SECTION 25
CUSTOMER SERVICE[1]

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INTRODUCTION

During the 1980s, customer service emerged as a critical success driver in many companies that pursue the management approaches of leading-edge enterprise. The compelling logic behind the importance of customer service is simple (Grant and Schlesinger 1995). As rapid cycle times diminish the ability of providers to differentiate their products, customer service is one of only very few ways to motivate customers to enhance behaviors that affect the enterprise's sales and profitability. Customer service includes transactions with customers and relationships with customers that occur before and after purchase of product or service. These transactions and relationships differ for different types of products and services. It is convenient to view possible customer service elements as innovative or traditional, as is illustrated in Table 25.1.

It should be understood that the list in Table 25.1 is not a complete listing of possible customer service elements. In fact, leading-edge companies always strive to find new elements that will provide a competitive edge. I call these elements *key customer satisfiers* (KCSs). In some cases, KCSs involve the transfer of value to customers. In other cases, they involve relationships with customers. Assignments to the traditional and innovative categories are not always the same for different markets. What may be innovative in one market may be traditional in another.

The *value proposition* of a product is the totality of the service and tangible product elements that are perceived by customers as valuable, leading to decisions to purchase the products offered for sale in preference to competitors' products. The weight of evidence (e.g., see Grant and Schlesinger 1995) is that the marketing trend for many products and services continues to be the extension of the value proposition to include more transactional (value-transfer) items and more and more relational

[1]In the Fourth Edition, material for the section on customer service was supplied by Frank M. Gryna.

TABLE 25.1 Traditional and Innovative Elements of Customer Service

Traditional presale elements	Innovative presale elements	Traditional postsale elements	Innovative postsale elements
Sales information Ordering	Market research for key customer satisifiers	Packaging Transport Delivery Installation Maintenance Complaint handling Problem solving	Report cards Customer care Value-added information access

services. This is so because the trend is continuing for the products in many industries to become undifferentiated and commoditized. This trend is especially true in mature industries but is increasingly the case in industries such as consumer electronics and personal computers. Consequently, the traditional criteria used to distinguish between the product (manufacturing) and service sectors are breaking down. Products often include tangible goods bundled together with associated real-time services and ongoing information exchange. Anyone who has purchased and installed a personal computer software package will recognize this extended value proposition.

This section describes the quality considerations of customer service, the use of customer service as a strategic differentiator, and the design, structural, and operational considerations of high-quality customer service performance. Elements of behavioral science, organizational design, and systems engineering all are brought to bear on these topics (Pyzdek 1994). Reference to other sections of this handbook is made where appropriate.

CONSIDERATIONS OF QUALITY IN CUSTOMER SERVICE

There are four important areas where quality must be considered in customer service: strategic intent, design, organizational structure, and operations. The first is *strategic intent.* As part of a strategy formulation, the overall approach to quality is determined for the product or service. A subset of the overall approach is the use of customer service elements as strategic differentiators. Examples of marketplace advantages that may be achieved by providing value-added customer service are reduced customer turnover, increased repurchasing performance, increased product or service use, and customer referrals. Value-adding customer service also may yield higher profit margins and growth in market share. The customer service strategy is determined as part of the annual business planning cycle or as part of the product planning cycle. Customer service elements are hypothesized based on insights from the available body of knowledge about the industry and its marketplace. The insights are then verified using systematic methods. The results of the verification step may be confirmation that the proposed approaches to customer service indeed are opportunities to achieve marketplace advantages or that modified or alternative approaches yield more value-adding capability. Iteration may be required until there is closure and consensus on the strategy to be undertaken.

The second important area where quality must be considered is the *design area.* Companies that emphasize customer service design customer service capabilities as part of the product/service life cycle. Structures and processes are devised during the design phase to implement the strategy for customer service that was determined in the strategy formulation. The approach to design that is presented here is patterned after the service systems engineering framework of Pyzdek (1994). Pyzdek's framework combines concepts and methods from the systems engineering, organizational design, and behavioral science fields. All these components are important to achieve an effective design of customer service delivery capabilities.

The third area where quality must be considered is *organizational structure.* This is where quality is built into the organization's customer service delivery structure according to the requirements

of the product or service life-cycle design. Important considerations are enabling technologies and training, process engineering and reengineering, legacy migration, and outsourcing. It is common to find that process models for customer service capabilities involve almost every business function and, therefore, almost every part of the organization. This creates an opportunity to use customer service as an integrating force that knits together a company's quality thrust. However, in many firms this pervasive characteristic also creates a problem of distributed responsibility and accountability for effective customer service.

The last important area where quality must be considered is the *operational area.* This is where results are achieved, measured, and improved. The ongoing performance of operating customer service processes is important here and includes such considerations as human performance, process control, process capability, process improvement, and performance metrics. Three areas of consideration dominate an effective end-to-end life-cycle design. The first includes continuous communication, reward, recognition, and development of customer-facing associates; second is continuous oversight of processes in search of stress cracks that may be caused by saturated processes, by changes in customer needs, or by other considerations not congruent with the design intent and implementation criteria; and the third is continual environmental scans in search of early warning signs of changing markets, of new opportunities, and of new competitive threats. Common to all these considerations is the need for instrumentation for collection and analysis of information.

Here I present a model that features customer service as a strategic differentiator. To illustrate the use of the model, data and examples are provided, taken from the literature, from published benchmarks, and from Baldrige Award–winning companies. The reader may wish to review the contents of Sections 3, 13, and 18 as preparation for this topic.

The model presented in Figure 25.1 helps us visualize customer service as a vehicle to achieve strategic goals and objectives for a product or a service or for a family of products or services (Innis 1994). During the planning period for a specific product, or during the annual business planning interval for the forthcoming year, customer service is proposed as a competitive differentiator. The elements of customer service that may be appropriate for the particular type of product or service are selected. These elements are a subset of the assumed KCSs for the product or service. Insight for this inductive step may come from experience with previous products, from customer feedback such as complaint or suggestion data, from competitive analyses and environmental scans, or from new technology or business capabilities. A structured approach for this step, called *service blueprinting,* is described below, under Strategic Intent, AT&T Universal Card Services.

At this point in the strategy development, these insights should be verified. This verification step often is omitted, leaving the ultimate verification to the marketplace. This sometimes turns out to be an expensive shortcut. Therefore, every effort should be made to obtain verification. KCS data for the industry or for the specific product or service must be acquired. Identifying and addressing the key customer satisfiers constitute an essential step toward achieving customer satisfaction. KCS data are acquired from market research studies conducted in appropriately defined market segments. The KCS data provide insight into the specific product and service attributes that are important to customers in each market segment and the degree of importance the customers attach to each attribute. Depending on the industry, on its marketplace characteristics, and on the particular type of the product or service, one or both of two types of market research are commonly used for this purpose (see Section 18).

In many cases, it is possible to verify the proposed KCSs by using such preimplementation techniques as focus groups or market research surveys or by limited prototyping experiences. In other cases, it may be necessary to use a rapid cycle-time implementation of initial production to get feedback. This is called a *beta test* in some industries. A more traditional term is *field trial.* These alternatives are illustrated in an expansion of the Lisrel model as shown in Figure 25.2.

The well-known quality function deployment technique often is used as the vehicle to integrate two important steps, the understanding of what is important to customers in market segments (e.g., KCS data) and the correlation of the important attributes, stated in terms meaningful to the customer, with specific product and service attributes, stated in terms that are meaningful to the designer (see Section 3).

When the strategic approach to customer service is verified, improved and updated, and documented, it is usually included in a preliminary business case.

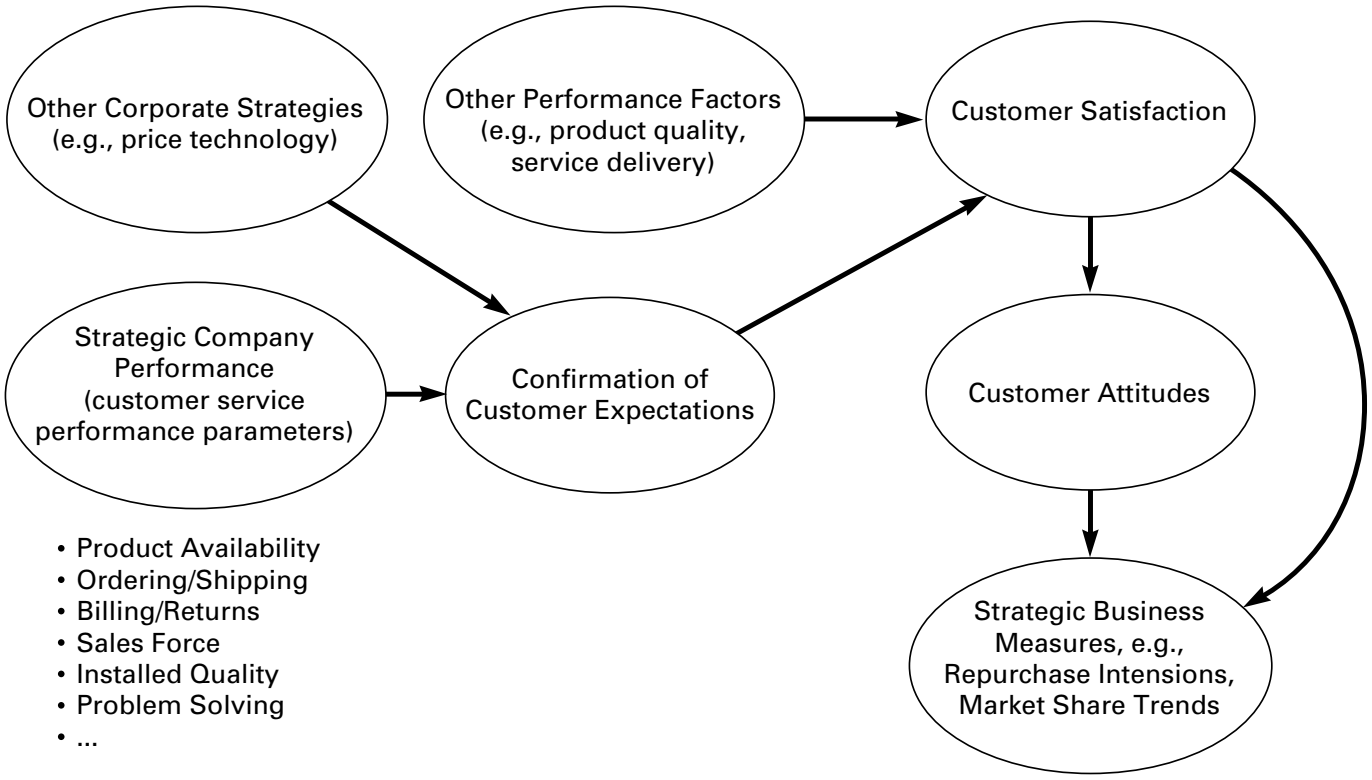


FIGURE 25.1 Combined Lisrel-Dresner model of customer service.

