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# Chapter Concepts

This chapter presents an overview of project management concepts. Based upon this chapter, students will become familiar with the

* Definition of a project and its attributes
* Key constraints within which a project must be managed
* Life cycle of a project
* Definition of project management
* Elements of the project management process
* Identification and engagement of stakeholders
* Implications of global project management
* Project Management Institute
* Benefits of project management

# Learning Outcomes

After studying this chapter, the learner should be able to:

* Define what a project is
* List and discuss the attributes of a project
* Explain what is meant by project objective
* Define what is meant by project deliverable
* Provide examples of projects
* Discuss project constraints
* Describe the phases of the project life cycle
* Define and apply project management
* Discuss the steps of the planning process
* Identify the three elements of the executing process
* Create a stakeholder register
* Discuss stakeholder engagement
* Discuss some implications of global project management
* Discuss the Project Management Institute
* List benefits of project management techniques

# Project Management Knowledge Areas from PMBOK® Guide

Concepts in this chapter support the following Project Management Knowledge Areas of

*A Guide to the Project Management Body of Knowledge (PMBOK*® *Guide*):

* Project Integration Management
* Project Stakeholder Management

# Teaching Strategies

1. Let the students know that this course isn’t only for project managers. It is also for anyone involved in working on a project.
2. Stress to them that what makes projects successful are the people involved. In order for this class to be successful they must actively be involved.
3. Encourage all students to participate by asking them to identify projects they have been involved in during their life.
4. For each project ask them what the objective was, what the constraints were, what the schedule was, and what resources were used.
5. Ask them if they can identify any project managers in the real world. If they get stuck, give them some hints to think about, like sports or music.
6. Ask your students to discuss something they did during the past summer or winter break, such as take a vacation, go to a concert, or watch a play.
7. Ask them how those activities relate to project management.
8. The Internet exercises in this chapter are very important. They involve the investigation of the Project Management Institute’s website. Inform the class that since it was founded in 1969, the Project Management Institute (PMI) membership is approaching 500,000 members in nearly 200 countries and has about 270 chapters in more than 80 countries. The association has over 30 online communities of practice. Pennsylvania-based PMI is, by far, the leading nonprofit professional association in the area of project management. It establishes standards, sponsors seminars, develops educational programs, has a professional certification program, and publishes Project Management Journal and PM Network. It has an excellent website for project management. Students can have some fun with this site.

# Lecture Notes

## 1. Real-World Project Management Examples

### Vignette A: World Bank Success Factors

Many World Bank project have failed in the past, nearly half. International development projects are complex. Critical success factors were found to lead to increased probability of success of international development projects.

* International development projects are undertaken by the World Bank through partner organizations to prepare, implement, and evaluate complex projects.
  + Strict guidelines are overseen by the World Bank project supervisor and the national Project Management unit national project coordinator.
  + Day-to-day project management of the international development projects is the responsibility of the partner organization.
  + An independent evaluation group completes an assessment two years after a project is completed or aborted to determine the relevance, efficiency, and effectiveness of the terminated project.
* Project success is measured by the relevance, efficiency, and effectiveness.
  + Relevance -- how well the project outcomes meet the priorities of the target group
  + Efficiency -- the use of the least costly resources to achieve the desired results indicated in the project plan
  + Effectiveness -- extent the project objectives, those proposed and those created through change management of the project during its implementation, are met
* Other evaluation measures
  + Sustainability of the project
  + Project’s impact for making change for the target group
* Causes for lack of successful projects
  + Managerial and organizational issues
  + Project design
  + Stakeholder management
  + Implementation delays
  + Cost overrun
  + Lack of coordination
  + Misunderstanding of the political, cultural, technical, and environmental conditions of the project location
* Critical Success Factors
  + Monitoring -- well documented project progress and Stringent reporting and controlling the project’s performance
  + Coordination -- increased communication and level of involvement of the World Bank project supervisors and coordinators
  + Design -- develop increasingly rigorous project plans to emphasize results-based management
  + Training -- the complexity of the environment
  + Institutional environment

### Vignette B: Hoover Dam Generates Project Management Techniques in Addition to Hydroelectricity

The Hoover Dam project is probably the largest infrastructure project in the U.S. The project finished 2 years ahead of schedule and $15 million below budget. Rigorous and aggressive scheduling and implementation of innovative technology under the guidance of an experienced project manager made the project successful. Many of the techniques developed for the Hoover Dam project are still in use for DOE projects today.

