

## CHAPTER NINETEEN

# Supervisory Control and Quality

### Learning objectives

After studying this chapter, you will be able to:

1. Outline the three basic steps in the control process.
2. Identify tools and techniques most frequently used by supervisors to exercise control.
3. Define what quality means to a supervisor, and list several reasons for maintaining quality.
4. Differentiate between product quality control and process control.
5. Define the concept of quality assurance.
6. Discuss total quality management (TQM).
7. Define the following terms: continuous improvement, quality at the source, six sigma, and lean manufacturing.
8. Summarize the thrust of ISO 9000 and ISO 14000.
9. Explain the purpose of a zero-defects program.
10. Define a quality circle.
11. Cite several guidelines that supervisors can follow to help build quality job habits among employees.

## SUPERVISION DILEMMA

Since taking over as supervisor of the claims section, John Lewis has discovered that things often don't get done as they should. John has missed deadlines. In addition, his department has mishandled claims and made basic processing errors. On top of this, John's department ran out of claim forms last week. Much to John's dismay, it took three days to get some replacements.

John does not expect everything to go perfectly, and he understands why certain things can go wrong. What he doesn't understand is why he rarely finds out about a problem until it is too late to correct it. When John discussed this matter with a supervisor from another department, the supervisor suggested that John's supervisory controls might be inadequate.

The major purpose of supervisory controls is to ensure that things are progressing according to the supervisor's plans. Thus, controls should be designed to alert the supervisor to problems or potential problems before they become critical. Supervisors should use the controlling process to ensure success by detecting deviations early and therefore allowing time to take corrective actions. Controlling is similar to planning in many ways. The major difference between controlling and planning is that controlling usually takes place *after* the fact, whereas planning takes place *before* the fact.

### Steps in the Controlling Process

1

LEARNING OBJECTIVES

**Control** is accomplished by comparing actual performance with predetermined standards or objectives and then taking action to correct any deviations from the standard. Thus, the control process has three basic requirements: (1) establishing performance standards, (2) monitoring performance and comparing it with standards, and (3) taking necessary corrective action. The first requirement is part of the planning process while the latter two are unique to the control process.

#### Establishing Performance Standards

When objectives have been set, they are generally used as standards. A standard outlines what is expected. **Standards** are used to set performance levels for machines, tasks, individuals, groups of individuals, or even the organization as a whole. Departmental objectives are types of standards. Usually, standards are expressed in terms of quantity, quality, or time limitations. For example, standards may deal with production output per hour, quality as reflected by customer satisfaction, or production schedules.

Performance standards attempt to answer the question "What is a fair day's work?" or "How good is good enough?" Although designed to reflect normal output, output standards take into account more than just work. Such standards include allowances for rest, delays that occur as part of the job, time for personal needs, time for equipment maintenance, and allowances for physical fatigue. Figure 19.1 lists several types of standards.

Many methods for setting standards are available. Which method is most appropriate depends on the type of standard in question. A common approach is to use the judgment of the supervisor or other recognized experts. A limitation of this approach is that it is very subjective. A variation of this method is for the supervisor and the person or persons performing the job to jointly set the standard. With this method, the individuals actually performing the job provide input. The analysis of historical data, such as production data, is another approach. A potential problem here is that things may have changed since the data were collected. The most objective approach is the employment of industrial engineering methods. These methods usually involve a detailed and scientific analysis of the situation. Motion studies and time studies (discussed in Chapter 9) are examples of this approach.

**FIGURE 19.1**  
Major Categories  
and Examples of  
Standards

*Revenue standards*—designed to reflect the level of sales activity.  
Examples: dollar sales, average revenue per customer, per capita sales.

*Cost standards*—designed to reflect the level of costs.  
Examples: dollar cost of operation, cost per unit produced, cost per unit sold.

*Productivity standards*—designed to reflect output per unit of time.  
Examples: number of units produced per work hour, number of units produced over a given time period.

*Material standards*—designed to reflect efficiency of material usage.  
Examples: amount of raw material per unit, average amount of scrap per unit produced.

*Resource usage standards*—designed to reflect how efficiently organizational resources are being used.  
Examples: return on investment, percent of capacity, asset usage.

**Monitoring  
Performance**

The overriding purpose of monitoring performance is to provide information on what is actually happening. The major problem in monitoring performance is deciding when, where, and how often to monitor. Monitoring must be done often enough to provide adequate information. If it is overdone, however, it can become expensive and can result in adverse reactions from employees. The key is to view monitoring as a means of providing needed information, not as a means of checking up on employees. Thus, monitoring should be preventive and not punitive. In this light, the reasons for monitoring should always be fully explained to employees.

Timing is also important when monitoring performance. For example, raw materials must be reordered before they run out so as to allow for delivery time.

Most control tools and techniques are primarily concerned with monitoring performance. Reports, audits, budgets, and personal observations are methods commonly used for this purpose.

**Taking  
Corrective  
Action**

Only after the actual performance has been determined and compared with the standard can proper corrective action be determined. All too often, however, managers set standards and monitor performance but do not follow up with appropriate actions. If standards are not being met satisfactorily, the supervisor must find the cause of the deviation and correct it. A major problem in this step is determining when standards are not being met satisfactorily. How many mistakes should be allowed? Have the standards been set correctly? Is the poor performance due to the employee or some other factor? The key here is the supervisor's timely intervention. A supervisor should not allow an unacceptable situation to exist for long but should promptly determine the cause and take action.

