perception.

Customer Needs. Customer needs are the basic physiological and psychological requirements and desires for survival and well-being. A. H. Maslow is a primary source of information on both physiological and psychological needs. He identifies a hierarchy of such needs as physiological, safety, social, ego, and self-fulfillment (for elaboration, see Section 15, Human Resources and Quality). Henry A. Murray developed a list of 20 physiological needs, e.g., achievement, order, autonomy (for a summary of the Murray study and a discussion of its marketing implications, see Onkvisit et al., 1994).

It is useful, also, to distinguish between stated needs and real needs. A consumer states a need for a "clothes dryer," but the real need is "to remove moisture"; a consumer wants a "lawn mower," but the real need is "to maintain height of lawn." In both cases, to express the need in terms of a basic verb and noun can spawn new product ideas. One historical example is the replacement of hair nets by hair spray to satisfy the basic need of "secure hair." Some needs are disguised or even unknown to the customer at the time of purchase. Such needs often lead to the customer using the product in a manner different from that intended by the supplier—a telephone number needed for emergencies is used for routine questions, a hair dryer is used in winter weather to thaw a lock, a tractor is used in unusual soil conditions. Designers view such applications as misuse of the product but might better view them as new applications and markets for their products.

Some of these applications are misuse, but such needs must be understood and, in some cases, alternative design concepts considered. Then there are other needs that go far beyond the utilitarian. Some needs may be perceptual (e.g., the now-classic example of Stew Leonard's supermarket customers who believed that only unwrapped fish on ice could be fresh); some needs may address social responsibility (e.g., the need for "green" products that protect the environment).

Customer needs may be clear or they may be disguised; they may be rational or less than rational. To create and retain customers, those needs must be discovered and served.

Discovering and understanding customer needs is necessary to define specific product attributes for subsequent market research and product development. Sometimes, a standard list of attributes is employed to obtain input on customer satisfaction. An example of this approach is Service Quality Gap analysis (ServQual). ServQual obtains input on customer service only and examines whether customer service is meeting customer expectations. The instrument covers five dimensions of service quality: tangibles (e.g., appearance of physical facilities and employees), reliability (dependability and accuracy of service), responsiveness (promptness), assurance (knowledge and courtesy of

employees), and empathy (caring, individualized attention). A questionnaire uses 22 statements to obtain customer feedback on both their expectations and their perceptions with respect to the five dimensions. Customers respond on a 7-point scale ranging from "strongly disagree" to "strongly agree." For elaboration, see Zeithaml et al. (1990).

Customer Expectations. Customer expectations are the anticipated characteristics and performance of the goods or service.

Kano and Gitlow (1995) suggest there are three levels of customer expectation related to product attributes (see Section 3, The Quality Planning Process). The "expected" level of quality represents the minimum or "must be" attributes. We cannot drive satisfaction up with these attributes because they are taken for granted, but if performance of the basic attributes is poor then strong dissatisfaction will result. At the "unitary" (or desired) level, better performance leads to greater satisfaction but (in a limited time period) usually in small increments. For the "attractive" (or surprising) level, better performance results in delighted customers because the attributes or the level of performance are a pleasant surprise to the customers. Of course, these attributes must be translated into the product design.

On the basis of Kano's work, the Hospital Corporation of America finds it useful to identify several levels of customer expectation. Thus, at level I, a customer assumes that a basic need will be met; at level II, the customer will be satisfied; at the level III, the customer will be delighted with the service. For example, suppose a patient must receive 33 radiation treatments. Waiting time in the therapy area is one attribute of this outpatient service. At level I, the patient assumes that the radiation equipment will be functioning each day for use; at level II, the patient will be satisfied if the waiting time in the area is moderate, say 15 minutes. At level III, the patient will be delighted if the waiting time is short, say 1 minute. To achieve a unique competitive advantage, we must focus on level III; i.e., we must delight, not just satisfy. For additional examples and discussion of the three levels applied to different products see Hofmeister et al. (1996).

Rust et al. (1994) propose that there is a hierarchy of six levels of expectation ranging from the "ideal" (what would happen under the best of circumstances) to the "worst possible" (the worst outcome that can be imagined).

Customer Satisfaction. Customer satisfaction is the degree to which the customer believes that the expectations are met or exceeded by the benefits received. Satisfaction depends on many factors but Carlzon (1987) recommends focusing on "moments of truth." A moment of truth is the time during which a customer comes in contact with a company or its product and thereby forms either a positive or negative impression. These moments of truth can occur before, during, or after the purchase of a product.

Note that customer expectation has a strong influence on satisfaction. Suppose, for example, a customer stays at a luxury hotel and there is some minor inconvenience. Satisfaction will likely be low because the customer expects perfection at the luxury hotel. Contrast this with the customer staying at a budget motel. That hotel can have poor features but as long as the customer gets a reasonable night's sleep, the customer will have high satisfaction, because the expectation at the budget hotel is low.

Customer Perception. Customer perception is the impression made by the product. The perception occurs after a customer selects, organizes, and interprets information on the product. Customer perceptions are heavily based on previous experience. But other factors influence perception, and these factors can occur before the purchase, at the point of purchase, and after the purchase.

Spectrum of Customers. We define a customer as anyone who is affected by the product or process. Three categories of customers then emerge: (1) external customers, both current and potential; (2) internal customers; and (3) suppliers as customers. All three categories of customers have needs which must be understood and addressed during the planning of quality.

The paragraphs below describe how the tools and techniques of market research can collect intelligence on customer attitudes and behavior.

MARKET RESEARCH—TOOLS AND TECHNIQUES

The discussion below focuses on some basic tools and techniques. For further details on market research see Churchill (1991). Rhey and Gryna (1998) discuss applications to small business.

Telephone Calls to Customers. Here, customers are called and asked for impressions on the quality of the item they purchased. The information gained can provide a general impression of quality, but it can also lead to specific action. Two examples will illustrate this tool.

On a quarterly basis, a hospital calls a sample of discharged patients (about one in three) and asks for opinions about the stay in the hospital. This phone interview consists of 36 questions or subquestions on nursing, physician care, hospital processes, and business processes. Separate questions on recommending the hospital and the physician to friends or relatives are included. From the information collected (and other research) it was learned that a major dissatisfier was the excessive waiting time for services within the hospital. The waiting time was in part due to the large number of personnel that a patient interacts with at the hospital. Further analysis resulted in the redesign of work and additional training for nursing personnel. This reduced the average number of personnel contacts for the patient from 60 to 24, for a typical stay of 3 days.

The Sales department in a high-technology company complained that "about 20 percent of the customers say quality is poor, and this is making it difficult for us to get repeat orders—no wonder we're having trouble meeting our sales goals." The Design and Manufacturing departments were amazed because of steps recently taken to achieve superior quality. The Quality department contacted some customers and heard a different story. Problems had occurred with early units of a new model, but the problems had been corrected and, said the customers, "Your overall quality record is really fine." Thus, the salespeople heard about problems but not about good performance and had therefore concluded that quality was poor.

Contacting the customers resulted in clarification of customer perception, but it also led to positive action. First, the salespeople were given information on product quality to make them believers of the superior quality level, and they highlighted this information in their selling efforts. Second, the positive reaction of customers resulted in Sales giving additional customer names to the Quality department and encouraging them to contact customers on a planned basis.

Visits to Individual Customers. Another form of research is the periodic visit to major customers by a marketing or engineering representative of the company. These visits are not made in response to complaints but are designed to learn about customer experiences with the product and to provide answers to specific questions. (In practice, the visits are often not structured and are only partially successful in collecting useful information.)