* Issues related to flooding and silt accumulation in canals influenced the study and approval to complete the construction of the Hoover Dam in Black Canyon.
  + $165 million project finished two years ahead of schedule and $15 million under budget.
  + Collaboration of Six Companies, Inc. successfully balanced resources to manage the challenges of completing one of the largest infrastructure projects ever built in the United States.
  + The 1930s in the United States was experiencing a time of depression, limited project implementation, and reduced production of goods and services.
* Why successful
  + Thorough analysis of the need
  + Development of the proposed solution to establish the feasibility
  + Strong oversight of the project performance
  + Innovative funding to secure adequate resources
* Project details
  + Financial planning -- overbid the creation of the tunnels and the rock removal and a low bid for concrete installation allowed for increased cash income up front to fund the surety bond required for the project
  + Project planning -- 119 separate projects
  + Incentives -- $3,000 per day fine was imposed for any delays and incentive bonus for completing the project early and under budget
  + Workers -- salaries paid to the workers were greater than other skilled workers in the United States in the 1930s
  + Management - timesaving and efficient construction methods using workers and machinery, and outsourcing where appropriate
* Lessons Learned
  + Project sponsors must know what they can afford
  + Project sponsors must have open communications, trust, and coordination with the contractor
  + Project leaders must be dedicated to the success of the project
  + Contract incentives must be clear and provide adequate compensation for risks and resources used

These are great short stories that can get the class discussion moving forward. Each of these projects (successes or failures) should have included serious planning, scheduling, organization, teamwork, communications, and leadership—all of which will be discussed in detail in this course.

## 2. Project Attributes

### A. Definition of a Project

A project is an endeavor to accomplish a specific objective through a unique set of interrelated activities and the effective utilization of resources. The following attributes help define a project:

* A project has a clear objective that establishes what is to be accomplished. It is the tangible end product that the project team must produce and deliver. The project objective is usually defined in terms of end product or deliverable, schedule, and budget. Furthermore, it is expected that the work scope will be accomplished in a quality manner and to the customer’s satisfaction.
* A project is carried out through a set of interdependent activities (also referred to as tasks) in a certain sequence in order to achieve the project objective.
* A project utilizes various resources to carry out the activities.
* A project has a specific time frame, or finite life span -- a start time and a date by which the objective must be accomplished.
* A project may be a unique or one-time endeavor such as developing a new product, designing and building a space station, building a house, or planning a wedding.
* A project has a sponsor or customer that provides the funds necessary to accomplish the project. In a business setting, the customer can be internal or external to your organization.
* Finally, a project involves a degree of uncertainty based on certain assumptions and estimates the project budget, schedule, and work scope.

### B. Examples of Projects

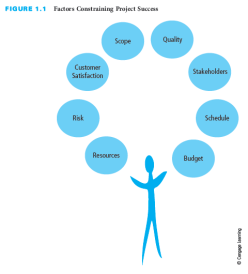
Get your students to list as many examples of real projects as they can. For each example listed, discuss some of the attributes listed above. Some examples are:

* Staging a theatrical production
* Developing and introducing a new product
* Developing a set of Apps for mobile business transactions
* Planning a wedding
* Modernizing a factory
* Designing and implementing a computer system
* Converting a basement to a family room
* Organizing and hosting a conference
* Designing and producing a brochure
* Executing an environmental cleanup of a contaminated site
* Holding a high school reunion
* Building a shopping mall
* Performing a series of surgeries on an accident victim
* Organizing a community festival
* Consolidating two manufacturing plants
* Rebuilding a town after a natural disaster
* Hosting a dinner for 20 relatives
* Designing a business internship program for high school students
* Building a tree house

## 3. Balancing Project Constraints

### A. Project Constraints

The successful accomplishment of the project objective is usually constrained by many factors, including scope, quality, schedule, budget, resources, risks, customer satisfaction, and stakeholder support.

