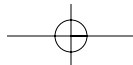
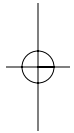
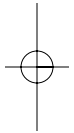


Modern Project Management
What Is a Project?
The Importance of Project Management
Project Management Today—An Integrative Approach
Summary



CHAPTER ONE

Modern Project Management

All of mankind's greatest accomplishments—from building the great pyramids to discovering a cure for polio to putting a man on the moon—began as a project.

This is a good time to be reading a book about project management. Business leaders and experts have proclaimed that project management is a strategic imperative. Project management provides people with a powerful set of tools that improves their ability to plan, implement, and manage activities to accomplish specific organizational objectives. But project management is more than just a set of tools; it is a results-oriented management style that places a premium on building collaborative relationships among a diverse cast of characters. Exciting opportunities await people skilled in project management.

The project approach has long been the style of doing business in the construction industry, U.S. Department of Defense contracts, and Hollywood as well as at big consulting firms. Now project management has spread to all avenues of work. Today, project teams carry out everything from port expansions to hospital restructuring to upgrading information systems. Automakers such as Toyota, Nissan, and BMW credit their ability to capture a significant share of the auto market to the use of project management teams, which quickly develop new cars that incorporate the latest automotive technology. The impact of project management is most profound in the area of information technology, where the new folk heroes are young professionals whose Herculean efforts lead to the constant flow of new hardware and software products.

Project management is not limited to the private sector. Project management is also a vehicle for doing good deeds and solving social problems. Endeavors such as providing emergency aid to the Gulf Coast devastated by hurricane Katrina, devising a strategy for reducing crime and drug abuse within a city, or organizing a community effort to renovate a public playground would and do benefit from the application of modern project management skills and techniques.

Perhaps the best indicator of demand for project management can be seen in the rapid expansion of the Project Management Institute (PMI), a professional organization for project managers. PMI membership has grown from 93,000 in 2002 to more than 230,000 currently. See the PMI Snapshot from Practice for information regarding professional certification in project management.

It's nearly impossible to pick up a newspaper or business periodical and not find something about projects. This is no surprise! Approximately \$2.5 trillion (about 25 percent of the U.S. gross national product) are spent on projects each year in the United States alone. Other countries are increasingly spending more on projects. Millions of people around the world consider project management the major task in their profession.

Snapshot from Practice The Project Management Institute



The Project Management Institute (PMI) was founded in 1969 as an international society for project managers. Today PMI has members from more than 125 countries and more than 230,000 members. PMI professionals come from virtually every major industry, including aerospace, automotive, business management, construction, engineering, financial services, information technology, pharmaceuticals, health care, and telecommunications.

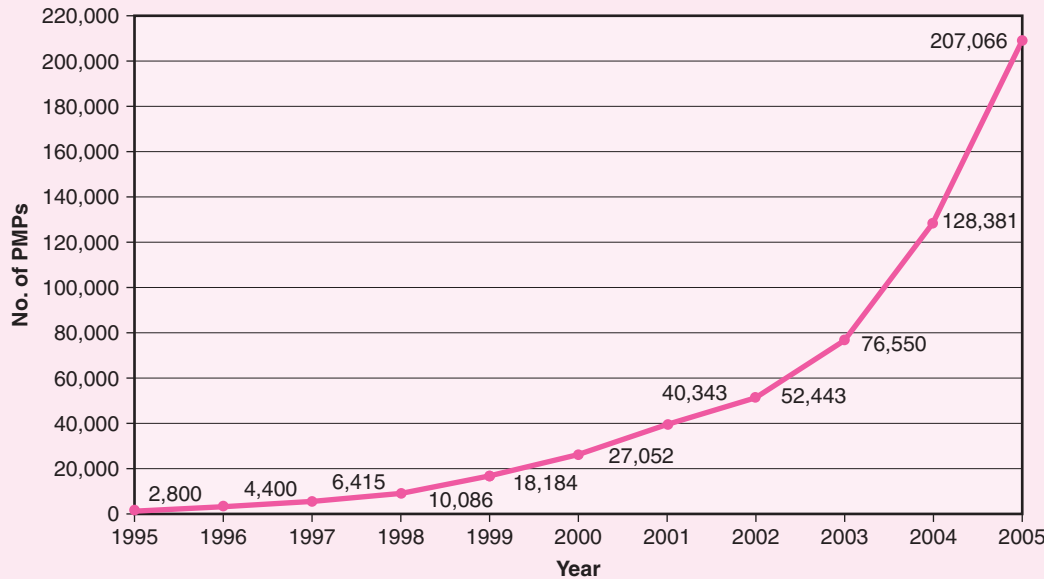
PMI provides certification as a *Project Management Professional (PMP)*—someone who has documented sufficient project experience, agreed to follow the PMI code of professional conduct, and demonstrated mastery of the field of project management by passing a comprehensive examination. The number of people earning PMP status has grown dramatically in recent years. In 1996 there were fewer than 3,000 certified project management professionals. By the end of 2005 there were more than 200,000 PMPs! Figure 1.1 shows the rapid growth in

the number of people earning project management professional certification from 1995 to 2005.

Just as the CPA exam is a standard for accountants, passing the PMP exam may become the standard for project managers. Some companies are requiring that all their project managers be PMP certified. Moreover, many job postings are restricted to PMPs. Job seekers, in general, are finding that being PMP certified is an advantage in the marketplace.