The type of corrective action depends on the situation. If the performance meets or exceeds the standards, a supervisor might provide positive reinforcement such as commending an employee for a job well done or praising the work group as a whole. When performance is below standards, an approach that works well in most situations is for the supervisor to take increasingly harsh actions. For example, if an employee's productivity is unacceptable, the supervisor might first merely advise the employee of the problem. If the problem continues, the supervisor might take the more direct action of offering to work with the employee to identify difficulties. Once the problem has been clearly identified, the supervisor and the employee should agree on the actions necessary to make the employee's productivity acceptable. Then, if the employee's productivity is still unacceptable, the supervisor may have to take more dramatic action, such as transferring or terminating the employee. In almost all situations, the supervisor should help the employee overcome the deficiency before taking dramatic action. The style, finesse, and method used to take corrective action can greatly affect the results achieved. Supervisors should avoid talking down to employees when taking

such action. Supervisors should also fully explain why the action is necessary. All too often, supervisors take corrective action without giving an adequate explanation. It is only natural for employees to resist something that they know very little about.

## Tools for Supervisory Control

2

LEARNING OBJECTIVES

Many tools and techniques are available to help the supervisor exercise control. Among the tools and techniques most frequently used by supervisors are budgets, written reports, personal observation, electronic monitors, and management by objectives.

### Budgets

As defined in Chapter 6, a **budget** is a statement of expected results or requirements expressed in financial or numerical terms. Budgets express plans, objectives, and programs of the organization in numerical terms. While preparation of the budget is primarily a planning function, its administration is a controlling function.

Many different types of budgets are in use (Figure 19.2 outlines some of the most common). Although the dollar is usually the common denominator, budgets may be expressed in other terms. Equipment budgets may be expressed in numbers of machines. Material budgets may be expressed in pounds, pieces, gallons, and so on. Budgets not expressed in dollars can usually be translated into dollars for incorporation into an overall budget. Figure 19.3 presents an example of a simplified expense budget.

While budgets are useful for planning and control, they are not without their dangers. Perhaps the greatest danger is inflexibility. Inflexibility is a special threat to organizations operating in an industry characterized by rapid change and high competition. Rigidity in the budget can also lead to a subordination of organizational goals to budgetary goals. The financial manager who won't go \$5 over the budget in order to make \$500 is a classic example. Another danger is that budgets can hide inefficiencies. Certain expenditures made in the past often become justification for continuing these expenditures when in fact the situation has changed considerably. Budgets can also become inflationary and inaccurate when supervisors pad their budgets because they know they will be cut by their bosses. Since the supervisor is never sure how severe the cut will be, the result is often an inaccurate if not unrealistic budget. The key to the successful use of budgets is to keep things in perspective. The budget should be used as a standard for comparison. However, it should not be inflexible. Cost budgets are described at length in the next chapter.

### Written Reports

Almost all reports are designed to provide information for control. The supervisor may be a preparer or recipient of reports. Supervisors often prepare reports for use by upper management, and employees often prepare reports for use by supervisors. In both cases, the reports are designed to provide information on what is happening.

**FIGURE 19.2**  
Types and Purposes  
of Budgets

Type of Budget	Brief Description or Purpose
Revenue and expense budget	Provides details for revenue and expense plans
Cash budget	Forecasts cash receipts and disbursements
Capital expenditure budget	Outlines specific expenditures for plant, equipment, machinery, inventories, and other capital items
Production, material, or time budget	Expresses physical requirements of production, or material, or the time requirements for the budget period
Balance sheet budgets	Forecasts the status of assets, liabilities, and net worth at the end of the budget period

**FIGURE 19.3**  
**Simplified Expense Budget**

Product cost	\$10,000
Advertising cost	5,000
Shipping cost	5,000
Sales commissions	2,500
Budgeted expenses	\$22,500

Written reports can be prepared on a periodic or as-necessary basis. There are two basic types of written reports. **Analytical reports** interpret the facts they present. **Informational reports** only present the facts.

The need for or the use of particular reports should be periodically evaluated. Reports have a way of continuing long past their usefulness. Unnecessary reports can represent a substantial waste of resources.

### Personal Observation

Personal observation is sometimes the only way for a supervisor to get an accurate picture of what is really happening. Most supervisors regularly make personal observations. Besides providing information, such observations can communicate the supervisor's interest in the employees. Supervisors seldom seen by employees are often accused of spending too much time in their ivory towers. But supervisors may also be criticized for continually looking over the employees' shoulders. A potential inaccuracy of personal observation is that an employee's behavior may change while he or she is being watched. Another potential inaccuracy lies in the interpretation of the observation. The observer must be careful not to read into the situation events that did not actually occur. When observing the work of others, supervisors should concentrate on objective facts such as productivity, not on subjective opinions.

Management by walking around is a type of control based on personal observation. This type of control was popularized by managers at the Hewlett-Packard Company. When this method is used, supervisors are encouraged to walk around and mingle with one another and with the employees. Management by walking around is basically a hands-on approach to control.

### Electronic Monitors

Today a number of different types of electronic devices can be used to monitor what is going on. Examples include electronic cash registers that keep a record of what items are sold and when; video cameras that record employee and customer movements; phones that record how long each customer was engaged; Internet programs that track where and how long an employee or customer is at certain Internet sites; and other forms of automated reports.

### Management by Objectives

Management by objectives (MBO) was discussed in Chapter 6 as an effective means for setting objectives. The development of an MBO system is part of the planning function. However, once such a system has been developed, it can be used for control purposes.

## Supervisory Control in Practice

Supervisors practice control in a number of the areas connected with their jobs. Which specific types of control supervisors practice depend on their areas of responsibility. However, quality assurance and inventory control are two types of control with which almost all supervisors are concerned. Quality assurance includes everything that an organization does to ensure the quality of its products and services, such as the steps taken to prevent quality problems and to monitor the quality of products and services. Inventory control is concerned with monitoring inventory so as to maintain a supply of inventory adequate to meet customer demand but not greater than is necessary for that purpose.

## Quality and the Supervisor

3

### LEARNING OBJECTIVES

*Quality* is a relative term. To a space engineer, it represents a million parts that have been carefully made, tested, and assembled so that they will function flawlessly. To the U.S. Department of Agriculture, it means uniformity and an absence of contamination in food. To a fancy restaurant, it may mean lobster flown in daily from Maine. Quality may not mean the same thing to the consumer and the supervisor. The consumer is concerned with service, reliability, performance, and appearance. The supervisor is concerned with the achievement of product or service specifications. The supervisor evaluates quality in relation to the specifications or standards that are set when the product or service is designed.