In one case, a manufacturer of car wax held discussions with customers to learn how customers evaluated quality of wax. Within the company, high priority was attached to the "gloss" properties of the wax. The research revealed that the customers did not associate this property with car wax (although it was associated with house paint). Even when the term "gloss" was brought up for discussion it generated little reaction by the customer. What the customers did talk about was the "beading" property of the wax. Customers described beading as "when the water rolls off the surface." About 82 percent of the respondents indicated that they used "water beading" as a measure of continued wax performance. This study led to a change in priorities for the manufacturer and even influenced the selection of a name for the wax.

Special Arrangements with Individual Customers. Establishing a special arrangement with a few customers is a simple and effective way to obtain information in depth. An elec-

tronics manufacturer does this with two or three key customers in each of several industries. The manufacturer offers, with the help of the customer (the "quality partner"), to maintain detailed records on the performance of the equipment in the customer's plant. The records benefit the manufacturer by relating performance to specific applications and environments rather than to assumed conditions. The customer benefits by having a direct link to the manufacturing and engineering operations of the manufacturer.

Focus Groups. To better understand customer perceptions of its products, a food company sponsors meetings of small groups of customers to discuss product requirements. (The company holds an average of one such meeting per day.) The technique is called the "focus group" method. A focus group consists of about eight to ten current or potential customers who meet for a few hours to discuss a product. Here are some key features:

1. The discussion has a focus, hence the name.
2. The discussion can focus on current products, proposed products, or future products.
3. A moderator who is skilled in group dynamics guides the discussion.
4. The moderator has a clear goal on the information needed and a plan for guiding the discussion.
5. Often company personnel observe and listen in an adjacent room shielded by a one-way mirror.

Focus groups can discuss many facets of a product or can discuss quality only. A discussion on quality can be broad (e.g., obtaining views on what are the factors constituting fitness for use) or can have a narrower scope (e.g., determining customer sensitivity to various degrees of surface imperfections on silverware).

Depending on the goals, the participants in a focus group may be average customers, noncustomers, or special customers. Sometimes the participants are a special segment of society. For example, a toy manufacturer assembles a focus group of youngsters and provides them with a variety of toys for use in the group session. The children are observed to see which toys command the most attention and what kind of abuse the toys must take. The parents get their chance to talk in a separate focus group. A manufacturer of hospital supplies uses focus groups of nurses who apply products under simulated hospital conditions and offer comments while the product designers are observing and listening behind a one-way mirror. The designers translate the comments of nurses as wisdom based on experience, while the feedback of company marketing personnel is viewed as gossip.

A key to a successful focus group is the qualification of the focus group moderator. This is not a task for a well-intentioned amateur. Greenbaum (1988) presents the following criteria for a good focus group moderator:

1. *Quick learner:* Absorbs and understands all inputs
2. *A "friendly" leader:* Develops rapport with the group
3. *Knowledgeable but not all-knowing:* Avoids being an expert
4. *Excellent memory:* Ties together inputs during the meeting
5. *Good listener:* Hears both content and implication
6. *A facilitator, not a performer:* Secures information from the participants
7. *Flexible:* Willing to adjust to the flow of information
8. *Empathic:* Relates to the nervousness of some group members
9. *A "big picture" thinker:* Separates the important observations from the less significant inputs
10. *Good writer:* Writes clear, concise summaries with meaningful conclusions

Electronic meeting support (EMS) tools can help to record and summarize views during a focus group meeting. Typically, the participants meet together in a room, with each participant sitting at a computer. Using the computers, the participants—simultaneously and anonymously—

respond to the questions posed by the focus group moderator. Responses can be in many forms, e.g., numerically, yes/no, brainstorming phrases. The responses are collected by the computer network and displayed for all to see. After a review of the responses, further questions can be posed and the responses immediately summarized and displayed, e.g., the participants might be asked to rank the relative importance of brainstorming ideas collected in a previous step. EMS can have important advantages over face-to-face meetings: remove inhibitions of participants, save time through simultaneous collection of ideas, reduce the extraneous inputs ("noise") in the group communication process, and provide a transcript of the results. Anderson and Slater (1995) describe the benefits and present a case study applying EMS to a focus group.

A focus group is useful in exploratory research to pinpoint problems, obtain specific information on quality matters, and identify issues for further research. This caucus of customers requires a minimum of investment for significant potential benefits.

Mail Surveys. Still another means of collecting field intelligence is the mail survey. Here, a questionnaire is developed listing various attributes of the product. The customer responds by using a satisfaction scale such as excellent, very good, good, fair, or poor. Space is also provided for other comments or suggestions. For example, a bank uses a questionnaire to probe 20 attributes of service by asking customers about the relative importance of the attributes and the degree of satisfaction.

Questionnaires are often lacking in two important areas of intelligence. First is the matter of the relative importance of each of the quality attributes. A list of attributes helps to be specific about the term "quality" but a failure to ask customers about the relative importance assumes that the attributes are of equal importance—a highly unlikely assumption. Second is the likelihood of the customer repurchasing or recommending the goods or service. Satisfaction does not necessarily mean loyalty in terms of repurchase (see above under Customer Satisfaction versus Customer Loyalty). A useful type of question to pose is the likelihood of repurchasing or recommending. Thus, intelligence information such as the percent of customers who are "highly likely to repurchase" provides data on customer loyalty that go beyond customer satisfaction data.

The following example illustrates the use of questionnaires and focus groups. An annual mail survey of automobile customers revealed a significant number of complaints on fit of doors. Within the company this term meant problems of "margin" and "flushness." Margin is the space between the front door and fender, or between the front and rear doors. Sometimes the margin was not uniform, e.g., a wider space at the top as compared to space at the bottom of the door. Flushness refers to the smoothness of fit of the door with the body of the car after the door is shut. The manufacturer took action, but it was doomed to failure. Steps were taken during processing and assembly to correct the margin and flushness problems, but the action didn't correct the problem—a later survey again reported a problem on fit of doors.

Fortunately, the company also held periodic focus group meetings in which a group of people were paid to attend a meeting where they answered a questionnaire and discussed issues in detail. The questionnaire listed fit of doors as one category of problems, and some customers in the focus group checked it. On the spot they were asked, "What do you mean by fit of doors?" Their answer was not margin or flushness but two other matters. First, fit meant the amount of effort required to close the door. They complained that they had to "slam the door hard in order to get it to close completely the first time." Second, fit meant sound. As the door was shut they wanted to hear a solid "businesslike" sound instead of the metallic, loose sound they heard (telling them the door was not closed) as they walked away from the car. The market research gave a better understanding of the symptom, and then the company pursued the right problem, which required changes in the product design and the manufacturing process. The company had long realized that fit of doors was important, but the first time the company acted, it solved the wrong problem.

Much experience is available to help in the design of questionnaires. Churchill (1991) suggests nine steps in preparing questionnaires along with 64 "dos and don'ts." For additional advice on preparing questionnaires, see Rust et al. 1994, Chapter 4.

Questionnaires should be viewed as only one of several means of gathering intelligence on quality. In practice, questionnaires need to be supplemented by contacts with individual customers, focus

groups, and the other methods to furnish intelligence in sufficient depth to correct current problems and supply information for new product development. Willets (1989) provides an example of a comprehensive approach. Information is collected on a continuous basis through 11 methods including analysis of sales trends, analysis of complaints, and customer focus groups. Formal questioning is conducted at four levels of customers:

1. Those who approve the purchase, e.g., a senior executive
2. Those who influence the decision, e.g., a technical executive
3. Those who sign the purchase order, e.g., a buyer
4. Those who are users, e.g., a store manager who uses a computer

As part of field intelligence, organizations must learn where they stand on quality with respect to competition. For physical products, some knowledge can be acquired from laboratory testing. For physical and service products, however, it is also necessary to conduct field studies (see below).

