Definitions of Effectiveness and Efficiency Productivity implies effectiveness and efficiency in individual and organizational performance. **Effectiveness** is the achievement of objectives. **Efficiency** is the achievement of the ends with the least amount of resources. Managers cannot know whether they are productive unless they first know their goals and those of the organization, a topic that will be discussed in Chapter 4.

Managing: Science or Art?

Managing, like all other practices—whether medicine, music composition, engineering, accountancy, or even baseball—is an art. It is know-how. It is doing things in the light of the realities of a situation. Yet, managers can work better by using the organized knowledge about management. It is this knowledge that constitutes a science. Thus, managing as practice is an **art**; the organized knowledge underlying the practice may be referred to as a **science**. In this context science and art are not mutually exclusive; they are complementary.

As science improves, so should art, as has happened in the physical and biological sciences. To be sure, the science underlying managing is fairly crude and inexact. This is true because the many variables with which managers deal are extremely complex. Nevertheless, such management knowledge can certainly improve managerial practice. Physicians without the advantage of science would be little more than witch doctors. Executives who attempt to manage without management science must trust on luck, intuition, or what they did in the past.

In managing, as in any other field, unless practitioners are to learn by trial and error (and it has been said that managers' errors are their subordinates' trials), there is no place they can turn to for meaningful guidance other than the accumulated knowledge underlying their practice.

THE EVOLUTION OF MANAGEMENT THOUGHT AND THE PATTERNS OF MANAGEMENT ANALYSIS

Many different contributions of writers and practitioners have resulted in different approaches to management, and these make up a "management theory jungle." Later in this chapter you will learn about the different patterns of management analysis and what can be done to untangle the jungle. Table 1.1 summarises the major contributions of management writers and practitioners. We will highlight Frederick Taylor's scientific management, Henri Fayol, the father of modern operational management theory, and Elton Mayo and F. J. Roethlisberger's Hawthorne studies.

Frederick Taylor and Scientific Management

Frederick Winslow Taylor gave up college studies and started out as an apprentice pattern maker and machinist in 1875, joined the Midvale Steel Company in Philadelphia as a machinist in 1878, and rose to the position of chief engineer after earning a degree in engineering through evening study. He invented high-speed steel-cutting tools and spent most of his life as a consulting engineer. Taylor is generally acknowledged as

Table 1.1
The Emergence of Management Thought

Name and year of major work	*Major contribution to management*
	Scientific management
Frederick W. Taylor *Shop Management* (1903) *Principles of Scientific Management* (1911) *Testimony before the Special House Committee* (1912)	Acknowledged as "the father of scientific management". His primary concern was to increase productivity through greater efficiency in production and increased pay for workers, through the application of the scientific method. His principles emphasized using science, creating group harmony and cooperation, achieving maximum output, and developing workers.
Henry L. Gantt (1901)	Called for scientific selection of workers and "harmonious cooperation" between labor and management. Developed the Gantt chart (Chapter 21). Stressed the need for training.
Frank and Lillian Gilbreth (1900)	Frank is known primarily for his time and motion studies. Lillian, an industrial psychologist, focused on the human aspects of work and the understanding of workers' personalities and needs.
	Modern operational-management theory
Henri Fayol *Administration Industrielle et Générale* (1916)	Referred to as "the father of modern management theory". Divided industrial activities into six groups: technical, commercial, financial, security, accounting, and managerial. Recognized the need for teaching management. Formulated fourteen principles of management, such as authority and responsibility, unity of command, scalar chain, and espirit de corps.
	Behavioural sciences
Hugo Münsterberg (1912)	Application of psychology to industry and management.
Walter Dill Scott (1901, 1911)	Application of psychology to advertising, marketing, and personnel.
Max Weber (translations 1946, 1947)	Theory of bureaucracy.
Vilfredo Pareto (books 1896–1917)	Referred to as "the father of the social systems approach" to organization and management.
Elton Mayo and F.J. Roethlisberger (1933)	Famous studies at the Hawthorne plant of the Western Electric Company. Influence of social attitudes and relationships of work groups on perfor-mance.
	Systems theory
Chester Barnard *The Functions of the Executive* (1938)	The task of managers is to maintain a system of cooperative effort in a formal organization. He suggested a comprehensive social systems approach to managing.
Emergence of modern management thought and recent contributors to management	
Many authors are discussed in the book. Major contributors include Chris Argyris, Robert R. Blake, C. West Churchman, Ernest Dale, Keith Davis, Mary Parker Follett, Frederick Herzberg, G.C. Homans, Harold Koontz, Rensis Likert, Douglas McGregor, Abraham H. Maslow, Lyman W. Porter, Herbert Simon, George A. Steiner, Lyndall Urwick, Norbert Wiener, and Joan Woodward.	

(Contd.)

Table 1-1 (*Contd.*)

Name and year of major work	*Major contribution to management*
Peter F. Drucker (1974)	Very prolific writer on many general management topics.
W. Edwards Deming (after World War II)	Introduced quality control in Japan.
Laurence Peter (1969)	Observed that eventually people get promoted to a level where they are incompetent.
William Ouchi (1981)	Discussed selected Japanese managerial practices adapted in the U.S. environment.
Thomas Peters and Robert Waterman (1982)	Identified characteristics of companies they considered excellent.

