"We are sorry."
Post on Target website after up to 110 million credit cards and their personal data were stolen by hackers in a major data breach.

9
Control Processes and Systems
What gets measured happens

CHAPTER QUICK START

Facts are informative and measurement helps keep us on target. Why, then, are we so often late to the party when it comes to exercising good control in our jobs and personal lives? We miss deadlines, we default on commitments, and we disappoint ourselves and others. There is a lot to learn about making control a personal asset, something that helps improve our performance as well as the performance of our teams and organizations.

Key Takeaways

- Identify the types of controls used by managers and the reasons for them.
- List and describe the steps in the control process.
- Explain the use of common control tools and techniques.

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Keeping in touch … staying informed … being in control: These are important responsibilities for every manager. But “control” is a word like “power.” If you aren’t careful when and how it’s used, just the thought of it carries a negative connotation. Yet, control plays a positive and necessary role in everyday living and in the management process. Having things “under control” helps to get things done; when things are “out of control” it is generally more difficult.

Nike and Target are high-profile companies with different control stories. At Nike the story is positive. The firm’s stylish shoes are made by innovative micro-level precision engineering that is great for controlling costs of materials, time, and labor.[1] At Target the story is negative. The firm experienced a massive data security breach that resulted in loss of some 110 million credit card registries with personal data to cyber hackers, and cost the CEO his job.[2] What lies behind these different control stories? Are management practices just better and more sophisticated at Nike? Did Target executives lack sufficient technology expertise to put the right control systems into place?

Why and How Managers Control

TAKEAWAY 1 Why and how do managers exercise control?

LEARN MORE ABOUT | The importance of controlling • Types of controls • Internal and external control

Control is important for the success of any organization, and we practice a lot of control quite naturally. Think of the things you do for fun—playing golf or tennis or Frisbee, reading, dancing, driving a car, or riding a bike. Through activities such as these you’ve already become quite expert in the control process. How? Most probably by having an objective in mind, always checking to see how well you are doing, and making continuous adjustments to get it right.

Importance of Controlling

The management function of planning involves setting goals and making plans. It is closely linked with **controlling**, the process of measuring performance and making sure that plans turn out as intended. And, information is the foundation of control. Henry Schacht, former CEO of Cummins Engine Company and also of Lucent Technologies, linked control to what he called “friendly facts.” He stated: “Facts that reinforce what you are doing are nice, because they help in terms of psychic reward. Facts that raise alarms are equally friendly, because they give you clues about how to respond, how to change, where to spend the resources.”[3]

Controlling is the process of measuring performance and taking action to ensure desired results.

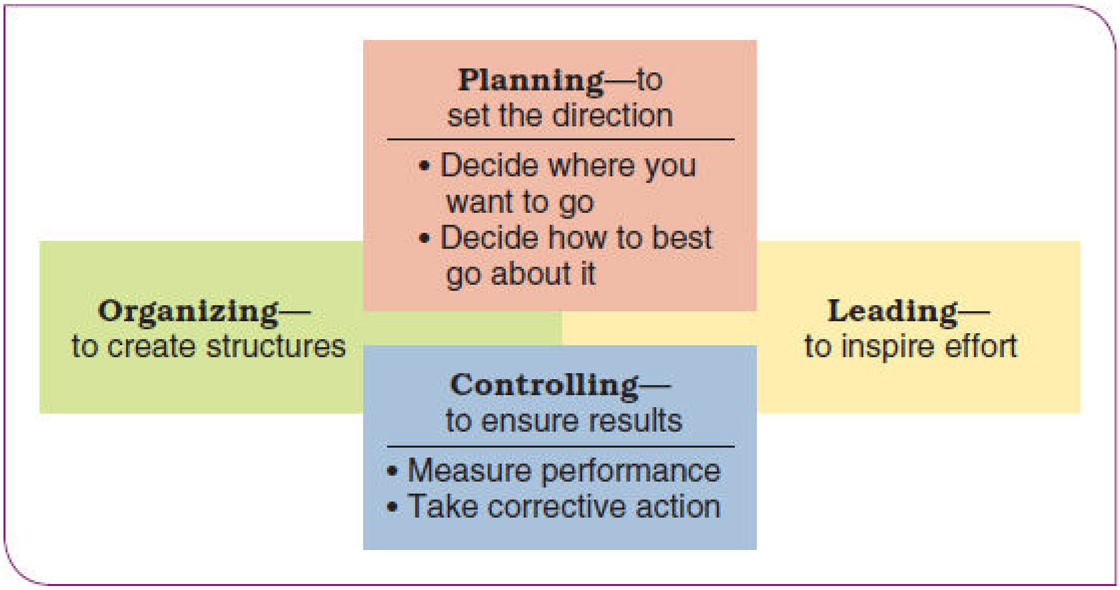

FIGURE 9.1 The role of controlling in the management process.

Figure 9.1 shows how controlling fits in with the other management functions. *Planning* sets the direction and the parameters for resource allocation. *Organizing* brings people and material resources together in working combinations. *Leading* inspires people to best utilize these resources. *Controlling* makes sure that the right things happen, in the right way, and at the right time. It’s a way of ensuring that performance is consistent with plans and that accomplishments throughout a team or organization are coordinated in a means–ends fashion.

One of the great benefits of effective control is organizational learning. Consider, for example, the program of **after-action review** pioneered by the U.S. Army and now used in many corporate settings. It is a process for a structured review of lessons learned and results accomplished in a completed project, task force assignment, or special operation. Participants answer questions such as: “What was the intent?” “What actually happened?” “What did we learn?”[4] The after-action review helps make continuous improvement a shared norm. It encourages those involved to take responsibility for how they acted, what they achieved, and how they can be more effective in the future. The end-of-chapter team exercise is modeled on this approach.

An **after-action review** is a systematic assessment of lessons learned and results accomplished in a completed project.

Types of Controls

The open-systems perspective shown in Figure 9.2 is one of the best ways to understand control. It shows how feedforward, concurrent, and feedback controls are linked with different phases of the input–throughput–output cycle.[5] The use of each of these control types increases the likelihood of high performance.

Feedforward Controls

Feedforward controls, also called *preliminary controls*, take place before a work activity begins. They ensure that objectives are clear, that proper directions are established, and that the right resources are available to accomplish the objectives. The goal is to solve problems before they occur by asking an important but often neglected question: "What needs to be done before we begin?"

> **Feedforward control** ensures that directions and resources are right before the work begins.

Feedforward controls are preventive in nature. Managers using them take a forward-thinking and proactive approach to control. At McDonald's, for example, preliminary control of food ingredients plays an important role in the firm's quality program. The company requires that suppliers of its hamburger buns produce them to exact specifications, covering everything from texture to uniformity of color. Even in overseas markets, the firm works hard to develop local suppliers that can offer dependable quality.[6]

Concurrent Controls

Concurrent controls focus on what happens during the work process. Sometimes called *steering controls,* they make sure objective-focused actions are executed according to plan. You can also think of this as control through direct supervision. In today's increasingly complex virtual world, that supervision is as likely to be computer driven as face-to-face. Picture this scene at the Hyundai Motors headquarters in Seoul, South Korea, in what the firm calls its Global Command and Control Center.[7]

> **Concurrent control** focuses on what happens during the work process.

> With dozens of computer screens relaying video and data, it [the Global Command and Control Center] keeps watch on Hyundai operations around the world. Parts shipments are traced from the time they leave the supplier until they reach a plant. Cameras peer into assembly lines from Beijing to Montgomery and keep a close watch on Hyundai's giant Ulsan, Korea, plant, the world's largest integrated auto factory.