COMPETITIVE EVALUATIONS BY FIELD STUDIES

The ultimate evaluation of quality is made by the user under the conditions of the marketplace. The field intelligence gathered on these evaluations must be based on factual inputs and not on hearsay. These evaluations aim to discover the users' viewpoints on fitness for use, and also to provide a comparison to competitors. The distinguishing feature of the field studies is that the user is the prime source of data.

Such studies should not be planned by any one department but by a team involving members from Marketing, Product Development, Quality, Manufacturing, and other areas as needed. This team must agree beforehand on what questions need to be answered by the field study. The types of questions which should be considered are:

1. What is the relative importance of various product qualities as seen by the user?
2. For each of the key qualities, how does our product compare with competitors' products, as seen by the users?
3. What is the effect of the quality differences on user costs, well-being, and other aspects of fitness for use?
4. What are users' problems about which they do not complain but which our product might nevertheless be able to remedy?
5. What ideas do users have that might be useful in new-product development?

Below are examples from the service and manufacturing sectors.

Examples of Field Studies. GTE employs several approaches (including both survey and analytical) to measure and analyze customer satisfaction (Drew and Castrogiovanni 1995). In one approach, customers are asked to rate GTE on overall quality and on five attributes of telephone service. One of the summary statistics is the percent of "excellent" ratings. Other national local carriers serve as benchmarks. Table 18.3 shows the results for one franchise area. Note that the performance is mixed: scores are generally in the middle of the range, never at the top, but one (for installation) is at the bottom. For each attribute, a goal can be set and a schedule set for achieving the goal based on knowledge of proposed process improvements and customer satisfaction results. Separate data on the relative importance of the attributes resulted in setting the first priority on narrowing the ratings gap for local dial service.

In a case involving an industrial product, a field study was made as part of a strategic planning analysis (Utzig 1980). Although both failure costs and customer complaints were low, the product

TABLE 18.3 Benchmark Data for Local Telephone Service

Attribute	Company score	Competitor scores
Overall quality	38.6	36.6–46.3
Local dial quality	40.6	36.7–47.9
Billing quality	34.5	28.7–37.2
Installation quality	41.2	43.2–53.3
Long distance quality	47.5	40.9–55.3
Operator quality	41.5	35.0–47.1

Source: Drew and Castrogiovanni (1995).

had been losing market share for several years. Quality was one of five areas of strategic planning that was studied in order to improve market share. Table 18.4 shows a summary of the results. The six attributes studied were collectively a measure of quality. On a scale of 1 to 10, customers were asked for two responses—the relative importance of each attribute and a perceived performance rating versus two key competitors. The average score for General Electric was lowest—not just for one attribute but for all of them. These unpleasant findings were not believed. (After all, the failure costs were at an acceptable level and complaints were few.) The study was repeated—the results were still not believed. It was repeated again. Three geographical areas, covering all types of customers, were studied before the results were believed. The details revealed that customers not only wanted fewer failures; they also wanted to improve their own productivity, and this meant purchasing products with higher efficiency, durability, and better maintainability and serviceability. The desire for improved service was a surprise. The company thought they were the leader on service (because theirs was a comprehensive service organization). The customers, however, reported that the speed and quality of service were not equal to that of the competition. All of this led to actions in product design, the manufacturing processes, product service, and the quality assurance system.

A manufacturer of health products also uses a "multiattribute study" in which customers are asked to consider several product attributes and indicate both the relative importance and a competitive rating. An overall score is obtained for each manufacturer by multiplying the relative importance by the score for that attribute and then adding up these products. (For an extension to include costs, see Gryna 1983.) The Construction Industry Institute (Swartz 1995) recommends a similar approach to calculate a monthly index for specific construction jobs based on ratings of five attributes (cost, schedule, quality, safety, and management). Weights are assigned to each attribute to define the relative importance. The overall index is calculated as the sum of the weighted scores for the attributes.

Gale (1994) proposes that market research be performed not on quality alone but on value. Value has two components—quality and price. Table 18.5 shows the calculations for the "quality profile" for the Perdue Company versus the average of competitors in the chicken business. The ratio column shows the Perdue rating divided by the average of the competitor ratings. These ratios are then multiplied by the relative importance ("weight") assigned by customers to the various attributes. The "market perceived quality ratio" is the sum of the weighted ratios or 1.26 (126.1/100).

Now suppose Perdue chicken sold for 69 cents per pound and others sold for 59 cents. The quality rating can be combined with the price data to yield a customer value map (Figure 18.4). In this figure, the "fair value line" indicates where quality is balanced against price. The slope of the line is the relative weight assigned by the customer to quality versus the weight assigned to price in the buying decision (in this case, $^1/_3$ on quality and $^2/_3$ on price). Any company below and to the right of the line is providing better customer value; anyone above and to the left of the line is providing worse customer value. Gale discusses how such customer value analyses can help to plan cost-effective improvement actions in quality and competitiveness.

Woodruff and Gardial (1996) examine value as a tradeoff in positive consequences (e.g., benefits of a product) and negative consequences (e.g., initial price, repairs). They discuss concepts and techniques for obtaining and analyzing data on customer value and customer satisfaction.

TABLE 18.4 Customer-Based Measurements

Product attribute	Mean importance rating	Competitor performance ratings		
		GE	*A*	*B*
Reliable operation	9.7	8.1	9.3	9.1
Efficient performance	9.5	8.3	9.4	9.0
Durability/life	9.3	8.4	9.5	8.9
Easy to inspect and maintain	8.7	8.1	9.0	8.6
Easy to wire and install	8.8	8.3	9.2	8.8
Product service	8.8	8.9	9.4	9.2

Source: Utzig (1980), p. 150.

TABLE 18.5 Quality Profile: Chicken Business, after Frank Perdue Performance Scores

Quality attribute (1)	Weight (2)	Perdue (3)	Ave. competitor (4)	Ratio (5) = (3)/(4)	Weight times ratio (6) = (2) × (5)
Yellow bird	10	8.1	7.2	1.13	11.3
Meat-to-bone	20	9.0	7.3	1.23	24.6
No pinfeathers	20	9.2	6.5	1.42	28.4
Fresh	15	8.0	8.0	1.00	15.0
Availability	10	8.0	8.0	1.00	10.0
Brand image	25	9.4	6.4	1.47	36.8
	100				126.1
Customer satisfaction		8.8	7.1		

Source: Buzzell and Gale (1987).