* Project scope is all the work that must be done in order to produce all the project deliverables (the tangible product or items to be provided), satisfy the customer that the deliverables meet the requirements or acceptance criteria, and accomplish the project objective.
* Quality expectations must be defined from the onset of the project. The project work scope must be accomplished in a quality manner and meet specifications.
* The schedule for a project is the timetable that specifies when each activity should start and finish. The project objective usually states the time by which the project scope must be completed in terms of a specific date agreed upon by the sponsor and the organization performing the project.
* The budget of a project is the amount the sponsor or customer has agreed to pay for acceptable project deliverables. The project budget is based on estimated costs associated with the quantities of various resources that will be used to perform the project.
* Various resources are needed to perform the project activities, produce the project deliverables, and accomplish the project objective. Resources include people, materials, equipment, facilities, and so forth.
* Risks adversely affect accomplishing the project objective
* Customer’s satisfaction goes beyond just completing the project scope within budget and on schedule or asking if the customer is satisfied at the end of the project. It means not only meeting the customer’s expectations but also developing and maintaining an excellent working relationship throughout the project.
* The project manager and team need to build relationships with, and engage, the various stakeholders who may influence or may be affected by the project, in order to gain their support.

During the project, it is sometimes challenging to balance or juggle these factors, which often constrain one another and could jeopardize accomplishing the project objective. See Figure 1.1. To help ensure the achievement of the project objective, the project team should develop a plan before starting the project work rather than jumping in and starting without a plan. Lack of a plan decreases the chances of successfully accomplishing the full project scope within budget and on schedule.

### B. Unforeseen Circumstances

Once a project has started, unforeseen circumstances may jeopardize the achievement of the project objective with respect to scope, cost, or schedule.

* Examples:
  + Some materials cost more than originally estimated.
  + Inclement weather causes a delay.
  + Additional redesign and modifications to a sophisticated new medical instrument are required to get it to meet the performance specifications and government testing requirements.
  + Delivery of a critical component for an aviation control system is delayed several months.
  + Environmental contaminants are discovered when excavating for a new building.
  + A key project team member with unique technical knowledge decides to retire, which creates a gap in critical expertise.
* Actions by the project manager
  + Prevent, anticipate, and/or overcome such circumstances in order to complete the project scope on schedule, within budget, and to the customer’s satisfaction.
  + Have good planning and communication -- essential to prevent problems from occurring and to minimize their impact.
  + Be responsible for ensuring the customer is satisfied. This goes beyond just completing the project scope within budget and on schedule. It requires ongoing communication with the customer.

## figure 14. The Project Life Cycle

### A. Overview of a Project Life Cycle

The generic project life cycle has four phases: initiating, planning, performing, and closing the project. See Figure 1.2

* The time span of each phase and the associated level of effort will vary depending on the specific project.
* Project life cycles vary in length from a few weeks to several years, depending on the content, complexity, and magnitude of the project.

### B. Initiating Phase

In the initiating phase, projects are identified and selected, and then authorized using a document referred to as a project charter.

* First phase of the project life cycle
* Involves the identification of a need, problem, or opportunity and can result in the sponsor’s authorizing a project to address the identified need or solve the problem
  + May take several months to identify the need, gather data, and define the project objective
  + Important to define the right need
  + Needs are often defined as part of an organization's strategic planning process
* Organizations must have a project selection process to determine what projects to pursue
* Project charter includes:
  + Rationale or justification for the project
  + Project objective and expected benefits
  + General requirements and conditions such as amount of funds authorized, required completion date, major deliverables, and required reviews and approvals, and key assumptions
* If external resources will be used, organizations develop a request for proposals asking contractors to submit proposals describing how address need, associated costs, and schedule

### C. Planning Phase

The planning phase includes defining the project scope, identifying resources, developing a schedule and budget, and identifying risks, all of which make up the baseline plan for doing the project work.