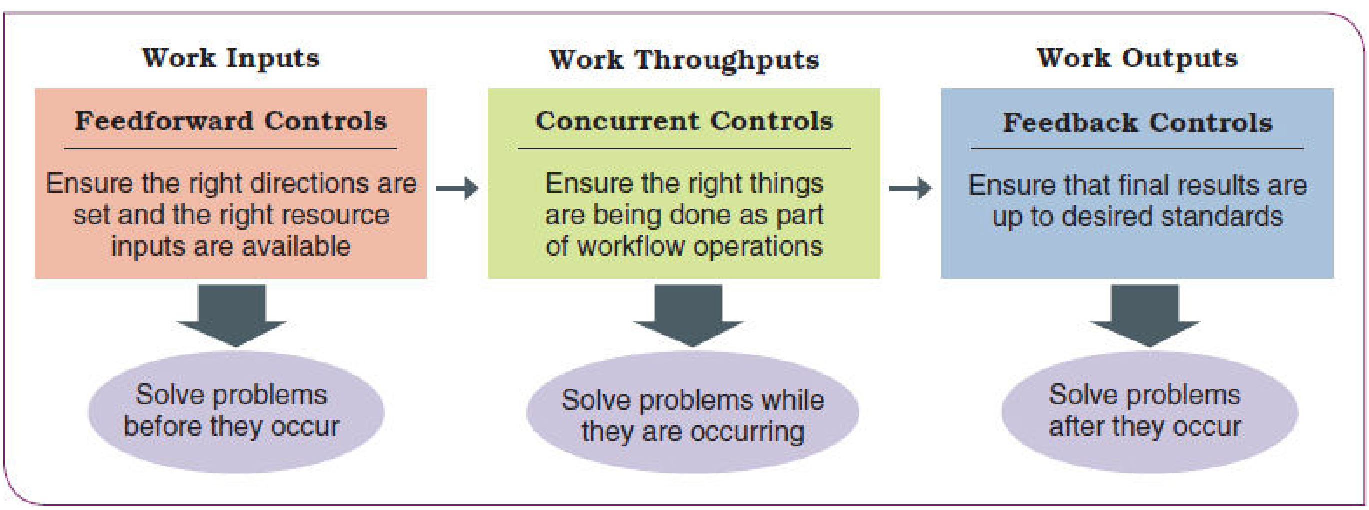

FIGURE 9.2 Feedforward, concurrent, and feedback controls.

choices> THINK BEFORE YOU ACT

> *"If there's more than one child in the family, it's unfair if they don't all get rewards."*

Some Parents Pay Their Kids for Good Grades

© Tetra Images/Alamy

Managing is a lot like parenting, and allocating rewards isn't easy in either situation. What about children and their school grades? How often have you heard someone say: "We pay for 'A's'?" Perhaps you've heard or said it yourself, or plan to do it when you've got kids in school. But is this the correct thing to do? Can paying for grades improve parental control over children's study habits and academic performance?

Those in favor of paying for grades are likely to say: "It gets the kid's attention" … "It motivates them to study more" … "It gets them ready for work where pay and performance go together." Those against the practice are likely to say: "Once they get paid for A's, they'll be studying for financial gain, not real learning" … "It hurts those who work hard but still can't get the high grades" … "If there's more than one child in the family, it's unfair if they don't all get rewards."

YOUR TAKE?

Is paying for grades a good way to control kids' school performance? As a parent, will you pay for grades or not? How can you justify your position? The pros and cons of this approach as you see them? Were you, or are you, paid for good grades? What is your experience? By the way, what can parenting teach us about managing people at work?

The goal of concurrent controls is to solve problems as they emerge. The key question is, "What can we do to improve things right now?" In the Hyundai example, operations are monitored and business intelligence is gathered in real time using sophisticated information systems that help managers to quickly spot and correct any problems in the manufacturing cycle. The same kind of process intervention also happens at McDonald's, but there, concurrent control takes place face to face. Ever-present shift leaders constantly observe what is taking place in the unit as a whole, while helping out with the work necessary to keep the unit running. They are trained to intervene immediately when something is done improperly and to correct things on the spot.

Feedback Controls

Feedback controls, also called *post-action controls,* take place after work is completed. They focus on the quality of end results rather than on inputs and activities. Feedback controls are largely reactive; the goals are to solve problems after they occur and to prevent future problems from occurring. They ask the question: "Now that we are finished, how well did we do?"

> **Feedback control** takes place after an action is completed.

We are all familiar with feedback controls and probably recognize their weak points from a customer service perspective. Restaurants often ask how you liked a meal after it is eaten; course evaluations tell instructors how well they performed after the course is over; a budget summary identifies cost overruns after a project is completed. Such feedback about mistakes that have already been made may not enable their immediate correction, but it can help to improve performance in the future.

Internal and External Control

Managers have two broad options with respect to control systems. First, they can trust and expect people to control their own behavior. This puts priority on internal or self-control.

Second, they can exercise external control by structuring situations to increase the likelihood that things will happen as planned.[8] The alternatives here include bureaucratic or administrative control, clan or normative control, and market or regulatory control. The most effective control typically involves a mix of these internal and external options.

Self-Control

We all exercise internal control in our daily lives. We do so with regard to managing our money, our relationships, our eating and drinking, our health behaviors, our study habits, and more. Managers can take advantage of this human capacity for **self-control** by unlocking, allowing, and supporting it. This means helping people to be good at self-management, giving them freedom, and encouraging them to exercise self-discipline in performing their jobs. Any workplace that emphasizes participation, empowerment, and involvement will rely heavily on self-control.

> **Self-control** is internal control that occurs through self-management and self-discipline in fulfilling work and personal responsibilities.

Managers can gain a lot by assuming that people are ready and willing to exercise self-control in their work.[9] But, an internal control strategy requires a great deal of trust. When people are willing to work on their own and exercise self-control, managers have to have the confidence to give them the freedom to do so. Self-control is most likely when the process used to set objectives and standards is participative. The potential for self-control also increases when capable people have a clear sense of the organization's mission and have the resources necessary to do their jobs well. The potential for self-control is also greater in inclusive organizational cultures in which everyone treats everyone else with respect and consideration.

insight> LEARN ABOUT YOURSELF

> *"Resilient people are like trees bending in the wind… . They bounce back."*

Resiliency Offers Strength from Within

Managerial control is all about how to increase the probability that things go right for organizations even as they deal with an increasing number of operational complexities. It's the same for us—every day, in our work and personal lives. We need to spot and understand where things are going according to plan or going off course. We need to have the courage and confidence to change approaches that aren't working well. Our success, simply put, depends a lot on **resiliency**—the ability to call on inner strength and keep moving forward even when things are tough.

Think of resiliency in personal terms—caring for an aging parent with a terrible disease or single parenthood with small children. Think of it in career terms—juggling personal and work responsibilities, continuously attending to e-mails, voice mails, instant messages, and rushing to many scheduled and unscheduled meetings. We need to be managed, we need to exercise control, and we need staying power to perform over the long term. Resiliency helps us hold on and keep things moving forward even in the face of personal and professional adversity.

Resilient people face up to challenges; they don't hide or back away from them. They develop strategies, make plans, and find opportunity even in challenging situations. Dr. Steven M. Southwick, professor of psychiatry at Yale University, says "Resilient people are like trees bending in the wind… . They bounce back." Does this description fit you … or not? Why?

Resiliency Quick Test

Score yourself from 1 = don't at all agree, to 5 = totally agree, on the following items:

- I am an upbeat person for the most part.
- Uncertainty and ambiguity don't much bother me.
- I tend to adapt quickly as things change.
- I can see positives even when things go wrong.
- I am good at learning from experience.
- I am good at problem solving.
- I am strong and hold up well when times are tough.
- I have been able to turn bad situations into positive gains.

GET TO KNOW YOURSELF BETTER

Take the Resiliency Quick Test. A score of 35 or better suggests you are highly resilient; with any lower score you should question how well you hold up under pressure. Double-check the test results by looking at your behavior. Write notes on how you handle situations like a poor grade at school, a put-down from a friend, a denial letter from a job application, or criticism from a supervisor or

co-worker on your job. Summarize what you've learned in a memo to yourself about how you might benefit from showing more resiliency in difficult situations.

It's important to think about self-control as a personal capacity, even a life skill. How good are you at taking control of your time and maintaining a healthy work–life balance? Do you ever wonder who's in control, you or your phone? It used to be that we sometimes took work home in a briefcase, did a bit, closed the case up, and took it back to work the next day. Now work is always there, on the computer, in our e-mails, and streamed as text messages. All this is habit forming, and some of us handle this intrusion into our non-work lives better than others.[10]

Bureaucratic Control

One form of external control uses authority, policies, procedures, job descriptions, budgets, and day-to-day supervision to make sure that people act in harmony with organizational interests. It's called **bureaucratic control**, and you can think of it as control that flows through the organization's hierarchy of authority. Organizations typically have policies and procedures regarding sexual harassment, for example. Their goal is to make sure members behave toward one another respectfully and with no suggestion of sexual pressure or impropriety. Organizations also use budgets for personnel, equipment, travel expenses, and the like to keep behavior targeted within set limits.