PMI recently added a certification as a *Certified Associate in Project Management (CAPM)*. CAPM is designed for project team members and entry-level project managers, as well as qualified undergraduate and graduate students who want a credential to recognize their mastery of the project management body of knowledge. CAPM does not require the extensive project management experience associated with the PMP. For more details on PMP and CAPM, “google” PMI to find the current Web site for the Project Management Institute.

FIGURE 1.1 Growth in PMP Certification, 1995–2005



Project management is not without problems. The Standish Group has tracked the management of information technology (IT) projects over the years. This firm’s periodic landmark reports summarize the continued need for improved project management. In 1994 approximately 16 percent of IT projects were completed on time, on budget; in 2004 the success rate moved up to 29 percent. Failed projects also declined from 31 percent in 1994 to 18 percent in 2004. However, the number of projects late or over budget has not changed; these “seriously challenged projects” remain at 53 percent.

The trend of improvement is clear, but there is an urgent need for elevating performance! The waste on failed projects and cost overruns is estimated in the neighborhood of \$150 billion!

These statistics are limited to information technology projects. Discussions with project managers in other industries suggest application to other industries may be a stretch, but the seriousness of the problems is just as great.

Project management is not restricted to specialists. Managing projects is often a vital part of everyone's job. For example, Brian Vannoni, formerly of General Electric Plastics, states:

We have very few dedicated project managers. Our project managers might be process engineers, they might be scientists, they might be process control technicians, maintenance mechanics, degreed and nondegreed people. A short answer for GE Plastics is that anyone, any level, any function could be a project manager.*

Companies recognize that their entire organizational staff can benefit from being trained in project management, not just project management wannabes.

The growth of project management can also be seen in the classroom. Ten years ago major universities offered one or two classes in project management, primarily for engineers. Today, many universities offer multiple sections of project management classes, with the core group of engineers being supplemented by business students majoring in marketing, management information systems (MIS), and finance, as well as students from other disciplines such as oceanography, health sciences, computer sciences, and liberal arts. These students are finding that their exposure to project management is providing them with distinct advantages when it comes time to look for jobs. More and more employers are looking for graduates with project management skills. The logical starting point for developing these skills is understanding the uniqueness of a project and of project managers.

What Is a Project?

What do the following headlines have in common?

- New Web Video Phone Is Here to Stay
- Farm Aid concert raises millions for family farmers
- New Zealand BritoMart Transportation System opens ahead of schedule
- Contract for building citywide WiFi site awarded
- Optical Security System on Line

All these events resulted from the management of projects. A project can be defined as follows:

A project is a complex, nonroutine, one-time effort limited by time, budget, resources, and performance specifications designed to meet customer needs.

Like most organizational effort, the major goal of a project is to satisfy a customer's need. Beyond this fundamental similarity, the characteristics of a project help differentiate it from other endeavors of the organization. The major characteristics of a project are as follows:

1. An established objective.
2. A defined life span with a beginning and an end.
3. Usually, the involvement of several departments and professionals.
4. Typically, doing something that has never been done before.
5. Specific time, cost, and performance requirements.

* Harold Kerzner, *Applied Project Management* (New York: John Wiley & Sons, 2000), p. 221.

First, projects have a defined objective—whether it is constructing a 12-story apartment complex by January 1 or releasing version 2.0 of a specific software package as quickly as possible. This singular purpose is often lacking in daily organizational life in which workers perform repetitive operations each day.

Second, because there is a specified objective, projects have a defined endpoint, which is contrary to the ongoing duties and responsibilities of traditional jobs. In many cases, individuals move from one project to the next as opposed to staying in one job. After helping to install a security system, an IT engineer may be assigned to develop a database for a different client.

Third, unlike much organizational work that is segmented according to functional specialty, projects typically require the combined efforts of a variety of specialists. Instead of working in separate offices under separate managers, project participants, whether they be engineers, financial analysts, marketing professionals, or quality control specialists, work closely together under the guidance of a project manager to complete a project.

The fourth characteristic of a project is that it is nonroutine and has some unique elements. This is not an either/or issue but a matter of degree. Obviously, accomplishing something that has never been done before, such as building a hybrid (electric/gas) automobile or landing two mechanical rovers on Mars, requires solving previously unsolved problems and breakthrough technology. On the other hand, even basic construction projects that involve established sets of routines and procedures require some degree of customization that makes them unique.

Finally, specific time, cost, and performance requirements bind projects. Projects are evaluated according to accomplishment, cost, and time spent. These triple constraints impose a higher degree of accountability than you typically find in most jobs. These three also highlight one of the primary functions of project management, which is balancing the trade-offs between time, cost, and performance while ultimately satisfying the customer.

What a Project Is Not Projects should not be confused with everyday work. A project is not routine, repetitive work! Ordinary daily work typically requires doing the same or similar work over and over, while a project is done only once; a new product or service exists when the project is completed. Examine the list in Table 1.1 that compares routine, repetitive work and projects. Recognizing the difference is important because too often resources can be used up on daily operations which may not contribute to longer range organization strategies that require innovative new products.

The terms *program* and *project* are often used interchangeably in practice, which sometimes causes confusion. Programs and projects are similar in the sense that they both are directed toward goals and require plans and resources to reach their goals. Both use similar tools, methods, and policies. The differences lie primarily in scope and time horizon. *A program is a series of coordinated, related, multiple projects that continue over extended*

TABLE 1.1
Comparison of
Routine Work with
Projects

Routine, Repetitive Work	Projects
Taking class notes	Writing a term paper
Daily entering sales receipts into the accounting ledger	Setting up a sales kiosk for a professional accounting meeting
Responding to a supply-chain request	Developing a supply-chain information system
Practicing scales on the piano	Writing a new piano piece
Routine manufacture of an Apple iPod	Designing an iPod that is approximately 2 × 4 inches, interfaces with PC, and stores 10,000 songs
Attaching tags on a manufactured product	Wire-tag projects for GE and Wal-Mart

time intended to achieve a goal. A program is a higher level group of projects targeted at a common goal. The classic example is the U.S. space program to place a space station on the moon to serve as a springboard to other space explorations.