* Second phase of the project life cycle
* Show how the project scope will be accomplished within budget and on schedule
* Plan the work and work the plan
* Detailed plan results in a baseline plan
  + What needs to be done -- scope, deliverable
  + How it will get done -- activities, sequence
  + Who will do it -- resources, responsibilities
  + How long it will take -- durations, schedule
  + How much it will cost -- budget
  + What the risks are
* Benchmark the baseline plan for comparison with actual progress
* Include the people that will actually do the work in the planning process
  + They have knowledge of detailed activities to be done
  + Participation builds commitment

### D. Performing Phase

In the performing phase, the project plan is executed and work activities are carried out to produce all the project deliverables and to accomplish the project objective. The project progress is monitored and controlled to ensure the work remains on schedule and within budget, the scope is fully completed according to specifications, and all deliverables meet acceptance criteria. Also, any changes need to be documented, approved, and incorporated into an updated baseline plan if necessary.

* Third phase of the project life cycle
* Project manager leads project team to complete project
* Pace of the project increases as more and various resources are involved in the project
* It is necessary to monitor and control the project's progress by comparing accomplishments to the baseline plan
* Corrective actions are taken if a project is off track
* Changes are managed and controlled through documentation, approval, and communication with agreement between the sponsor and the contractor
  + Some change is trivial
  + Several alternative actions may be evaluated to determine the best approach to bring the project back within the scope, schedule, and budget constraints
  + Determine whether any sacrifices to scope, budget, schedule, or quality are necessary to accomplish the project
  + The cost of change varies with the timing in the project -- generally, the later in the project that changes are identified, the greater their effect on accomplishing the project objective
* The end of the phase, customer satisfaction, is achieved when the work and deliverables have been accepted by the customer and the project objective has been accomplished

### E. Closing Phase

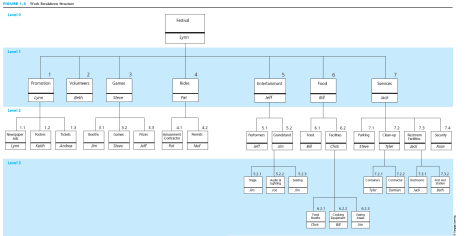
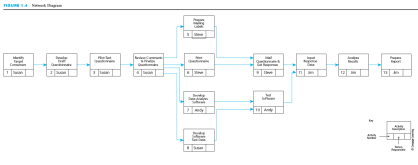
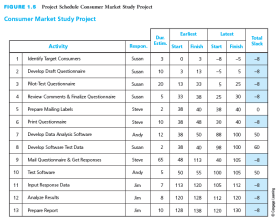
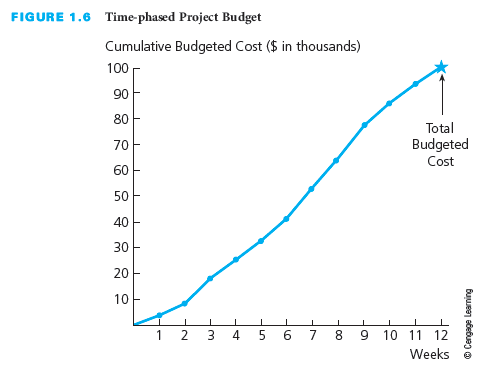
In the closing phase, project evaluations are conducted, lessons learned are identified and documented to help improve performance on future projects, and project documents are organized and archived.