### Why Insist on Quality?

What has caused all the recent concern about quality? Quality has always been important, but never more so than today. Rising labor and material costs, combined with the need to satisfy more demanding customers, have motivated organizations to become more quality conscious. When labor and materials were less expensive, remaking or scrapping an item wasn't nearly so costly. Also, America's leadership in quality has been eroding for years. In many instances, the quality of foreign products is viewed as better than that of American products. In the service fields, the public now demands higher quality at a lower cost. Historically, many other reasons have existed for maintaining quality. Figure 19.4 lists some of these.

### Who Is Responsible for Quality?

In the final analysis, who is responsible for maintaining quality? Who causes quality problems? Most supervisors defend their positions on quality by saying, "If the material we get is good, then we'll send it on good." The obvious implication is that the material they get is often of poor quality. Taking this thought one step further, the supervisor might argue, "How can you expect me to produce quality products or services when I get such bad materials?" Any number of people can be blamed for a supervisor's quality problems. Purchasing, engineering, quality control people, and the human resources department are prime candidates. It is a natural tendency to blame someone else.

The supervisor should be one of the first to know what is going on! In other words, if *all* supervisors provided up-to-standard materials, there would be no quality problems. Every supervisor should first worry about his or her own area of responsibility. If all supervisors assumed responsibility for quality in their respective areas, quality would be a reality. In the final analysis, accountability for quality is spread across the entire organization.

### Types of Quality Control

Organizations usually have some method for monitoring the quality of their products or services. This aspect of quality is referred to as *qualified control*. While supervisors are usually not responsible for designing a quality control system, they are frequently responsible for implementing the system. They should therefore have a basic understanding of how quality control works.

**FIGURE 19.4**  
Steps for  
Maintaining Quality

1. Maintain certain standards, such as with interchangeable replacement parts or with service levels.
2. Meet customer specifications.
3. Meet legal requirements.
4. Find defective products that can be reworked.
5. Identify inferior services.
6. Find problems in the production process.
7. Grade products or services (such as lumber, eggs, or restaurants).
8. Provide performance information on individual workers and departments.

4

## LEARNING OBJECTIVES

Quality control relating to things (products, services, raw materials, etc.) is referred to as **product quality control**. Product quality control is used when quality is being evaluated with respect to a batch of products or services that already exist, such as incoming raw materials or outgoing finished goods. Product quality control lends itself to acceptance sampling procedures. With acceptance sampling, some portion of outgoing items (or incoming materials) is inspected in an attempt to ensure that the items meet specifications with regard to the percentage of defective units that will be tolerated. Under acceptance sampling procedures, the decision to accept or reject an entire batch of items is based on a sample or group of samples.

Quality control relating to the control of a machine or an operation during the production process is called **process control**. Under process control, machines and/or processes are periodically checked to ensure that they are operating within certain preestablished tolerances. Adjustments are made as necessary to prevent the machines or processes from getting out of control and producing bad items. Process control is used to prevent the production of defects, whereas product control is used to identify defects after they have been produced.

Today considerable attention is also devoted to controlling the quality of *services* that are offered. Examples include supervisors calling customers to see how they would rate the quality of a service or asking customers to fill out a brief evaluation form regarding a service received.

## Quality Assurance

5

## LEARNING OBJECTIVES

For years the focus of industry was to practice quality control through the inspection process. As discussed in the previous section, the general approach was to produce a product or service and then inspect to ensure that the quality standards were being met. While this approach is still widely used, there has been a shift in philosophy toward placing the operator in charge of his or her own quality—while the product or service is being produced. Thus, *today* the emphasis is on the *prevention* of defects and mistakes rather than on finding and correcting them. The idea of “building in” quality as opposed to “inspecting it in” is known as **quality assurance**. With this approach, quality is viewed as the responsibility of all organization members rather than the exclusive domain of a quality control department.

While there have been many individuals who have championed the prevention approach to quality, W. Edwards Deming is perhaps most responsible. Deming was a statistics professor at New York University in the 1940s who went to Japan after World War II to assist in improving quality and productivity. While he became very much revered in Japan, Deming remained almost unknown to U.S. business leaders until the 1980s when Japan’s quality and productivity attracted the attention of the world. Supervision Illustration 19–1 describes how one company has prospered by placing emphasis on the quality of its processes and products.

## Total Quality Management

6

## LEARNING OBJECTIVES

A major question facing today’s supervisors is how to build quality into employee performance. How can supervisors get their employees to be concerned about the quality of their everyday work? Most successful attempts to improve quality have focused on the prevention of quality problems through employee involvement. **Total quality management (TQM)** is a management philosophy that emphasizes managing the entire organization so that it excels in all dimensions of products and services that are important to the customer.<sup>1</sup> TQM, in essence, is an organizationwide emphasis on quality as defined by the customer. Under TQM everyone from the CEO on down to the lowest level employee must be involved.

TQM can be summarized by the following actions:<sup>2</sup>

1. Find out what customers want. This might involve the use of surveys, focus groups, interviews, or some other technique that integrates the customer’s voice in the decision-making process.
2. Design a product or service that will meet (or exceed) what customers want. Make it easy to use and easy to produce.

## SUPERVISION ILLUSTRATION 19 – 1

**QUALITY AT CASTAIC BRICK**

Castaic Brick in Castaic, California, produces a range of commercial, common, paving, thin, and crushed brick. The company began in the 1950s in the San Fernando Valley and moved into its present location in the 1960s. In the mid-1970s, Mike Malow, a holocaust survivor and shrewd businessman, bought out the other owners and became the sole owner of the company.