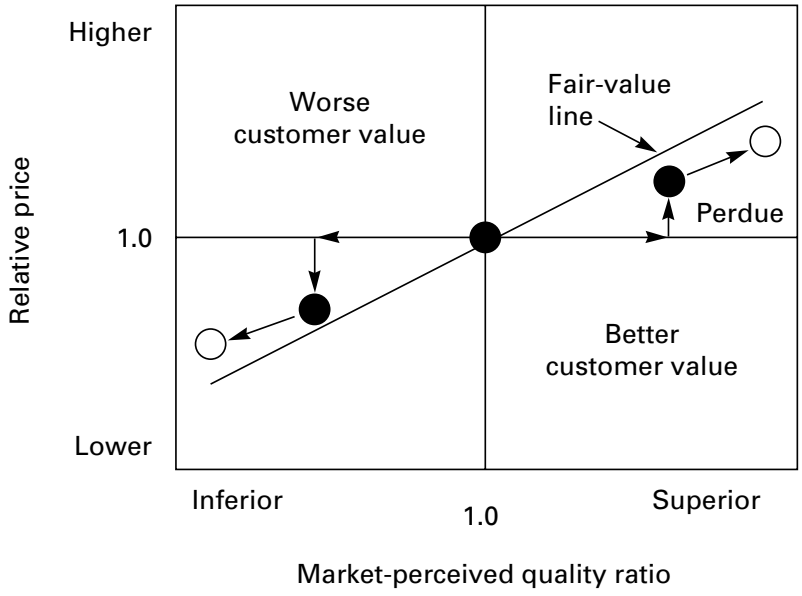

FIGURE 18.4 Customer value map: chicken business. [*From Gale (1994). Reprinted with permission of The Free Press, a Division of Simon & Schuster.*]

The relative importance of the product attributes can be determined by several methods. In one approach, customers are asked to allocate 100 points over the various attributes. If desired, the allocation can be refined by using a systematic procedure involving questions to check the consistency of the numbers assigned. This systematic method was originally developed by C. W. Churchman, R. L. Ackoff, and E. L. Arnoff and is described in Barish and Kaplan (1978), Chapter 13. Finally, customers can be presented with combinations of product attributes and asked to indicate their preferences. The importance ratings can then be calculated. Churchill (1991), Appendix 9B, describes this method ("conjoint measurement").

AMERICAN CUSTOMER SATISFACTION INDEX

The American Customer Satisfaction Index (ACSI) is a national economic indicator of customer evaluations of goods and services. The index, calculated from about 50,000 telephone survey responses, covers 200 firms in seven sectors of the economy. For most companies, about 250 customers are contacted. A scale of 0 to 100 is used with 0 as the lowest rating and 100 as the highest. Although the ACSI is a satisfaction index, it goes beyond single measures such as the percent of respondents rating the product in the top one or two rating categories in a survey (Fornell et al. 1995). The basic model for the ACSI consists of a series of equations describing relations among six submodels—perceived quality, customer expectations, perceived value, customer satisfaction, customer complaints, and customer retention. Customers are asked questions directly related to each of the six elements of the model.

Important uses of the satisfaction data are

1. Compare industries.
2. Compare individual firms with the industry average.
3. Make comparisons over time.
4. Predict long-term performance. Empirical evidence is growing that customer satisfaction is related to internal company measures and also to stock market performance.
5. Answer specific questions. With appropriate assumptions, the model can be used to evaluate the impact of a specific quality improvement initiative, e.g., a training program for service personnel. Thus, the effect of such an initiative on satisfaction, retention, and future sales revenue (net present value) can be predicted in quantitative form. See Fornell et al. (1995) for elaboration.

As with all models, it is important to understand the assumptions and other elements of methodology. Additional information on the ACSI (including a methodologies report) can be acquired from the American Society for Quality.

LINKING CUSTOMER SATISFACTION RESULTS TO CUSTOMER LOYALTY ANALYSIS AND TO PROCESSES

Customer satisfaction and customer loyalty are distinct concepts (see above under Customer Satisfaction versus Customer Loyalty) but the two must be linked through action steps to achieve high customer loyalty and minimize customer defections. Some actions provide early warnings of defections and help to prevent the agony of further defections while other actions are "after the fact" of a defection. Action steps can include:

Ask about Repurchase Intention. Incorporate in customer satisfaction measurement one or more questions on the likelihood that the customer will repurchase or recommend the product. The bottom line measure of customer satisfaction is the extent of repeat purchases. One service orga-

nization employs four measures: overall service quality, satisfaction with the price, was the service worth the price, and likelihood to repurchase. In addition, a study of a customer lifetime purchase pattern can determine loyalty in terms of repeat purchases. Winchell (1996) explains how to calculate the investment that would be justified for an improvement effort to increase the level of customer satisfaction. This approach combines data on customer satisfaction and willingness to repurchase (such as in Table 18.2) with a time profile of purchase patterns. The justifiable investment is calculated using the net present value concept.

Track Retention and Loyalty Information. Track and distribute information on customer retention and customer loyalty. For example, an insurance company measures the percent of customers who do not allow a policy to lapse due to nonpayment of the annual premium. But that company is now examining a distinction between a retention measure and a loyalty measure. As a loyalty measure, the company is attempting to estimate what percent of insurance products being purchased by their customers are purchased from their company versus competitor insurance companies, i.e., the share of spending a firm earns from its customers. The initial estimate was low and identified a major market opportunity. Reichheld (1996, Chapter 8) discusses this "share of wallet" measure and other measures of customer loyalty.

Assure Understanding of Results. Assure that market research results are understood and acted upon by line managers in product development, operations, and other areas. To accomplish this, one bank employs a guide to help each branch manager interpret and act on the market research results. The branch manager receives a separate customer satisfaction report, specific to the manager's branch, and uses the guide to identify the branch's strengths and weaknesses on the basis of those attributes the customers noted as most important. The branch manager and his/her staff complete the guide and communicate the results to all branch employees.

At this bank, 14 indicators of customer satisfaction are measured monthly. The results are reported to branch managers along with performance for the previous month, a comparison to other branches in the same state, and a comparison to the bank corporation as a whole. To assist in interpreting the results, the managers are provided with suggested questions. A brief plan is completed including action items to occur which will improve customer satisfaction.

A related issue is designing the satisfaction survey and other research to collect the right information in sufficient detail so that the line managers can take action on the research. This highlights the importance of obtaining input from the line managers for designing the satisfaction research (and also subsequent loyalty analysis).

Present Results for Action. Present the results in a format that stimulates action. Graphing the market research results can be helpful. Rust et al. (1994) show an example of how the mapping of satisfaction and importance ratings can relate customer views and potential action (Figure 18.5). In this approach, attributes in which importance is high and satisfaction is poor represent the greatest potential for gain.

In Figure 18.5, the four quadrants are roughly defined by the averages on the two axes. Interpretation of the quadrants is typically as follows:

Upper left (satisfaction strong, importance low): maintain the status quo

Upper right (satisfaction strong, importance high): leverage this competitive strength through advertising and personal selling

Lower left (satisfaction weak, importance low): assign little or no priority on action

Lower right (satisfaction weak, importance high): add resources to achieve an improvement

Such maps could also be created for data on importance and percent of customers who are delighted, not just satisfied (see Rust et al. 1994). For additional examples of maps for customer retention modeling, see Lowenstein (1995, Chapter 9).