* The final phase of the project life cycle
* Includes a variety of actions such as:
  + Collecting and making final payments
  + Recognizing and evaluating staff
  + Conducting a post project evaluation
  + Documenting lessons learned
  + Archiving project documents
* Using a knowledge base to record lessons learned and post-project evaluation is helpful to retrieve the lessons and information that could support future business with the customer or other customers

## 5. Project Management Process

Project management is planning, organizing, coordinating, leading, and controlling resources to accomplish the project objective. The project management process involves planning the work (establishing the plan) and then working the plan (executing that plan).

### A. Project Planning Process

1. Establish project objective -- get agreement from sponsor and contractor
2. Define scope -- include customer requirements, define major work activities, list deliverables and associated acceptance criteria
3. Create a work breakdown structure -- translate a hierarchical decomposition of the project scope into work elements to be executed by the project team and produce the project deliverables. See Figure 1.3.
4. Assign responsibility -- identify the person or organization responsible for each work item. See Figure 1.3.
5. Define specific activities -- develop a list of detailed activities needed to perform each work package and produce any required documents
6. Sequence activities -- create a network diagram that shows the necessary sequence and dependent relationships. See Figure 1.4.
7. Estimate activity resources -- determine the types of resources needed for each activity, these may include people, materials, or equipment that are internal or external to the contractor
8. Estimate activity durations -- make time estimates for how long each activity will take to be completed based on the estimate of resources available applied to each activity
9. Develop project schedule -- determine the start and finish times for each activity to complete the project by its required completion date. See Figure 1.5.
10. Estimate activity costs -- use the appropriate labor cost or unit cost rate for each type of resource to determine the cost of each activity
11. Determine budget -- aggregate the costs associated with each activity and each work package and add indirect costs and profits to determine the costs of completing the project. Allocate the costs over time to determine the time-phased budget as shown in Figure 1.6.

### B. Baseline Plan

The result of the planning process is a baseline plan. Taking the time to develop a well thought out plan is critical to the successful accomplishment of any project.

* Many projects overrun their budgets, missed their completion dates, or only partially met their requirements because there was no viable baseline plan before the project was started.
* The baseline plan for a project can be displayed in graphical or tabular format for each time period (week, month) from the start of the project to its completion.
  + The start and completion dates for each activity
  + The amounts of the various resources that will be needed during each time period
  + The budget for each time period as well as the cumulative budget from the start of the project through each time period

### C. Executing the Project Plan

Once a baseline plan has been established, the plan must be executed. The executing process involves performing the work according to the plan, monitoring and controlling the work, and managing changes so that the project scope is achieved within the budget and schedule, to the customer’s satisfaction.

1. Perform the work -- all activities are performed to produce the deliverables and meet their acceptance criteria with regular communication with stakeholders and the customer
2. Monitor and control progress -- monitor the progress to see whether it is going according to plan, measure actual progress, take corrective action if activities are behind schedule
3. Control changes -- changes to the work activities and to the project scope will occur for a variety of reasons and need to be agreed upon by the sponsor and the contractor

## 6. Stakeholder Engagement

Project stakeholders are individuals and entities involved in, or who may influence, or may be affected by a project, such as the customer/sponsor; project team, including the project manager, subcontractors, and consultants; end users or consumers; and advocacy groups.

* Stakeholders include
  + Customer/sponsor and the project team including subcontractors and suppliers
  + Organizations or groups of people who may be supportive or adversarial or may want to be kept informed about the project because of potential impact
* Create a stakeholder register as potential stakeholders are identified and include key contact information, role or specific topics of interest, expectations, any known issues, and areas of potential influence for each stakeholder.
* Maintain in issue log of specific issues or concerns or questions that various stakeholders identify so that the project manager, project team, or sponsor/customer can address them and make sure they are not forgotten or dismissed without an adequate follow up and response.

## 7. Global Project Management

Globalization adds a unique dimension to managing projects. It changes the dynamics of the project and adds a layer of complexity that can adversely affect the project outcome if the project participants are not aware of what they might encounter regarding cultural differences and multinational economic transactions.

