PROJECT MANAGEMENT

ACHIEVING COMPETITIVE ADVANTAGE

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Pennsylvania State University

Fifth Edition

New York, NY
To Mary Beth, my wife and best friend, with the most profound thanks and love for her unwavering support. And, to our children, Emily, AJ, and Joseph—three “projects” that are definitely over budget but that are performing far better than I could have hoped!

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Project management has become central to operations in industries as diverse as construction and information technology, architecture and hospitality, and engineering and new product development; therefore, this text simultaneously embraces the general principles of project management while addressing specific examples across the wide assortment of its applications. This text approaches each chapter from the perspective of both the material that is general to all disciplines and project types and that which is more specific to alternative forms of projects. One way this is accomplished is through the use of specific, discipline-based examples to illustrate general principles as well as the inclusion of cases and Project Profiles that focus on more specific topics, such as, Chapter 5’s treatment of IT “death march” projects (see Box 5.1 below).

**BOX 5.1**

Project Management Research in Brief

*Information Technology (IT) Project “Death Marches”: What Is Happening Here?*

Every year, billions of dollars are spent on thousands of information technology (IT) projects worldwide. With the huge emphasis on IT products and advances in software and hardware systems, it is no surprise that interest in this field is exploding. Under the circumstances, we would naturally expect that, given the importance of IT projects in both our corporate and everyday lives, we are doing a reasonably good job of implementing these critical projects, right? Unfortunately, the answer is a clear “no.” In fact, IT projects have a terrible track record for delivery, as numerous studies have shown. How bad? The average IT project is likely to be 6 to 12 months behind schedule and 50% to 100% over budget. Of course, the numbers vary with the size of the project, but the results still suggest that companies should expect their IT projects to lead to wasted effort, enormous delays, burnout, and many lost weekends while laboring for success with the cards stacked the other way.

What we are referring to here are “death march” projects. The death march project is typically one in which the project is set up for failure through the demands or expectations that the company places on it, leaving the intention that the project team will pull off a miracle. The term death march invokes images of team members wearily trudging along mile after mile, with no possibility of escape, no safety net, no hope of success, and not even a prayer of doing the project on time and under budget. The result is an endless game of exploiting “opportunities” without fully comprehending them or the learning curve for using new technologies.

Students in project management classes come from a wide and diverse cross section of university majors and career tracks. Schools of health, public administration, business, architecture and the built environment, engineering, information systems, and hospitality are all adding project management courses to their catalogs in response to the demands from organizations and professional groups that see their value for students’ future careers. Why has project management become a discipline of such tremendous interest and application? The simple truth is that we live in a “projectized” world. Everywhere we look, we see people engaged in project management. In fact, project management has become an integral part of practically every firm’s business model.

This text takes a holistic, integrated approach to managing projects, exploring both technical and managerial challenges. It not only emphasizes individual project execution, but also provides a strategic perspective, demonstrating the means with which to manage projects at both the program and portfolio levels.
At one time, project management was almost exclusively the property of civil and construction engineering programs where it was taught in a highly quantitative, technical manner. “Master the science of project management,” we once argued, “and the ‘art’ of project management will be equally clear to you.” Project management today is a complex “management” challenge requiring not only technical skills but a broad-based set of people skills as well. Project management has become the management of technology, people, culture, stakeholders, and other diverse elements necessary to successfully complete a project. It requires knowledge of leadership, team building, conflict resolution, negotiation, and influence in equal measure with the traditional, technical skill set. Thus, this textbook broadens our focus beyond the traditional project management activities of planning and scheduling, project control, and termination, to a more general, inclusive, and, hence, more valuable perspective of the project management process.

NEW TO THIS EDITION

New Features

- Sustainability in Project Management
- Employability Skills
- Project Management Ethics
- MS Project 2016 Step-by-Step Tutorials
- New Project Managers in Practice Profiles
- Project Portfolio selection
- Expanded discussion of Agile project management
- Updated problems in chapters
- Updated Internet Exercises
- Expanded PMP Certification Exam sample questions
- New project management cases
- All MS Project examples and screen captures updated to MS Project 2016

Updated Project Profiles and Cases

Chapter 1: Introduction: Why Project Management?
- Development Projects that are Transforming Africa
- President Obama Signs the Program Management Improvement and Accountability Act
- London’s Crossrail: Europe’s Largest Construction Project

Chapter 2: The Organizational Context: Strategy, Structure, and Culture
- The Airbus A-380: A Failure of Strategy?
- Electronic Arts and the Power of Strong Culture in Design Teams

Chapter 3: Project Selection and Portfolio Management
- Project Selection Procedures: A Cross-Industry Sampler