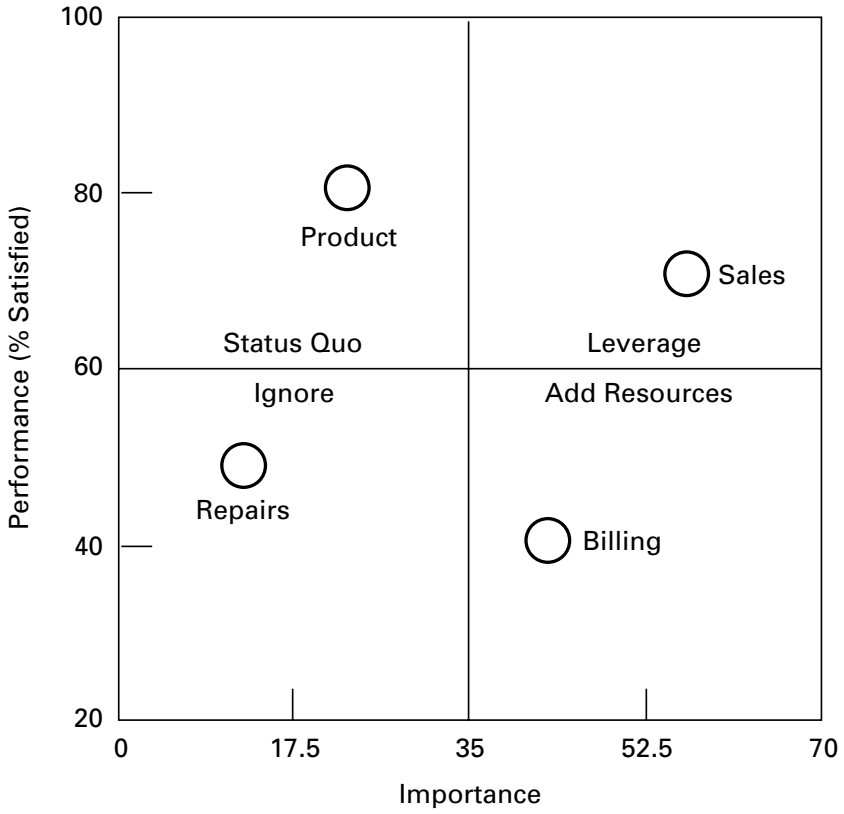

FIGURE 18.5 Performance versus importance in driving satisfaction: quadrant map. (*Rust et al. 1994.*)

Mikulak (1992) discusses the application of a "two-dimensional survey format" for satisfaction data on hotel guests. A battery manufacturer uses a two-dimensional diagram to depict the relation of its battery quality to that of its competition. The diagram applies the two components of quality; i.e., one axis has a scale for the key product feature (service life) and the other axis has a scale of freedom from deficiencies (a composite of various deficiencies). Each point on the diagram reflects both features and deficiencies. It is then possible to show both the company's and competitors' quality by plotting single points, each point representing quality for one company (or even one plant).

Link Results to Processes. Link the satisfaction results to operational processes or to specific activities. Kordupleski et al. (1993) show an example from the General Business Systems Division of AT&T.

Overall quality is made up of the combined quality of the business processes (Figure 18.6). In this example, note:

> 30 percent of the variation in overall quality is explained by product, 30 percent by sales, 10 percent by installation, 15 percent by repair and 15 percent by billing. Thus, service processes contribute 70 percent of the variation.
>
> Customer needs are identified for the five processes, and the relative importance of each need on the business process measure is shown. Note how the needs are stated in customer language, e.g., "accuracy, no surprises," "resolve on first call." (Customer needs are determined using focus groups and other methods discussed above under Market Research—Tools and Techniques.)
>
> To link customer needs to processes, internal metrics are tracked such that an improvement in the metric results in meeting a customer need.

This overall approach helps to ensure that improvement efforts have a strong customer emphasis.

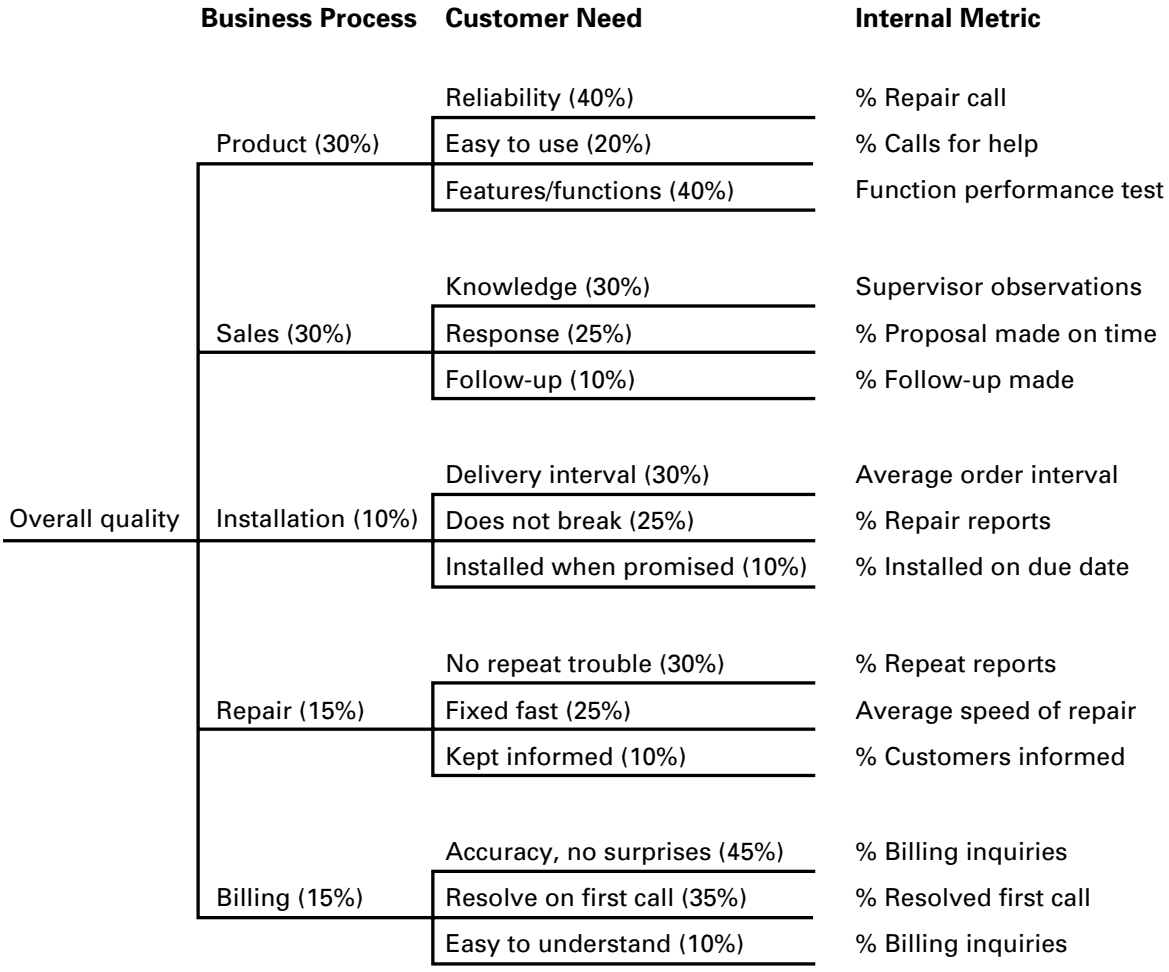

FIGURE 18.6 Strategic marketing information used to focus business processes. (*Kordupleski et al., 1993.*)

Analyze Complaints. Use complaints as an early indicator of potential customer defections. Clearly, the frequency and nature of the complaints must be analyzed—see above under Concept of Field Intelligence. In addition, however, the effectiveness of the complaint-handling process and its impact on customer defections should be examined. Juran and Gryna (1993, pp. 518–520) explain a procedure for estimating the lost profit due to product problems coupled with ineffective handling of complaints. The language of economic impact can help to focus upper management attention on the complaints and the complaint-handling process.

Analyze Competitive Studies. Analyze competitive studies on quality to identify differences in satisfaction that are likely to result in customer defections. Analysis of the multiattribute studies illustrated above can provide early warnings of reasons for customer defection and thereby trigger preventive action.

Determine the Reasons for Defections. Conduct customer research to determine the reasons for defections. Basically, this means asking customers why they left. Experience suggests, however, that the reasons stated by customers are often not the real reasons; e.g., price is often mentioned as a key reason but probing usually reveals other reasons. The effort required to obtain actionable research results can be evaluated against the sales lost due to defections. Learning the reasons for defections can help to prevent a larceny—the loss of customers to competition.