Each project within a program has a project manager. A major difference between a program and project lies in scale and time span. Examples of programs and their goals are a set of projects that aim to increase computer chip speed each year; several new pharmaceutical products for arthritis; and Denver's 12-year, \$4.7 billion urban transportation system that will extend 120 miles on six new rail lines.

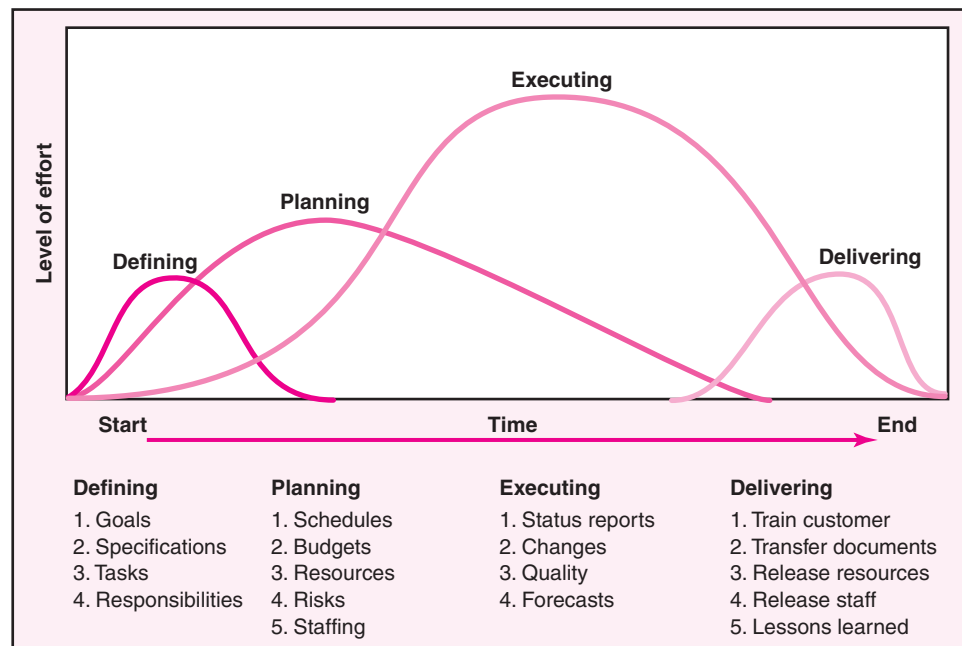
The Project Life Cycle

Another way of illustrating the unique nature of project work is in terms of the project life cycle. Some project managers find it useful to use the project life cycle as the cornerstone for managing projects. The life cycle recognizes that projects have a limited life span and that there are predictable changes in level of effort and focus over the life of the project. There are a number of different life-cycle models in project management literature. Many are unique to a specific industry or type of project. For example, a new software development project may consist of five phases: definition, design, code, integration/test, and maintenance. A generic cycle is depicted in Figure 1.2.

The project life cycle typically passes sequentially through four stages: defining, planning, executing, and delivering. The starting point begins the moment the project is given the go-ahead. Project effort starts slowly, builds to a peak, and then declines to delivery of the project to the customer.

1. **Defining stage:** Specifications of the project are defined; project objectives are established; teams are formed; major responsibilities are assigned.
2. **Planning stage:** The level of effort increases, and plans are developed to determine what the project will entail, when it will be scheduled, whom it will benefit, what quality level should be maintained, and what the budget will be.

FIGURE 1.2
Project Life Cycle



Snapshot from Practice Project Management at Work*



Ryan McVay/Getty Images.

Investments in info-tech projects are indicative of rapid innovation within organizations. A few selected high profile organizations and their projects are described below. Although info-tech projects are hot, projects cut across small and large firms in diverse industries such as construction, biotechnology, nanotechnology, aerospace, and public transportation.

1. **Company: Krispy Kreme**

Project: Network 320 stores to manage their inventory and take orders

Payoff: New system provides many benefits: coordination alerts store managers of too much inventory; quick notification

3. **Executing stage:** A major portion of the project work takes place—both physical and mental. The physical product is produced (a bridge, a report, a software program). Time, cost, and specification measures are used for control. Is the project on schedule, on budget, and meeting specifications? What are the forecasts of each of these measures? What revisions/changes are necessary?
4. **Delivering stage:** Includes the two activities: delivering the project product to the customer and redeploying project resources. Delivery of the project might include customer training and transferring documents. Redeployment usually involves releasing project equipment/materials to other projects and finding new assignments for team members.

In practice, the project life cycle is used by some project groups to depict the timing of major tasks over the life of the project. For example, the design team might plan a major commitment of resources in the defining stage, while the quality team would expect their major effort to increase in the latter stages of the project life cycle. Because most organizations have

of the arrival of damaged goods at store; reduction of problem orders down from 26,000 to less than 3,000; district managers can now handle 320 stores, up from 144 three years ago.

2. **Company: Mattel (Toy manufacturer)**

Cut Design Time Project: Move product design and licensing on line

Payoff: Instead of molding prototypes (e.g., Hot Wheels or Barbie doll), virtual models are electronically sent directly to manufacturing sites. Approvals for new products have been reduced from 14 to 5 weeks. Revenue is expected to increase by 200 million.