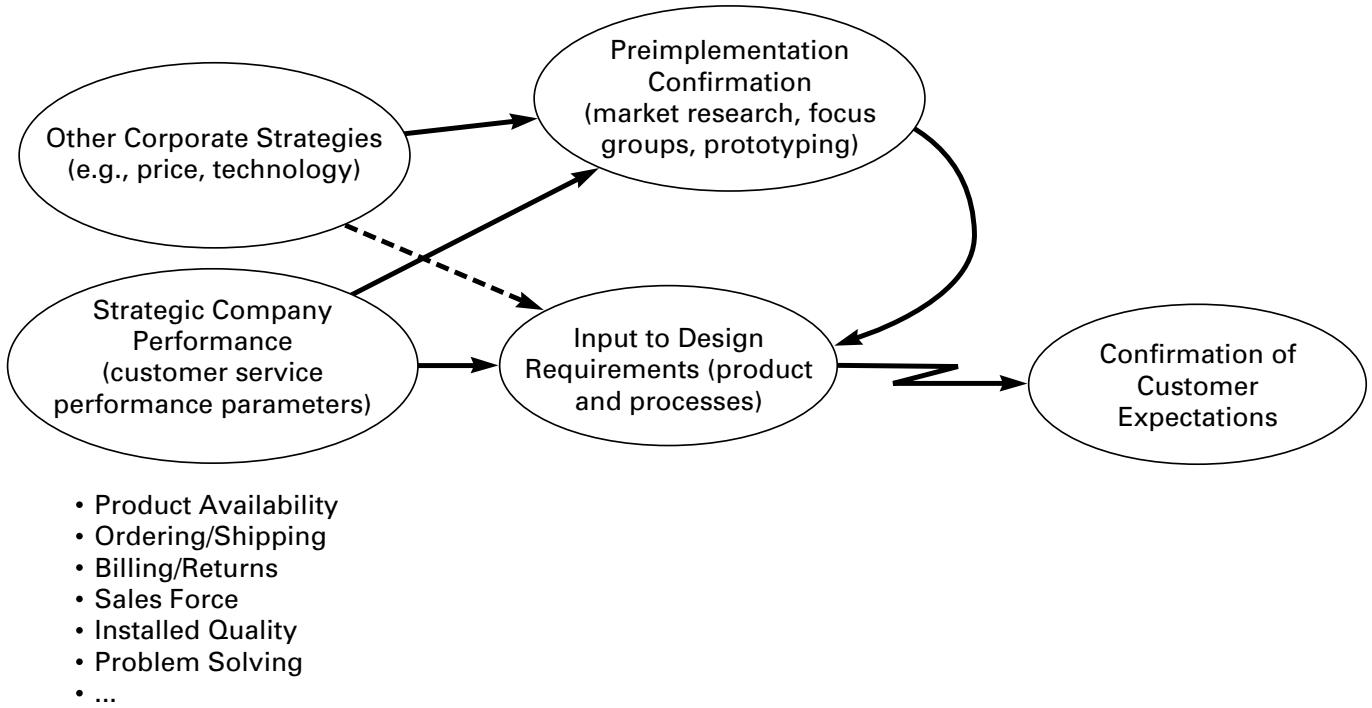


FIGURE 25.2 Expanded Lisrel model of customer service.

STRATEGIC INTENT

AT&T Universal Card Services. The Universal Card Services business unit of AT&T provides an impressive example. From the time the business was first created in March 1990, it took only 30 months to become the second largest credit card issuer in the United States. How did AT&T differentiate what had been a commodity product and service? What prompted AT&T at the outset to rush in and try to establish a winning credit card business? AT&T was looking for ways to reinforce brand loyalty for long-distance calling services. A credit card that is also a calling card seemed like a natural marriage. However, there were hurdles to overcome. Customers were not satisfied with the credit cards that they had. Card users did not like the high fees, and they did not generally like the service that they received. They complained angrily about surly service representatives who took weeks to process changes and who embroiled anxious customers who had lost their cards in tangles of paperwork and phone calls. AT&T asserted that it could do better. Using the service blueprinting process, described below, AT&T chose a differentiating capability that had never been provided to credit card owners in the past: world-class customer service. To differentiate the customer service significantly, several important moments of truth in the customer service blueprints were selected. Market research studies showed clearly that one moment of truth would not have been enough.

The blueprinting process is illustrated and summarized in Figure 25.3. The blueprint is usually recorded as a flowchart of the particular process under study. The flowchart is segmented to clearly illustrate the lines of interaction between the service and the customer and the so-called line of invisibility. The line of invisibility is the boundary between the directly customer-facing subprocesses and the "back-office" subprocesses that support the customer-facing elements. Using the blueprint diagram, it becomes possible to answer the questions summarized in the bullet list in Figure 25.3. These answers provide the basis for selecting key moments of truth and for making other implementation decisions.

The service blueprint, which was implemented as a process, included fast, accurate, supportive, and helpful customer service representatives. The service representatives are empowered and rewarded for helping customers. First, a rigorous *daily* customer satisfaction measurement process was put in

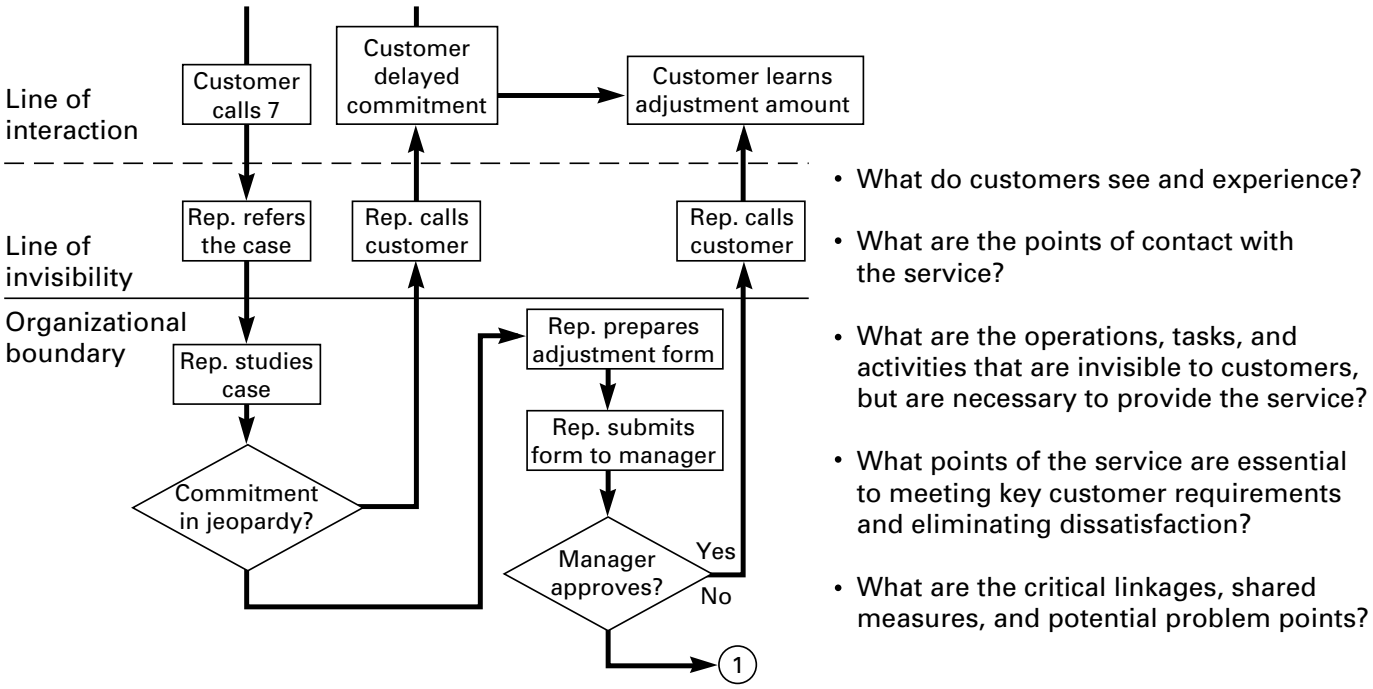


FIGURE 25.3 Example of the customer service blueprint (see Section 3).

	Quarter or Period	Number of quality days as percent of total	Bonus as percent of salary
Associate Quality Days and Bonus	1990-4th quarter	76.1%	6.4%
	1991-1st quarter	87.8%	11.4%
	1991-2nd quarter	92.3%	9.9%
	1991-3rd quarter	96.7%	12.0%
	1991-4th quarter	95.7%	11.6%
	1992-1st quarter	60.0%	10.6%
	1992-2nd quarter	75.8%	7.5%
	1992-3rd quarter	76.1%	7.9%
	1992-4th quarter	95.7%	10.8%
	1993-1st quarter	84.4%	9.4%
Management Quality Days and Bonus	1991	87.9%	5.6%
	1992	66.1%	4.7%
	1993-1st quarter	76.6%	5.6%

FIGURE 25.4 UCS quality days: performance and bonuses. [*From AT&T Operations (1998).*]

place, coupled with a *daily* bonus plan. Figure 25.4 offers an example of bonuses actually received during a period of time. On those days when the service representatives do not receive their bonus, no manager receives a bonus. Second, the customer service processes are supported by leading-edge technology. This gives the service representatives easy and rapid access to all the information that could possibly be needed in support of the customer. Third, the customers are given differentiating value in the form of lower interest rates than are provided by any other vendor. And fourth, the company undertook the role of the agent of the customer in relationships with credit bureaus and other users of credit information.

In recent years, AT&T Universal Card Services has initiated more than 300,000 new accounts per month. This growth stems in part from the sales story that is part of the front-end, customer relationship-building process. It also comes from finely tuned customer service operations that also were part of the strategic design of the business and which have been improved and enhanced over time. This customer service strategy was part of AT&T's Baldrige Award–winning approach.

New England Telephone. The Interexchange Customer Service Center (ICSC) of New England Telephone Company knew in 1988 that it had to make changes. ICSC is the interface between the local telephone company and the interexchange carriers. Its customers are AT&T, MCI, Sprint, mobile, radio, and television common carriers. The customers did not like the job that the center was doing, nor did management or the employees (Clarke 1992). Morale was low. The organization conducted a customer assessment and created a service blueprint. It was discovered that customers thought that New England Telephone was reactive rather than proactive. It found the company unable to relate individual jobs to customer needs. The service blueprint revealed that the organization design was that of a job shop. Employees each took a piece of paper in a hand-off and processed it. Everyone did the job according to the job description, but accountability for the results occurred only at executive levels. It was not possible to relate individual tasks to customer needs, nor to coordinate and track customer service requests and results. ICSC developed a strategic vision, which was to "…outperform competitors by providing our customers the highest level of service quality. We will be the 'best of the best' within our industry.…" The solution was to reengineer the operation, establishing a customer-focused team structure responsible for all processing and service support for a customer segment. The changes affected not only ICSC but also all the company organizations that provide technical and operational services, such as network and accounting.

Hewlett-Packard Company. Hewlett-Packard summarizes its overall strategy for quality with two acronyms (Spechler 1988). The first acronym is *FURPS*. The letters in the acronym have the following definitions:

- *F* = functionality. The feature set, capabilities, comparability, and security.
- *U* = usability. The human factors, consistency and documentation of the product.
- *R* = reliability. The frequency and severity of failures. The predictability and accuracy of the product.
- *P* = performance. The speed and efficiency of the product, as well as resource consumption.
- *S* = supportability. Maintainability and servicability of the product, along with its ability to be installed.

