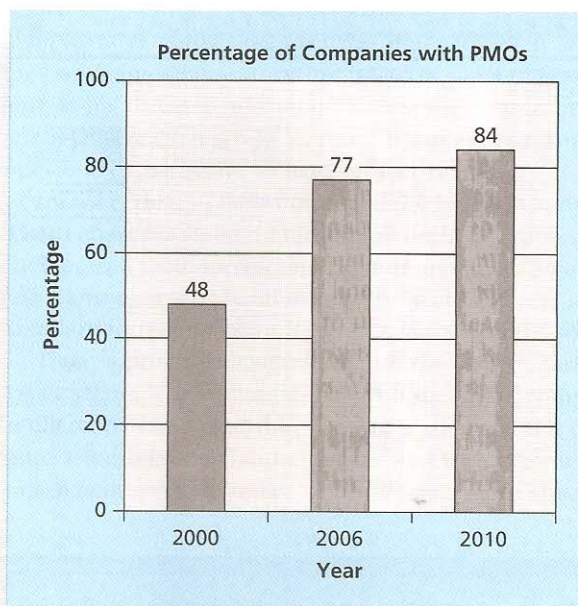


As computer hardware became smaller and more affordable and software companies developed graphical, easy-to-use interfaces, project management software became less expensive and more widely used. This made it possible—and affordable—for many industries worldwide to use project management software on all types and sizes of projects. New software makes basic tools such as Gantt charts and network diagrams inexpensive, easy to create, and available for anyone to update. See the section later in this chapter on project management software for more information.

In the 1990s, many companies began creating Project Management Offices to help them handle the increasing number and complexity of projects. A **Project Management Office (PMO)** is an organizational group responsible for coordinating the project management function throughout an organization. A 2010 study found that 84 percent of U.S. companies have PMOs, growing significantly from percentages in prior surveys, as shown in Figure 1-8. For large organizations, 91 percent have PMOs, while only 48 percent of small organizations do.



Source: PM Solutions, "The State of the PMO 2010" (2010)

FIGURE 1-8 Growth in the number of Project Management Offices

There are different ways to structure a PMO, and they can have various roles and responsibilities. PM Solutions identified three key factors that are playing major roles in the growth of PMOs:

1. The growing strategic value of the PMO
2. The increased role of the PMO in training
3. The ever-present challenge of resource management³¹

Below are possible goals of a PMO:

- Collect, organize, and integrate project data for the entire organization.
- Ensure that the organization's approaches for project management include accepted and validated best practices.
- Audit the project documentation and offer feedback to the project manager's approaches and compliance with standards.
- Develop and maintain templates, tools, and standards for project documents and project methodologies to be used.
- Develop or coordinate training in various project management topics.
- Develop and provide a formal career path for project managers.
- Provide project management consulting services.
- Provide a structure to house project managers while they are acting in those roles or are between projects.

By the end of the 20th century, people in virtually every industry around the globe began to investigate and apply different aspects of project management to their projects. The sophistication and effectiveness with which project management tools are being applied and used today is influencing the way companies do business, use resources, and respond to market requirements with speed and accuracy. As you saw earlier in this chapter, many organizations are now using enterprise or project portfolio management software to help manage portfolios of projects.

Many colleges, universities, and companies around the world now offer courses related to various aspects of project management. You can even earn bachelor's, master's, and doctoral degrees in project management. In early 2012, a *gradschools.com* search for "project management" found 310 campus and online accredited graduate, certificate, and doctoral programs from all types of institutions. PMI reported in 2008 that of the 280 institutions it had identified that offered degrees in project management, 103 were in mainland China. "When Western companies come into China they are more likely to hire individuals who have PMP certification as an additional verification of their skills. In our salary survey, the salary difference in IT, for example, was dramatic. A person with certification could make five to six times as much salary, so there is terrific incentive to get certified and work for these Western companies."³²



GLOBAL ISSUES

Based on a survey of more than 1,000 project management leaders across a variety of experience levels and industries, several global dynamics are forcing organizations to rethink their practices:

- Talent development for project and program managers is a top concern. Seventy percent of organizations have a career path for project and program management, but most are still informal and not documented.

continued

- Good project portfolio management is crucial in tight economic conditions. Financial and budget management is the second most important aspect of portfolio management, after providing a big-picture view to executives.
- Basic project management techniques are core competencies. Seventy percent of organizations said that they always or often use basic practices like change management and risk management on their projects.
- Organizations want to use more agile approaches to project management. One-quarter of survey respondents said they now use agile techniques, and agile project management was the most requested article topic.
- Benefits realization of projects is a key metric. Organizations know that they need to align projects and programs with the organization's business strategy.³³

The problems in managing projects, the publicity about project management, and the belief that it can make a difference continue to contribute to the growth of this field.

The Project Management Institute

Although many professional societies suffer from declining membership, the **Project Management Institute (PMI)**, an international professional society for project managers founded in 1969, has continued to attract and retain members, reporting more than 380,000 members worldwide by early 2012. Because so many people work on projects in various industries, PMI has created communities of practice that enable members to share ideas about project management in their particular application areas, such as information systems. PMI also has communities for aerospace/defense, financial services, government, healthcare, and agile techniques, to name a few. Note that there are other project management professional societies. See the companion Web site for more information.

PMI STUDENT MEMBERSHIP

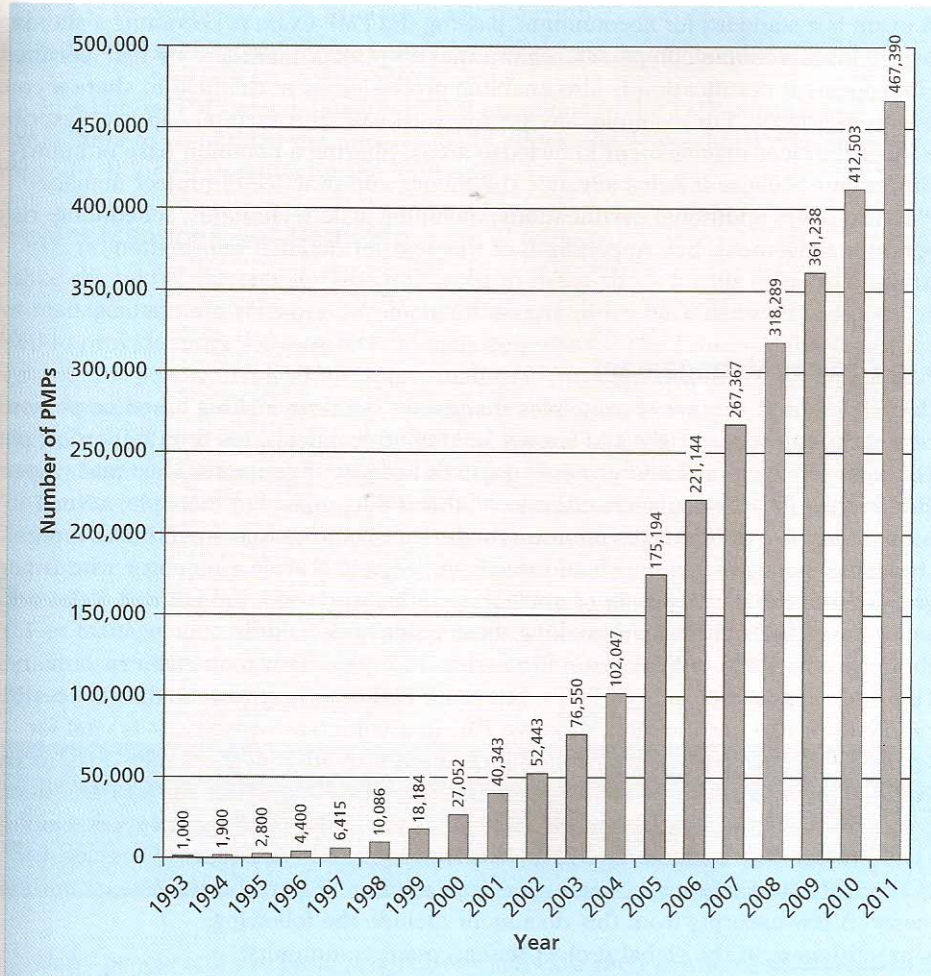
As a student, you can join PMI for a reduced fee (\$40 versus \$129 in 2012). Consult PMI's Web site (www.pmi.org) for more information. You can network with other project management students by joining the New Practitioners Community of Practice. Also check to see whether a local chapter exists. Many welcome students to attend free events, including talks and job networking. You can volunteer your services to help develop your skills and serve your community. You can also qualify for the Certified Associate in Project Management (CAPM) certification with just a bachelor's degree and a course in project management. See Appendix B for more information.