3. **Company: Nike**

Project: Online supply-chain link to manufacturing partners

Payoff: Lead time for new shoe development has been reduced from nine months to six. Better forecasting has reduced speculation on what to produce from 30 percent to 3 percent. These efficiencies have upped Nike's gross margin 2.1 percent.

4. **Company: FBI**

Project: Digitizing millions of fingerprint cards and connecting law enforcement agencies to the data base

Payoff: Local law enforcement departments can have the FBI check against 46 million sets of fingerprints and respond within two hours. In addition, the FBI conducts background checks for private enterprises (e.g., schools, insurance and securities industry, private security agencies). This latter service resulted in revenue of 152 million for one year.

5. **Company: Kinko's**

Project: Replace 51 training sites with e-learning network

Payoff: E-courses online are available to 20,000 employees. Courses range from products, to policies, to new product

rollouts. Kinko's expects to save around \$10 million a year on employee training. Kinko's is now moving into training for customers—such as making banners, holiday cards, and jazzy transparencies. Stores offering online customer training saw revenues rise 27 percent versus 11 percent in non-online stores.

6. **Company: BMW**

Project: Build cars to specific customer orders

Payoff: Updating supply chain from suppliers to customer allows customer (or salesperson) to use the Internet to order cars without altering production-line efficiency; delivery date is delivered in five seconds. Suppliers are notified when order is confirmed so parts arrive just-in-time for production. Cars are off the production line in 11 to 12 days and can be in the United States in 12 additional days. Eighty percent of European buyers design their own custom Beemer. Thirty percent of U.S. buyers access the custom service with the number increasing each year.

7. **Company: Sony**

Project: Produce and use a secure website to rescue *Lord of the Rings* schedule

Payoff: Important special effects for the film *Two Towers* fell behind schedule. Coordination between New Zealand, London, and the U.S. became a nightmare. A secure website using special custom software allowed all sites to download and edit over 100 scenes. Simultaneously, each site could use a digital pointer to discuss specific details or pull up specific footage. The one million dollar cost was small relative to the potential wasted cost of missing the promotions and ads deadlines.

*Adapted from Heather Green, "The Web," *BusinessWeek*, November 24, 2003, pp. 82–104.

a portfolio of projects going on concurrently, each at a different stage of each project's life cycle, careful planning and management at the organization and project levels are imperative.

The Project Manager

In a small sense project managers perform the same functions as other managers. That is, they plan, schedule, motivate, and control. However, what makes them unique is that they manage temporary, nonrepetitive activities, to complete a fixed life project. Unlike functional managers, who take over existing operations, project managers create a project team and organization where none existed before. They must decide what and how things should be done instead of simply managing set processes. They must meet the challenges of each phase of the project life cycle, and even oversee the dissolution of their operation when the project is completed.

Project managers must work with a diverse troupe of characters to complete projects. They are typically the direct link to the customer and must manage the tension between

customer expectations and what is feasible and reasonable. Project managers provide direction, coordination, and integration to the project team, which is often made up of part-time participants loyal to their functional departments. They often must work with a cadre of outsiders—vendors, suppliers, subcontractors—who do not necessarily share their project allegiance.

Project managers are ultimately responsible for performance (frequently with too little authority). They must ensure that appropriate trade-offs are made between the time, cost, and performance requirements of the project. At the same time, unlike their functional counterparts, project managers generally possess only rudimentary technical knowledge to make such decisions. Instead, they must orchestrate the completion of the project by inducing the right people, at the right time, to address the right issues and make the right decisions.

While project management is not for the timid, working on projects can be an extremely rewarding experience. Life on projects is rarely boring; each day is different from the last. Since most projects are directed at solving some tangible problem or pursuing some useful opportunity, project managers find their work personally meaningful and satisfying. They enjoy the act of creating something new and innovative. Project managers and team members can feel immense pride in their accomplishment, whether it is a new bridge, a new product, or needed service. Project managers are often stars in their organization and well compensated.

Good project managers are always in demand. Every industry is looking for effective people who can get the right things done on time. Clearly, project management is a challenging and exciting profession. This text is intended to provide the necessary knowledge, perspective, and tools to enable students to accept the challenge.

The Importance of Project Management

Project management is no longer a special-need management. It is rapidly becoming a standard way of doing business. See Snapshot from Practice: Project Management at Work. An increasing percentage of the typical firm's effort is being devoted to projects. The future promises an increase in the importance and the role of projects in contributing to the strategic direction of organizations. Several reasons why this is the case are briefly discussed below.

Compression of the Product Life Cycle

One of the most significant driving forces behind the demand for project management is the shortening of the product life cycle. For example, today in high-tech industries the product life cycle is averaging 1 to 3 years. Only 30 years ago, life cycles of 10 to 15 years were not uncommon. *Time to market* for new products with short life cycles has become increasingly important. A common rule of thumb in the world of high-tech product development is that a six-month project delay can result in a 33 percent loss in product revenue share. Speed, therefore, becomes a competitive advantage; more and more organizations are relying on cross-functional project teams to get new products and services to the market as quickly as possible.

Global Competition

Today's open market demands not only *cheaper* products and services but also *better* products and services. This has led to the emergence of the quality movement across the world with ISO 9000 certification a requirement for doing business. ISO 9000 is a family of international standards for quality management and assurance. These standards cover design, procurement, quality assurance, and delivery processes for everything from

banking to manufacturing. Quality management and improvement invariably involve project management. For many, their first exposure to project management techniques has been in quality workshops.