> **Bureaucratic control** influences behavior through authority, policies, procedures, job descriptions, budgets, and day-to-day supervision.

Another level of bureaucratic control comes from laws and regulations in the organization's external environment. An example is the Sarbanes-Oxley Act of 2002 (SOX), which establishes procedures to regulate financial reporting and governance in publicly traded corporations.[11] SOX was passed in response to major corporate scandals over the accuracy of financial reports provided by some firms. Under SOX, chief executives and chief financial officers must personally sign off on financial reports and certify their accuracy. Those who misstate

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their firm's financial records can go to jail and pay substantial personal fines. The complexity and pressures of increased government regulations have led many firms to appoint chief compliance officers, CCOs, and set up compliance departments. They are most effective when the CCO reports directly to the chief executive or to the board of directors.[12] Actions are also being taken to strengthen governance by boards. Stricter management oversight is evident in moves for directors to become more actively involved in leadership and to separate the CEO and board chairman roles.[13]

> *Office workers get distracted as often as once every 3 minutes; it can take 23 minutes to refocus after a major interruption.*

Those Small Distractions Can Be Goal Killers

Hiya Images/Corbis Corp.

Most of us work with good intentions. But when distractions hit, focus gets lost, plans fall by the wayside, and progress suffers. Whether it's chatting with co-workers, following social media, or tackling electronic in-boxes, interruptions are more plentiful than we might admit.

- Office workers get distracted as often as once every 3 minutes and it takes an average of 23 minutes to refocus after a major interruption.
- Handling up to 100 electronic messages can kill up to one-half of a workday.
- Facilitators of disruptions include open-plan office spaces, use of multiple electronic devices, and constant checking of social media and messaging windows.

Lacy Roberson, eBay's director of learning and organization development, calls the situation "an epidemic" and says it's hard for people to get their work done with all the interruptions and the strain that they cause. The fight against disruptions causes some employees to start their day very early or to stay late to get their jobs done. Employers are starting to fight back and to try to protect "real work" time.

"No devices" is a rule at some eBay meetings. Intel is experimenting with allowing workers blocks of "think time" where they don't answer messages or attend meetings. Abbot Laboratories is retraining workers to use the telephone rather than e-mail for many internal office communications.

YOUR THOUGHTS?

How prone are you to letting distractions consume your time? Does this problem apply to your personal affairs and relationships, not just work? It's interesting that some employers are trying to step in and set policies that might minimize the negative impact of distractions, particularly electronic ones. Where's the self-control? Aren't there things we can all do to protect our time and keep our work and goals on track?

Clan Control

Whereas bureaucratic control emphasizes hierarchy and authority, **clan control** influences behavior through norms and expectations set by the organizational culture. Sometimes called *normative control,* it harnesses the power of group cohesiveness and collective identity to influence behavior in teams and organizations.

> **Clan control** influences behavior through norms and expectations set by the organizational culture.

Clan control happens as people who share values and identify strongly with one another behave in consistent ways. Just look around the typical college classroom and campus. You'll see clan control reflected in how students dress, use language, and act in class and during leisure time. They often behave according to the expectations of peers and the groups with whom they identify. The same holds true in organizations, where clan control influences the members of teams and work groups to display common behavior patterns.

Market Control

Market control is essentially the influence of customers and competition on the behavior of organizations and their members. Business firms show the influence of market control in the way that they adjust products, pricing, promotions, and other practices in response to consumer feedback and what competitors are doing. A good example is the growing emphasis on green products and sustainability practices. When a firm like Walmart starts to get positive publicity from its expressed goals of powering all of its stores with renewable energy, for example, the effect is felt by its competitors.[14] They have to adjust their practices in order to avoid losing the public relations advantage to Walmart. "For American companies there's a lot of peer pressure," said the director of the Governance & Accountability Institute when reporting that voluntary filings by S&P 500 firms of sustainability reports had risen from 53% to 72% in just one year.[15] In this sense the time-worn phrase "keeping up with the competition" is really another way of expressing the dynamics of market controls in action.

> **Market control** is essentially the influence of market competition on the behavior of organizations and their members.

Learning Check 1

TAKEAWAYQUESTION 1 **Why and how do managers exercise control?**

BE SURE YOU CAN • define *controlling* as a management function • explain benefits of after-action reviews • illustrate how a fast-food restaurant uses feedforward, concurrent, and feedback controls • discuss internal control and external control systems • give examples of bureaucratic, clan, and market controls

The Control Process

TAKEAWAY 2 What are the steps in the control process?

LEARN MORE ABOUT | Establishing objectives and standards • Measuring actual results Comparing results with objectives and standards • Taking corrective action

The control process involves the four steps shown in Figure 9.3: (1) establish performance objectives and standards; (2) measure actual performance; (3) compare actual performance with objectives and standards; and (4) take corrective action as needed. Although essential to management, these steps apply equally well to personal and career decisions as well. Consider this—without career objectives, how do you know where you really want to go? How can you allocate your time and other resources to take best advantage of available opportunities? Without measurement, how can you assess whether any progress has been made? How can you adjust your current behavior to improve the prospects for positive future results?

Step 1—Establish Objectives and Standards

in terms of key results. However, the word *key* in the prior sentence deserves special emphasis. The focus when setting objectives and standards should be on “critical” or “essential” results that will make a real performance difference. Unfortunately we often expend too much time and effort on things that just aren’t all that important, and we let the big or really consequential things get away from us in the process. To stay on focus, productivity experts suggest remembering the **Pareto Principle** that 80% of consequences (think—real impact) come from 20% of causes (think—work accomplished).[16]

The **Pareto Principle** states that 80% of consequences come from 20% of causes.

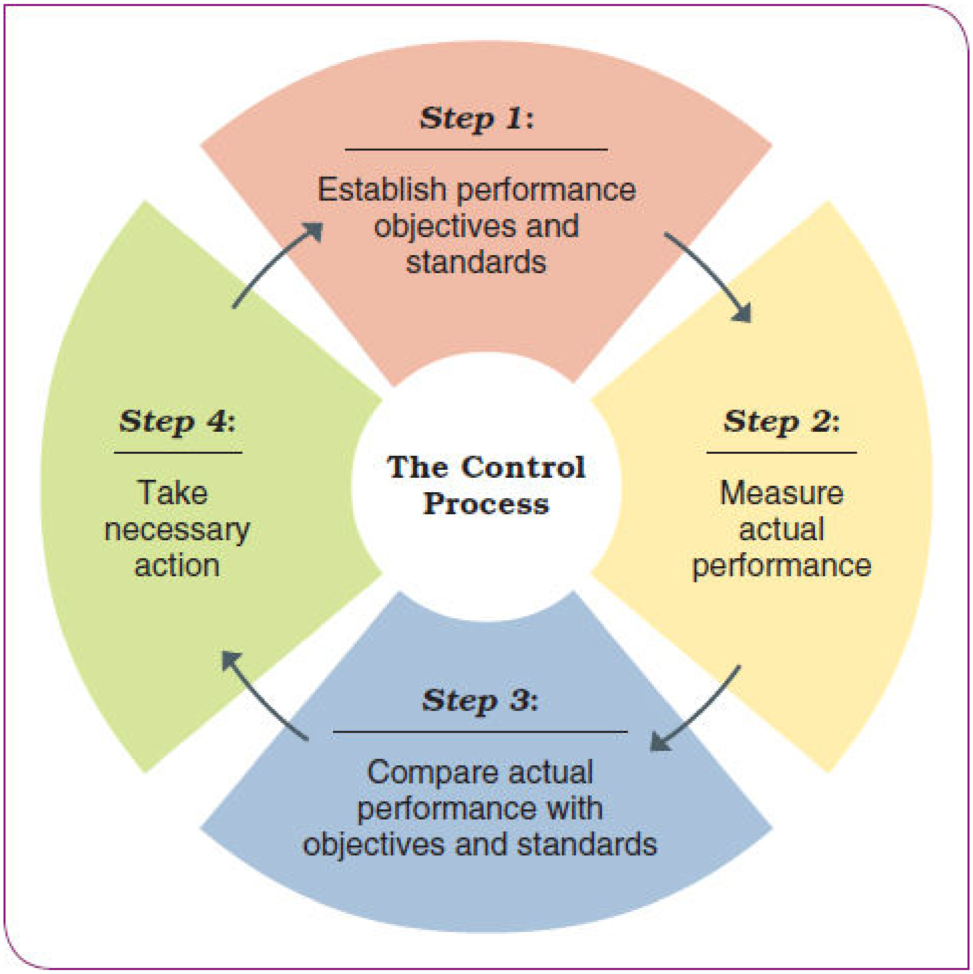


FIGURE 9.3 Four steps in the control process.

