ENGINEERING MANAGEMENT

Work is an activity that produces value for other people.

FUNCTIONS OF MANAGEMENT

Management entails four basic functions: planning, organizing, leading, and controlling resources (land, labor, capital, and information) to efficiently reach a company's goals. Managers are the employees **responsible for performing these four functions in addition to a number of other duties to coordinate the organization's work**. These duties, or roles, fall into three main categories:

- **Interpersonal roles**. Managers perform ceremonial obligations; provide leadership to employees; build a network of relationships with bosses, peers, and employees; and act as liaison to groups and individuals both inside and outside the company (such as suppliers, competitors, government agencies, consumers, special-interest groups, and interrelated work groups).

- **Informational roles**. Managers spend a fair amount of time gathering information by questioning people both inside and outside the organization. They also distribute information to employees, other managers, and outsiders.

- **Decisional roles**. Managers use the information they gather to encourage innovation, to resolve unexpected problems that threaten organizational goals (such as reacting to an economic crisis), and to decide how organizational resources will be used to meet planned objectives. They also negotiate with many individuals and groups, including suppliers, employees, and unions.

Being able to move among these roles while performing the basic management functions is just one of the many skills that managers must possess.

The Basic Functions of Management

Steve Case demonstrates that when managers possess the right combination of vision, skill, experience, and determination, they can lead an organization to success. To do this, however, they must perform the basic functions of management:

- Planning,

- Organizing,
- Staffing
- Directing, and
- Controlling

THE PLANNING FUNCTION

Planning is the primary management function, the one on which all others depend. Managers engaged in **planning** develop strategies for success, establish goals and objectives for the organization, and translate their strategies and goals into action plans. To develop long-term strategies and goals, managers must be well informed on a number of key issues and topics that could influence their decisions.

Understanding the Strategic Planning Process

Strategic plans outline the firm's long-range (two to five years) organizational goals and set a course of action the firm will pursue to reach its goals. These long-term goals encompass eight major areas of concern: market standing, innovation, human resources, financial resources, physical resources, productivity, social responsibility, and financial performance. A good strategic plan answers:

- Where are we going?
- What is the environment?
- How do we get there?

To answer these questions and establish effective long-term goals, managers require extensive amounts of information. For instance, managers must study

- Budgets,
- Production schedules,
- Industry and economic data,
- Customer preferences,
- Internal and external data,
- Competition and so on.

Managers use this information to set a firm's long-term course of direction during a process called strategic planning.

Develop a Clear Vision - *Most organizations are formed in order to realize a vision, a realistic, credible, and attainable view of the future that grows out of and improves on the present.*

- Henry Ford envisioned making affordable transportation available to every person.
- Fred Smith (founder of FedEx) envisioned making FedEx an information company (besides being a transportation company).
- Bill Gates (chairman of Microsoft) envisioned empowering people through great software, anytime, anyplace, and on any device.

Translate the Vision into a Meaningful Mission Statement *To transform vision into reality, managers must define specific organizational goals, objectives, and philosophies. A starting point is to write a company mission statement, a brief document that defines why the organization exists, what it seeks to accomplish, and the principles that the company will adhere to as it tries to reach its goals.*

Establish Company Goals and Objectives

As mentioned earlier, establishing goals and objectives is the key task in the planning process. Although these terms are often used interchangeably, a goal is a broad, long-range accomplishment that the organization wishes to attain in typically five or more years, whereas an objective is a specific, short-range target designed to help reach that goal.

- For AOL, a goal might be to become the number-one Internet service provider in the Brazilian marketplace, and an objective might be to add 100,000 new Brazilian subscribers by year-end.

Develop Action Plans

Once managers have established a firm's long-term strategic goals and objectives, it must then develop a plan of execution.

- **Tactical plans** lay out the actions and the allocation of resources necessary to achieve specific, short-term objectives that support the company's broader strategic plan. Tactical plans typically focus on departmental goals and cover a period of one to three years. Their limited scope permits them to be changed more easily than strategic plans.
- **Operational plans** designate the actions and resources required to achieve the objectives of tactical plans. Operational plans usually define actions for less than one year and focus on accomplishing a firm's specific objectives such as increasing the number of new subscribers by 5 percent over the next six months.

THE ORGANIZING FUNCTION

Organizing, the process of arranging resources to carry out the organization's plans is the second major function of managers. During the organizing stage, managers think through all the activities that employees carry out (from programming the organization's computers to mailing its letters), as well as all the facilities and equipment employees need in order to complete those activities. They also give people the ability to work toward organizational goals by determining who will have the authority to make decisions, to perform or supervise activities, and to distribute resources.

We will discuss the three levels of a corporate hierarchy—top, middle, bottom—commonly known as the **management pyramid**. In general,

- **Top managers** are the upper-level managers who have the most power and who take overall responsibility for the organization. An example is the chief executive officer (CEO). **Top managers establish the structure for the organization as a whole** and they select the people who fill the upper-level positions. Top managers also make long-range plans, establish major policies, and represent the company to the outside world at official functions and fund-raisers.