Increased pressures to reduce costs have not only led to the migration of U.S. manufacturing operations to Mexico and Asia, which by itself is a significant project, but also a transformation in how organizations try to achieve results. More and more work is being classified as projects. Individuals are being assigned responsibility to achieve a specific objective within a given budget and by a specified deadline. Project management, with its triple focus on time, cost, and performance, is proving to be an efficient, flexible way to get things done.

Knowledge Explosion

The growth in new knowledge has increased the complexity of projects because projects encompass the latest advances. For example, building a road 30 years ago was a somewhat simple process. Today, each area has increased in complexity, including materials, specifications, codes, aesthetics, equipment, and required specialists. Similarly, in today's digital, electronic age it is becoming hard to find a new product that does not contain at least one microchip. Product complexity has increased the need to integrate divergent technologies. Project management has emerged as an important discipline for achieving this task.

Corporate Downsizing

The last decade has seen a dramatic restructuring of organizational life. Downsizing (or rightsizing if you are still employed) and sticking to core competencies have become necessary for survival for many firms. Middle management is a mere skeleton of the past. In today's flatter and leaner organizations, where change is a constant, project management is replacing middle management as a way of ensuring that things get done. Corporate downsizing has also led to a change in the way organizations approach projects. Companies outsource significant segments of project work, and project managers have to manage not only their own people but also their counterparts in different organizations.

Increased Customer Focus

Increased competition has placed a premium on customer satisfaction. Customers no longer simply settle for generic products and services. They want customized products and services that cater to their specific needs. This mandate requires a much closer working relationship between the provider and the receiver. Account executives and sales representatives are assuming more of a project manager's role as they work with their organization to satisfy the unique needs and requests of clients.

Increased customer attention has also prompted the development of customized products and services. For example, 10 years ago buying a set of golf clubs was a relatively simple process: You picked out a set based on price and feel. Today, there are golf clubs for tall players and short players, clubs for players who tend to slice the ball and clubs for those who hook the ball, high-tech clubs with the latest metallurgic discovery guaranteed to add distance, and so forth. Project management is critical both to development of customized products and services and to sustaining lucrative relationships with customers.

Small Projects Represent Big Problems

The velocity of change required to remain competitive or simply keep up has created an organizational climate in which hundreds of projects are implemented concurrently. This climate has created a multiproject environment and a plethora of new problems. Sharing and prioritizing resources across a portfolio of projects is a major challenge for senior management. Many firms have no idea of the problems involved with inefficient management of

small projects. Small projects typically carry the same or more risk as do large projects. Small projects are perceived as having little impact on the bottom line because they do not demand large amounts of scarce resources and/or money. Because so many small projects are going on concurrently and because the perception of the inefficiency impact is small, measuring inefficiency is usually nonexistent. Unfortunately, many small projects soon add up to large sums of money. Many customers and millions of dollars are lost each year on small projects in product and service organizations.

Many small projects can eat up the people resources of a firm and represent hidden costs not measured in the accounting system. Organizations with many small projects going on concurrently face the most difficult project management problems. A key question becomes one of how to create an organizational environment that supports multi-project management. A process is needed to prioritize and develop a portfolio of small projects that supports the mission of the organization.

In summary, there are a variety of environmental forces interacting in today's business world that contribute to the increased demand for good project management across all industries and sectors. Project management appears to be ideally suited for a business environment requiring accountability, flexibility, innovation, speed, and continuous improvement.

Project Management Today—An Integrative Approach

Some project managers have used different tools that are useful for managing projects. For example, networks, bar charts, job costing, task forces, partnering, and scheduling all have been used—sometimes very successfully and other times with poor results. As the world becomes more competitive, the importance of managing the process of project management and “getting it right the first time” takes on new meaning. Piecemeal systems fail to tie to the overall strategies of the firm. Piecemeal project priority systems fail to connect the selected projects to resources. Piecemeal tools and techniques fail to be integrated throughout the project life cycle. Piecemeal approaches fail to balance the application of project planning and control methods with appropriate adjustments in the organization's culture to support project endeavors.

Today, emphasis is on development of an integrated project management process that focuses all project effort toward the strategic plan of the organization and reinforces mastery of both the project management tools/techniques and the interpersonal skills necessary to orchestrate successful project completion. For some organizations, integrating projects with strategy will require reengineering the entire business management process. For others, integration will mean carefully establishing linkages among the piecemeal systems already in place and altering the focus to one of a total system. At the individual level, for some professionals to become effective project managers will require augmenting their leadership and team-building skills with modern project planning and control methods. For others it will require complementing their administrative skills with the capacity to inspire and lead a divergent cast of professionals to project completion.

Integration in project management directs attention to two key areas. The first area is integration of projects with the strategic plan of the organization. The second area is integration within the process of managing actual projects. Each of these areas is examined next.