Project Management Certification

Professional certification is an important factor in recognizing and ensuring quality in a profession. PMI provides certification as a **Project Management Professional (PMP)**—someone who has documented sufficient project experience and education, agreed to follow the PMI

code of professional conduct, and demonstrated knowledge of project management by passing a comprehensive examination. Appendix B provides more information on PMP certification as well as other certification programs, such as CompTIA's Project+ certification. Note that you do not need work experience to qualify for CompTIA's Project+ certification or PMI's CAPM certification, so college graduates just entering the workforce can earn these certifications and become more marketable.

The number of people earning PMP certification continues to increase. In 1993, there were about 1,000 certified project management professionals. By December 31, 2011, there were 467,390 active PMPs.³⁴ Figure 1-9 shows the rapid growth in the number of people earning project management professional certification from 1993 to 2011.



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FIGURE 1-9 Growth in PMP certification, 1993–2011

Several studies show that organizations supporting technical certification programs tend to operate in more complex IT environments and are more efficient than companies that do not support certification. Likewise, organizations that support PMP certification see the value of investing in programs to improve their employees' knowledge in project management. Many employers today require specific certifications to ensure that their workers have current skills, and job seekers find that they often have an advantage when they earn and maintain marketable certifications. Over two-thirds of IT hiring managers surveyed in 2011 said that certifications had an impact on a new hire's base salary. Of all 12,000 survey respondents from around the globe, those who had the PMP certification reported the highest salaries, averaging \$103,570.³⁵

As IT projects become more complex and global in nature, the need for people with demonstrated knowledge and skills in project management will continue. Just as passing the CPA exam is a standard for accountants, passing the PMP exam is becoming a standard for project managers. Some companies require that all project managers be PMP certified. Project management certification is also enabling professionals in the field to share a common base of knowledge. For example, any person with PMP certification can list, describe, and use the 10 project management knowledge areas. Sharing a common base of knowledge is important because it helps advance the theory and practice of project management. PMI also offers additional certifications, including agile techniques, scheduling, risk, and program management. See Appendix B of this text for detailed information on certification.

Ethics in Project Management

Ethics, loosely defined, is a set of principles that guides decision making based on personal values of what is considered right and wrong. Making ethical decisions is an important part of project managers' personal and professional lives because it generates trust and respect with other people. Project managers often face ethical dilemmas. For example, several projects might involve different payment methods. If project managers can make more money by doing their jobs poorly, should they? No! Should a project manager who is personally opposed to the development of nuclear weapons work on a project that helps produce them? Yes! Ethics guide us in making these types of decisions.

PMI approved a Code of Ethics and Professional Conduct that took effect in January 2007. This code applies not only to PMPs, but to all PMI members who hold a PMI certification, apply for a PMI certification, or serve PMI in a volunteer capacity. It is vital for project management practitioners to conduct their work in an ethical manner. Even if you are not affiliated with PMI, these guidelines can help you conduct your work in an ethical manner, which helps the profession earn the confidence of the public, employers, employees, and all project stakeholders. The PMI Code of Ethics and Professional Conduct includes short chapters addressing vision and applicability, responsibility, respect, fairness, and honesty. A few excerpts from this document include the following:

“As practitioners in the global project management community:

- 2.2.1 We make decisions and take actions based on the best interests of society, public safety, and the environment.
- 2.2.2 We accept only those assignments that are consistent with our background, experience, skills, and qualifications.