Reichheld (1996, Chapter 7) discusses how "failure analysis" (a failure is a customer defection) can help to discover the causes of defections. Such an analysis includes applying the classical

improvement technique of the "five whys"—i.e., asking why an event occurred at least five times to get to the root cause of a defection. For further discussion of the concept and techniques for customer loyalty and retention, see Lowenstein (1995).

MARKET RESEARCH FOR NEW AND MODIFIED PRODUCTS

In addressing quality for new and modified products, the broad steps for market research are: identify user needs and quantify user views, analyze the present use of the product, analyze the total system of use, discover market opportunities for new products, and link market research results to new product development. These steps can lead to a smash hit of success in the marketplace.

Identify User Needs and Quantify User Views. Needs are the basic physiological and psychological body requirements for survival and well-being (see above under Customer Behavior Concepts).

Understanding, in sufficient depth, the needs of the customer requires listening to the "voice of the customer" by conducting special studies and also analyzing the present use of the product. In one example of a special study, a support department of AT&T Bell Laboratories conducted a survey of needs of internal customers (Weimer 1995). The result was a multilevel hierarchy of needs. Service quality was identified as one of the primary (strategic) needs. Customers defined service quality with 10 secondary (tactical) needs such as "no red tape" and "access to service information." These needs were further defined in terms of 42 tertiary (operational) needs such as "deal with person providing service directly" and "know who supplies a service or owns a process."

Sometimes, such studies require a team of people with special skills. For example, Philips NV sent a team of industrial designers, cognitive psychologists, anthropologists, and sociologists in mobile vans to conduct brainstorming with adults and children on ideas for new electronic products to meet changing needs (McKenna 1995). Also, companies must keep the dialogue flowing by making sure that all sources of customer contact, e.g., customer "hot line" phone calls, are converted to information for product designers (McKenna 1995). A further extension to gather information places the customer in the product development loop. This involves the concept of mass customization of products rather than mass production. Here, the individual customer designs the product to meet personal needs and simultaneously the company obtains information on customer needs. For examples involving products like greeting cards, windows, and clothing see Pine et al. (1995). The Ford Motor Company's planning for the Taurus model of automobile included extensive market research of customers. "Customers" included anyone affected by the automobile, e.g., potential purchasers, insurance companies, regulating agencies, manufacturing plants. Market research information, including competitor data, was obtained on 429 features of the automobile. A similar approach was employed for a major redesign of the Mustang automobile (see Section 3, The Quality Planning Process).

Multiattribute customer satisfaction studies, including those which include competitive data, are an important source of information on customer needs (see above under Competitive Evaluations by Field Studies). Such studies should include both satisfaction ratings and also the importance ratings on various attributes.

Analyze the Present Use of the Product. This includes collecting and analyzing all available information on current product usage. See, generally, Section 25, Customer Service. Sometimes, a physical good or a service system can be designed to collect, filter, and interpret usage information. For example, Goodyear has developed a "smart tire" which contains a microchip that collects and analyzes air pressure data; the Ritz-Carlton Hotel chain tracks customer preferences (e.g., hypoallergenic pillows) and automatically transmits the information worldwide. For a discussion of the concept of "knowledge-based offerings" see Davis and Botkin (1994).

Visit the Scene of Action. Go to the places where the product is used. We need to "staple ourselves to the product" to learn about customer problems and opportunities. To do this properly

requires a high level of trust and "customer intimacy." It means watching for opportunities on the two components of quality, i.e., product features and freedom from deficiencies. Visits on site provide information about:

1. *Conditions of use:* Actual conditions can differ markedly from those assumed by a product designer, but field conditions are the realities.
2. *Problems reported by the user:* These problems can be of various types, e.g., difficult installation, breakdowns, inconvenience during use.
3. *Problems not reported by the user:* Only a small portion of dissatisfied customers bother to complain; they just quietly walk away to a competitor. Thus, it is helpful to search out customers who defected and learn the reasons why. In addition, customers may report being satisfied but be unaware of problems or opportunities for improvement. Information on customer costs in using the product can be a source of ideas. Such information includes:
   a. Information on the costs to the user of operating and maintaining the product throughout its life. Performance data of this nature become targets for the product development function to exceed through future product designs.
   b. Information on the amount of employee training required to operate the product. To the extent that future designs can reduce the training, the design will be superior.
   c. Information on the amount of technical service required to support the product. An example includes the amount of diagnosis and maintenance work required to repair product failures.
4. *Remedial steps already taken by the user* (*or contemplated by the user*) *to improve the product:* This source of ideas for product changes even includes some built-in field testing.
5. *Needs for which the user sees no present solution:* These needs represent an opportunity for the product development function to create a new and unique design for the marketplace.

Visits to the customer sites need not require a large amount of resources; a sample of customers is sufficient. Before the visits are made, however, a plan must spell out the questions to be answered and the procedures to be followed to collect the information. Some companies take unusual steps to conduct this deep, personalized research. For example, at the Weyerhaeuser Corp. some employees work for the customer—at the customer site—for a week. At one location, the Weyerhaeuser employee on site discovered that the bar-code label (attached by Weyerhaeuser to the newsprint rolls) was sticking to the printing presses. By relocating the bar code a few inches, the problem was solved (Jacob 1994). The Motorola Corp, as well as other organizations, encourages senior executives to visit customers. These visits, often scheduled on a quarterly basis, may address a customer complaint or provide executives with an eyewitness customer perspective to help identify new opportunities.

Analyze the Total System of Use of the Product. The study of the user's operation can be aided by dissecting the total system of use. This is done by documenting all of the steps, analyzing them, and identifying opportunities for new product development. Saunders (1992) describes how the owners of different process steps may have different—and even conflicting—needs. Then we must sort, categorize, and prioritize the voices of these customers and even educate them on conflicting needs.

There have been a number of examples of the systems approach that enable us to identify some distinct categories:

Transfer of decentralized processing to a central process facility (e.g., frozen food, instant photography)

Modular concepts (e.g., prefabricated housing modules)

Elimination of user maintenance (e.g., self-lubricated bearings, aluminum exteriors)

New centralized service (e.g., centrally generated gas for heating, a central computer center into which various terminals feed)

Extending the shelf life of a product (e.g., by making a basic change in the manufacturing process, the shelf life of a brand of potato chips was increased from 2 months to 1 year)

Making a product compatible with other products (e.g., linking of products to a computer)

Input on customer needs and present usage leads to new products.

Discover Opportunities for New Products. The opportunities for improvement span the full range of customer use from initial receipt through operation and maintenance. The primary stages and examples of ideas for improvements of an industrial product are given in Table 18.6.

In another approach, Bovee and Thill (1992) suggest five ways of adding value through enhanced customer service with an application to financial services and retailing (Table 18.7).

Taking a broader viewpoint, Treacy and Wiersema (1995) recommend that companies focus on one of three "value disciplines":

1. *Operational excellence:* Provide customers with reliable products at competitive prices and minimal inconvenience.
2. *Product leadership:* Provide customers with state-of-the-art products.
3. *Customer intimacy:* Provide each customer with products that meet the specific customer needs.

Note how the focus on one of these disciplines not only influences the search for new product opportunities but also the market research process itself.