- **Middle managers** have similar responsibilities, but usually for just one division or unit. They develop plans for implementing the broad goals set by top managers, and they coordinate the work of first-line managers. In traditional organizations, managers at the middle level are plant managers, division managers, branch managers, and other similar positions—reporting to top-level managers. But in more innovative management structures, middle managers often function as team leaders who are expected to supervise and lead small groups of employees in a variety of job functions. Similar to consultants, they must understand every department's function, not just their own area of expertise. Furthermore, they are granted decision-making authority previously reserved for only high-ranking executives.

- At the bottom of the management pyramid are **first-line managers** (or *supervisory managers*). They oversee the work of operating employees, and they put into action the plans developed at higher levels. Positions at this level include supervisor, department head, and office manager.

THE DIRECTING (LEADING) FUNCTION

Leading—the process of influencing and motivating people to work effectively and willingly toward company goals—is the third basic function of management.

Managers with good leadership skills have greater success in influencing the attitudes and actions of others, both through the demonstration of specific tasks and through the manager's own behavior and spirit.

Additional studies have shown that managers with strong **interpersonal skills** and **high emotional quotients** (EQs) tend to be more effective leaders. The characteristics of a high EQ include:

- **Self-awareness**. Self-aware managers have the ability to recognize their own feelings and how they, their job performance, and other people are affected by those feelings. Moreover, managers who are highly self-aware know where they are headed and why.
- **Self-regulation**. Self-regulated managers have the ability to control or reduce disruptive impulses and moods. They can suspend judgment and think before acting. Moreover, they know how to utilize the appropriate emotion at the right time and in the right amount.
- **Motivation**. Motivated managers are driven to achieve beyond expectations—their own and everyone else's.
- **Empathy**. Empathetic managers thoughtfully consider employees' feelings, along with other factors, in the process of making intelligent decisions.
- **Social skill**. Socially skilled managers tend to have a wide circle of acquaintances, and they have a knack for finding common ground with people of all kinds. They assume that nothing important gets done by one person alone and have a network in place when the time for action comes.

The three broad categories of leadership style are *autocratic, democratic,* and *laissez-faire.*

- **Autocratic leaders** make decisions without consulting others.

- **Democratic leaders** delegate authority and involve employees in decision making. Even though their approach can lead to slower decisions, soliciting input from people familiar with particular situations or issues may result in better decisions.

- The third leadership style, laissez-faire, is sometimes referred to as free-rein leadership. The French term *laissez faire* can be translated as "**leave it alone**," or more roughly as "hands off." **Laissez-faire leaders** take the role of consultant, encouraging employees' ideas and offering insights or opinions when asked. The laissez-faire style may fail if workers pursue goals that do not match the organizations. However, the style has proven effective in some situations.
  Managers at Hewlett-Packard's North American distribution organization adopted a laissez-faire style when they were given nine months to reorganize their order-fulfillment process. The managers eliminated all titles, supervision, job descriptions, and plans, and they made employees entirely responsible for the project. At first there was chaos. However, employees soon began to try new things, make mistakes, and learn as they went. In the end, the team finished the reorganization ahead of schedule, reduced product delivery times from 26 days to 8 days, and cut inventory by 20 percent. Moreover, the employees experienced a renewed sense of challenge, commitment, and enjoyment in their work.

Adapting leadership style to current business circumstances is called **contingency leadership**. You can think of leadership styles as existing along a continuum of possible leadership behaviors, as shown on digital display.

THE CONTROLLING FUNCTION

Controlling is the fourth basic managerial function. In management, controlling means monitoring a firm's progress toward meeting its organizational goals and objectives, resetting the course if goals or objectives change in response to shifting conditions, and correcting deviations if goals or objectives are not being attained.

The Control Cycle

Many firms control for quality through a four-step cycle that involves all levels of management and all employees. In the:

- First step, top managers set standards, or criteria for measuring the performance of the organization as a whole.
- In the second step of the control cycle, managers assess performance, using both quantitative (specific, numerical) and qualitative (subjective) performance measures.
- In the third step, managers compare performance with the established standards and search for the cause of any discrepancies.
- If the performance falls short of standards, the fourth step is to take corrective action, which may be done by either adjusting performance or reevaluating the standards.
- If performance meets or exceeds standards, no corrective action is taken.

Management Skills

- **Interpersonal Skills** To communicate with other people, work effectively with them, motivate them, and lead them are interpersonal skills.

- **Technical Skills** A person who knows how to operate a machine, prepare a financial statement, program a computer, or pass a football has technical skills: Managers at all levels use administrative skills, which are the technical skills necessary to manage an organization.

- **Conceptual Skills** Managers need conceptual skills to see the organization as a whole, in the context of its environment, and to understand how the various parts interrelate. Conceptual skills are especially important to top managers. These managers are the strategists who develop the plans that guide the organization toward its goals. A key managerial activity requiring conceptual skills is decision making, a process that has five distinct steps: (1) recognizing the need for a decision, (2) identifying, analyzing, and defining the problem or opportunity, (3) generating alternatives, (4) selecting an alternative and implementing it, and (5) evaluating the results.