Output Standards

The control process uses **output standards** that measure actual outcomes or work results. Businesses use many output standards, such as earnings per share, return on investment, sales growth, and market share. Others include quantity and quality of production, costs incurred, service or delivery time, and error rates. Based on your experience at work and as a consumer, you can probably come up with even more examples of relevant output standards.

> An **output standard** measures performance results in terms of quantity, quality, cost, or time.

When Allstate Corporation launched a new diversity initiative, it created a “diversity index” to quantify performance across a range of diversity issues. The standards included how well employees met the goals of bias-free customer service and how well managers met the firm’s diversity expectations.[17] When General Electric became concerned about managing ethics in its 320,000-member global workforce, it created measurement standards to track compliance. Each business unit was required to report quarterly on how many of its members attended ethics training sessions and signed the firm’s “Spirit and Letter” ethics guide.[18]

How about output standards for other types of organizations, such as a symphony orchestra? When the Cleveland Orchestra wrestled with performance standards, the members weren’t willing to rely on vague generalities like “we played well” or “the audience seemed happy” or “not too many mistakes were made.” Rather, they decided to track standing ovations, invitations to perform in other countries, and how often other orchestras copied their performance style.[19]

Input Standards

The control process also uses **input standards** that measure work efforts. These are common in situations where outputs are difficult or expensive to measure. Examples of input standards for a college professor might be an orderly course syllabus, meeting all class sessions, and returning exams and assignments in a timely fashion. Of course, as this example might suggest, measuring inputs doesn't mean that outputs such as high-quality teaching and learning are necessarily achieved. Other examples of input standards at work include conformance with rules, efficient use of resources, and work attendance.

An **input standard** measures work efforts that go into a performance task.

Step 2—Measure Actual Performance

The second step in the control process is to measure actual performance. It is the point where output standards and input standards are used to carefully document results. Linda Sanford, currently a senior vice president at IBM, has had a high-performance career with the company. She grew up on a family farm where measuring results was a way of life. Sanford says: "At the end of the day, you saw what you did, knew how many rows of strawberries you picked." At IBM she is known for walking around the factory, just to see "at the end of the day how many machines were going out of the back dock."[20]

ethics> KNOW RIGHT FROM WRONG

> *Twitter removes tweets in response to government requests in specific countries.*

Global Censorship of Search and Social Media

Lv Jianshe/Imaginechina/Zuma Press

London—Reporters Without Borders criticized Twitter's censorship policy after the company said it will remove tweets in response to government requests in specific countries. These tweets will remain available elsewhere in the world, and deleted tweets will be replaced with the message "Deleted at government request." CEO Dick Costolo says: "You can't reside in countries and not operate within the law." Lucie Morillon of Reporters Without Borders counters that "if Twitter is ready to abide by repressive countries then there are real consequences for journalists, bloggers ... the chain of information is broken."

Beijing—Skype is told by the Chinese government that its software must filter words that the Chinese leadership considers offensive from text messages. If the company doesn't, it can't do business in the country. After refusing at first, company executives finally agreed. Phrases such as "Falun Gong" and "Dalai Lama" are deleted from text messages delivered through Skype's Chinese joint venture partner, Tom Online. Skype co-founder Niklas Zennstrom, says: "I may like or not like the laws and regulations to operate businesses in the UK or Germany or the U.S., but if I do business there I choose to comply."

New Delhi—An Indian citizen sues Google in local court claiming that some of its content is offensive to certain religious communities. The New Delhi district court issued an order for Google to remove the content. Google complies on its India site but keeps the content available outside of the country. A Google spokesperson says: "This step is in accordance with Google's longstanding policy of responding to court orders." But, free speech advocates in India claim it is censorship.

WHAT DO YOU THINK?

Is it ethical for companies who want to do business in China or elsewhere to go along with policies that would clearly be considered to be a violation of human rights in other places? What determines whether companies should comply with local censorship requests? Should they follow local rules, challenge the status quo, or simply decline to operate in those markets? When should business executives

stand up and challenge laws and regulations that are used to deny customers the rights or privacy that they expect?

Performance measurement in the control process must be accurate enough to identify significant differences between what is really taking place and what was originally planned. Without measurement, effective control is impossible. With measurement tied to key results, however, an old adage often holds true: "What gets measured happens."

Step 3—Compare Results with Objectives and Standards

Step 3 in the control process is to compare objectives with results. You can remember its implications by this **control equation**:

> The **control equation** states: Need for Action = Desired Performance – Actual Performance.

Need for Action = Desired Performance – Actual Performance

The question of what constitutes "desired" performance plays an important role in the control equation. Some organizations use *engineering comparisons*. United Parcel Service (UPS), for example, carefully measures the routes and routines of its drivers to establish the times expected for each delivery. When a delivery manifest is scanned as completed, the driver's time is registered in a performance log that is closely monitored by supervisors. Organizations also use *historical comparisons*, where past experience becomes the baseline for evaluating current performance. They also use *relative comparisons* that benchmark performance against that being achieved by other people, work units, or organizations.

wisdom> LEARN FROM ROLE MODELS

> *"You can achieve incredible progress if you set a clear goal and find a measure that will drive progress toward that goal."*

Bill Gates Calls for Better Measurement to Solve Social Problems

AFP/Getty Images

"Measure them!" advises Bill Gates. The world's social problems will remain unsolved unless we do it and do it well. "I have been struck by how important measurement is to improving the human condition. You can achieve incredible progress if you set a clear goal and find a measure that will drive progress toward that goal," he says. "We can do better. We have the tools at hand."

Gates describes the challenge this way. "In the U.S. we should be measuring the value added by colleges… . In agriculture, creating a global productivity target would help countries focus on a key but neglected area: the efficiency and output of hundreds of millions of small farmers who live in poverty… . In poor countries we still need better ways to measure the effectiveness of the many government workers providing health services… . I'd love to have a way to measure how exposure to risks like disease, infection, malnutrition and problem pregnancies impact children's potential."

In making his case for "extraordinary measures," Bill Gates describes a pathway to progress through big goals and big accomplishments. His message is basic management, a lesson on control learned from success in building Microsoft into a global corporation. Progress begins with the right goals and plans. Progress is achieved when results are measured and adjustments are made so that things can keep getting better in the future.

FIND THE INSPIRATION

It may be tempting to dismiss Gates's call to action as the musings of a rich man. It would be a lot smarter to listen and to learn. How can this call for better measurement and greater willingness to pay attention to data be applied to the organizations that you work for or are familiar with? Can this advice help advance your own life and career goals? Do you have an aversion to measurement? If so, how can you turn measurement into a friend rather than an enemy?

Step 4—Take Corrective Action

The final step in the control process is to take actions needed to correct problems or make improvements. **Management by exception** is the practice of giving attention to situations that show the greatest need for action. It saves time, energy, and other resources by helping managers focus their attention on high-priority areas.

Management by exception focuses attention on substantial differences between actual and desired performance.

Managers should be alert to two types of exceptions. The first is where actual performance is less than desired. This *problem situation* must be understood so that corrective action can restore performance to the desired level. The second is where actual performance turns out higher than what was desired. This *opportunity situation* must be understood with the goal of continuing or increasing the high level of accomplishment in the future.

Learning Check 2

TAKEAWAYQUESTION **2** **What are the steps in the control process?**

BE SURE YOU CAN • list the steps in the control process • explain why planning is important to controlling • differentiate between output and input standards • state the control equation • define *management by exception*

Control Tools and Techniques

TAKEAWAY 3 **What are the common control tools and techniques?**

LEARN MORE ABOUT | Project management and control • Inventory control • Breakeven analysis

Financial controls • Balanced scorecards

Managers in most organizations use a variety of different control systems and techniques. Some of the most common ones include special techniques of project management, inventory control, breakeven analysis, and financial controls, as well as the use of balanced scorecards.