* Factors can create a dynamic and perhaps unstable environment over the life of a project and include:
  + Currency fluctuations and exchange rates
  + Country-specific work codes and regulations, such as hours per day, holidays, and religious observances
  + Corporate joint ventures and partnerships creating entities with a presence and facilities in multiple countries
  + Political relations between countries
  + Availability of high-demand workforce skills
* Competencies that are required or helpful for global project management success include:
  + Foreign language skills
  + Knowledge and understanding of other countries and cultures, geography, world history, and international economics
  + Awareness and understanding of cultures, customs, and etiquette
  + Awareness of the geopolitical environment
  + Technology adoption of translation software

## 8. Project Management Associations

### A. Project Management Institute (PMI)

* The Project Management Institute (PMI) is a premier worldwide not-for-profit association for practitioners in the project management profession and individuals who want to learn more about the profession.
  + Founded in 1969, PMI is approaching 500,000 members in more than 170 countries and has about 270 chapters in more than 80 countries.
  + Has over 30 online communities of practice where peers can collaborate on specific topics of interest
  + Publishes A Guide to the Project Management Body of Knowledge (PMBOK® Guide), which provides a framework of processes and guidelines for the application of project management concepts, practices, and techniques
  + Created the PMI Code of Ethics and Professional Conduct, which sets standards and establishes expectations for professional behavior
  + Offers a certification program that provides the opportunity to earn credentials in various project management disciplines
* Additional and current information about the Project Management Institute can be found at [www.pmi.org](http://www.pmi.org).

### B. Project Management Associations around the Globe

* Many other project management associations exist around the globe.
* Appendix C provides a list of approximately 60 such associations.
* Website addresses can be found on this book’s student companion website, [www.cengagebrain.com](http://www.cengagebrain.com), and through the link found by searching for the ISBN of *Successful Project Management* 6e (from the back cover of the book), using the search box at the top of the page

## 9. Benefits of Project Management

The ultimate benefit of implementing project management techniques is having a satisfied customer—whether you are the customer of your own project, such as remodeling your basement, or a business (contractor) being paid by a customer to perform a project.

* Completing the full project scope in a quality manner, on time, and within budget provides a great feeling of satisfaction and/or referrals for more business
* Project managers have satisfaction, enhanced reputation, and expanded career opportunities
* Project team members have contributed to the project's success, expanded knowledge, and enhanced skills
* When projects are successful, everyone wins!

## 10. Critical Success Factors

* Planning and communication are critical to successful project management. They prevent problems from occurring or minimize their impact on the achievement of the project objective when they do occur.
* Taking the time to develop a well thought-out plan before the start of the project is critical to the successful accomplishment of any project.
* A project must have a clear objective of what is to be accomplished and defined in terms of end product or deliverable, schedule, and budget, and agreed upon by the customer.
* Involve the sponsor or customer as a partner in the successful outcome of the project through active participation during the project.
* Achieving customer satisfaction requires ongoing communication with the customer to keep the customer informed and to determine whether expectations have changed.
* The key to effective project control is measuring actual progress and comparing it to planned progress on a timely and regular basis and taking any needed corrective action immediately.
* After the conclusion of a project, the project performance should be evaluated to learn what could be improved if a similar project were to be done in the future. Feedback should be obtained from the sponsor or customer and the project team.
* Learning and understanding the culture and customs of other project participants will demonstrate respect, help build trust, and aid in developing an effective project team, and it is critical for successful global project management.

## 11. Summary

* A project is an endeavor to accomplish a specific objective through a unique set of interrelated activities and the effective utilization of resources.
* The successful accomplishment of the project objective could be constrained by many factors, including scope, quality, schedule, budget, resources, risks, customer satisfaction, and stakeholder support.
* The project life cycle has four phases: initiating, planning, performing, and closing the project.
* Project management is planning, organizing, coordinating, leading, and controlling resources to accomplish the project objective. The project management process involves two major functions: first establishing a plan and then executing that plan to accomplish the project objective.
* Project stakeholders are individuals and entities involved in, or who may influence, or may be affected by a project. Stakeholder engagement and support is important to the successful performance of a project and accomplishment of the project objective.
* Globalization changes the dynamics of a project and adds a layer of complexity that can adversely affect the project outcome if the project participants are not aware of what they might encounter regarding cultural differences and multinational economic transactions.
* The Project Management Institute is a premier worldwide not-for-profit association for practitioners in the project management profession.
* The ultimate benefit of implementing project management techniques is having a satisfied customer—whether you are the customer of your own project or a business (contractor) being paid by a customer to perform a project.