Chapter 4: Leadership and the Project Manager
- NASA Taps a Leader with the Right Stuff to Run Their Mars 2020 Project
- Leading by Example for the London Olympics—Sir John Armitt
- Brazilian Construction Giant Caught in Wide-Spread Corruption Scandal

Chapter 5: Scope Management
- Berlin’s Brandenburg Willy Brandt International Airport
- Nicaragua’s Canal and Sustainability Challenges
- Boeing’s Virtual Fence
- California’s High-Speed Rail Project
- The Expeditionary Fighting Vehicle

Chapter 6: Project Team Building, Conflict, and Negotiation
- Team Building Events – Heli-Skiing and Zombie Apocalypses
- Engineers Without Borders: Project Teams Impacting Lives
SOLVING TEACHING AND LEARNING CHALLENGES

Projects continue to drive innovation and advances in human development globally. Evidence from businesses, government offices, public and private organizations, and volunteer groups all point to the way in which project-based work has become central to the challenges new generations of college graduates will face. Many students initially have a difficult time understanding why projects form such a central theme in their current academic undertakings and how these project challenges will continue to grow as they move into the workforce. In project management courses in business, engineering, health administration, hospitality, and science programs, the challenge faculty and students often face is to personalize these ideas to the roles their students are preparing to undertake. Moreover, one of the principal challenges of effectively teaching project management is to understand that project management duties are broad and diverse; most particularly, they require computational, software, and organizational/behavioral knowledge. Some of our students are quickly able to understand the computational elements of using mathematical models to select projects, developing schedules and networks, using Microsoft Project and other software packages, and tracking projects, while finding the “people” skills in leading a project team daunting. Alternatively, other students are comfortable with financial and managerial concepts but experience more difficulty in transitioning to statistical, software, or arithmetic challenges. The fascinating nature of project management is that it requires students to develop a mastery of both the “people” and “numbers” sides of the discipline. Short of the CEO’s office, in no other position in an organization are the duties as broad and diverse as those found in the project manager role—developing
strategies, financing, planning, budgeting, negotiating, leading, controlling, and motivating—these are all routine responsibilities of project managers.

To illustrate the computational challenges of project management, we provide many chapters, cases, and examples of how to use financial models to select a project portfolio, how to develop project networks and identify the critical path, how to use MS Project to engage its planning and tracking tools, and how to employ earned value and other methods for accurately determining the status of projects. Managerial challenges are addressed through chapters, profiles, and cases that highlight leadership, stakeholder management, team development, conflict and negotiation, ethical challenges, and project sustainability. Project management is a dynamic undertaking. We employ a simple visual device (see Figure 1.12 below) to demonstrate the manner in which technical and managerial challenges intermingle, as the project moves through its development cycle. Referring to this visual can help students understand the project life cycle and project manager duties across its development.

FIGURE 1.12

To support these teaching initiatives, the text employs a wide variety of pedagogical approaches, including tutorials and screen captures of Microsoft Project for scheduling and project status updating, problems, an integrated project plan to show students how to develop and plan their own projects, templates for planning and project charters, and other devices to support student learning and computational skills. Additionally, the text uses cases and profiles of current examples of projects from a wide variety of industries. Just as projects are ubiquitous across a wide variety of industries, the cases and examples in this text cover new product development, construction and infrastructure, hospitality, software and programming, as well as many other project examples. The cases and profiles were deliberately created to demonstrate the breadth of project challenges in order to reinforce for students that regardless of their undergraduate degree or career aspirations, they will be heavily involved in project-based work.

- **Project Profiles**—Each chapter contains one or more Project Profiles that highlight current examples of project management in action. Some of the profiles reflect on significant achievements; others detail famous (and not-so-famous) examples of project failures. Because they cover diverse ground (IT projects, construction, new product development, and so forth), there should be at least one profile per chapter that is meaningful to the class’s focus. There is a deliberate effort made to offer a combination of project success stories and project failures. While successful projects can be...
instructive, we often learn far more from examining the variety of reasons why projects fail. As much as possible, these stories of success and failure are intended to match up with the chapters to which they are attached. For example, as we study the uses of projects to implement corporate strategy, it is useful to consider the current status of Airbus’s A380, the massively expensive, double-decker aircraft that appears to be ripe for early cancellation because of mediocre sales.

**Cases**—At the end of each chapter are some final cases that take specific examples of the material covered in the chapter and apply them in the alternate format of case studies. Some of the cases are fictitious, but the majority of them are based on real situations, even where aliases mask the real names of organizations. These cases include discussion questions that can be used either for homework or to facilitate classroom discussions. There are several “classic” project cases as well, highlighting some famous (and infamous) examples of projects whose experiences have shaped our understanding of the discipline and its best practices.