Project Management and Control

It might be something personal, like an anniversary party for your parents or grandparents; a fundraiser for a local homeless shelter; or the launch of a new product or service at your place of work. It might be the completion of a new student activities building on campus, or the implementation of a new advertising campaign for a sports team. What these examples and others like them share in common is that they encompass relatively complicated sets of interrelated tasks with multiple components that have to happen in a certain sequence, and that must be completed by a specified date. We call them **projects**, complex one-time events with unique components and an objective that must be met within a set time frame.

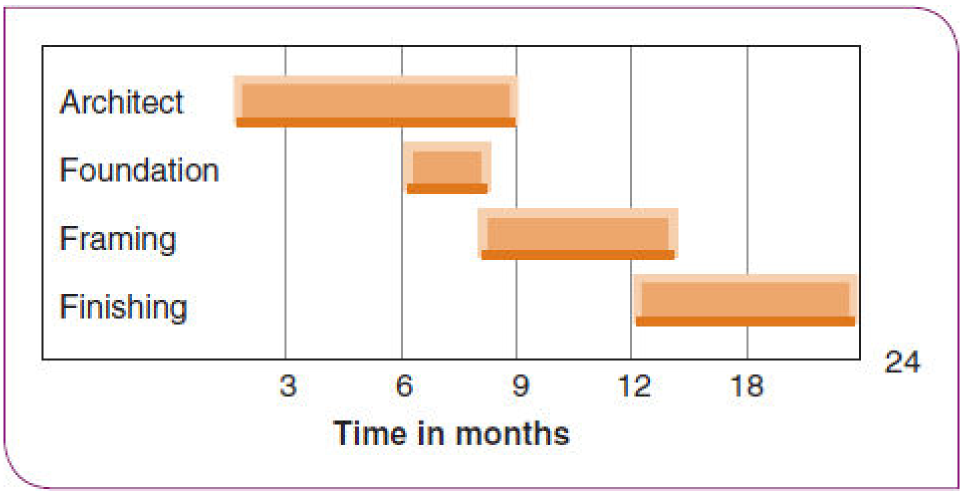
Projects are one-time activities with many component tasks that must be completed in proper order and according to budget.

Project management takes responsibility for overall planning, supervision, and control of projects. A project manager's job is to ensure that a project is well planned and then completed according to plan—on time, within budget, and consistent with objectives. Two useful techniques for project management and control are Gantt charts and CPM/PERT.

> **Project management** is the responsibility for overall planning, supervision, and control of projects.

A **Gantt chart** graphically displays the scheduling of tasks that go into completing a project. As developed in the early 20th century by Henry Gantt, an industrial engineer, this tool has become a core element of project management. The visual overview of what needs to be done on a project allows for easy progress checks to be made at different time intervals. It also helps with event or activity sequencing to make sure key aspects of a project get accomplished in time for later work to build on them. One of the biggest problems with projects, for example, is when delays in early activities create problems for later activities.

> A **Gantt chart** graphically displays the scheduling of tasks required to complete a project.

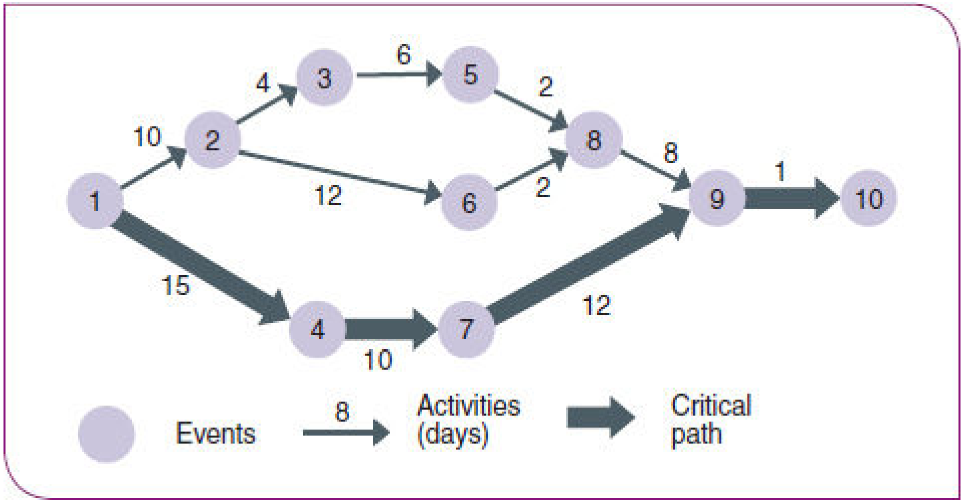


A more advanced use of the Gantt chart is a technique known as **CPM/PERT**—a combination of the critical path method and the program evaluation and review technique. Project planning based on CPM/PERT uses a network chart like the one shown here. Such charts break a project into a series of smaller sub-activities that have clear beginning and end points. These points become "nodes" in the chart, and the arrows between nodes show in what order the sub-activities must be completed. The full diagram shows all the interrelationships that must be coordinated for the entire project to be successfully completed.

> **CPM/PERT** is a combination of the critical path method and the program evaluation and review technique.

Use of CPM/PERT techniques helps project managers track activities to make sure they happen in the right sequence and on time. If you look at the network in the nearby figure, you should notice that the time required for each activity can be easily computed and tracked. The longest pathway from start to conclusion in a CPM/PERT network is called the **critical path**. It represents the quickest time in which the entire project can be finished, assuming everything goes according to schedule and established project plans. In the example, the critical path is 38 days.

> The **critical path** is the longest pathway in a CPM/PERT network.



Inventory Control

Cost control is always an important performance concern. And a very good place to start is with inventory. The goal of **inventory control** is to make sure that any inventory is only big enough to meet immediate needs, so that carrying costs are minimized.

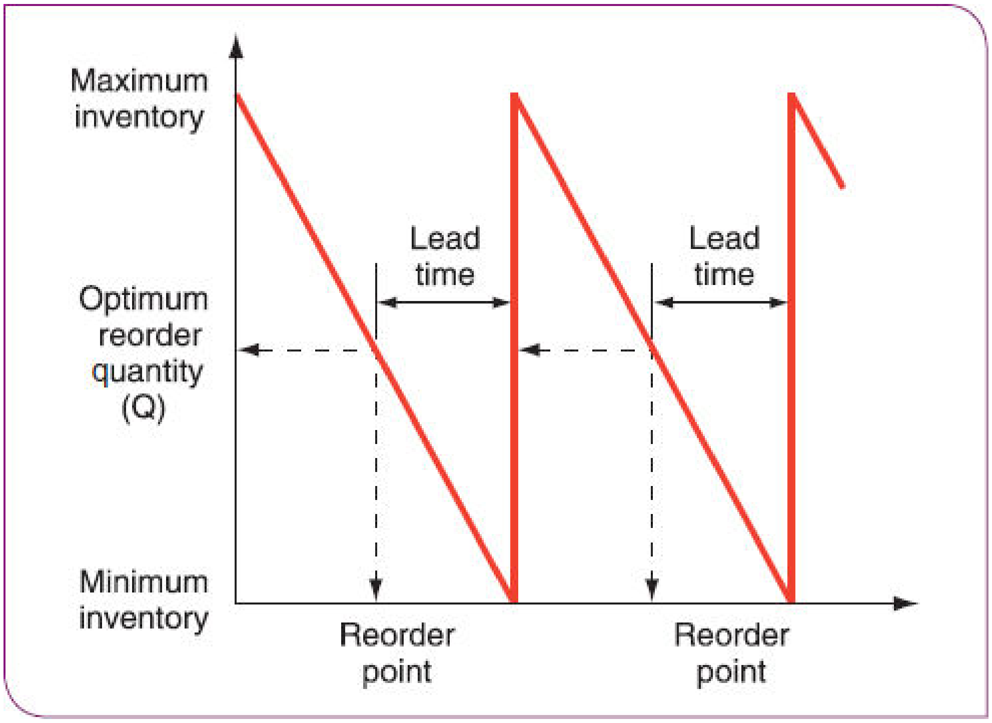
Inventory control ensures that inventory is only big enough to meet immediate needs.

The **economic order quantity** form of inventory control, shown in the figure, automatically orders a fixed number of items every time an inventory level falls to a predetermined point. The order sizes are mathematically calculated to minimize inventory costs. A good example is your local supermarket. It routinely makes hundreds of daily orders on an economic order quantity basis.