The second category of quality attributes uses the acronym *AART.* AART refers to the relationship with customers. The letters in the acronym have the following meanings:

- *A* = anticipation. The ability to identify, understand, and help solve customer needs before they become problems.
- *A* = availability. The degree to which products and services provide for uninterrupted use at full functionality.
- *R* = responsiveness. The ability to provide timely, accurate, and complete information and/or solutions to customer-initiated requests for help.
- *T* = transitions. The ease of initial startup and ongoing changes as individual products and services evolve and conform to new needs and technologies.

Many of these attributes are strongly related to customer service. Two areas of implementation where Hewlett-Packard sought to differentiate itself with exceptional customer service are the field customer engineers (CEs) and the response center engineers. The field customer engineers, who provide on-site hardware maintenance, have been equipped with hand-held portable terminals. Through these terminals, they receive notification of service calls they need to fulfill. They use the terminals to upload symptoms and to download diagnoses. At the completion of the call, the CE enters repair details, such as revised failure symptoms, parts used, and labor effort. This information enters a relational database, where it is used for parts inventory management, staff capacity management, determining training needs, and to produce the quality metrics that are part of the strategic goals and objectives.

The methodology used by Hewlett-Packard to develop, deploy, and track strategic plans, goals, and objectives for these attributes is called the *hoshin kanri planning process. Hoshin kanri* was introduced within Hewlett-Packard in the Yokogawa Hewlett-Packard subsidiary in Japan. *Hoshin* has been loosely translated into English and is generally referred to in Western countries as *policy deployment* (see Sections 3 and 13).

Motorola. Motorola's strategic customer service thrust was prompted by findings from the CEO's personal visits with key customers (Motorola 1989). The CEO visited the top 10 corporate customers during a 5-month interval in 1988 and then presented the findings to the Motorola Corporate Quality Council. Quality was the battleground of the 1980s, but the council concluded that service was evolving as the next competitive challenge. In response, one business sector established a service strategy task force to focus on the issues of customer service and to develop recommendations. The task force comprised eight senior managers, including seven officers. The eighth member was the chairperson, who was appointed to facilitate and coordinate the task. They left their current job responsibilities and moved to an off-site location for 3 months. The task force began its work with customer and associate assessments using formal survey instruments. They surveyed 54 customers worldwide and 220 Motorola business-sector employees. The highlight of the customer survey was that responsiveness emerged as the competitive issue; customers took for granted perfect quality and on-time delivery. By contrast, the employee assessment revealed that employees believed on-time delivery to be the most important issue (and, at that time, the area in which their performance was weakest). Further, the employees believed that service and responsiveness were areas of company strength and needed only improvements in teamwork, communications, and consistent goals to support them.

The task force grouped the issues revealed by the data into six categories. Then, using Pareto analysis, the task force identified issues that warranted action. (See Section 5, The Quality Improvement Process, under Quality Improvement Goals in the Business Plan.) The task force came up with 52 action items, of which the top 10 were considered urgent. One of the six categories was on-time delivery. Examples of key action items in this area included the following three statements (Motorola 1989):

1. One hundred percent on-time delivery will be the acceptable level of performance on which compensation will be based. (This replaced an incremental improvement goal.)
2. There will be disciplined use of the on-time delivery index. This means no recutting of orders, no early shipments unless approved by the customer, and no partial shipments unless approved by the customer.
3. Training in and application of the methods of short-cycle-time production and order realization will be required for all organizations, with applied measurements and goals.

Another catagory of issue from among the top six was responsiveness. Here the task force decided on the following key action items (Motorola 1989):

1. A schedule of formal visits with all key customers
2. A no-questions-asked return policy
3. Development of systems and procedures to take an order anywhere in the world and ship it anywhere in the world
4. Elimination of the "will advise," "will schedule," and "Motorola to advise" from the backlog lexicon

The consequences of these actions and comparable action on the other issues were reflected by a number of Motorola quality awards and in independent third-party customer satisfaction assessments that revealed improved perceived performance.

DESIGN

Many of the design approaches that apply to customer service processes apply to the design of any business process and are well covered in Section 6, Process Quality Management, and in the reengineering literature, the human factors literature, the organization design literature, and elsewhere. Pyzdek integrates the systems engineering considerations, the organization, and the human factors considerations into an integrated design paradigm that he calls *service systems engineering.* The term *service systems engineering* actually has been used for decades in industries such as the transportation industry and the telecommunications industry to size traffic-carrying systems and facilities. Techniques employing approaches from the fields of applied probability and statistics are found in the systems engineering and operations research literature. What distinguishes Pyzdek's approach is the integration of these approaches with the very important behavioral and organization considerations (Pyzdek 1994).

Pyzdek defines a *service delivery system* as a systematic arrangement of human resources and technology designed to create successful service encounters. A *service encounter* is the direct interaction between a retail or service firm and a client. As described in the preceding section, success is measured in terms of a set of business performance criteria.

Systems Engineering. Table 25.2 identifies the major inputs, activities, and outputs of the service delivery systems engineering process. Managing these steps for quality involves knowing how the precise and measurable quality objectives for the final customer service translates into specific, measurable performance standards for the inputs, outputs, and activities.

TABLE 25.2 Major Inputs, Activities, and Outputs of Service Delivery Systems

Inputs	Activities	Outputs
Information from business case, including • Market segments • General service definition • Demand or volume forecast • Quality, reliability, other performance goals	Analyze/clarify user needs and service objectives	Create service requirements document, including • Functions • Performance • Quality and reliability standards
Service objectives and customer needs	Create a functional framework	High-level service architecture
Service constraints	Create functional and cost boundaries	High-level cost objectives
Technology roadmap	Analyze available technologies	High-level technology architecture
Feasibility analyses and exploratory service development results	Plan service development	Service design and implementation documentation

Organizational Structure. The planning and management controls associated with the specific customer services are intended to guide and support managers and associates in all parts of the organization in their definition of meaningful tasks and in the specification of procedures to monitor their effective completion. From this perspective, it is easy to recognize the central importance of organizational structure. Responsibility has to do with the nature of the tasks entrusted to each individual. The design process is a primary vehicle to identify, in a coordinated manner, the major tasks faced by the enterprise and to organize those tasks in the most effective way (Hax and Maluf 1984).

The organizational structure to perform the customer service functions may be defined as "the relatively enduring allocation of work roles and administrative mechanisms that create a pattern of interrelated work activities and allows the organization to conduct, coordinate and control its work activities" (Jackson and Morgan 1978). There are three accepted basic types of organization for managing customer service work and two newer, emerging approaches. The accepted organizational types are functional, divisional, and matrix. They are important design baselines because these organizational structures have been tested and studied extensively, and their advantages and disadvantages are well known. The matrix structure is a hybrid combination of the functional and divisional archetypes. The newer, emerging organizational designs are process and network organizations.

The design attributes associated with division managers, functional managers, process managers, and network managers of customer services are summarized in Table 25.3. There is emerging evidence that divisional and functional organizations may not have the flexibility to adapt to rapidly changing marketplace or technological changes. This is especially true of larger customer service organizations associated with large companies. For this reason, there is a trend in large companies to outsource the customer service function, a topic that is addressed below.

Human Resources. Behavioral science helps us to understand human capabilities, capacities, and needs for the design of customer service systems. This understanding is becoming increasingly important for several reasons. First, modern technology, especially information technology, is providing the foundation for customer service systems. For these systems to be successful, it is essential to design effective human-machine coupling. Second, modern technology is increasingly embodied in products and services, making new and unusual demands on customers. For these products and services to be successful, user-friendly human-machine interfaces again are essential. Third, to the extent that the user-friendliness of products and services is less than perfect, customers will make use of customer services to help them through the rough spots.

TABLE 25.3 Design Attributes of Various Roles in a Customer Service Organization

	Division manager	Function manager	Process manager	Network leader
Strategic orientation	Entrepreneurial	Professional	Cross-functional	Dynamic
Focus	Customer	Internal	Customer	Variable
Objectives	Adaptability	Efficiency	Effectiveness	Adaptability, speed
Operational responsibility	Cross-functional	Narrow, parochial	Broad, pan-organizational	Flexible
Authority	Less than responsibility	Equal to responsibility	Equal to responsibility	Ad hoc, based on leadership
Interdependence	May be high	Usually high	High	Very high
Personal style	Initiator	Reactor	Active	Proactive
Ambiguity of task	Moderate	Low	Variable	Can be high

Sources: The first two columns are adapted from the work of Financial Executive Research Foundation, Morristown, N.J. The last two columns represent the work of the author.

Because new customer service systems involve more interactions between users and supporting systems than ever before, making these systems easy to use and error-free is a major goal of their design. Properly designed information input arrangements, easy-to-read screens, announcements, timings, and instructions increase user acceptance, minimize errors, and promote effective use. Training programs for customer service representatives and easy-to-understand and easy-to-use instructions for customers are very important.

The design of new customer service systems can be evaluated for user-friendliness by coordinated studies that include (Bell 1983)

- Analysis of present customer service systems
- Benchmarking of best-in-class customer service systems
- User interviews
- Laboratory studies of protocols for user-system interactions
- Field tests of customer services
- In-service follow-up studies for continuous improvement

Investigation of best-in-class systems is particularly useful. In the area of customer service, certain companies are well known for the efficacy of the approaches, e.g., L.L. Bean for order entry, Fidelity Investments for account inquiries, and GE for broad customer support.

It is clear that the customer service representatives as well as all other employees whose work affects the customers' perception of service are critical elements of the customer service design. The design of the roles of individuals in the enterprise, including those whose jobs involve customer service, must be within the frame of a human resource architecture for the enterprise. An example of such an architecture is that in Figure 25.5. In order for the customer service design to be successful, the design must address more than the functional processes and systems associated with the service. Each of the people considerations identified in Figure 25.5 also must be included, either directly or by reference to the overall human resource architecture design documents.

Electronic Data Systems (EDS). In 1992, EDS put in place a matrix organizational structure radically different from those in most successful U.S. companies (EDS Homepage Internet www). The matrix structure is a hybrid that has elements of the divisional and network designs. The structure involves 35 to 40 strategic business units (SBUs). The number changes frequently, as it would in a network design, due to business demands. There are approximately the same number of strategic support centers (SSCs), which support SBU requirements. The organizational relationships

between the SBUs and the SSCs form a matrix. Think of the various SSCs as the entries in the columns of the matrix and the SBUs as the entries in the rows of the matrix. Stanford University's business school has included in its core curriculum a case study of this organization design. In this design, key customer service teams reside organizationally in the SBU, which is the profit center, while commodity production services (e.g., EDS information-processing centers) are outside the profit centers, in the support organizations. The SSCs have the people with the subject matter expertise to perform key functions for the SBUs, and the SBU managers have the budget to pay them for their support services. EDS's approach to human resources is based on customer focus and rewards. These are the key elements of the HR architecture.