TABLE 18.6 Opportunities for Improving Fitness for Use of an Industrial Product

Stage	Opportunities
Receiving inspection	Provide data so incoming inspection can be eliminated
Material storage	Design product and packaging for ease of identification and handling
Processing	Do preprocessing of material (e.g., ready mixed concrete); design product to maximize productivity when it is used in customer's manufacturing operation
Finished goods storage warehouse and field	Design product and packaging for ease of identification and handling
Installation, alignment, and checkout	Use modular concepts and other means to facilitate setups by customer rather than manufacturer
Maintenance, preventive	Incorporate preventive maintenance in product (e.g., self-lubricated bearings)
Maintenance, corrective	Design product to permit self-diagnosis by user

TABLE 18.7 Adding Value Through Customer Service

Possible ways to add value (basic product)	Example from financial services (checking account)	Example from retailing (compact discs)
Be flexible	Let customers design their own checks	Accept returns of CDs that customers discovered they do not like
Tolerate customer errors	Cover overdrafts without charging a fee	Extend credit when customers forget to bring money
Give personal attention	Help customers with individual tax questions	Learn customers' musical tastes and suggest new CDs they might enjoy
Provide helpful information	Publish a brochure on financial planning	Distribute a newsletter that reviews new stereo equipment
Increase convenience	Install ATMs	Let customers order by phone

Source: Bovee and Thill (1992).

Linking Market Research Results to New Product Development. In-depth market research results provide an essential input to new product development (NPD). Formal linking is accomplished using quality function deployment (QFD) and other approaches to convert customer needs to product and process requirements (see Section 3, The Quality Planning Process). The market research described in this Section to capture customer expectations, the relative importance of product attributes, and competitor positions is the direct link to QFD. To assure that the market research meets the needs of product development, it is important that product developers provide input and suggestions (content and depth) to a market research plan before the research is conducted.

Most organizations take steps to learn customer needs and use that information in new product development. But organizations striving for superiority probe customer needs in much more depth and scope than organizations who are satisfied with staying competitive. For superiority, what is needed is "customer intimacy," which goes beyond "customer satisfaction." Customer intimacy makes use of the techniques discussed above. But it also involves broader matters such as sharing responsibility for customer results, tailoring product solutions for *individual* (rather than group) customer needs, and developing trust with customers to share operating information and practice other forms of real partnerships. Such a profound approach requires much time and effort and may mean carefully choosing customers (and rejecting others) who have the technical capability and culture to form partnerships that have significant economic and other benefits to both partners. For elaboration, see Wiersema (1996).

To evaluate the benefits of conducting market research for current and new products, it is useful to conduct an audit of the usage of the research. This might include a review of the list of recipients of the research results, analysis of the knowledge of the recipients on how to interpret and use the results, and learning their satisfaction with the subject matter chosen and depth provided in the research results.

Next, we examine other quality-related activities within the marketing function.

QUALITY ACTIVITIES WITHIN THE MARKETING FUNCTION

Orsini (1994) presents an analysis of the seven Malcolm Baldrige National Quality Award categories and identifies the areas of marketing expertise that can foster results in specific Baldrige categories. The Baldrige categories of "Customer Focus and Satisfaction" and "Management of Process Quality" can benefit most from marketing expertise. A Pareto analysis of 12 areas of marketing expertise reveals that "research methods," "consumer behavior," and "market assessment" are the highest potential areas of marketing involvement in quality. Johnson and Chvala (1996) provide an overview of "total quality" and its application within the marketing function.

Albrecht (1992) describes how the Storage Technology Corp. uses four principles of deployment and five corporate change mechanisms to implement quality concepts in a regional marketing organization. The principles of deployment are

1. Utilize topics, subjects, processes that interest marketing representatives.
2. Start with interested parties. Leave those who resist until later.
3. Create opportunities for involvement of marketing people.
4. Provide value-added service for sales account management.

These principles are then related to five corporate change mechanisms: management network, education, quality improvement program, communication, and recognition.

Some marketing departments (particularly in the service industries) play a broader role in quality. Such a broader role includes taking the initiative to establish the need, do the initial planning, and coordinate the various quality activities throughout the company.

As with all functions in an organization, activities within the marketing function can benefit from the application of quality concepts. Table 18.8 shows some marketing activities and their related quality activities. Some of these are discussed in subsequent paragraphs.

TABLE 18.8 Marketing and Quality-Related Activities

Marketing activity	Quality-related activity
Launching new products	Conducting a test market to identify product weaknesses and weaknesses in the marketing plan.
Labeling	Ensuring that products conform to label claims.
	Ensuring that label information is accurate and complete.
Advertising	Identifying the product features that will persuade customers to purchase a product.
	Verifying the accuracy of quality claims included in advertising.
Assistance to customers in product selection	Presenting quality-related data to help customers evaluate alternative products.
Assistance to merchants	Providing merchants with quality-related information for use by salespeople.
	Providing merchants with technical advice on product storage, handling, and sales demonstrating.
Preparation of sales contract	Defining product requirements on performance, other technical requirements, and level of quality (e.g., defects per million).
	Defining requirements on execution of a contract, e.g., a quality plan, submission of specified documentation during contact.
	Defining warranty provisions.
	Defining incentive provisions on quality and reliability.
Order entry and filling	Applying quality improvement concepts to reduce lead time or reduce errors.

Quality in Sales Activities: Customer Relationship Process. Every business has a process for working with customers, i.e., a "customer-relationship process" (CRP). Most organizations never define or analyze that process, but some are using quality principles and tools to define, study, and document their CRPs. Corcoran et al.(1995) explain how some organizations define the customer-relationship process in terms of five phases: establish the relationship, analyze the customer's requirements, recommend a solution and gain customer commitment, implement the recommendation, and maintain and expand the relationship. Managing an organization's CRP will help to:

Identify and analyze its people's interactions with customers.

Measure its people's performance against customer requirements and competitors' performance.

Involve customers in a dialogue about how the organization can change its CRP to better meet their needs.

Establish a common language that can be used within the organization and with customers to describe how the organization works with customers now—and how it would like to work with them in the future.

Clarify the roles, high-value activities, and competencies required of the front-line people whose daily interactions build the customer relationship.

Standardize and replicate the actions and behaviors that customers most value and that can differentiate the organizations from its competition.

Establish improvement priorities and allocate resources accordingly.

Better understand—and meet—the needs of various market segments by examining the CRPs that best meet their needs.

Based on CRP research, Corcoran et al. (1995) conclude that recent trends in many firms represent an evolution from traditional selling to consultative selling. Under consultative selling, sales-

people have three roles in helping the customer—strategic orchestrator, business consultant, and long-term ally.

The concept of attracting, maintaining, and improving customer relationships is sometimes called "relationship marketing." Emphasis is on long-term retention of customers rather than making immediate sales. *The Journal of the Academy of Marketing Science* devoted a special issue to relationship marketing. One subprocess of this is "database marketing" which uses modern information technology to collect, assemble, and analyze information on customer characteristics (see *Business Week* 1994). This approach focuses on attracting the likeliest customers, targeting campaigns once they have become customers, and then structuring loyalty programs to reward them for continued patronage.

Thus, the process of personal selling has a quality-related dimension. But product promotion also involves advertising, public relations, and special sales promotions.

Advertising of Quality. Customer satisfaction is the result of the comparison between customer expectations and the performance delivered (see above under Customer Behavior Concepts). Expectations evolve from a number of inputs, one of which is advertising. Thus advertising can influence customer satisfaction. Advertising enlarges sales income either through (1) product advertising, which aims to induce people to buy the product, or (2) institutional advertising, which aims to create a favorable image of the company. Advertising also provides information to help the customer make purchasing decisions. Overpromising in advertising (or by salespeople) can result in a dramatic loss of customer loyalty.