The **economic order quantity** method places new orders when inventory levels fall to predetermined points.

Another popular approach to inventory control is **just-in-time scheduling (JIT)**. These systems reduce costs and improve workflow by scheduling materials to arrive at a workstation or facility just in time for use. Because JIT nearly eliminates the carrying costs of inventories, it is an important business productivity tool.

Just-in-time scheduling (JIT) routes materials to workstations just in time for use.



Breakeven Analysis

A frequent control question asked by business executives is: "What is the **breakeven point**?" In Figure 9.4 you'll see that breakeven occurs at the point where revenues are just equal to costs. You can also think of the breakeven point as where losses end and profit begins. A breakeven point is computed using this formula:

> The **breakeven point** occurs where revenues just equal costs.

Breakeven Point = Fixed Costs ÷ (Price – Variable Costs)

Managers using **breakeven analysis** perform what-if calculations under different projected cost and revenue conditions. *Question*—Suppose the proposed target price for a new product is $8 per unit, fixed costs are $10,000, and variable costs are $4 per unit. What sales volume is required to break even? (*Answer*: breakeven at 2,500 units.) *Question*—What happens if you can keep variable costs to $3 per unit? (*Answer*: breakeven at 2,000 units.) *Question*—If you can produce only 1,000 units in the beginning and at the original costs, at what price must you sell them to break even? (Answer: $14.) Business executives perform these types of cost control analyses every day.

> **Breakeven analysis** performs what-if calculations under different revenue and cost conditions.

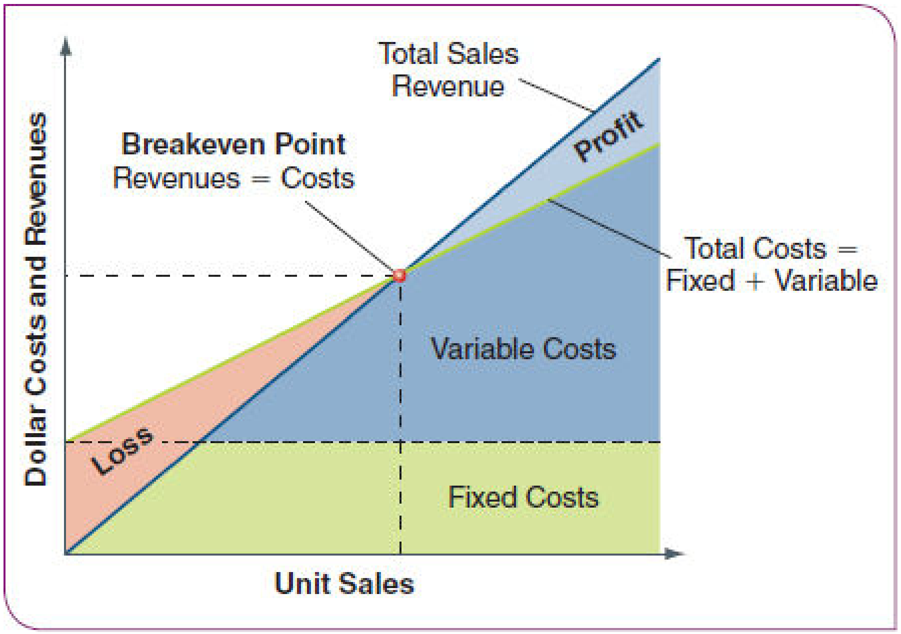


FIGURE 9.4 Use of breakeven analysis to make informed "what-if" decisions.

Financial Controls

The pressure is ever present for all organizations to use their financial resources well. And, the global economic recession has left no doubt that an important part of managerial control involves the analysis of financial performance. Control depends on measurement, and there are a number of ways that financial performance can be measured and tracked for control purposes.

The foundation for analysis using financial controls rests with the firm's balance sheet and income statement. Each looks at finances in slightly different ways, and together they provide a good picture of the financial health of an organization. The **balance sheet** shows assets and liabilities at a point in time. It will be displayed in an Assets = Liabilities format. The **income statement** shows profits or losses at a point in time. It will be displayed in a Sales – Expenses = Net Income format. You are likely to remember both from an accounting course or as summarized in Figure 9.5.

A **balance sheet** shows assets and liabilities at one point in time.

An **income statement** shows profits or losses at one point in time.

Special measures of financial performance help managers use information from balance sheets and income statements for control purposes. They include financial ratios that indicate *liquidity*—the ability to generate cash to pay bills; *leverage*—the ability to earn more in returns than the cost of debt; *asset management*—the ability to use resources efficiently and operate at minimum cost; and *profitability*—the ability to earn revenues greater than costs. The following list highlights some widely used financial ratios.

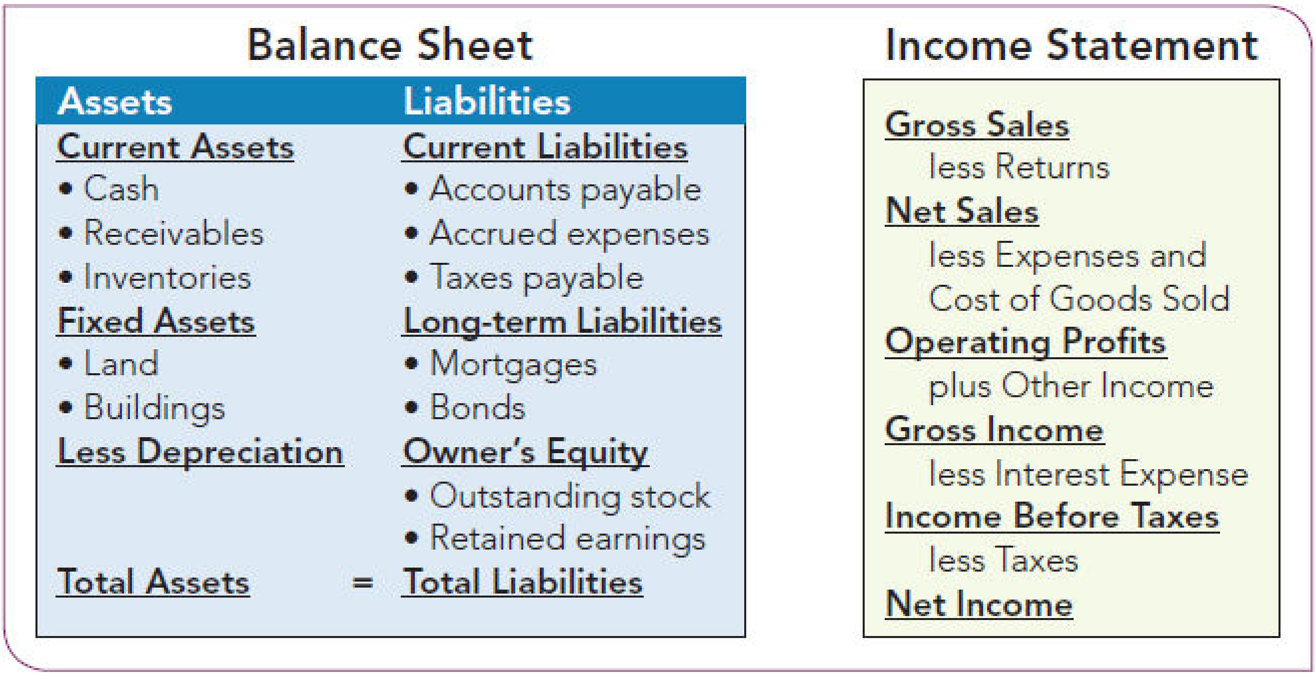


FIGURE 9.5 Basic foundations of a balance sheet and income statement.

Profitability—measures ability to earn revenues greater than costs

- *Net Margin* = Net Income/Sales
- *Return on Assets* (ROA) = Net Income/Total Assets
- *Return on Equity* (ROE) = Net Income/Owner's Equity

Higher is better: You want higher net income relative to sales, assets, and equity.

Liquidity—measures ability to meet short-term obligations

- *Current Ratio* = Current Assets/Current Liabilities
- *Quick Ratio or Acid Test* = Current Assets – Inventories/Current Liabilities

Higher is better: You want more assets and fewer liabilities.

Leverage—measures use of debt

- *Debt Ratio* = Total Debts/Total Assets

Lower is better: You want fewer debts and more assets.