Source: Some information in this table is based on Claude S. George, Jr., *The History of Management Thought* (Englewood Cliffs, N.J.: Prentice Hall, 1972).

the father of scientific management. Probably no other person has had a greater impact on the early development of management. His experiences as an apprentice, a common labourer, a foreman, a master mechanic, and then the chief engineer of a steel company gave Taylor ample opportunity to know first-hand the problems and attitudes of workers and to see the great possibilities for improving the quality of management.

Frederick W. Taylor
(1856–1915)

Taylor's famous work entitled *The Principles of Scientific Management* was published in 1911. The fundamental principles that Taylor saw underlying the scientific approach to management are as follows:

1. Replacing rules of thumb with science (organized knowledge).
2. Obtaining harmony in group action, rather than discord.
3. Achieving cooperation of human beings, rather than chaotic individualism.
4. Working for maximum output, rather than restricted output.
5. Developing all workers to the fullest extent possible for their own and their company's highest prosperity.

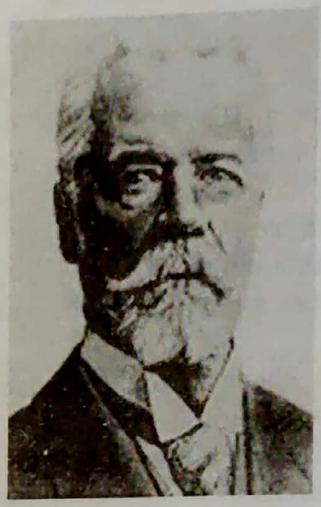
You will notice that these basic precepts of Taylor's are not far from the fundamental beliefs of the modern manager.

Fayol, the Father of Modern Operational Management Theory[10]

Perhaps the real father of modern management theory is the French industrialist Henri Fayol. He recognized a widespread need for principles and management teaching. Consequently, he identified fourteen such principles, noting that they are flexible, not absolute, and must be used regardless of changing conditions. Let us look at some of these principles:

1. *Authority and responsibility:* Fayol suggests that authority and responsibility are to be related, with the latter arising from the former. He sees authority as a combination of official factors, deriving from the manager's position, and personal factors, "compounded of intelligence, experience, moral worth, past service, etc."
2. *Unity of Command:* This means that employees should receive orders from one superior only.
3. *Scalar Chain:* Fayol thinks of this as a "chain of superiors" from the highest to the lowest ranks, which, while not to be departed from needlessly, should be short-circuited when to follow it scrupulously would be detrimental.
4. *Esprit de Corps:* This is the principle that "in union there is strength," as well as an extension of the principle of unity of command, emphasising the need for teamwork and the importance of communication in obtaining it.

Fayol regarded the elements of management as the functions of—planning, organizing, commanding, coordinating, and controlling.



Henri Fayol (1841–1925)

Elton Mayo and F Roethlisberger and the Hawthorne Studies.

Elton Mayo, F J Roethlisberger, and others undertook the famous experiments at the Hawthorne plant of the Western Electric Company between 1927 and 1932.[11] Earlier, from 1924 to 1927, the National Research Council conducted a study in collaboration with Western Electric to determine the effects of illumination and other conditions on workers and their productivity. Finding that when illumination was either increased or decreased for a test group, productivity improved, the researchers were about to declare the whole experiment a failure; however, Elton Mayo, of Harvard, saw in it something unusual and, with Roethlisberger and others, continued the research.

What Mayo and his colleagues found, partly on the basis of the earlier thinking of Pareto, was to have a dramatic effect on management thought. Changing illumination for the test group, modifying rest periods, shortening workdays, and varying incentive pay systems did not seem to explain changes in productivity. Mayo and his researchers then came to the conclusion that other factors were responsible for it. They found, in general, that the improvement in productivity was due to such social factors as morale, satisfactory interrelationships between members of a work group (a sense of belonging),

Elton Mayo (1880–1949)

and effective management—a kind of managing that would understand human behavior, especially group behavior, and serve it through such interpersonal skills as motivating, counselling, leading, and communicating. This phenomenon, arising basically from people being "noticed," has been known as the "Hawthorne effect."

Recent Contributors to Management Thought

Among the several contributors to management thought are public administrators, business managers, and behavioral scientists, whose important works are discussed throughout this book. We will mention only a few here.

Peter F Drucker has written on a variety of general management topics. Keith Davis helped us to understand the informal organization discussed in Part 3 in this book. The late W Edwards Deming and Joseph M Juran, two Americans, have done much to improve the quality of Japanese products. The late Laurence Peter suggested that eventually people get promoted to a level where they are incompetent and no further promotion is possible. Unfortunately, this may result in organizations with incompetent people. William Ouchi, who wrote the best-selling book *Theory Z*, shows how selected management practices may be adapted in the United States. Finally, Thomas Peters and Robert Waterman discuss characteristics of excellent companies. Most of these works are discussed in greater detail in other parts of this book.

PATTERNS OF MANAGEMENT ANALYSIS: A MANAGEMENT THEORY JUNGLE?

Although academic writers and theorists contributed little to the study of management until the early 1950s, previous writings having come largely from practitioners, the past four to five decades have seen a veritable deluge of writing from the academic halls. The variety of approaches to management analysis, the amount of research, and the number of differing views have resulted in much confusion as to what management is, what management theory and science is, and how managerial events should be analyzed. As a matter of fact, Koontz some years ago called this situation "the management theory jungle."[12] Since that time, the vegetation in this jungle has changed somewhat—new approaches have developed, and older approaches have taken on