Objective Evidence. Advertising based on objective product and quality data is widely used for industrial products and, to some degree, for consumer products as well. These objective presentations likewise take numerous forms:

Laboratory and inspection test results: tensile strength, frequency distribution, Weibull plots, safety ratings, tar and nicotine content

Usage data: mean time between failures; fuel consumption; cost per unit product, e.g., copies from a copier machine; lower frequency of adjustments, replacements, service

Listing of features possessed by the product (often to show that competitors lack these features)

Warranty provided (see below under Warranty)

Demonstrations of product usage by a series of still pictures or on television

Evidence of user satisfaction: testimonials from named users; data on share of market, e.g., "more than all other makes combined"

Results of tests by independent test laboratories: marks of certifications from such independent laboratories

Advertising which compares product features with those of competitors has a long history. Such advertising, however, has traditionally avoided naming the competitors in question. More recently there has been a dramatic increase in the frequency of naming the competitors. Some of these advertisements have stimulated competitors to complain to government regulators who then demand objective proof of the claims made in the advertisement. Alternatively, the competitors file legal actions to recover damages. In the face of such threats, advertisers are well advised to assure that the claims made in the advertising are based on objective test data.

Warranty: Industrial Products. A warranty is a form of assurance that products are fit for use or, if defective, that the customer will receive some extent of compensation. Parties to a sale of industrial products are knowledgeable in contract relations, and they draft a purchase contract to embody their known needs and to cover contingencies experienced under previous contract arrangements. The resulting written contracts reflect mutual agreement on various pertinent matters including the warranty.

Warranties on industrial products are created uniquely for each product or type of product. For many commodity items, the warranty calls for compliance to specifications, and the warranty extends to survive "acceptance" of the item by the customer. Usually, no time period is specified. For other industrial products, the warranty often includes a time period and special provisions covering consequential damages. In some cases the warranty concept is extended to place predictable limits on users' costs. For example, a manufacturer of electrical generating equipment warrants to its industrial clients that the cost of power generated will be no higher than the cost of purchased power. If it is higher, the manufacturer agrees to pay the difference.

Warranty: Consumer Products. In contrast to the tailor-made warranties which are written into large industrial contracts, warranties for consumer products are relatively standardized. Usually printed on good-quality paper with an artwork border, these warranties look like, and are, legal certificates. A preamble is included stating the good intentions and care supplied by the manufacturer. Specific statements of the manufacturer's written responsibility then follow.

Consumer product warranties are either "full" or "limited." The term "full warranty" refers to the consumer's rights, not to the portion of the physical product that is covered by the warranty, i.e., it does not have to cover the entire product. A full warranty means the following:

1. The manufacturer will fix or replace any defective product free of charge.
2. The warranty is not limited in time.
3. The warranty does not exclude or limit payment for consequential damages (see below).
4. If the manufacturer has been unable to make an adequate repair, the consumer may choose between a refund and a replacement.
5. The manufacturer cannot impose unreasonable duties on the consumer. For example, the warranty cannot require the consumer to ship a piano to the factory (one manufacturer listed such a condition).
6. The manufacturer is not responsible if the damage to the product was caused by unreasonable use.

The full warranty also provides that not only the original purchaser, but any subsequent owner of the product during the warranty period, is entitled to make claims.

A limited warranty is a warranty that does not meet the requirements for a full warranty. Typically, the limited warranty may exclude labor costs, may require the purchaser to pay for transportation charges, and may also be limited to the original purchaser of the product. As a practical matter, most warranties on consumer products are limited warranties and must be so labeled.

Some organizations provide an "unconditional service guarantee." Such a guarantee is not only without conditions, it is easy to understand, relevant, and easy to invoke. This type of guarantee can have a strong impact on sales, and it can also provide a strong internal company focus on customer satisfaction. For examples and discussion, see Hart (1988).

Role of the Marketing Function during the Launching of New Products. A key factor in launching new products is the fit of the product with market needs.

Even with superior field intelligence and product development, the final test of the new product can be made only in the marketplace. Before mass producing and distributing the product on a nationwide basis, many companies use the concept of a "test market." In a test market, the product is sold on a limited basis for the purpose of:

1. Measuring the potential sales performance to decide whether or not to go ahead with full-scale marketing
2. Identifying weaknesses in the product
3. Identifying weaknesses in the marketing plan (product name, packaging, advertisements)

Conducting a test market can be expensive, and generally this step is taken only after pretesting has shown that the product will likely be a winner in the marketplace. A common method of pretest-

ing involves a focus group of potential customers (see above under Market Research—Tools and Techniques).

As in the collection of field intelligence prior to the start of product development, it is essential that a team of people from marketing, product development, manufacturing, and other departments decide what questions need to be answered by the test market. After such agreement, the marketing department (with the aid of others, if necessary) collects the information in the marketplace. The mechanisms for collecting the information can include questionnaires, phone calls, focus groups, and other market research techniques.

The decision of whether or not to use a test market requires a comparison of the costs and risks. The costs include not only the expenses for data collection but also the income lost by delaying a full-scale market introduction. The key risk is introducing a product that fails. Even with prior market research, weaknesses in a new product are sometimes not revealed until the product lives in the marketplace environment. Examples of product weaknesses that did not show up until the marketplace follow:

Some bags of candy are almost impossible to open—the consumer resorts to biting the bag.

Because of their shape at the bottom, some tall, plastic bottles of soft drinks will not stand erect.

Some trash bags are difficult to use because they are a mystery to open and no instructions are provided.

Use of test marketing can help to prevent such disasters. The advent of three-dimensional computer graphics has led to the development of "virtual shopping simulation" for consumer products. In this market research technique, the atmosphere of an actual retail store is created on a computer screen, the shopper can "pick up" a package from a shelf, examine the package from all sides, and "purchase" the product by touching an image of a shopping cart. Product managers can test new products and marketing concepts without incurring manufacturing and other costs. For elaboration, see Burke (1996).

The process of launching new products is an example of an activity that is worthy of review by upper management (see Section 19, Quality in Research and Development, under Organizing for Research and Development Quality).

QUALITY IMPROVEMENT IN MARKETING

The marketing function has opportunities for identifying and acting upon chronic quality-related problems within marketing. For the approach and specific tools see Section 5, The Quality Improvement Process.

To cite just one area, Shapiro et al. (1992), studied the order management cycle (OMC) at 18 companies in different industries. In evaluating the effectiveness of the OMC, 10 steps (from order planning to postsales service) in the process were identified, the progress of individual orders traced, and the responsibilities of various departments analyzed. Further analysis revealed that four problems existed in a typical order management cycle:

1. Most companies never view the OMC as a process or system. No one person seems to understand the entire process.
2. Each step in the OMC has a mix of overlapping responsibilities.
3. Top management has little contact with the OMC.
4. The customer is as remote to the OMC as top management.

Improvement of the cycle in an individual company should start with charting the detailed process steps and applying appropriate quality improvement tools (see Section 5, The Quality Improvement Process).

QUALITY MEASUREMENT IN MARKETING

In all activities—including marketing—what gets measured gets done. Figure 18.6 shows examples of internal metrics for strategic marketing information. As in other applications of quality measurement, the measurements should have a customer focus, provide for both evaluation of performance and feedback for self-control, and include early, concurrent, and lagging indicators of performance.

BENCHMARKING FOR QUALITY IN MARKETING

Section 12, Benchmarking, explains the general concept and the steps in benchmarking. Johnson and Chvala (1996) identify 11 marketing areas to be benchmarked: sales management, sales-service support, direct marketing, industrial marketing, services marketing, new product development, advertising, sales promotion, distribution, supplier relationships, and retailing. Drew and Castrogiovanni (1995) describe how market research surveys can serve as a mechanism for benchmarking in a service industry. Identical questionnaires are sent to one's own customer and to customers of competitors. Data are gathered for various service processes (e.g., billing, installation) and the best rating for each becomes the benchmark for that process.

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