Integration of Projects with the Strategic Plan

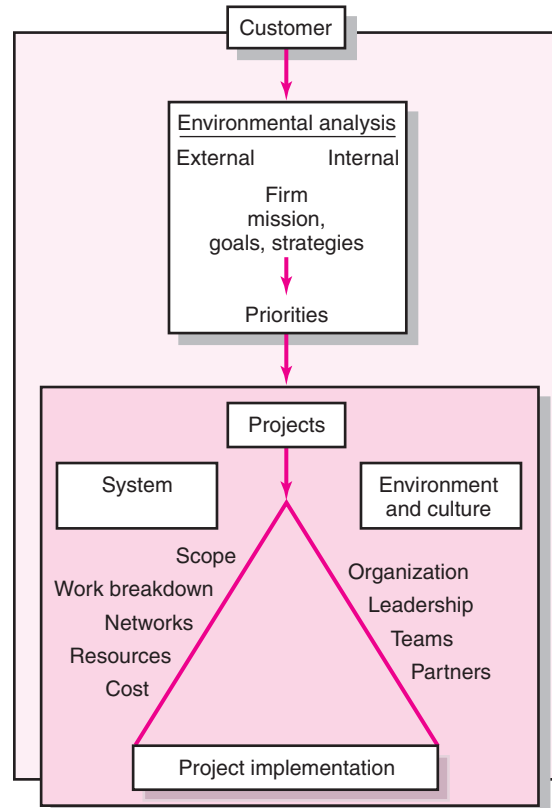
In some organizations, selection and management of projects often fail to support the strategic plan of the organization. Strategic plans are written by one group of managers, projects selected by another group, and projects implemented by another. These independent

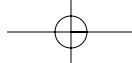
decisions by different groups of managers create a set of conditions leading to conflict, confusion, and—frequently—an unsatisfied customer. Under these conditions, resources of the organization are wasted in non-value-added activities/projects.

An integrated project management system is one in which all of the parts are interrelated. A change in any one of the parts will influence the whole. Every organization has a customer it is seeking to satisfy. The customer sets the *raison d'être* for the organization. Mission, objectives, and strategies are set to meet the needs of customer(s). Development of a mission, objectives, and organization strategies depend on the external and internal environmental factors. External environmental factors are usually classified as political, social, economic, and technological; they signal opportunities or threats in setting the direction for the organization. Internal environmental factors are frequently classified as strengths and weaknesses such as management, facilities, core competencies, and financial condition. The outcome of the analysis of all these environmental factors is a set of strategies designed to best meet the needs of customers. But this is only the first step (see Figure 1.3).

Implementing strategies is the most difficult step. Strategies are typically implemented through projects. Creative minds always propose more projects than there are resources. The key is selecting from the many proposals those projects that make the largest and most balanced contribution to the objectives and strategies (and thus, customers) of the organization. This means prioritizing projects so that scarce resources are allocated to the right projects. Once a project has been selected for implementation, the focus switches to the project management process that sets the stage for how the project will be implemented or delivered.

FIGURE 1.3
Integrated Management of Projects





Research Highlight

Works Well with Others*



The phrase “works well with others” has long been a staple on grade school report cards; now, in the IT world, it’s the No. 1 criterion for management candidates. In a nationwide survey conducted in 1999, 27 percent of chief information officers (CIOs) cited strong interpersonal skills as the single most important quality for reaching management levels. Advanced technical skills came in second, receiving 23 percent of the response.

The project was sponsored by RHI Consulting, which provides information technology professionals on a project basis. An independent research firm was hired to administer the survey. Over 1,400 CIOs responded to the questionnaire.

Survey respondents were also asked:

In 2005, how frequently will employees in your IT department work on project-based teams with members of other departments throughout the company?

Very frequently	57%
Somewhat frequently	26%
Somewhat infrequently	10%
Very infrequently	6%
Never	1%

Greg Scileppi, RHI Consulting’s executive director, recommends that IT professionals develop their interpersonal skills. “The predominance of project teams has created a corresponding need for strong communication and team-player abilities. Technical staff put these skills to test daily as they work with employees at all levels to create and implement IT solutions ranging from simple troubleshooting to corporate web initiatives and system wide upgrades.”

*Joanita M. Nellenbach, “People Skills Top Technical Knowledge, CIOs Insist,” PMNetwork (August 1999), pp. 7–8.

Integration within the Process of Managing Actual Projects

There are two dimensions within the project management process (see Figure 1.4). The first dimension is the technical side of the management process, which consists of the formal, disciplined, pure logic parts of the process. The technical side relies on the formal information system available. This dimension includes planning, scheduling, and controlling projects. Clear project scope statements are written to link the project and customer and to facilitate planning and control. Creation of the deliverables and work breakdown structures facilitate planning and monitoring the progress of the project. The work breakdown structure serves as a database that links all levels in the organization, major deliverables, and all work—right down to the tasks in a work package. Effects of project changes are documented and traceable. Thus, any change in one part of the project is traceable to the source by the integrated linkages of the system. This integrated information approach can provide all project managers and the customer with decision information appropriate to their level and needs. A successful project manager will be well trained in the technical side of managing projects.

The second dimension is the sociocultural side of the project management process. In contrast with the orderly world of project planning, this dimension involves the much messier, often contradictory and paradoxical world of implementation. It centers on creating a temporary social system within a larger organizational environment that combines the talents of a divergent set of professionals working to complete the project. See Research Highlight: Works Well with Others. Project managers must shape a project culture that stimulates teamwork and high levels of personal motivation as well as a capacity to quickly identify and resolve problems that threaten project work. This dimension also involves managing the interface between the project and external environment. Project managers have to assuage and shape expectations of customers, sustain the political support of top management, negotiate with their functional counterparts, monitor subcontractors, and so on. Overall, the manager must build a cooperative social network among a divergent set of allies with different standards, commitments, and perspectives.