- *Customer focus:* The company keeps its people focused on what is important: quality delivery. The company practices a severe approach to employee alignment—"If you can't change the people, change the people!"
- *Reward system:* Since 1993, EDS has changed its reward system to emphasize team awards. This appears to be comparable to the approach practiced by AT&T's Universal Card Services, described earlier.

STRUCTURE

Presales customer service systems support such services as sales information, ordering, and market research (see Table 25.1). These are both outbound and inbound services, since they involve service representative-originated calls to customers and customer–originated calls for service. In the diverse universe of differing products and services that are addressed by this section, the term *call* should be understood broadly as referring to both personal calls, such as calls on a customer by a salesperson, and remote calls, such as telephone calls by a customer to place an order or to request sales information. Postsales customer service systems support such services as complaint handling and problem solving; again, refer to Table 25.1. These systems are usually primarily inbound services, involving calls from the customer or from installers or maintenance personnel to the support system.

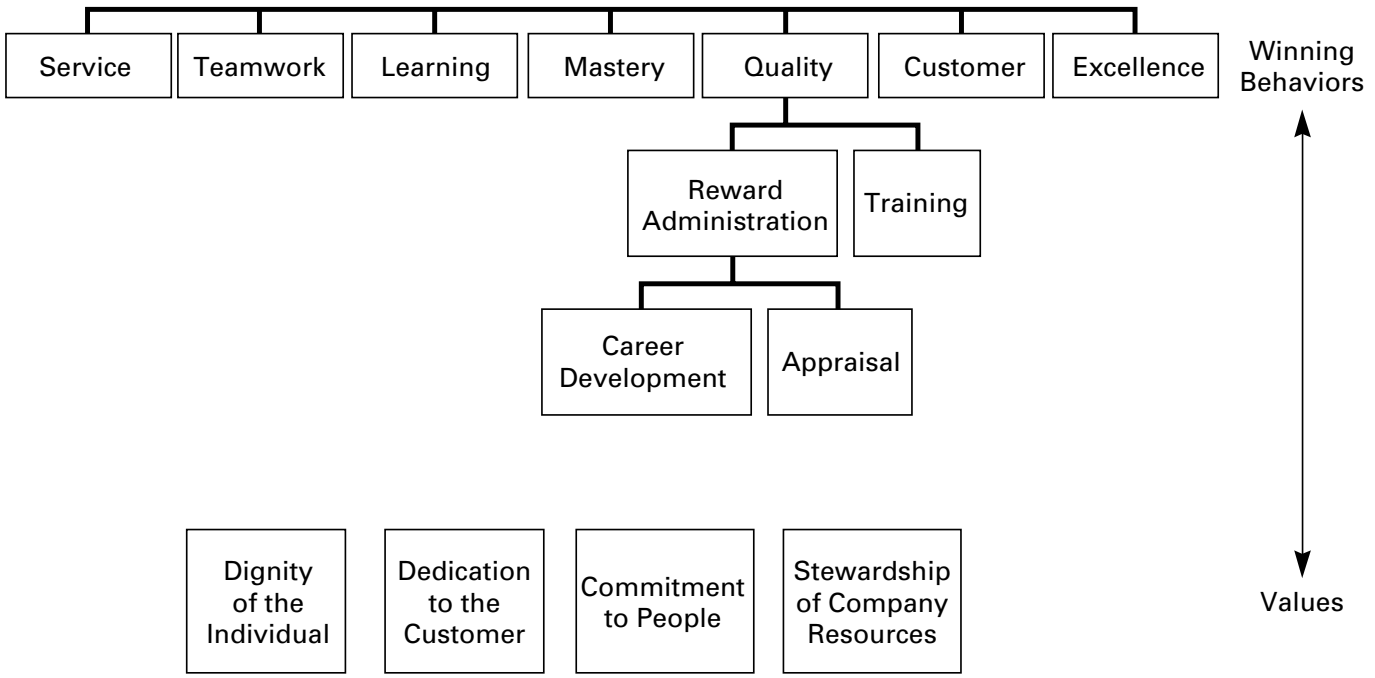


FIGURE 25.5 Human resource architecture.

Examples of configurations of such systems are included later in this section. A wide variety of tools is in use to help the customer service personnel and to help the customers. Examples of tools, organized by category, are shown in Table 25.4.

The configuration of customer service tools to execute the customer service process can take a variety of forms. Two of these are illustrated in Figure 25.6. The configuration in Figure 25.6*a* is a traditional one, where each function is supported by its own work center. The configuration in Figure 25.6*b* is a more advanced arrangement, one that typically emerges from a TQM or a re-engineering initiative.

TABLE 25.4 Some Important Tools in Customer Service Systems

Access tools	Process tools	Enabling tools
Automatic call distributors	Customer information resource databases	Intelligent agent software within the product
Voice-response units	Remote access tools	On-line support services to log requests, check status, etc.
On-line bulletin boards	Outsourcing vendors	User access to knowledge bases
Fax servers		Integrated voice recognition/response

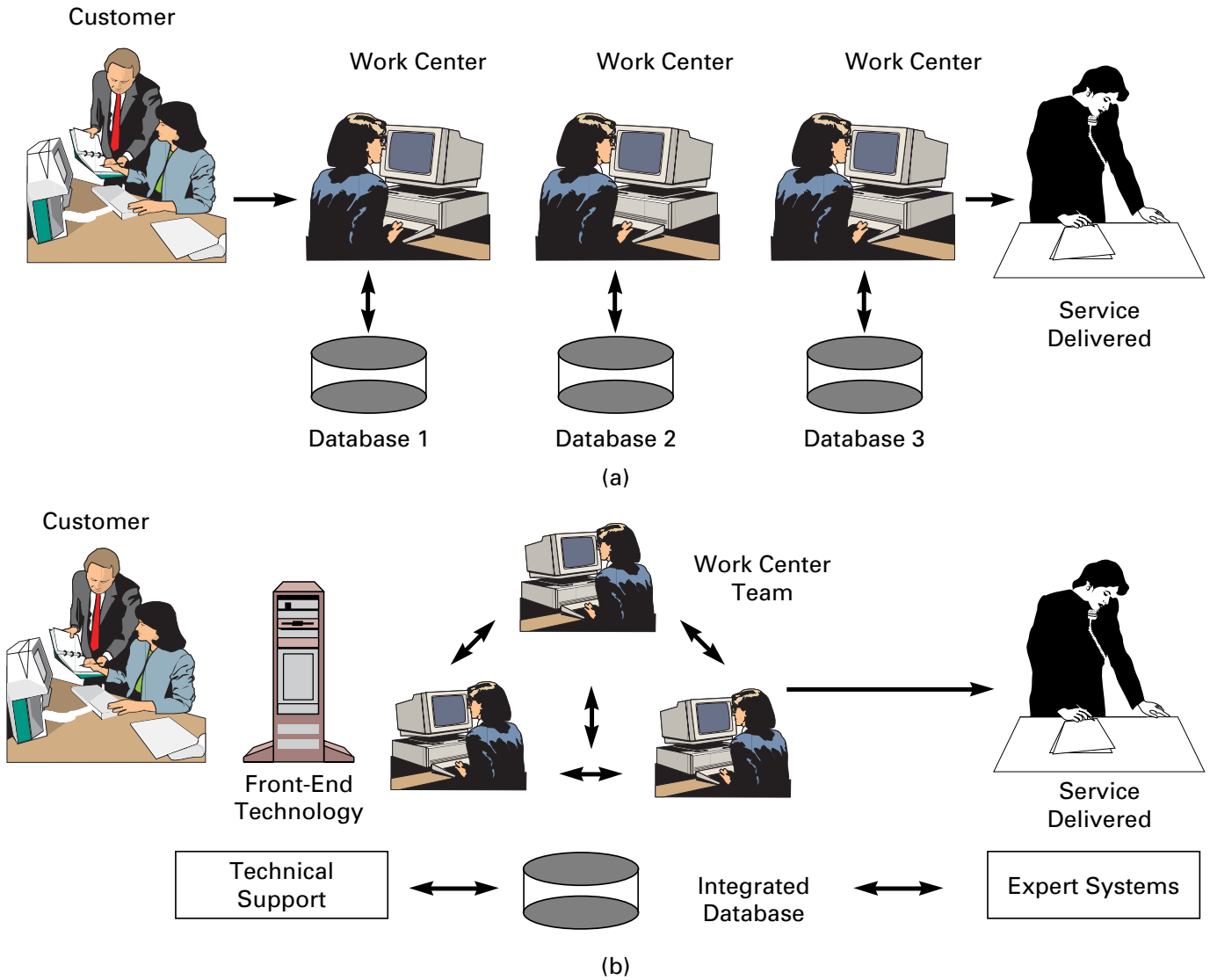


FIGURE 25.6 (*a*) A traditional organization with functional work centers and separate databases. (*b*) A more advanced organization with team work center and integrated database.

The Work Center team is a colocated group consisting of the major work functions required for delivery of customer service from the initiation of a request for service through the delivery of the service. The attributes of the design of the Work Center team for high-quality performance are

- The team includes all the necessary work functions.
- The team bears complete responsibility for satisfying the customer. Performance of the team is measured accordingly.
- The team uses a set of work processes that are formulated in the design step that eliminate rework and review and that meet service delivery quality objectives.
- The team is provided with the technology and systems that enable its members to meet the objectives.
- The team is sized and trained according to the criteria included in the design process.

Structurally, we may think of these teams and associated systems and tools as defining an enterprise in terms of its processes, as shown in Figure 25.7. As we have seen, there are numerous ways in which these processes may be organized to work together.

Consider the customer service process for an enterprise that provides "help desk" or "customer care" types of service to customers who have problems with a purchased product. The product could be an unsatisfactory software package for a PC, or a malfunctioning dishwasher, or a shirt purchased by mail order that is the wrong size. Let's see what the customer service process of Figure 25.7 might look like, in terms of the tools described in Table 25.4, organized in configurations such as those in Figure 25.6. Such a configuration is illustrated in Figure 25.8.

Incoming calls encounter a voice response unit (VRU), which engages the caller in a dialogue to determine the nature and the priority of the call. Based on this information, the call is routed to the first available analyst. The analyst examines the symptoms provided by the call and either resolves the matter or directs the call to a subject matter expert at the help desk. If the problem is complex, the analyst may obtain technical assistance. If the problem is very complicated or unusual, it may require the support of the product vendor for resolution.

Customer Care Center Example. Quality function deployment (QFD) is an effective tool to provide the coupling between the customer satisfiers and the design process. One of the methods used in QFD is the "house of quality." Figure 25.9 is an example of the house of quality developed by a re-engineering team for an enterprise that provides desktop computing services to business customers. The customer requirements data, in the language of the users, were gathered from customer interviews. The data were transferred to the house of quality, and design attributes and performance targets were determined by the re-engineering team. The customer needs were in the categories Knowledge and Responsiveness. Under the latter heading, the customers identified many subcategories: Promptness, Completion Estimates, Status, Access, and Communications. For each performance category, the customers and the re-engineering team agreed on one or more performance measures that appropriately capture the customer need. Then the re-engineering team developed a set of design attributes and priorities that formed the house of quality. Notice that the attributes that comprise the rows in Figure 25.9 fall into three design categories: systems, human resources, and organizational structure.