As recently as 1981, Castaic Brick was still making bricks using century-old methods that required the bricks to be fired outside. These methods made it impossible to produce bricks during the rainy season, and unseasonable rains could ruin thousands of bricks. In the early 1980s Malow replaced the old outdoor kilns with a new plant and more modern equipment. Production levels soared, and the company prospered.

Over the next several years, the company began to experience more and more competition. As the competition increased,

the company began to view increased quality as a way of differentiating itself from the competition. Modifications were made to methods and more modern equipment was purchased, improving both quality and productivity. The company also added supervisors to oversee the quality of each department.

While its emphasis on quality is largely responsible for Castaic Brick's success, challenges still remain. David Friedman, the company's technical supervisor in charge of R&D, quality control, quality assurance, and mining, summed up the company attitude toward quality, "A lot of times you have to spend money to make money, and Malow and the rest of our management understand that. Quality is important to us, and we'll always be willing to make changes in our process to ensure that we reach that goal."

**Source:** Christine L. Grahl, "Quality Drives Change at Castaic Brick," *Ceramic Industry*, May 1999, pp. 52–56. For more information on Castaic Brick see its website at: [www.castaicbrick.com](http://www.castaicbrick.com).

3. Design a production process that facilitates doing the job right the first time. Determine where mistakes are likely to occur and try to prevent them. When mistakes do occur, find out why so that they are less likely to occur again. Strive to "mistake-proof" the process.
4. Keep track of results and use them to guide improvement in the system. Never stop trying to improve.
5. Extend these concepts to suppliers and to distribution.

## 7

## LEARNING OBJECTIVES

Continuous improvement, quality at the source, six sigma, and lean manufacturing are terms that have particular relevance to TQM. **Continuous improvement**, in general, refers to an ongoing effort to make improvements in every part of the organization relative to all of its products and services. With regard to TQM, it means focusing on steady improvement in the quality of the processes by which work is accomplished. The idea here is that the quest for better quality and better service is never ending. **Quality at the source** refers to the philosophy of making each employee responsible for the quality of his or her work. In effect, this approach views every employee as a quality inspector for his or her own work. A major advantage of this approach is that it removes the adversarial relationship that often exists between quality control inspectors and production employees. It also encourages employees to take pride in their work.

**Six sigma** is both a precise art of statistical tools and a rallying cry for continuous improvement.<sup>3</sup> Six sigma was pioneered by Motorola during the 1980s and literally means, in statistical terms, six standard deviations from the mean. The philosophy of six sigma is that in order to realize the very high level of quality demanded by six sigma (most processes traditionally have used three sigma), the entire production or service system must be examined and improved. **Lean manufacturing** is a systematic approach to identifying and eliminating waste and non-value-added activities.<sup>4</sup> The essence of lean manufacturing is to look at the entire production or service process to eliminate waste or unnecessary activities wherever possible.

All four of the above terms (continuous improvement, quality at the source, six sigma, and lean manufacturing) are approaches for improving quality of the product or service

## SUPERVISION ILLUSTRATION 19-2

**TQM AT STMICROELECTRONICS**

STMicroelectronics, Inc., a subsidiary of STMicroelectronics, NV, manufactures and markets a broad range of semiconductor products to automotive, communications, computer peripherals, consumer, and industrial makers. In 2000, the company enjoyed U.S. sales of \$1.8 billion, which represented about 24 percent of overall corporate billings. ST, as the company is known, adopted TQM in 1991. Between 1992 and 1996, all managers and employees attended a two-day course dedicated to TQM education and culture. Since 1996, TQM training and awareness have been critical components of every new employee's orientation. Senior managers continue to be involved in the different TQM training programs.

An important part of ST's TQM program is empowerment. Employees are provided with the education, training, motivation,

recognition, and rewards necessary to make on-the-job decisions. As stated by Pasquale Pistorio, ST's worldwide corporate CEO, "Employees must become factors, not actors, in the corporate environment." Sixty percent of ST's employees work in the manufacturing division, which uses a team-based approach to work and job design.

Since embracing TQM in 1991, ST's performance has exceeded that of the semiconductor industry, and it has risen from being the fourteenth-ranked semiconductor company in 1994 to the sixth largest today.

**Source:** Richard Pieraunzi, "TQM Breeds Success at STMicroelectronics," *Journal of Organizational Excellence*, Autumn 2001, pp. 39-43.

offered. These approaches are not mutually exclusive but rather are complementary; the differences are that each offers a different emphasis. It should also be pointed out that each of these approaches can be applied in nonmanufacturing environments such as service, education, and government.

As stated earlier, TQM is an organizationwide emphasis on quality as defined by the customer. It is not a collection of techniques but a philosophy or way of thinking about how people view their jobs and quality throughout the organization.

Some people confuse the concept of reengineering with TQM. **Reengineering**, also called business process engineering, is "the search for and implementation of radical change in business processes to achieve breakthrough results in cost, speed, productivity, and service."<sup>5</sup> Unlike TQM, reengineering is not a program for making marginal improvements in existing procedures. Reengineering is rather a one-time concerted effort, initiated from the top of the organization, to make major improvements in processes used to produce products or services. The essence of reengineering is to start with a clean slate and redesign the organization's processes to better serve its customers.

While TQM has produced positive value for many companies, its success is often dependent on the support and commitment of all levels of management. Naturally supervisors play a critical role in this process. The role of supervisors under TQM is to first understand the concept and then to demonstrate their support of the concept. Supervision Illustration 19-2 discusses how one company has successfully used TQM.

While TQM is a highly effective, organizationwide philosophy about quality, there are other techniques and approaches that organizations may adopt to encourage quality. Most of these can be used alone or in conjunction with TQM. Three of these approaches are discussed below.

**Other Quality Standards**

8

LEARNING OBJECTIVES

**ISO 9000**

*ISO 9000* is a set of quality standards created in 1987 by the International Organization for Standardization (ISO), in Geneva, Switzerland. ISO is currently composed of the national standards bodies of over 110 countries with the major objective of promoting the development of standardization and facilitating the international exchange of goods and services. The American National Standards Institute (ANSI) is the member body representing the United States in the ISO.