- 2.2.3 We fulfill the commitments that we undertake—we do what we say we will do.
- 3.2.1 We inform ourselves about the norms and customs of others and avoid engaging in behaviors they might consider disrespectful.
- 3.2.2 We listen to others' points of view, seeking to understand them.
- 3.2.3 We approach directly those persons with whom we have a conflict or disagreement.
- 4.2.1 We demonstrate transparency in our decision-making process.
- 4.2.2 We constantly reexamine our impartiality and objectivity, taking corrective action as appropriate.
- 4.3.1 We proactively and fully disclose any real or potential conflicts of interest to appropriate stakeholders.
- 5.2.1 We earnestly seek to understand the truth.
- 5.2.2 We are truthful in our communications and in our conduct."³⁶

In addition, PMI added a new series of questions to the PMP certification exam in March 2002 to emphasize the importance of ethics and professional responsibility. See Appendix B for information on the PMP exam.

Project Management Software

Unlike the tale of the cobbler who neglected to make shoes for his own children, the project management and software development communities have definitely responded to the need to provide more software to help manage projects. The Project Management Center, a Web site for people involved in project management, used to provide an alphabetical directory of more than 300 project management software solutions (www.infogol.com/pmc). By 2012, the list was down to 50, and several of those solutions had become outdated, showing how much the market changes as new tools continue to become available. TopTenReviews.com has a category for online project management software, and listed Clarizen and AtTask as the top two products in January 2012. There are also several smartphone and tablet apps for project management. Deciding which project management software to use has become a project in itself. This section summarizes the basic types of project management software available and provides references for finding more information. In Appendix A, you will learn how to use Microsoft Project ²⁰¹³~~2010~~, the most popular project management software today.

MICROSOFT PROJECT ²⁰¹³~~2010~~

Appendix A includes a *Guide to Using Microsoft Project ²⁰¹³~~2010~~*, which will help you develop hands-on skills for using this popular project management software.

Many people still use basic productivity software such as Microsoft Word and Excel to perform many project management functions, including determining project scope, time, and cost, assigning resources, and preparing project documentation. People often use productivity software instead of specialized project management software because they already have it and know how to use it. However, hundreds of project management

software tools provide specific functionality for managing projects and performing portfolio management. These software tools can be divided into three general categories based on functionality and price:

- *Low-end tools:* These tools provide basic project management features and generally cost less than \$200 per user. Smartphone and tablet apps are available for much less, but they often have limited functionality. Low-end tools are often recommended for small projects and single users. Most of these tools allow users to create Gantt charts, which cannot be done easily using current productivity software.
- *Midrange tools:* A step up from low-end tools, midrange tools are designed to handle larger projects, multiple users, and multiple projects. All of these tools can produce Gantt charts and network diagrams, and can assist in critical path analysis, resource allocation, project tracking, and status reporting. Prices range from about \$200 to \$1,000 per user, or less per month for online tools. Several tools require additional server software for using workgroup features. Microsoft Project is still the most widely used project management software in this category, and it has an enterprise version, as described earlier and in Appendix A. Students and educators can purchase software like Microsoft Project at reduced prices from sites like www.journeyed.com (\$139.95 for Project Professional 2010 in 2012), and anyone can download a trial version from Microsoft's Web site. Many other suppliers also provide trial versions of their products.
- *High-end tools:* Another category of project management software is high-end tools, sometimes referred to as enterprise project management software. These tools provide robust capabilities to handle very large projects and dispersed workgroups, and they have enterprise and portfolio management functions that summarize and combine individual project information to provide an enterprise view of all projects. These products are generally licensed on a per-user basis, can be integrated with enterprise database management software, and are accessible via the Internet. In 2002, Microsoft introduced the first version of its Enterprise Project Management software, and in 2003, it introduced the Microsoft Enterprise Project Management solution. This product was updated in 2010 to include Microsoft Office Project Server 2010, which is built on the popular SharePoint Server 2010. Several inexpensive, Web-based products that provide enterprise and portfolio management capabilities are also on the market.