The design attributes of Figure 25.9 then were translated by the re-engineering team into a design concept, portrayed in Figure 25.10. The specific design concept looks similar to the hypothetical design of Figure 25.8. The key needs that were identified in the QFD exercise, which are emphasized in the design concept, are

- Increased knowledge on the part of the Customer Care Center associates
- Systems and resources that provide a high degree of responsiveness
- Systems that provide increased accessibility to the Customer Care Center
- Accurate and complete responses to customer questions

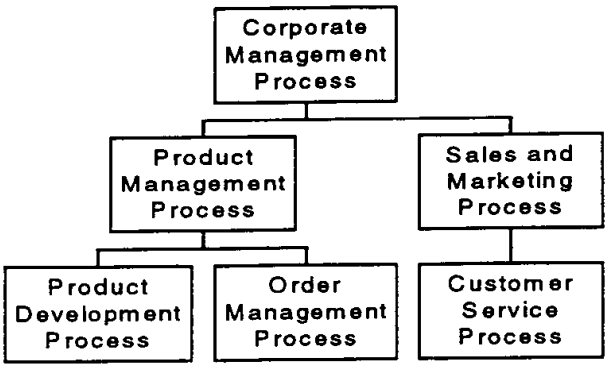


FIGURE 25.7 An enterprise described in terms of its major processes.

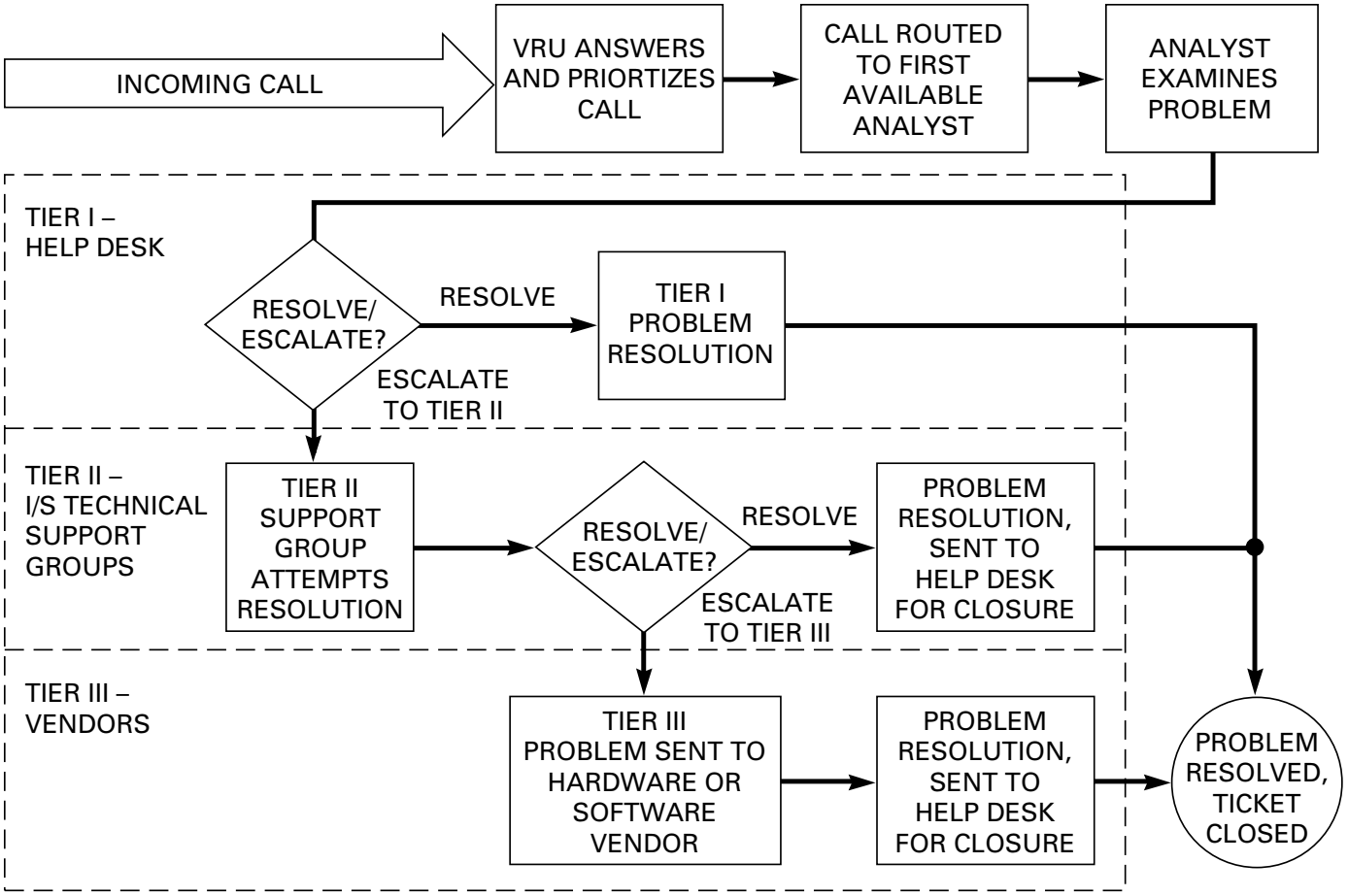


FIGURE 25.8 The "customer care" or "help desk" organization. [*From AT&T Operations (1998).*]

The team also prepared performance objectives for the design concept, which could be used to test the design for compliance with customer needs. These are examples of the objectives for the Call Center:

- The Call Center will be capable of resolving 60 percent of customer service requests without the need for second- or third-tier support.
- An average call to the Call Center will take about 10 minutes to resolve.

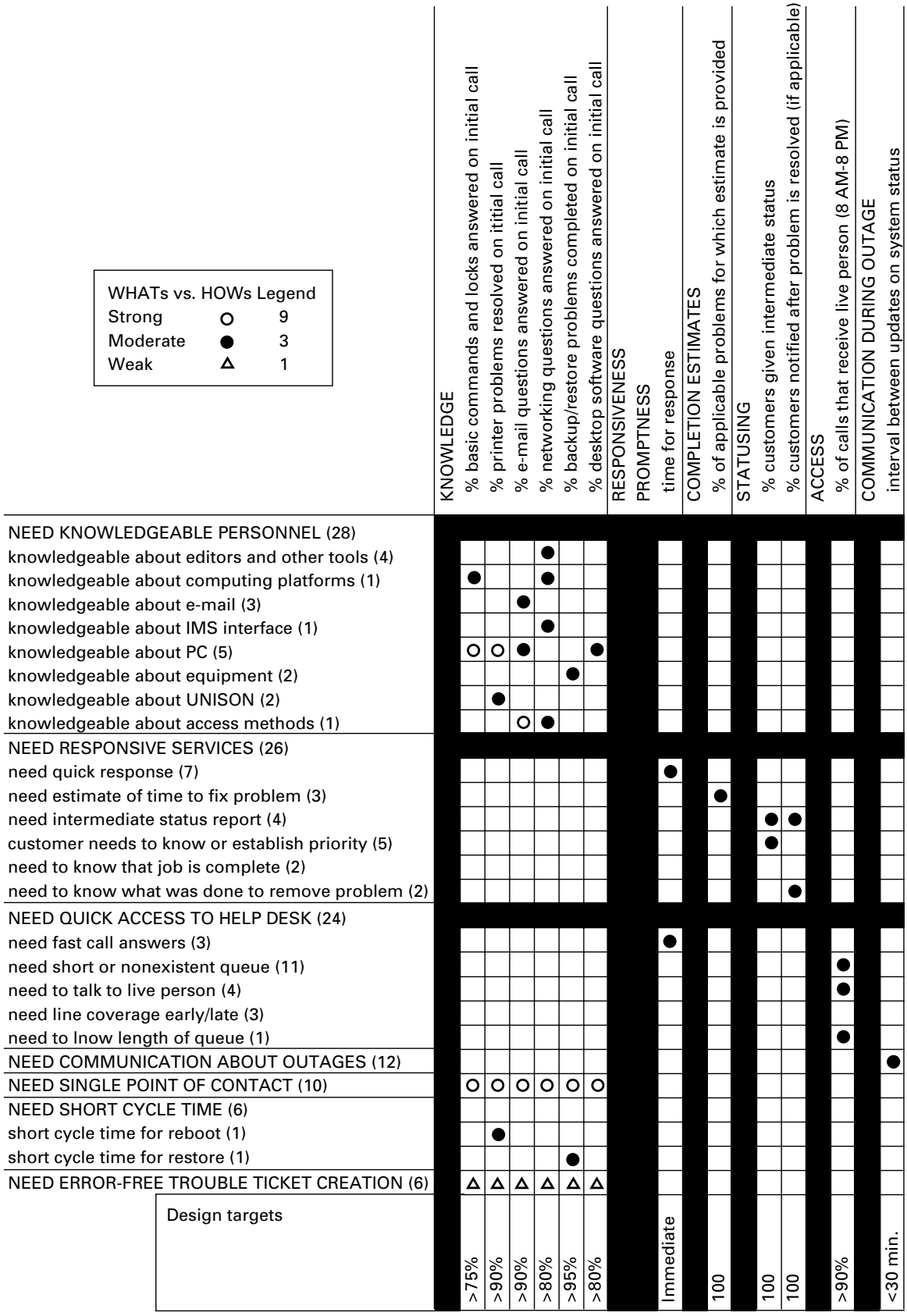


FIGURE 25.9 The house of quality. [*From AT&T Operations (1998).*]