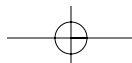
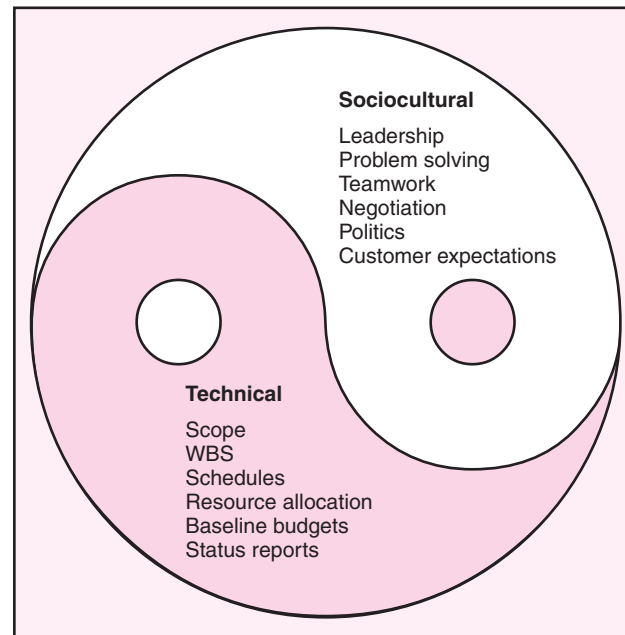


FIGURE 1.4
The Technical
and Sociocultural
Dimensions of the
Project Management
Process



Some suggest that the technical dimension represents the “science” of project management while the sociocultural dimension represents the “art” of managing a project. To be successful, a manager must be a master of both. Unfortunately, some project managers become preoccupied with the planning and technical dimension of project management. Often their first real exposure to project management is through project management software, and they become infatuated with network charts, Gantt diagrams, and performance variances and attempt to manage a project from a distance. Conversely, there are other managers who manage projects by the “seat of their pants,” relying heavily on team dynamics and organizational politics to complete a project. Good project managers balance their attention to both the technical and sociocultural dimensions of project management.

Summary

There are powerful environmental forces contributing to the rapid expansion of project management approaches to business problems and opportunities. A project is defined as a nonroutine, one-time effort limited by time, resources, and performance specifications designed to meet customer needs. One of the distinguishing characteristics of project management is that it has both a beginning and an end and typically consists of four phases: defining, planning, executing, and delivering. Effective project management begins with selecting and prioritizing projects that support the firm’s mission and strategy. Successful implementation requires both technical and social skills. Project managers have to plan and budget projects as well as orchestrate the contributions of others.

Text Overview

This text is written to provide the reader with a comprehensive, integrative understanding of the project management process. The text focuses both on the science of project management and the art of managing projects. Following this introductory chapter, Chapter 2

focuses on how organizations go about evaluating and selecting projects. Special attention is devoted to the importance of linking project selection to the mission and strategy of the firm. The organizational environment in which projects are implemented is the focus of Chapter 3. The discussion of matrix management and other organizational forms is augmented by a discussion of the role the culture of an organization plays in the implementation of projects.

The next six chapters focus on developing a plan for the project; after all, project success begins with a good plan. Chapter 4 deals with defining the scope of the project and developing a work breakdown structure (WBS). The challenge of formulating cost and time estimates is the subject of Chapter 5. Chapter 6 focuses on utilizing the information from the WBS to create a project plan in the form of a timed and sequenced network of activities.

Risks are a potential threat to project management, and Chapter 7 examines how organizations and managers identify and manage risks associated with project work. Resource allocation is added to the plan in Chapter 8 with special attention devoted to how resource limitations impact the project schedule. After a resource schedule is established, a project time-phased budget is developed. Finally, Chapter 9 examines strategies for reducing (“crashing”) project time either prior to the initiation of the project or in response to problems or new demands placed on the project.

Chapters 10 through 12 focus on project implementation and the sociocultural side of project management, beginning with Chapter 10, which focuses on the role of the project manager as a leader and stresses the importance of managing project stakeholders within the organization. Chapter 11 focuses on the core project team; it combines the latest information on team dynamics with leadership skills/techniques for developing a high-performance project team. Chapter 12 continues the theme of managing project stakeholders by discussing how to outsource project work and negotiate with contractors, customers, and suppliers.

Chapter 13 focuses on the kinds of information managers use to monitor project progress, with special attention devoted to the key concept of earned value. Issues surrounding the termination or completion of the project are dealt with in Chapter 14. Implementation of project management in multicultural, international environments is the subject of Chapter 15. Finally, Chapter 16 notes the need for organizational oversight and how it impacts the management of projects. A special segment on pursuing a career in project management is also included.

Throughout this text you will be exposed to the major aspects of the project management system. However, a true understanding of project management comes not from knowing what a scope statement is, or the critical path, or partnering with contractors, but from comprehending how the different elements of the project management system interact to determine the fate of a project. If, by the end of this text, you come to appreciate and begin to master both the technical and sociocultural dimensions of project management, you should have a distinct competitive advantage over others aspiring to work in the field of project management.

Key Terms

ISO 9000
Program

Project
Project life cycle

Project Management
Professional (PMP)
Sociotechnical perspective

Review Questions

1. Define a project. What are five characteristics that help differentiate projects from other functions carried out in the daily operations of the organization?

2. What are some of the key environmental forces that have changed the way projects are managed? What has been the effect of these forces on the management of projects?
3. Why is the implementation of projects important to strategic planning and the project manager?
4. The technical and sociocultural dimensions of project management are two sides to the same coin. Explain.
5. What is meant by an integrative approach to project management? Why is this approach important in today's environment?