## SUPERVISION ILLUSTRATION 19-3

**IMPLEMENTING ISO 9000 AT STANDARD AERO ALLIANCE**

Standard Aero Alliance, Inc. (SAAI), is the world's largest independent small gas turbine engine and accessory repair and overhaul facility. The company performs repair and overhaul on Pratt & Whitney Canada, Rolls-Royce, Honeywell, and General Electric gas turbines used in aviation, marine, and industrial applications. After having successfully implemented ISO 9000 in two previous companies, Leon Dodd, Jr., director of quality assurance, was convinced that the best way to implement ISO 9000 was to use teams and/or employee involvement in the process.

One of the first things the implementation team did was to develop a matrix that clearly tied each ISO 9000 element to a team responsible for that specific element, procedure, form, or process. The matrix also fostered a top-down commitment since

all element owners were on the vice president/general manager's staff. Thus management was accountable for not only process, but also the team's success. As the implementation process moved forward and prior to the actual audit, an all-hands meeting was held to discuss each employee's role and responsibility during the audit. Chuck McKenzie, vice president and general manager of SAAI, summed up the experience: "Being recognized by the ISO organization puts us on a level playing field and makes us more competitive in the maintenance, repair, and overhaul industry. We successfully achieved this goal because we involved all of our employees during the ISO implementation process."

**Source:** Leon P. Dodd, Jr., "The Team Approach to ISO 9000: 2000 at Standard Aero Alliance," *The Journal for Quality and Participation*, Spring 2002, pp. 41-44.

Originally the ISO published five international standards designed to guide internal quality management programs and to facilitate external quality assurance endeavors. In essence, ISO 9000 outlines the quality system requirements necessary to meet quality requirements in varying situations. ISO 9000 focuses on the design and operation processes, not on the end product or service. ISO 9000 requires extensive documentation in order to demonstrate the consistency and reliability of the processes being used. In summary, ISO certification does not relate to the quality of the actual end product or service, but it guarantees that the company has fully documented its quality control procedures.

While ISO issues the standards, it does not regulate the program internationally; regulation is left to national accreditation organizations such as the U.S. Register Accreditation Board (RAB). RAB and other such boards then authorize registrars to issue ISO 9000 certificates. The number of worldwide organizations certified in ISO 9000 has increased dramatically, reaching over 510,000 in 161 countries by the end of 2001.<sup>6</sup>

New ISO 9000 standards were implemented beginning fall of 2000. The new standards emphasize international organization and in-house performance, rather than engineering, as the best way to deliver a product or service. In essence the new ISO 9000 standard focuses more on continuous improvement and customer satisfaction. Supervision Illustration 19-3 illustrates how one company successfully implemented ISO 9000.

**ISO 14000**

Sparked by the success of ISO 9000, ISO has developed a similar series of international standards for environmental management. *ISO 14000* is a series of voluntary international standards covering environmental management tools and systems.<sup>7</sup> While many countries have developed environmental management system standards, these standards are often not compatible. The goal of ISO 14000 is to provide international environmental standards that are compatible. Similar to ISO 9000, which does not prescribe methods to integrate quality processes into an organization, ISO 14000 does not prescribe environmental policies. ISO 14000 does provide an international standard for environmental management systems so that organizations will have a systematic framework for their environmental activities. ISO 14000 focuses heavily on strategic issues such as setting goals and developing policies. Ultimately, ISO 14000 will include 20 separate standards covering

everything from environmental auditing to labeling to assessing life cycles of products. ISO 14000 certification requires compliance in four organizational areas:<sup>8</sup> (1) implementation of an environmental management system, (2) assurance that procedures are in place to maintain compliance with laws and regulations, (3) commitment to continual improvement, and (4) commitment to waste minimization and prevention of pollution.

Many people believe that the impact of ISO 14000 will far exceed that of ISO 9000. As of the end of 2001, an ISO survey reported that over 36,000 certificates in 112 countries had been registered worldwide, compared with just over 5,000 at the end of 1997.<sup>9</sup>

9

## LEARNING OBJECTIVES

***Zero-Defects Approach***

The name *zero-defects* is somewhat misleading in that this approach doesn't literally try to cut defects or defective service to zero. This would obviously be very cost ineffective in many situations. A **zero-defects program** attempts to create a positive attitude toward the prevention of low quality. The objective of a zero-defects program is to heighten awareness of quality by making everyone aware of his or her potential impact on quality. Naturally, this should lead to more attention to detail and concern for accuracy.

Most successful zero-defects programs have the following characteristics:

1. Extensive communication regarding the importance of quality—signs, posters, contests, and so on.
2. Organizationwide recognition—publicly granting rewards, certificates, and plaques for high-quality work.
3. Problem identification by employees—employees point out areas where they think quality can be improved.
4. Employee goal setting—employees participate in setting quality goals.<sup>10</sup>

10

## LEARNING OBJECTIVES

***Quality Circles Approach***

This approach, which originated in Japan, has been transplanted to America. A **quality circle** consists of a supervisor and a group of employees who work together under that supervisor. Membership in a quality circle is almost always voluntary, and the basic purpose is to meet periodically to solve quality problems and identify ways of improving quality. These meetings are normally held once or twice a month and last for one to two hours. Usually, a quality circle begins by receiving specialized training relating to quality. It then proceeds to discuss specific quality problems, which can be brought up by management representatives or by the circle members. Staff experts may be called upon by the circle as needed. There is evidence that hundreds, if not thousands, of U.S. companies are currently using some form of quality circles. As with zero-defects programs, the primary emphasis of quality circles is to get the employees actively involved. Research has shown that a key to quality circle effectiveness is properly training members to function in a quality circle.<sup>11</sup>

**Quality Guidelines**

As discussed earlier, the key to the prevention of quality problems is employee involvement. The following 11 guidelines are offered as aids for building quality job habits among employees:

11

## LEARNING OBJECTIVES

*Guideline 1: Make sure employees have received proper training.* Employees can only do quality work if they have been properly trained. Create an environment where employees are not afraid to ask what they don't know.