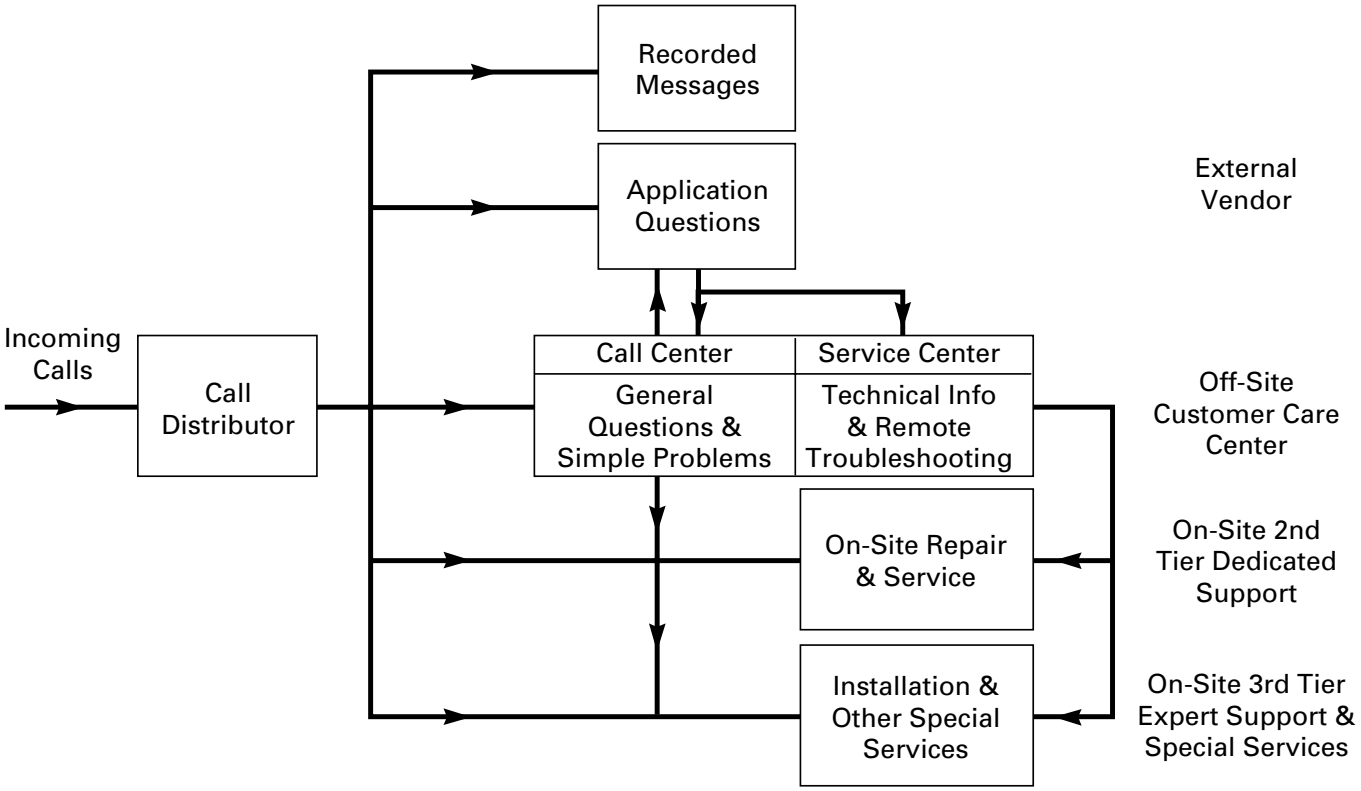


FIGURE 25.10 Process-design concept model. [*From AT&T Operations (1998).*]

- The Call Center will function as a learning organization.
- The Call Center will comprise both permanently assigned employees and employees assigned on a rotating basis from the functional service organizations supported by the Call Center.
- Permanent employees will provide general customer service and also will be responsible for quality and training functions.
- Employees on rotating assignment will provide specialized skills to the Call Center but also will support general customer service to gain familiarity with the "voice of the customer."
- All Call Center agents will be trained in customer contact skills and in the skills required for solution of common problems.
- All solutions to customer problems will be entered into the system knowledge database.
- All transactions with customers will be recorded for analysis to determine root causes and to support quality improvement.

OPERATIONS

The last important area where quality must be considered is the operational area. This is where results are achieved, measured, and improved. The ongoing performance of operating customer service processes includes such considerations as human performance, process control, process capability, and process improvement. Performance metrics are important here. These considerations for customer service share quality methods in common with most other business functions. Therefore, interested readers should refer to earlier sections to understand the generic methods. In particular, the following sections are important: Section 4, The Quality Control Process; Section 5, The

Quality Improvement Process; Section 6, Process Management; Section 9, Measurement, Information, and Decision Making; Section 15, Human Resources and Quality; and Section 16, Training for Quality. This section will focus mainly on examples of the operations of well-designed, well-structured customer service capabilities that employ the methods described in these earlier sections.

PROCESSES AND SYSTEMS

The first requirement for successful management, control, and improvement of customer service processes is to have well-defined, well-understood processes. Often, steps to manage and improve quality are undertaken without process definitions because no one has taken the time to think through and document, especially in process diagrams, the way work is done. Ideally, the initial versions of such documents are produced as part of the service design. An example of process diagram for the process described in Figure 25.10 is shown in Figure 25.11.

The process diagram uses a particular flowcharting convention (*AT&T Operations Engineering Workbook*). There are many available process flowcharting conventions and tools. The particular conventions used here are summarized in Figure 25.12.

A detailed understanding of the conventions used in Figure 25.11 is not important here; the words and arrows convey enough meaning for our purposes. It is important to remember that it is not possible to control and improve customer service operations without process descriptions and associated metrics. Attempts at control and improvement without process descriptions and metrics are only guesswork. And metrics without defined processes only make for busywork, with no real value. Worse yet, lacking processes, it is tempting to measure the performance of the people who provide customer service. The consequences of so doing are severe. The people will do their work to make the metrics look good rather than providing customer service that maximizes customer satisfaction. And the people will lobby strongly for weak metrics that may very well be irrelevant to customer needs or business requirements.

In addition to process control and improvement, it is important to recognize that as an enterprise grows or as customer services are extended and augmented, process capability must be monitored. This involves continuous oversight of customer service processes in search of stress cracks that may be caused by saturated processes, by changes in customer needs, or by other considerations not congruent with the design intent and implementation criteria. Process capability studies are addressed in Section 4. When the demands of the process exceed the process capability, the process must be reengineered. Process reengineering also may yield improved efficiency or effectiveness, especially when it incorporates new or improved technology.

OUTSOURCING

In many enterprises, business process re-engineering (BPR) initiatives introduce issues relating to legacy migration and outsourcing. *Legacy migration* is a term used to connote the migration of customer service systems from their traditional (legacy) processes and associated systems to modern, leading-edge processes and systems. Traditional approaches have legacy hardware, software, training, and cultures that must be overcome to replace them effectively with modern approaches that provide competitive advantages. The corollary issue is whether the customer service functions should be done at all inside the enterprise, or whether the enterprise should *outsource* the functions to companies that specialize in performing them. Companies that provide customer service functions on an outsourced basis are prominent in the customer service arena, performing many of the associated functions at superior levels. The conventional wisdom on this question is that if the customer service functions are strategic to the enterprise's business strategy, as defined earlier, under Strategic Intent, then the functions should be performed internally. This

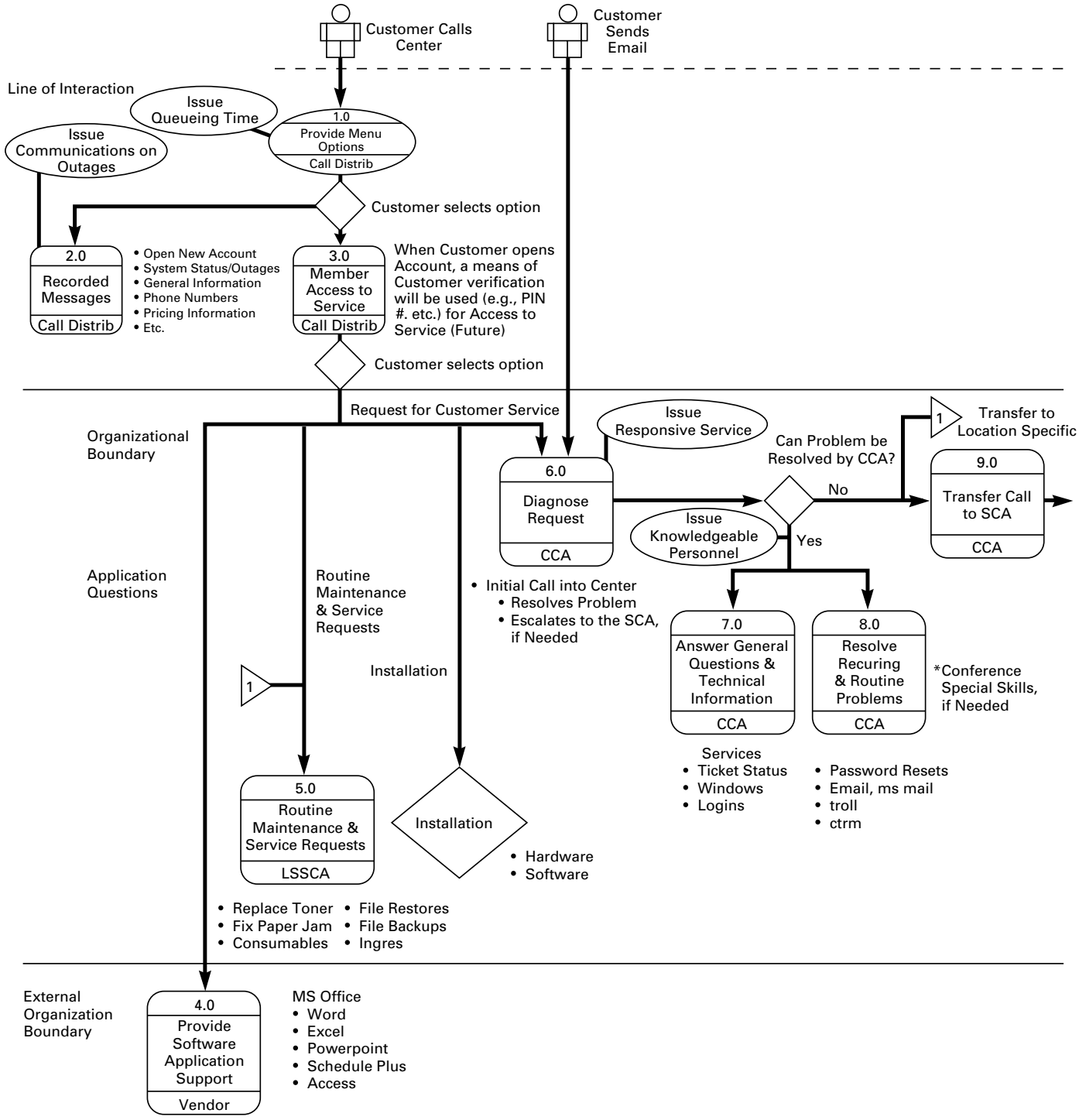


FIGURE 25.11 The customer care center: high-level overview. [*From AT&T Operations (1998).*]

is easy to understand, since the functions are part of a strategy to be better than the best competitor in some critical dimension of service. On the other hand, if the functions are not strategic, then the question of whether they can be performed at levels of quality and at costs that are comparable with those of the *outside* companies is a valid one. Customer service functions of many quality-award-winning companies are provided by outside companies unbeknownst to the customers.

MEASUREMENT AND METRICS

Common to all approaches designed to achieve excellence in customer service operations is instrumentation for the collection and analysis of information. We must begin with some basic definitions.

- *Metric:* Unit of measurement. Common metrics in everyday life are miles (or kilometers) to measure distance and pounds (or kilograms) to measure weight.
- *Statistical metric:* The result of a calculation procedure. For instance, the most commonly used statistical metric is the arithmetic average of a set of numerical values. One could easily calculate the average weight of people riding in the elevator with you by asking them their individual weights, adding the numbers, together with your weight, and dividing the sum by the total number of people in the elevator. Of course, the people in the elevator may not know their weights exactly, so the calculated average would be an estimate.
- *Data:* A set of individual measurements. The data are usually the input to a statistical metric. For instance, the weights of the individuals in the elevator comprise a set of data.
- *Analysis:* Structured ways of comparing data and statistical metrics. For instance, Tom weighs more than the average of the people in the elevator.