Several free or open-source tools are also available. For example, dotProject (www.dotproject.net), Achievo (www.achievo.org), and Ganttproject (www.ganttproject.biz) are all free online project management tools. Remember, however, that these tools are developed, managed, and maintained by volunteers. They often run on limited platforms and may not be well supported.

There are many reasons to study project management, particularly as it relates to IT projects. The number of IT projects continues to grow, the complexity of these projects continues to increase, and the profession of project management continues to expand and mature. As more people study and work in this important field, the success rate of IT projects should improve.

CASE WRAP-UP

Anne Roberts worked with the VPs and the CEO to form teams to help identify potential IT projects that would support their business strategies. They formed a project team to implement a portfolio project management software tool across the organization. They formed another team to develop project-based reward systems for all employees. They also authorized funds for a project to educate all employees in project management, to help people earn PMP and related certifications, and to develop a mentoring program. Anne had successfully convinced everyone that effectively managing projects was crucial to their company's future.

Chapter Summary

Many people and organizations have a new or renewed interest in project management as the number of projects continues to grow and their complexity continues to increase. The success rate of IT projects has more than doubled since 1995, but still only about one-third are successful in meeting scope, time, and cost goals. Using a more disciplined approach to managing projects can help projects and organizations succeed.

A project is a temporary endeavor undertaken to create a unique product, service, or result. An IT project involves the use of hardware, software, and networks. Projects are unique, temporary, and developed incrementally; they require resources, have a sponsor, and involve uncertainty. The triple constraint of project management refers to managing the scope, time, and cost dimensions of a project. It is important to address these dimensions as well as other constraints (such as quality, resources, and risks) and to satisfy the project sponsor.

Project management is the application of knowledge, skills, tools, and techniques to project activities to meet project requirements. Stakeholders are the people involved in or affected by project activities. A framework for project management includes the project stakeholders, project management knowledge areas, and project management tools and techniques. The 10 knowledge areas are project integration management, scope, time, cost, quality, human resource, communications, risk, procurement, and stakeholder management. There are many tools and techniques in each knowledge area. There are different ways to define project success, and project managers must understand the criteria that define success for their unique projects.

A program is a group of related projects managed in a coordinated way to obtain benefits and control that are not available from managing the projects individually. Project portfolio management involves organizing and managing projects and programs as a portfolio of investments that contribute to the entire enterprise's success. Portfolio management emphasizes meeting strategic goals, while project management focuses on tactical goals. Studies show that user involvement is crucial to project success, as are other factors like executive support and clear business objectives.

Project managers play a key role in helping projects and organizations succeed. They must perform various job duties, possess many skills, and continue to develop skills in project management, general management, and their application area, such as IT. Soft skills, especially leadership, are particularly important for project managers.

The profession of project management continues to grow and mature. In the United States, the military took the lead in project management and developed many tools such as Gantt charts and network diagrams, but today people use project management in virtually every industry around the globe. The Project Management Institute (PMI) is an international professional society that provides certification as a Project Management Professional (PMP) and upholds a code of ethics. Today, hundreds of project management software products are available to assist people in managing projects.

Quick Quiz

1. Approximately what percentage of the world's gross product is spent on projects?
 - a. 10 percent
 - b. 25 percent
 - c. 50 percent
 - d. 75 percent
2. Which of the following is not a potential advantage of using good project management?
 - a. Shorter development times
 - b. Higher worker morale
 - c. Lower cost of capital
 - d. Higher profit margins
3. A _____ is a temporary endeavor undertaken to create a unique product, service, or result.
 - a. program
 - b. process
 - c. project
 - d. portfolio
4. Which of the following is not an attribute of a project?
 - a. projects are unique
 - b. projects are developed using progressive elaboration
 - c. projects have a primary customer or sponsor
 - d. projects involve little uncertainty
5. Which of the following is not part of the triple constraint of project management?
 - a. meeting scope goals
 - b. meeting time goals
 - c. meeting communications goals
 - d. meeting cost goals
6. _____ is the application of knowledge, skills, tools, and techniques to project activities to meet project requirements.
 - a. Project management
 - b. Program management
 - c. Project portfolio management
 - d. Requirements management