Asset Management—measures asset and inventory efficiency

- *Asset Turnover* = Sales/Total Assets
- *Inventory Turnover* = Sales/Average Inventory

Higher is better: You want more sales relative to assets and inventory.

Financial ratios are very common in executive dashboards that organize business intelligence information for decision making. The ratios lend themselves in a straightforward way to visual displays that provide neat historical comparisons within the firm and for industry benchmarking. They can also be used to set financial targets or goals to share with employees and tracked to indicate performance success or failure. Civco Medical Instruments, for example, distributes a monthly financial report to all employees. These reports always have the facts about how well the firm is doing. This helps employees focus on what they can do better to improve the firm's bottom line.[21]

Balanced Scorecards

If an instructor takes class attendance and assigns grades based on it, students tend to come to class. If an employer tracks the number of customers employees serve per day, employees tend to serve more customers. So if "what gets measured happens," shouldn't managers take advantage of "scorecards" to record and track performance results?

Strategic management consultants Robert S. Kaplan and David P. Norton advocate using the **balanced scorecard** for management control.[22] They say it gives top managers "a fast, but comprehensive view of the business." The basic principle is that to do well and to win, you have to keep score. Like sports teams, organizations tend to perform better when their members always know the score.

> A **balanced scorecard** tallies organizational performance in financial, customer service, internal process, and innovation and learning areas.

Issues&Trends

iPhone's Birth Not Always a Smooth Delivery

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Do you like iPhone's slide-to-unlock feature? Most users do, as does Apple's arch-rival Samsung. Apple sued Samsung for patent infringement on this feature which it claims was invented by an Apple team led by senior engineer Greg Christie. When giving testimony in the suit, Christie pointed out that the birth of iPhone's special features wasn't always smooth. CEO Steve Jobs kept a close eye on his team's innovations and kept telling them he "wanted bigger ideas and bigger concepts." At one point Jobs was so unhappy with what they were creating that he told Christie he had just two weeks to demonstrate results or he'd give development of the iPhone's software vision to another team. Christie's team met the challenge and kept their jobs. We got slide-to-unlock and lots more.

Developing a balanced scorecard for any organization begins with a clarification of the organization's mission and vision—what it wants to be and how it wants to be perceived by its key stakeholders. Next, the following questions are used to develop specific scorecard goals and measures:

- *Financial Performance*—"How well do our actions directly contribute to improved financial performance? To improve financially, how should we appear to our shareholders?" Sample goals: survive, succeed, and prosper. *Sample measures:* cash flow, sales growth and operating income, increased market share, and return on equity.
- *Customer Satisfaction*—"How well do we serve our customers and clients? To achieve our vision, how should we appear to our customers?" Sample goals: new products, responsive supply. *Sample measures:* percentage sales from new products, percentage on-time deliveries.
- *Internal Process Improvement*—"How well do our activities and processes directly increase the value we provide our customers and clients? To satisfy our customers and shareholders, at what internal business processes should we excel?" Sample goals: manufacturing excellence, design productivity, new product introduction. *Sample measures:* cycle times, engineering efficiency, new product time.
- *Innovation and Learning*—"How well are we learning, changing, and improving things over time? To achieve our vision, how will we sustain our ability to change and improve?" Sample goals: technology leadership, time to market. *Sample measures:* time to develop new technologies, new product introduction time versus competition.

When balanced scorecard measures are taken and routinely recorded for critical managerial review, Kaplan and Norton expect managers to make better decisions and organizations to perform better in these four performance areas. Like the financial ratios discussed earlier, the balanced scorecard is a good fit for executive dashboards and visual displays of business intelligence. Again, what gets measured happens.

Think about the possibilities of using balanced scorecards in all types of organizations. How can this approach be used, for example, by an elementary school, a hospital, a community library, a mayor's office, or a fast-food restaurant? How might the performance dimensions and indicators vary among these different organizations? And if balanced scorecards make sense, why is it that more organizations don't use them?

Learning Check 3

TAKEAWAYQUESTION 3 What are the common control tools and techniques?

BE SURE YOU CAN • define project management • explain how Gantt charts and CPM/PERT analysis can assist in project management • explain how inventory controls and breakeven analysis can assist in cost control • list and explain common ratios used in financial control • identify the four main balanced scorecard components and give examples of how they might be used in organizations of various types

Management Learning Review

Get Prepared for Quizzes and Exams

Summary

TAKEAWAYQUESTION **1**

Why and how do managers exercise control?

- Controlling is the process of measuring performance and taking corrective action as needed.
- Feedforward controls are accomplished before a work activity begins; they ensure that directions are clear and that the right resources are available to accomplish them.
- Concurrent controls make sure that things are being done correctly; they allow corrective actions to be taken while the work is being done.
- Feedback controls take place after an action is completed; they address the question "Now that we are finished, how well did we do, and what did we learn for the future?"
- Internal control is self-control and occurs as people take personal responsibility for their work.
- External control is based on the use of bureaucratic, clan, and market control systems.

FOR DISCUSSION Can strong input and output controls make up for poor concurrent controls?

TAKEAWAYQUESTION **2**

What are the steps in the control process?

- The first step in the control process is to establish performance objectives and standards that create targets against which later performance can be evaluated.
- The second step in the control process is to measure actual performance and specifically identify what results are being achieved.
- The third step in the control process is to compare performance results with objectives to determine if things are going according to plans.
- The fourth step in the control process is to take action to resolve problems or explore opportunities that are identified when results are compared with objectives.

FOR DISCUSSION What are the potential downsides to management by exception?

TAKEAWAYQUESTION **3**

What are the common control tools and techniques?

- A project is a unique event that must be completed by a specified date; project management is the process of ensuring that projects are completed on time, on budget, and according to objectives.

- Gantt charts assist in project management and control by displaying how various tasks must be scheduled in order to complete a project on time.
- CPM/PERT analysis assists in project management and control by describing the complex networks of activities that must be completed in sequence for a project to be completed successfully.
- Economic order quantities and just-in-time deliveries are common approaches to inventory cost control.
- The breakeven equation is: Breakeven Point = Fixed Costs − (Price − Variable Costs).
- Breakeven analysis identifies the points where revenues will equal costs under different pricing and cost conditions.
- Financial control of business performance is facilitated by a variety of financial ratios, such as those dealing with liquidity, leverage, assets, and profitability.
- The balanced scorecard measures overall organizational performance in four areas: financial, customers, internal processes, and innovation.

FOR DISCUSSION Should all employees of a business be regularly informed of the firm's overall financial performance?

Self-Test 9

a. Measure results.

b. Take corrective action.

c. Compare results with objectives.

d. Modify standards to fit circumstances.

2. When a soccer coach tells her players at the end of a game, "I'm pleased you stayed with the game plan," she is using a/an ______________ to a measure performance, even though in terms of outcomes her team lost.

a. input standard

b. output standard

c. historical comparison

d. relative comparison

3. When an automobile manufacturer is careful to purchase only the highest-quality components for use in production, this is an example of an attempt to ensure high performance through ______________ control.

a. concurrent

b. statistical
c. inventory
d. feedforward

4. Management by exception means _______________.
   a. managing only when necessary
   b. focusing attention where the need for action is greatest
   c. the same thing as concurrent control
   d. the same thing as just-in-time delivery
5. When a supervisor working alongside an employee corrects him or her when a mistake is made, this is an example of _______________ control.
   a. feedforward
   b. concurrent
   c. internal
   d. clan
6. If an organization's top management visits a firm in another industry to learn more about its excellent record in hiring and promoting minority and female candidates, this is an example of using _______________ for control purposes.
   a. a balanced scorecard
   b. relative comparison
   c. management by exception
   d. progressive discipline
7. The control equation states: _______________ = Desired Performance – Actual Performance.
   a. Problem Magnitude
   b. Management Opportunity
   c. Planning Objective
   d. Need for Action
8. When a UPS manager compares the amount of time a driver takes to make certain deliveries against standards set through a quantitative analysis of her delivery route, this is known as _______________.
   a. a historical comparison
   b. an engineering comparison
   c. relative benchmarking
   d. concurrent control
9. Projects are unique one-time events that _______________.
   a. have unclear objectives
   b. must be completed by a specific time
   c. have unlimited budgets

d. are largely self-managing

10. The _______________ chart graphically displays the scheduling of tasks required to complete a project.
    a. exception
    b. Taylor
    c. Gantt
    d. after-action
11. When one team member advises another team member that “your behavior is crossing the line in terms of our expectations for workplace civility,” she is exercising a form of _______________ control over the other’s inappropriate behaviors.
    a. clan
    b. market
    c. internal
    d. preliminary
12. In a CPM/PERT analysis the focus is on _______________ and the event that link them together with the finished project.
    a. costs, budgets
    b. activities, sequences
    c. timetables, budgets
    d. goals, costs
13. If fixed costs are $10,000, variable costs are $4 per unit, and the target selling price per unit is $8, what is the breakeven point?
    a. 2
    b. 500
    c. 2,500
    d. 4,800
14. Among the financial ratios used for control, Current Assets/Current Liabilities is known as the _______________.
    a. debt ratio
    b. net margin
    c. current ratio
    d. inventory turnover ratio
15. With respect to return on assets (ROA) and the debt ratio, the preferred directions when analyzing them from a control standpoint are _______________.
    a. decrease ROA, increase debt
    b. increase ROA, increase debt
    c. increase ROA, decrease debt
    d. decrease ROA, decrease debt