- **Integrated Project Exercises**—Many of the chapters include an end-of-chapter feature that is unique to this text: the opportunity to develop a detailed project plan. A very beneficial exercise in project management classes is to require students, either in teams or individually, to learn the mechanics of developing a detailed and comprehensive project plan, including scope, scheduling, risk assessment, budgeting, and cost estimation. The Integrated Project exercises afford students the opportunity to develop such a plan by assigning these activities and illustrating a completed project (ABCups, Inc.) in each chapter. Thus, students are assigned their project planning activities and have a template that helps them complete these exercises.

Lastly, this text supports the employability skills goal that Pearson actively promotes in its publications by linking to important materials and knowledge from the Project Management Institute, the world’s largest professional project management association. The text uses terminology for their Project Management Body of Knowledge (PMBOK), employs the PMBoK glossary of terms, and includes an expanded set of sample Project Management Professional (PMP) certification exam questions at the end of most chapters. Faculty can demonstrate that these chapters highlight critical
project management duties but also point to the professionalism opportunities from project management careers.

- **Integration with the PMBOK**—As a means to demonstrate the coverage of the critical PMBOK elements, readers will find that the chapters in this text identify and cross-list the corresponding knowledge areas from the latest, fifth edition of PMBOK. Further, all terms (including the Glossary) are taken directly from the most recent edition of the PMBOK.

- **Inclusion of Sample PMP Certification Exam Questions**—The Project Management Professional (PMP) certification represents the highest standard of professional qualification for a practicing project manager and is administered by the Project Management Institute. As of 2017, there were more than 775,000 PMPs worldwide. In order to attain PMP certification, it is necessary for candidates to undergo a comprehensive exam that tests their knowledge of all components of the PMBOK. This text includes an expanded set of sample PMP certification exam questions at the end of most of the chapters, in order to give readers an idea of the types of questions typically asked on the exam and how those topics are treated in this book.

### DEVELOPING EMPLOYABILITY SKILLS

Careers in project management are in high demand, and those numbers continue to grow dramatically. Data collected in 2016 by the U.S. Bureau of Labor Statistics and the Anderson Economic Group assessed the popularity of jobs in project-based industries and concluded that there are outstanding opportunities for jobs and career growth in the discipline of project management. Moreover, it is expected that future demand for project managers will continue to grow faster than demand for workers in other professions. Further, this demand for trained project managers is currently expected to far outstrip the current supply of qualified individuals capable of performing these roles. This information all points to one critical conclusion: project management careers are in exceptionally high demand and are expected to remain that way for the next decade (at least, through 2027). Eleven countries studied by the Anderson Economic Group, including the United States and Canada, Brazil, Germany, China, India, and Japan, are all projecting millions of project management jobs available in the next decade, spanning a diverse set of industries, including construction, healthcare, new product development, services and hospitality, and Information Technology (IT). Finally, two critical pieces of information highlight this accelerating demand for project management professionals: first, the percentage of those in project-oriented occupations will become a larger proportion of total employment, with anticipated growth from 5.6% in 2006 to 8.3% in 2017. Second, wages in 2017 for project management-oriented professionals reflect far higher average salaries than non-project-oriented professionals, with a premium of 82% over non-project workers. Clearly, the data make a strong case that project management skills are a critical means by which students can enhance their employability.

This text reinforces Pearson’s commitment to producing not only innovative educational content but ensuring that the material covered in their products addresses the critical skills that employers are looking for. As part of a recent, large-scale study, involving hundreds of respondents from universities and public and private organizations, Pearson identified a set of “employability skills,” those abilities that businesses deem crucial for their new hires. These skills include: 1) communication, 2) critical thinking, 3) collaboration, 4) knowledge application and analysis, 5) business ethics and social responsibility, 6) information technology application and computer skills, and 7) data literacy. We have modeled the text material, exercises, tutorials, and case material to address each of these seven employability skills in order to provide students with the maximum advantage when transitioning from the classroom to the business enterprise. With this textbook, Project Management: Achieving Competitive Advantage, students receive the dual benefit of acquiring the latest information and employability skills in a discipline that is in extraordinarily high demand.
INSTRUCTOR TEACHING RESOURCES

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• Section number and name  
• Learning outcome  
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Finally, it is important to reflect on an additional salient issue as you begin your study of project management; most of you will be running a project long before you are given wider management responsibilities in your organizations. Successful project managers are the lifeblood of organizations and bear the imprint of the fast track. I wish you great success!

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