7. Project portfolio management addresses _____ goals of an organization, while project management addresses _____ goals.
 - a. strategic, tactical
 - b. tactical, strategic
 - c. internal, external
 - d. external, internal
8. Several application development projects done for the same functional group might best be managed as part of a _____.
 - a. portfolio
 - b. program
 - c. investment
 - d. collaborative
9. Which of the following is not true?
 - a. Most American companies have a project management office.
 - b. You can earn an advanced degree in project management from hundreds of colleges and universities.
 - c. Employers are looking for project management skills in new graduates.
 - d. IT hiring managers reported that project management certification did not affect starting pay.
10. What is the name of one of the popular certifications provided by the Project Management Institute?
 - a. Certified Project Manager (CPM)
 - b. Project Management Professional (PMP)
 - c. Project Management Expert (PME)
 - d. Project Management Mentor (PMM)

Quick Quiz Answers

1. b; 2. c; 3. c; 4. d; 5. c; 6. a; 7. a; 8. b; 9. d; 10. b

Discussion Questions

1. Why is there a new or renewed interest in the field of project management?
2. What is a project, and what are its main attributes? How is a project different from what most people do in their day-to-day jobs? What is the triple constraint? What other factors affect a project?
3. What is project management? Briefly describe the project management framework, providing examples of stakeholders, knowledge areas, tools and techniques, and project success factors.
4. What is a program? What is a project portfolio? Discuss the relationship between projects, programs, and portfolio management and the contributions that each makes to enterprise success.

5. What is the role of the project manager? What are suggested skills for all project managers and for IT project managers? Why is leadership so important for project managers? How is the job market for IT project managers?
6. Briefly describe some key events in the history of project management. What role do the Project Management Institute and other professional societies play in helping the profession?
7. What functions can you perform with project management software? What are the main differences between low-end, midrange, and high-end project management tools?

Exercises

1. Visit the Standish Group's Web site at www.standishgroup.com. Read one of the CHAOS articles, and read at least one report or article that questions the findings of the CHAOS studies. See the Suggested Readings by Robert L. Glass on the companion Web site for references. Write a summary of the reports, key conclusions, and your opinion of them.
2. Find someone who works as a project manager or someone who works on projects, such as a worker in your school's IT department or the president of a social club. Prepare several interview questions to learn more about projects and project management, and then ask your questions in person, through e-mail, over the phone, or using other technology. Write a summary of your findings. Guidelines for your interview and sample questions are available on the companion Web site.
3. Search the Internet for the terms *project management*, *project management careers*, *project portfolio management*, and *IT project management*. Write down the number of hits that you received for each of these phrases. Find at least three Web sites that provide interesting information on one of the topics. Write a paper summarizing key information about these three Web sites as well as the Project Management Institute's Web site (www.pmi.org).
4. Find any example of a real project with a real project manager. Feel free to use projects in the media (such as the Olympics, television shows, or movies) or a project from your work, if applicable. Write a paper describing the project in terms of its scope, time, and cost goals. Also describe other impacts on a project, such as quality, resources, and risks. Discuss what went right and wrong on the project and the role of the project manager and sponsor. Also describe whether the project was a success, and why. Include at least one reference and cite it on the last page.
5. Skim through Appendix A on Microsoft Project 2010. Review information about Project 2010 from Microsoft's Web site (www.microsoft.com/project). Research three other project management software tools, including at least one smartphone or tablet app. Write a paper answering the following questions:
 - a. What functions does project management software provide that you cannot do easily using other tools such as a spreadsheet or database? View the video Microsoft provides on its enterprise project management tool (see the link on the companion Web site) or search for other videos or documents for additional information.
 - b. How do the different tools you reviewed compare with Project 2010, based on cost of the tool, key features, and other relevant criteria?
 - c. How can organizations justify investing in enterprise or portfolio project management software?