*Guideline 2: Start new employees off right.* Make sure the new employee understands that high quality is expected. Set the quality standards high, and make sure they are clearly communicated.

## SUPERVISION ILLUSTRATION 19 – 4

**LESSONS LEARNED BY A MALCOLM BALDRIGE AWARD WINNER**

The smallest company ever to win the prestigious Malcolm Baldrige National Quality Award is Texas Nameplate Company. Texas Nameplate is a family-owned Dallas firm with 66 employees. Since 1946 the company has been making metal nameplates for products ranging from oil-drilling equipment to computers.

When asked what lessons other small businesses could learn from Texas Nameplate, the company's president, Dale Crownover, offered the following:

- You get what you pay for. Texas Nameplate pays all employees better than minimum wage. Instead of paying two

people minimum wage, the company pays one person considerably more than the minimum and gets the same productivity that it would get from two lower-paid employees.

- "Layoffs are highly destructive." The company had a layoff in the early 1980s, and Crownover believes it is the worst thing the company ever did.
- Stay ahead of regulation. Don't just meet but rather exceed environmental regulations.

**Source:** Michael Barrier, "Smallest Baldrige Award Winner Imparts Some Big Lessons," *Nation's Business*, March 1999, p. 15.

*Guideline 3: Keep employee relations on an individual basis.* Talk with the employees individually. Tell them what they are doing that is good and what they are doing that is not so good with regard to quality.

*Guideline 4: Don't settle for less than desired.* Don't accept inferior work or reward an employee for it. Find the cause of inferior work and take the necessary corrective action.

*Guideline 5: Communicate the value of top quality.* Explain why high quality is necessary. Get down to dollars and cents. Explain the potential costs of inferior quality.

*Guideline 6: Perform thorough inspections.* Careful inspections help ensure high quality. This is another way for the supervisor to set the example. A careful inspection should not only find quality problems but also locate their causes.

*Guideline 7: Encourage suggestions.* Actively solicit suggestions from employees. Implement and give credit for good suggestions.

*Guideline 8: Learn from the past.* Investigate the areas that have historically caused quality problems. How could these problems have been prevented? What can be done to prevent these problems from recurring?

*Guideline 9: Solicit the help of other departments and supervisors.* Use individual accountability. Implement systems that make clear the quality responsibilities of each individual employee.

*Guideline 10: Assign individual responsibility wherever possible.* Use individual accountability. Implement systems that make clear the quality responsibilities of each employee.

*Guideline 11: Set the example.* If the supervisor strives for high quality in everything that he or she does, so will the employees. On the other hand, if a supervisor performs certain activities sloppily, so will the employees.<sup>12</sup>

### The Malcolm Baldrige National Quality Award

In 1987, the U.S. Congress passed the Malcolm Baldrige National Quality Improvement Act. The purpose of this legislation was to inspire increased efforts by U.S. businesses to improve the quality of their products and services. The **Malcolm Baldrige Award** is named after the late Malcolm Baldrige who was a successful businessman and a former U.S. secretary of commerce. The award is administered by the National Institute of Standards and Technology and can only be awarded to businesses located in the United States. The

## SOLUTION TO THE SUPERVISION DILEMMA

From the material presented in this chapter, it appears that John has not given adequate attention to the basic steps in the control function. There is no evidence that he has clearly communicated what standards he expects in each of his problem areas (pp. 327–28). Even if his standards were clear, it is obvious that he does not do an adequate job of monitoring performance (p. 328). John needs to set up systems to alert him and/or his subordinates to problems before they get out of hand. Once problems have been identified, he should take swift and deliberate corrective action (pp. 328–29).

To avoid missed deadlines, mishandling of claims, and basic processing errors, John might set up daily reporting systems to help monitor what is going on. These systems should not be complex or time-consuming; they should simply report the production and quality status of claims. John might also consider implementing some type of quality assurance program as a means of “building in” quality.

purpose of the award is to encourage efforts to improve quality and to recognize the quality achievements of U.S. companies. A maximum of two awards are given each year in each of three categories: large manufacturer, large service organization, and small business (500 or less employees). Supervision Illustration 19–4 on page 337 discusses some lessons learned by the smallest company to ever win the Malcolm Baldrige Award.

### Summary

This chapter discusses the controlling function as it affects most supervisors. The chapter begins by defining the controlling function and its components. It then examines specific supervisory control techniques. Quality assurance and inventory control receive special attention.

1. *Outline the three basic steps in the control process.* Control is accomplished by comparing actual performance with predetermined standards or objectives and then taking corrective action to correct any deviations from the standard. Thus, the control process has three basic steps: (1) establishing performance standards, (2) monitoring performance and comparing it with standards, and (3) taking necessary action.
2. *Identify tools and techniques most frequently used by supervisors to exercise control.* Among the tools and techniques most frequently used by supervisors to exercise control are budgets, written reports, personal observation, electronic monitors, and management by objectives.
3. *Define what quality means to a supervisor, and list several reasons for maintaining quality.* Quality is a relative term that means different things to different people. A supervisor’s primary concern with quality is that the product or

service specifications be achieved to (1) maintain certain standards, (2) meet customer specifications, (3) meet legal requirements, (4) locate defective products, (5) identify inferior services, (6) find problems in the production process, (7) grade products or services, and (8) provide performance information on employees and/or departments.