Exercises

1. Review the front page of your local newspaper, and try to identify all the projects contained in the articles. How many were you able to find?
2. Individually identify what you consider to be the greatest achievements accomplished by mankind in the last five decades. Now share your list with three to five other students in the class, and come up with an expanded list. Review these accomplishments in terms of the definition of a project. What does your review suggest about the importance of project management?
3. Individually identify projects assigned in previous terms. Were both sociocultural and technical elements factors in the success or difficulties in the projects?
4. Check out the Project Management Institute's home page at www.pmi.org.
 - a. Review general information about PMI as well as membership information.
 - b. See if there is a PMI chapter in your state. If not, where is the closest one?
 - c. Use the search function at the PMI home page to find information on Project Management Body of Knowledge (PMBOK). What are the major knowledge areas of PMBOK?
 - d. Explore other links that PMI provides. What do these links tell you about the nature and future of project management?

Note: If you have any difficulty accessing any of the Web addresses listed here or elsewhere in the text, you can find up-to-date addresses on the home page of Dr. Erik Larson, coauthor of this text: <http://www.bus.oregonstate.edu/faculty/bio.htm?UserName=Larson>.

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**Case****A Day in the Life**

Rachel, the project manager of a large information systems project, arrives at her office early to get caught up with work before her co-workers and project team arrive. However, as she enters the office she meets Neil, one of her fellow project managers, who also wants to get an early start on the day. Neil has just completed a project overseas. They spend 10 minutes socializing and catching up on personal news.

It takes Rachel 10 minutes to get to her office and settle in. She then checks her voice mail and turns on her computer. She was at her client's site the day before until 7:30 P.M. and has not checked her e-mail or voice mail since 3:30 P.M. the previous day. There are 7 phone messages, 16 e-mails, and 4 notes left on her desk. She spends 15 minutes reviewing her schedule and "to do" lists for the day before responding to messages that require immediate attention.

Rachel spends the next 25 minutes going over project reports and preparing for the weekly status meeting. Her boss, who just arrived at the office, interrupts her. They spend 20 minutes discussing the project. He shares a rumor that a team member is using stimulants on the job. She tells him that she has not seen anything suspicious but will keep an eye on the team member.

The 9:00 A.M. project status meeting starts 15 minutes late because two of the team members have to finish a job for a client. Several people go to the cafeteria to get coffee and doughnuts while others discuss last night's baseball game. The team members arrive, and the remaining 45 minutes of the progress review meeting surface project issues that have to be addressed and assigned for action.

After the meeting Rachel goes down the hallway to meet with Victoria, another IS project manager. They spend 30 minutes reviewing project assignments since the two of them share personnel. Victoria's project is behind schedule and in need of help. They broker a deal that should get Victoria's project back on track.

She returns to her office and makes several phone calls and returns several e-mails before walking downstairs to visit with members of her project team. Her intent is to follow up on an issue that had surfaced in the status report meeting. However, her simple, "Hi guys, how are things going?" elicits a stream of disgruntled responses from the "troops." After listening patiently for over 20 minutes, she realizes that among other things several of the client's managers are beginning to request features that were not in the original project scope statement. She tells her people that she will get on this right away.

Returning to her office she tries to call her counterpart John at the client firm but is told that he is not expected back from lunch for another hour. At this time, Eddie drops by and says, "How about lunch?" Eddie works in the finance office and they spend the next half hour in the company cafeteria gossiping about internal politics. She is surprised to hear that Jonah Johnson, the director of systems projects, may join another firm. Jonah has always been a powerful ally.

She returns to her office, answers a few more e-mails, and finally gets through to John. They spend 30 minutes going over the problem. The conversation ends with John promising to do some investigating and to get back to her as soon as possible.

Rachel puts a "Do not disturb" sign on her door, and lies down in her office. She listens to the third and fourth movement of Ravel's string quartet in F on headphones.

Rachel then takes the elevator down to the third floor and talks to the purchasing agent assigned to her project. They spend the next 30 minutes exploring ways of getting

necessary equipment to the project site earlier than planned. She finally authorizes express delivery.

When she returns to her office, her calendar reminds her that she is scheduled to participate in a conference call at 2:30. It takes 15 minutes for everyone to get online. During this time, Rachel catches up on some e-mail. The next hour is spent exchanging information about the technical requirements associated with a new version of a software package they are using on systems projects like hers.

Rachel decides to stretch her legs and goes on a walk down the hallway where she engages in brief conversations with various co-workers. She goes out of her way to thank Chandra for his thoughtful analysis at the status report meeting. She returns to find that John has left a message for her to call him back ASAP. She contacts John, who informs her that, according to his people, her firm's marketing rep had made certain promises about specific features her system would provide. He doesn't know how this communication breakdown occurred, but his people are pretty upset over the situation. Rachel thanks John for the information and immediately takes the stairs to where the marketing group resides.

She asks to see Mary, a senior marketing manager. She waits 10 minutes before being invited into her office. After a heated discussion, she leaves 40 minutes later with Mary agreeing to talk to her people about what was promised and what was not promised.

She goes downstairs to her people to give them an update on what is happening. They spend 30 minutes reviewing the impact the client's requests could have on the project schedule. She also shares with them the schedule changes she and Victoria had agreed to. After she says good night to her team, she heads upstairs to her boss's office and spends 20 minutes updating him on key events of the day. She returns to her office and spends 30 minutes reviewing e-mails and project documents. She logs on to the MS project schedule of her project and spends the next 30 minutes working with "what-if" scenarios. She reviews tomorrow's schedule and writes some personal reminders before starting off on her 30-minute commute home.

1. How effectively do you think Rachel spent her day?
2. What does the case tell you about what it is like to be a project manager?