With these definitions in mind, we are ready to view Figure 25.13, a process diagram for defining, collecting, and analyzing metrics (I am indebted to the AT&T OE Process Management Consultants for most of this material on this topic.). In the following explanations, it is assumed that

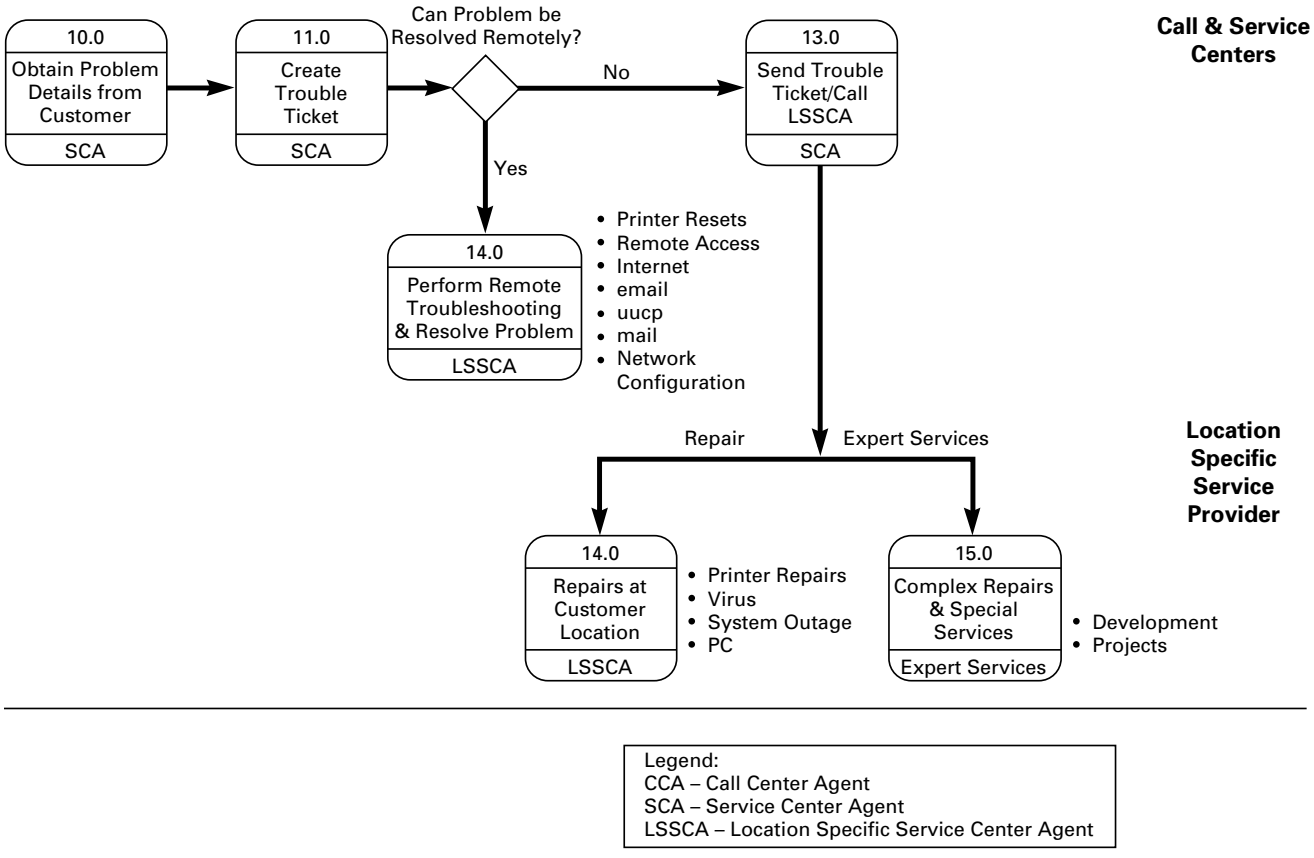
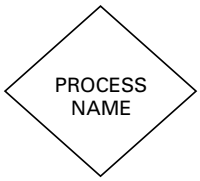


FIGURE 25.11 (*Continued*)

SYMBOLS

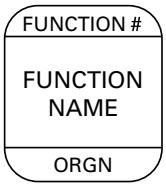
OEW flow-charting symbols are designed to capture a maximum amount of information and still maintain an uncluttered appearance for the resulting flowcharts. They also ensure a consistency and uniformity between process descriptions.



Processes are represented by large diamonds with the name of the process written inside.

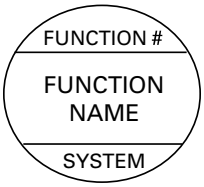
Processes external to the process to be improved are depicted as diamonds with "cut corners". The name of the external process is written inside the diamond.

The names of organizations external to the process to be improved (e.g., Customer or Vendor), are shown as a aquare with "cut corners".

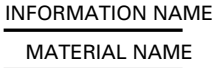


Functions performed by organizations or work centers are symbolized by a vertical rectangular, with rounded corners. The rectangle is divided into three areas. The top area contains the acronym and function number. The middle area contains the name given to the function. The bottom area identifies the organization performing the function.

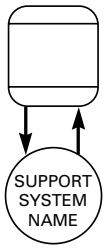
A function which has been improved will have a asterisk (*) before the function number.



Functions performed solely by computer systems are depicted by a circle divided into three areas, The top two areas are as described above; the bottom area contains the name of the computer system.

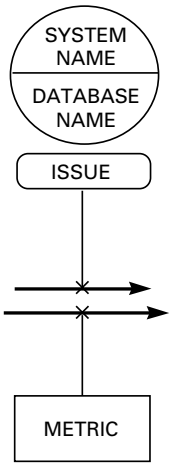


There are two types of interfaces (inputs/outputs). A solid line is used for information. A dashed line is used for material. The name of the information or material is written on the line.



Support systems are depicted by a circle containing the name of the information system. This symbol is used when the system is supporting a function. Two parallel, vertical lines show input and output flowing between the system and function.

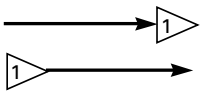
FIGURE 25.12 Flowcharting: symbols and conventions. [*From AT&T Operations (1998).*]



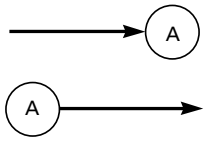
A small circle divided into two sections depicts a specific database that is being accessed by a system. The top half contains the name of the computer support system, and the bottom half contains the name of the database.

Any issue identified within a process is shown in an oval above or below the point at which it occurs. The point is marked by an X and is connected to the oval by a line.

Any metric associated with part of a process is shown in a rectangle above or below the point at which the metric is measured. The measured point is marked by an X and is connected to the rectangle by a line.

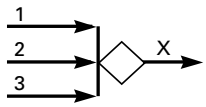


Feedback symbols are used to prevent flow-charts from becoming too cluttered. Feedbacks are always labelled numerically. Identical labels must be given to both ends of the feedback flow.

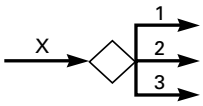


Connector symbols are used when the splitting of a flow must be divided between pages. The symbol is a small circle with a capital letter. The identical letter is given to both sides of the division.

DECISION POINTS: Decision points are shown as small diamonds. These are points at which choices are made based on pre-specified conditions called decision rules. They are generally given as supporting function descriptions (see p. 8).



In this case, a decision rule in an upstream sending function, based on outputs 1, 2 and 3 dictates what occurs at X. For example, the decision rule may be: if 1 and 3 are both present, then send 2 to X, otherwise take no action.



In this case, a decision rule in an upstream sending function, based on the output x, dictates what occurs at 1, 2 and 3. For example, the decision rule may be, if X is greater than 10 send X through to 1, if it is between 5 and 10 send through to 2, otherwise send through to 3.

OE Flow-charting conventions assure that complex flow-charts are interpreted in only one way. They also help to ensure consistency and uniformity between projects.

DIRECTION: Process flow-charts show the time sequence of the functions performed. The progression is from left to right.

The following situation could arise when constructing process flow diagrams: Five functions; A, B, C, D, and E, are considered. Functions A and B receive materials from external suppliers and perform separate operations on them. Their products go to a "storage" function C where they are kept for some time before being sent to D for further processing. When the product of function D is ready, it goes to C for storage for additional time, before being sent to E for final test and shipment to an external customer.

FIGURE 25.12 (*Continued*)

the activities identified on the far left end of Figure 25.13 have taken place; process descriptions exist, and business needs, in the form of goals and objectives, have been defined as part of the strategy formulation and service definition.

The first steps leading to the deployment of customer service metrics are to identify the requirements for metrics and to define the specific metrics that satisfy the requirements. Usually, metrics address some or all of three process considerations:

- *Customer service process effectiveness:* Does the output of the process step meet customer needs? One approach to this metric is to quantify the defects that escape the process.
- *Customer service process efficiency:* Does the process make good use of resources? One approach to this metric is to quantify defects internal to the process, such as rework.
- *Supplier effectiveness:* Do the inputs to the process meet its needs? An approach to this metric is to quantify incoming defects.

The metrics recommended in the preceding paragraph all focus on defects. In the sense intended for these metrics, a *defect* is anything that does not meet or exceed the requirements of the customer, the business, or the process. Since the focus on defects is primarily on internal defects, rather than on defects that affect the customer, the emphasis on defects is a preventive approach, eliminating problems before they have any effect on the service provided to the customer. Therefore, it is important to have a realistic threshold for what is called a *defect.*

When defining the metrics, it is important to ensure that the data required to calculate them can be collected readily and reliably. The metrics team should think through the sources of the data, the likely methods of collection, how defects will be identified, the amount of effort required, and the cycle time for data collection. All the key characteristics should be represented with metrics, even though all of them may not be implemented initially. The metrics team should think through how each method may affect behavior and be modified if required to ensure that the metrics will drive the desired behavior.