4. *Differentiate between product quality control and process control.* Quality control relating to things (products, services, raw materials, etc.) is referred to as product quality control. Quality control relating to the control of a machine or an operation during the production process is called process control.
5. *Define the concept of quality assurance.* Quality assurance refers to the idea of “building in” quality as opposed to “inspecting it in.”
6. *Discuss total quality management.* Total quality management (TQM) is a management philosophy that emphasizes “managing the entire organization so that it excels in all dimensions of products and services that are important to the customer.” TQM, in essence, is an organization-wide emphasis on quality as defined by the customer.

7. *Define continuous improvement, quality at the source, six sigma, and lean manufacturing.*

Continuous improvement refers to an ongoing effort to make improvements in every part of the organization relative to all of its products and services. Quality at the source refers to the philosophy of making each employee responsible for the quality of his or her work. Six sigma is both a precise set of statistical tools and a rallying cry for continuous improvement. Lean manufacturing is a systematic approach to identifying and eliminating waste and non-value-added activities. These approaches to improving quality are not mutually exclusive but rather are complementary; the differences are that each offers a different emphasis.

8. *Summarize the thrust of ISO 9000 and ISO 14000.*

ISO 9000 is a set of quality standards established in 1987 by the International Organization for Standardization (ISO). ISO 9000 focuses on the design and operations processes and not on the end product or service. ISO 9000 requires extensive documentation in order to demonstrate the consistency and reliability of the processes being used. ISO 14000 is a series of voluntary international standards covering environmental management tools and systems. The goal of ISO 14000 is to provide international environmental standards

that are compatible. ISO 14000 does not prescribe environmental policies; it does provide an international standard for environmental management systems so that organizations will have a systematic framework for their environmental activities.

9. *Explain the purpose of a zero-defects program.*

A zero-defects program attempts to create a positive attitude toward the prevention of low quality.

10. *Define a quality circle.*

A quality circle consists of a supervisor and a group of employees who work together under that supervisor. Its primary purpose is to meet periodically to solve quality problems and identify ways of improving quality.

11. *Cite several guidelines that supervisors can follow to help build quality job habits among employees.*

The following guidelines can be used by supervisors to build quality job habits: Start new employees off right, keep employee relations on an individual basis, don't settle for less than desired, communicate the value of top quality, perform thorough inspections, encourage suggestions, learn from the past, solicit the help of other departments and supervisors, assign individual responsibility wherever possible, and set the example.

## Review Questions

1. What is the major purpose of all supervisory controls?
2. Name and briefly discuss at least three tools used in supervisory control.
3. What determines the desired level of quality for the supervisor?
4. Define the following terms and explain what they have in common: continuous improvement, quality at the source, six sigma, and lean manufacturing.
5. What is quality assurance?
6. What is the basic philosophy underlying total quality management (TQM)?
7. Differentiate between ISO 9000 and ISO 14000.
8. Describe the zero-defects and quality circles approaches to quality.
9. What is the difference between product quality control and process quality control?
10. What is the Malcolm Baldrige National Quality Award?

## Skill-Building Questions

1. Why do you think that many supervisors are reluctant to take corrective actions when people are involved?
2. Since quality is a relative concept, how does a supervisor ever know if the quality level is optimum?

340 Section Five *Controlling Skills*

3. What do you think are the advantages of “building in” quality as opposed to “inspecting in” quality?
4. Many people believe that ISO 14000 will have a larger impact on organizations than ISO 9000. Why do you think that might be true?
5. It has often been said that supervisory planning and supervisory control go hand in hand. Elaborate on this statement.

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## Additional Readings

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## SKILL-BUILDING APPLICATIONS

### Incident 19–1

#### *The Assuming Supervisor*

Nancy Keene is a supervisor of the children's clothing department for the Model Dress Company. Model Dress sells women's and children's casual fashions in the low-to-middle price ranges. Because of control problems related to many facets of the business, management decided to implement a management-by-objectives (MBO) system about 10 months ago. Shortly thereafter, Nancy, along with the company's 14 other supervisors, attended a company-sponsored seminar on MBO. After the seminar, Nancy's boss, Joan Chung, outlined what she thought should be Nancy's annual objectives in terms of sales, returns, and personnel turnover. Joan further suggested how these objectives might be passed down to Nancy's subordinates. All of Joan's suggestions seemed perfectly reasonable to Nancy, and she accepted them to the letter. A few days later, Nancy distributed a memo announcing just what the departmental objectives were and how they affected each member of her department. Much to her surprise, several of her subordinates reacted quite negatively and accused her of being "too bossy." After several meetings, Nancy was able to calm down these subordinates and assure them that she was not attempting to force anything on them. Things seemed to move along on an even keel for the next several months.

Then Joan called Nancy into her office, where the following dialogue took place:

**Joan:** Nancy, we're nine months into our MBO year, and you're running way behind on our agreed-upon objectives.

**Nancy:** What do you mean?

**Joan:** According to my records, your department's sales have averaged well below your goal, your returns have been running well over your goal, and your department has already exceeded your turnover goal for the entire year.

**Nancy:** I had no idea! Are you sure your records are correct? Since I hadn't heard anything from you, I just assumed everything was on target.

**Joan:** Haven't you been comparing your weekly figures with your goals?

**Nancy:** No, not really. Like I said, I just assumed everything was OK. And I've been extremely busy, as you know.

#### *Questions*

1. Who is most at fault for having allowed this situation to develop, Joan or Nancy? Why?
2. What do you think about Nancy's understanding of MBO?
3. What changes would you suggest to both Joan and Nancy?

### Incident 19–2

#### *High-Quality Toys*

The Cutee Toy Company of Crossroads City makes all types of metal toys. Cutee has built a good reputation on the quality of its toys, which hold up much better than comparable toys made of plastic. Also, many parents are attracted to metal toys because they grew up with such toys. At the same time, because of the dangers inherent in metal toys, Cutee has to maintain very tight quality standards. Great care must be taken to ensure that no toys are shipped with sharp edges, protruding tabs, or any other hazards. The high price charged by Cutee also requires that the quality standards be kept high.