Short-Response Questions

16. List the four steps in the controlling process and give examples of each.
17. How might feedforward control be used by the owner/manager of a local bookstore?
18. How does Douglas McGregor's Theory Y relate to the concept of internal control?
19. What four questions could be used to organize the presentation of a real-time balanced scorecard in the executive dashboard for a small business?

Essay Question

20. Assume that you are given the job of project manager for building a new student center on your campus. List just five of the major activities that would need to be accomplished to complete the new building in two years. Draw a CPM/PERT network diagram that links the activities together in required event scheduling and sequencing. Make an estimate for the time required for each sequence to be completed and identify the critical path.

Management **Skills & Competencies** Make yourself **valuable!**

Evaluate Career Situations

What Would You Do?

1. **Adrift in Career**

   A work colleague comes to you and confides that she feels "adrift in her career" and "just can't get enthused about what she's doing anymore." You think this might be a problem of self-management and personal control. How can you respond most helpfully? How might she use the steps in the management control process to better understand and improve her situation?

2. **Too Much Socializing**

   You have a highly talented work team whose past performance has been outstanding. You've recently noticed team members starting to act like the workday is mainly a social occasion. Getting the work done too often seems less important than having a good time. Recent data show that performance is on the decline. How can you use controls in a positive way to restore performance to high levels in this team?

3. **Yes or No to Graduate School**

   You've had three years of solid work experience after earning your undergraduate degree. A lot of your friends are talking about going to graduate school, and the likely target for you would be an MBA degree. Given all the potential costs and benefits of getting an MBA, how can breakeven analysis help you make the decision: (a) to go or not go, (b) to go full time or part time, and (c) even where to go?

Reflect on the Self-Assessment

Internal/External Control

Instructions

Circle either "a" or "b" to indicate the item you most agree with in each pair of the following statements.[23]

1.

- **a.** Promotions are earned through hard work and persistence.
- **b.** Making a lot of money is largely a matter of breaks.

2.

- **a.** Many times the reactions of teachers seem haphazard to me.
- **b.** In my experience I have noticed that there is usually a direct connection between how hard I study and the grades I get.

3.

- **a.** The number of divorces indicates that more and more people are not trying to make their marriages work.
- **b.** Marriage is largely a gamble.

4.

- **a.** It is silly to think that one can really change another person's basic attitudes.
- **b.** When I am right, I can convince others.

5.

- **a.** Getting promoted is really a matter of being a little luckier than the next guy.
- **b.** In our society, an individual's future earning power is dependent on his or her ability.

6.

- **a.** If one knows how to deal with people, they are really quite easily led.
- **b.** I have little influence over the way other people behave.

7.

- **a.**

In my case, the grades I make are the results of my own efforts; luck has little or nothing to do with it.

- **b.**

8.

- **a.** People such as I can change the course of world affairs if we make ourselves heard.
- **b.** It is only wishful thinking to believe that one can really influence what happens in society at large.

9.

- **a.** Much of what happens to me is probably a matter of chance.

b. I am the master of my fate.

10.

a. Getting along with people is a skill that must be practiced.

b. It is almost impossible to figure out how to please some people.

Scoring

Give yourself 1 point for 1a, 2b, 3a, 4b, 5b, 6a, 7a, 8a, 9b, 10a. Total scores of: 8–10 = high *internal* locus of control, 6–7 = moderate *internal* locus of control, 5 = *mixed* locus of control, 3–4 = moderate *external* locus of control, 0–2 = high *external* locus of control.

Interpretation

This instrument offers an impression of your tendency toward an *internal locus of control or external locus of control*. Persons with a high internal locus of control tend to believe they have control over their own destinies. They may be most responsive to opportunities for greater self-control in the workplace. Persons with a high external locus of control tend to believe that what happens to them is largely in the hands of external forces or other people. They may be less comfortable with self-control and more responsive to external controls in the workplace.

Contribute to the Class Exercise

After-Meeting/Project Remorse

Instructions

A. Everyone on the team should complete the following assessment after participating in a meeting or a group project.[24]

1. How satisfied are you with the outcome of the meeting project?
   Not at all satisfied 1 2 3 4 5 6 7 Totally satisfied
2. How would the other members of the meeting/project group rate your influence on what took place?
   No influence 1 2 3 4 5 6 7 Very high influence
3. In your opinion, how ethical was any decision that was reached?
   Highly unethical 1 2 3 4 5 6 7 Highly ethical
4. To what extent did you feel *pushed into* going along with the decision?
   Not pushed into it at all 1 2 3 4 5 6 7 Very pushed into it
5. How committed are you to the agreements reached?
   Not at all committed 1 2 3 4 5 6 7 Highly committed
6. Did you understand what was expected of you as a member of the meeting or project group?
   Not at all clear 1 2 3 4 5 6 7 Perfectly clear
7. Were participants in the meeting/project group discussions listening to each other?
   Never 1 2 3 4 5 6 7 Always
8. Were participants in the meeting/project group discussions honest and open in communicating with one another?
   Never 1 2 3 4 5 6 7 Always’
9. Was the meeting/project completed efficiently?
   Not at all 1 2 3 4 5 6 7 Very much

10. Was the outcome of the meeting/project something that you felt proud to be a part of?
    Not at all 1 2 3 4 5 6 7 Very much

B. Share results with all team members and discuss their meaning.

C. Summarize and share with the instructor and class the implications of this exercise for: (a) the future success of this team if it was to work on another project, and (b) each individual team member as he or she goes forward to work in other teams and on other group projects in the future.

Manage a Critical Incident

High Performer but Late for Work

You are an elementary school principal. One of your best teachers—perhaps the best—is causing a bit of an uproar. She is in her second year on staff after graduating from college and is doing a wonderful job with the second graders. They're happy, the parents are happy, and you're happy. The other teachers aren't happy, at least some of them aren't. Two of the more outspoken and senior teachers came to you today with a request. "Do something about her," they said. "She is consistently late in the mornings. You know our policy is for the teacher to be in the classroom at least 30 minutes before school starts." You are aware of her tardiness, but you also know that she consistently stays late and is most often the last teacher out of the building at the end of the day. She isn't aware that her co-workers have complained about her. You can't put this off because the grumbling is starting to spread.

Questions

What do you do, and why? How can you turn this into an opportunity to develop an approach that accommodates a range of personal work styles and different classroom approaches, all while holding up high performance standards?

Collaborate on the Team Activity

In your assigned teams do the following.

1. Choose a local organization of interest to team members and about which you collectively have some information and insights.
2. Build a Balanced Scorecard that can be used for control purposes by this organization's top management. Make sure your scorecard covers these four areas—financial performance, customer satisfaction, internal process improvement, and innovation and learning.
3. For each of the four scorecard performance areas, be very specific in identifying what you recommend as possible performance goals and areas of performance measurement.
4. Design a scorecard format that makes analysis easy and informative. If possible demonstrate how your proposed scorecard might fit into an Executive Dashboard.

5. Present your proposed Balanced Scorecard to the entire class, along with justification for all suggested goals and measures. Explain in your presentation why you believe this scorecard could help the organization perform better in the future.

Analyze THE CaseStudy | ELECTRONIC ARTS
Inside Fantasy Sports

Go to ***Management Cases for Critical Thinking*** at the end of the book to find this case.