IBM Corporation. Large companies that emphasize customer service, such as IBM, approach the measurement process in a comprehensive way (Edosomwan 1988). Customer service quality measurements at IBM address four areas that affect customers:

- Customer requirements
  1. Customer partnership
  2. Quality assurance
  3. Reliability
  4. Empathy
  5. Durability
  6. Responsiveness

- Task requirements
  1. Supplier options
  2. Vendor options
  3. Operational options
  4. Department options
  5. Interfunctional options
  6. Cross-functional options
  7. Production options
  8. Delivery options
  9. Consumption options

- Organizational requirements
  1. Management commitment
  2. Education and training

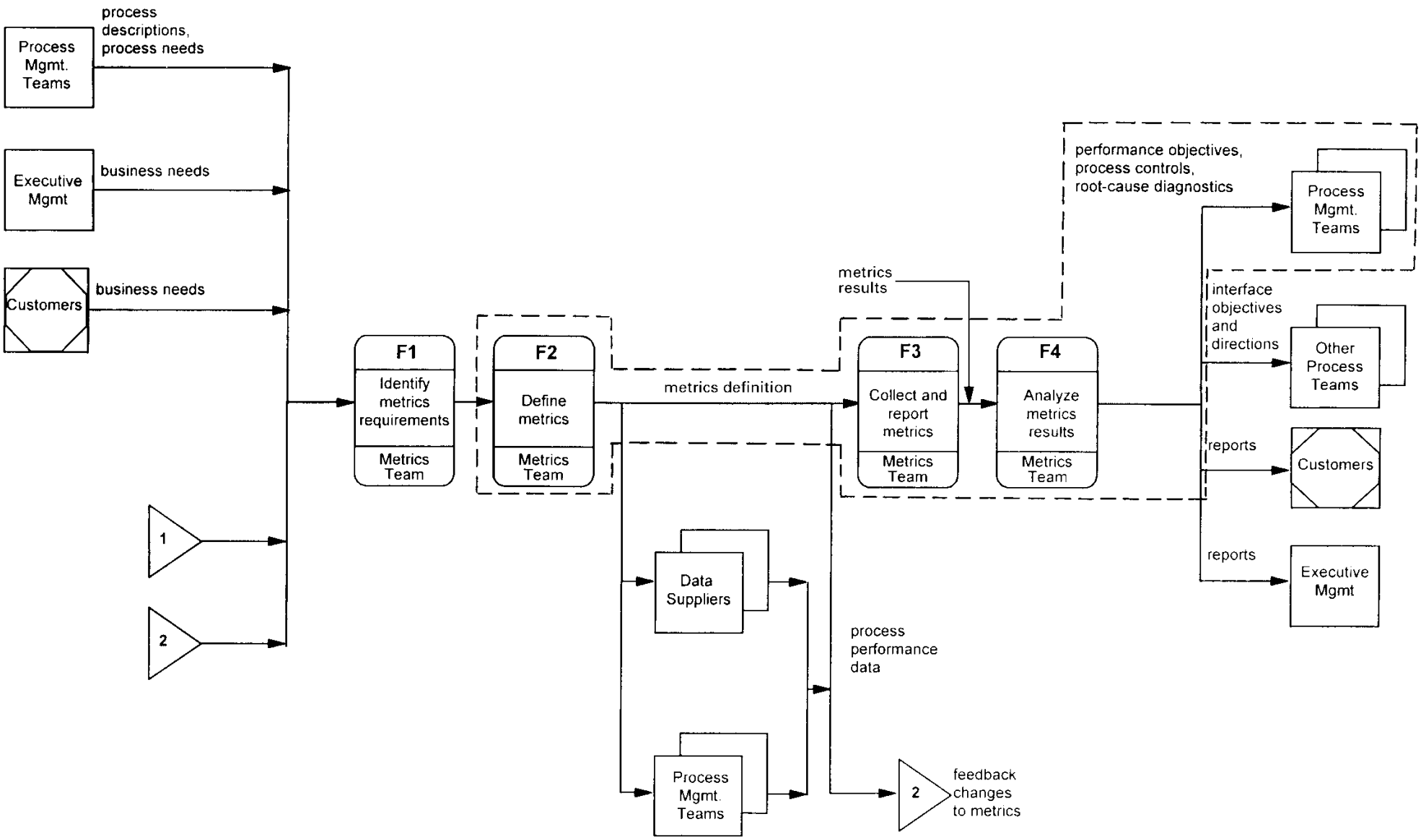


FIGURE 25.13 Defining, collecting, and analyzing metrics.

3. Defined roles and responsibilities
4. Recognition and reward
5. Communications
6. Goal-setting process

- Process control requirements

1. Measurement tools
2. Evaluation tools
3. Improvement tools
4. Information
5. Resource allocations
6. Planning
7. Feedback mechanisms
8. Environment-monitoring tools

Each of the four areas is conceptually addressed at five levels, as shown in Table 25.5. Examples of specific types of metrics that IBM uses to implement the preceding structured approach are summarized in Table 25.6 (Edosomwan 1988).

The examples include objective metrics, such as defect levels and error rates, and subjective measures, such as competitive quality ratings. In both cases, the usefulness of the data are determined by the effectiveness of the definitions of what constitutes a defect or an error, how the customer questionnaires and surveys are designed and implemented, and how the data are analyzed and used to drive control, improvement, and planning efforts. Therefore, education and training of all levels of personnel are critically important. According to IBM, the education and training requirements summarized in Table 25.7 are appropriate for a medium-sized division. Recall that the content, allotted times, and budgets are those which were given in 1988.

The education and training summarized in Table 25.7 do not include the specialized training that is given to the customer-facing customer service personnel. The training for the customer service personnel is tailored by business unit to the particular approaches, systems, and strategies employed for the products and services sold and supported by the business unit.

TABLE 25.5 Impacts of Quality in Customer Service

Level of service quality	Potential areas of impact
Fitness for use	Customer
Fitness for standard	Operational processes
Fitness for demand	Cycle times
Fitness for planning	Planning service quality variables
Fitness for control	Protecting customer requirements

Source: Edosomwan (1988).

TABLE 25.6 Some Types of Quality Metrics in IBM Customer Service

Types of metrics	Sources of data
System in-house performance defects	Manufacturing, engineering, and quality assurance departments
System field performance defects	Customer service departments and marketing offices
Field replacements due to in-service failures	Spare parts logs and marketing office data
Competitive quality ratings	Customer report cards
Engineering changes and updates	Development, manufacturing, and engineering quality reports
Performance error rates in-plant	Plant control charts
Field performance error rates	System performance control charts

Source: Edosomwan (1988).

TABLE 25.7 Education and Training for Customer Service at IBM

Level	Training highlights	Training time required	Training budget allocation
Upper management	Customer partnership Customer requirements Goal setting Key customer service quality programs	One-week initial Three-hour periodic follow-ups	9% of total
Middle management	Customer partnership Resource allocation Customer service program development	$1\frac{1}{2}$-week initial Five-hour periodic follow-ups Program oversight	23% of total
Supervisors	Program oversight Quality management tools Feedback processes	Two weeks initial One-day periodic updates	23% of total
Technical staff and operators	Tools for reliability, durability, and customer satisfaction	Three weeks initial Two-days periodic follow-up	45% of total

Source: Edosomwan (1988).

HUMAN RESOURCES

The human resource (HR) issues for enterprises that focus on excellent customer service involve both the customer-facing staff and all the associates in the enterprise who support the customer-facing staff and the customer service strategies and processes.

The key issues concerning the customer service staff are summarized in Table 25.8. The operational framework for the customer service issues summarized in Table 25.8 should include goals, metrics, and improvement approaches for each HR issue. Examples of such a framework are summarized in Table 25.9.

EMPLOYMENT CONSIDERATIONS

Quality Progress reported a study by Abt Associates of 50,000 customer service employees. The study found that customer satisfaction depends on the degree to which customer service employees believe that they have the capability, the tools, and the organization's support to provide for the customers' needs (Struebing 1996). The same article reported an expert assessment that customer service initiatives can be headed for success or failure at the very first step, the recruiting of customer-facing employees. Here, personality is the critical characteristic.

CONTINUOUS IMPROVEMENT

The philosophy, methods, and tools for the continuous improvement of customer service are similar to those for other functions and are generally covered in Section 6. It is important to remember that continuous improvement involves incremental improvement when appropriate and discontinuous improvement when required. Part of the improvement process involves continual environmental scans in search of early warning signs of changing markets, of new opportunities, and of new competitive threats. In some cases the improvement needs or opportunities will be customer-driven, in some cases they will be competitor-driven, and in some cases they will be driven be emerging technological capabilities. In any of these cases, improvement may be emphasized by including it as part of the strategic planning process discussed earlier in this section.

TABLE 25.8 Human Resources: Quality Initiatives for a Customer Service Organization

Human resource issues	Key operational initiatives (examples)	Key strategic initiatives (examples)
Recruiting	Active relationships with suppliers of customer service recruits	Identify competencies and skills required for customer service job functions
Education and training	Conduct skill assessments and gap analyses	Develop and deliver functional skills and people skills
Tools and technology	Instrument the information technology and tools to provide metrics for improvements and rewards	Acquire and deploy information technology and tools in support of customer service functions
Involvement	Implement feedback and incentive building processes	Develop team-centered customer service organization structures
Empowerment	Provide leadership, role models, and examples for institutionalizing empowerment	Create stakeholder relationships between customer service associates and the enterprise
Performance and recognition	Provide immediate, visible feedback and reward for exemplary performance	Ensure that recognition and reward processes emphasize desired behaviors and business results

TABLE 25.9 Human Resources: Operational Framework for Quality Initiatives

HR issue	Goal	Metric	Improvement approach
Recruiting	100% follow-up within 48 h	Cycle time to yes/no decision	Process improvement for cycle-time reduction
Education and training	Fully qualified front-line staff	% Customer service staff with up-to-date education and training milestones	Cascaded goals and objectives for policy deployment
Technology and tools	Provision systems to permit answering 100% of incoming calls within 15 s	% calls with answer times greater than 15 s	Associates and managers review performance daily at start-of-shift meeting
Involvement	Cascaded personal and team goals and objectives for everyone	Suggestions for improvement per associate	Customer service teams
Empowerment	Every associate has the authority and the tools to satisfy the customers	Leadership survey scores	360-degree assessments
Reward and recognition	Every associate has documented SMART goals (*S*pecific, *M*easurable, *A*greed-to, *R*ealizable, *T*ime-bound)	Associate and management performance assessment scores on goal setting and realization	SMART goals include shared team goals and individual goals; some goals are SMAST (S=*S*tretch)

L.L. Bean. The first step by L.L. Bean to initiate an environment of continuous improvement in its customer service operations was to assign a full-time facilitator to help the customer service manager in the effort (*Customer Service Newsletter* 1995). A transition team was formed to re-engineer the customer service process to include a continuous improvement capability. The team was formed based on expertise in four essential competencies.

- *Customer focus:* Are team members committed to meeting the needs of external and internal customers, and can they build effective relationships with all customers?
- *Team play:* Are team members willing to share knowledge and information with others? "We don't want people who are going to try to build job security by hoarding information," noted the team facilitator.

- *Good communications skills.*
- *Flexibility and adaptability* to changing work conditions.

The team began by understanding the current customer service process. The team discovered that it was based on hand-offs, many of which were unnecessary. The hand-offs were especially problematic whenever there was a transaction that a front-line employee could not handle. In those cases, the employee transferred the customer to another department. The transfer took place off-line. The receiving department did the necessary work and then got back to the customer with the resolution. In most cases, this took 2 or 3 days to complete.

The team developed a pilot prototype program before trying to initiate changes throughout L.L. Bean. It decided that it was too risky to apply untested process improvements to 1200 people at one time. The changes involved a new front-line customer service organization structure that possessed the following characteristics:

- *External-customer focus:* It maximized convenience for customers by eliminating unnecessary hand-offs, moving the customers quickly and efficiently to the person that can meet their needs.
- *Process-oriented structure:* The prior organizational structure was functionally oriented. In the new structure, the customer service representative is accountable for the entire transaction from the initial customer interaction to the final resolution.
- *Learning organizational structure:* The minimum hand-off, end-to-end accountability design emphasized learning opportunities. The service representatives were now enabled to build reservoirs of knowledge sufficient to identify the root causes of customer service problems and ways to prevent their occurrence at the sources. The Customer Service Department became a forum for discussing the day's activities, what went wrong and what went well, with a focus on preventing problems from recurring, rather than getting better at resolving them.

Two months after initiation of the pilot program, the productivity of the pilot customer service team increased by 38 percent. This was a surprise to the team leader, who had budgeted for an initial decline in productivity. The most important discovery made during the pilot effort was that productivity, good service, and job satisfaction are complementary results.

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