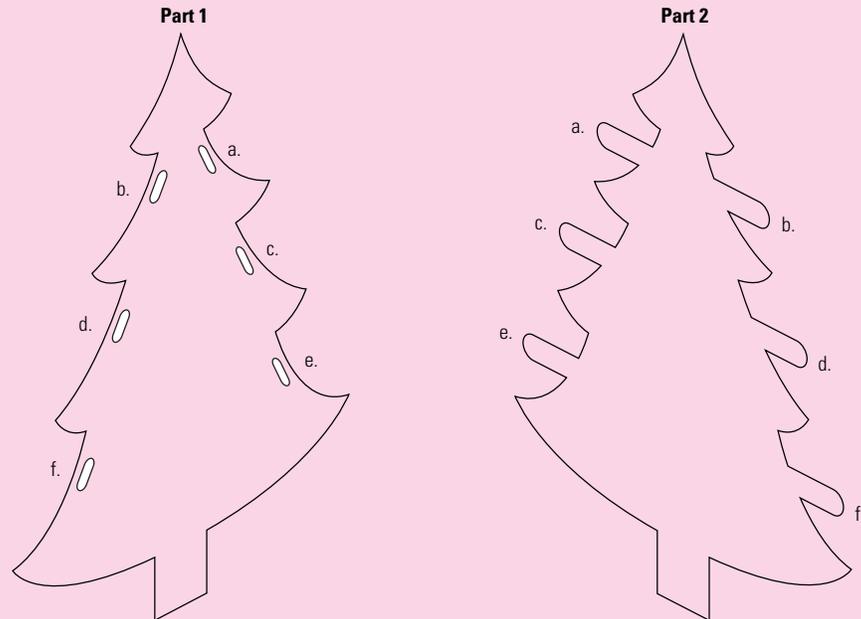
The basic production process is the same for all of Cutee's products. The parts for a particular toy are stamped out of sheet metal. The parts for the toy are then assembled by fitting small metal tabs on one piece through small slots on the matching piece and bending the tabs over (see Exhibit 19.1). To avoid scratches during the assembly process, the toy is painted after it has been assembled. A silk-screening process is often used to add details after the basic painting process. All finished toys are carefully wrapped in kraft paper and put into boxes to be shipped or stored in inventory.

#### *Questions*

1. Assume you are the supervisor of the painting department. What do you think your responsibilities should be regarding the quality of the final product?
2. If you were a supervisor charged with inspecting the final products, what general type of inspection system would you set up? Support your answer with justifications.

### EXHIBIT 19.1

#### Assembly of a Toy Christmas Tree



To assemble, put Tab a. on Part 2 into Slot a. on Part 1 and bend it over; put Tab b. on Part 2 into Slot b. on Part 1 and bend it over, etc.

3. If you were supervisor of the production department, what concerns might you have relating to raw material inventory?

#### Exercise 19–1

##### *Controlling Production*

The Gantt chart was introduced in Chapter 6 as a tool to help supervisors plan. Gantt charts are also frequently used for control purposes. The Cutee Toy Company, described in Incident 19–2, uses the Gantt chart in Exhibit 19.2 to plan and control the production of toy Christmas trees.

1. Assuming that the vertical arrows indicate actual progress made to date, how would you describe Cutee Toy Company's present production situation? Is it ahead of or behind schedule?
2. Assuming that the following events take place, what actions would you take?
  - a. The purchasing agent of the Top Mill Company calls and tells you that her order is not wanted until day 25.
  - b. No work is done on the Carter Company order during the next two days.

- c. An order change from Keller, Inc., doubles its original order (thus requiring that each operation take twice the scheduled time).

3. If you were the production manager for the Cutee Toy Company, what additional information would you like for control purposes? Make specific recommendations for getting this information.

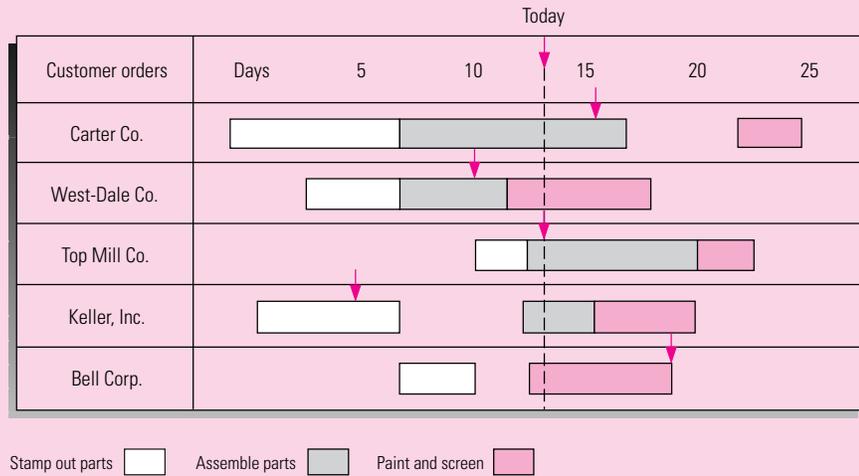
#### Exercise 19–2

##### *Assessing Quality*

Visit a local fast-food establishment and observe the service from the quality viewpoint. Make notes of the following specific things:

1. Were the facility and parking lot clean?
2. Were you greeted pleasantly and cheerfully by the person taking your order?
3. How long did you wait from the time you entered the facility until you received your order?
4. Was your order correct?
5. How would you rate the taste of the food?
6. Was the rest room clean?

**EXHIBIT 19.2**  
**Gantt Chart**



After you have completed your visit and analyzed your notes, what suggestions do you have for improving quality? Can you think of anything that management might do to increase its employees' concern for quality?

**Exercise 19-3**

*How Important Is Quality?*

Think of the last product or service that you purchased that cost at least \$500. What role did quality

play in making your decision to purchase the item or service? Now that you have used the product or service, are you satisfied with its quality? If you could go through the selection process again, would you make the same choice? What, if anything, would you do differently?