## Questions

1. Define project.

A project is an endeavor to accomplish a specific objective through a unique set of interrelated activities and the effective utilization of resources.

2. Define the term project objective and give some examples.

A project has a well-defined objective—an expected result or product. The objective of a project is usually defined in terms of scope, schedule, and cost. Furthermore, it is expected that the work scope will be accomplished in a quality manner and to the customer’s satisfaction.

An example is to produce 5,000 two-page, marketing brochures by July 1 for a cost of $15,000.

3. List some examples of resources that are used on a project.

People, equipment, money, materials, etc.

4. What role does a customer have during the project life cycle? Why is it important to satisfy the customer?

The customer should be involved throughout the project life cycle.

The customer is the one who is paying for the project. Unsatisfied customers have been known to withhold payments, never call you again for repeat business, and spread word of their dissatisfaction. On the other hand, a satisfied customer will do the opposite of those things.

5. What aspects of a project might involve some degree of uncertainty? Why?

Many aspects can have some degree of uncertainty, such as the schedule or the budget. An unexpected snowstorm may delay a highway construction project and increased lumber prices may increase the cost of building a new home.

Not everything in a project can be planned, scheduled, or budgeted.

6. Define scope, schedule, cost, and customer satisfaction. Why are these considered to be constraints?

The scope of a project is all the work that must be done in order to satisfy the customer that the deliverables meet the requirements or acceptance criteria agreed upon at the onset of the project.

The cost of a project is the amount the customer has agreed to pay for acceptable project deliverables. The project cost is based on a budget that includes an estimate of the costs associated with the various resources that will be used to accomplish the project.

The schedule for a project is the timetable that specifies when each activity should start and finish. The project objective usually states the time by which the project scope must be completed in terms of a specific date agreed upon by the customer and the individual or organization performing the work.

Customer Satisfaction is the level to which the customer is pleased with the end result of the project.

The objective of any project is to complete the scope within budget by a certain time to the customer’s satisfaction. Any of these four factors can put limitations on the final product.

7. List and describe the main phases of the project life cycle.

The first is the initiating phase, when projects are identified and selected. They are then authorized, using a document referred to as a project charter.

The second phase of the project life cycle is the planning phase and includes defining the project scope, identifying resources, developing a schedule and budget, and identifying risks, all of which make up the baseline plan for doing the project work.

In the third phase, the performing phase, the project plan is executed, and work activities are carried out to produce all the project deliverables and to accomplish the project objective. During this phase, the project progress is monitored and controlled to assure the work remains on schedule and within budget, the scope is fully completed according to specifications, and all deliverables meet acceptance criteria. Also, any changes need to be documented, approved, and incorporated into an updated baseline plan, if necessary.

The final phase of the project life cycle is the closing phase. Project evaluations are conducted, lessons learned are identified and documented to help improve performance on future projects, and project documents are organized and archived.

8. List and describe the steps required to develop a baseline plan.

1. Establish project objective -- clearly define the project objective and have it agreed upon by the sponsor or customer.
2. Define scope -- include customer requirements, define the major work activities or elements, and provide a list of deliverables and associated acceptance criteria that can be used to verify that the work and deliverables meet specifications
3. Create a work breakdown structure -- divide and subdivide the project scope into pieces or work packages.
4. Assign responsibility -- identify the person or organization responsible for each work item in the work breakdown structure
5. Define the specific activities -- develop the list of detailed activities that need to be performed for each work package to produce any required deliverables.
6. Sequence activities -- graphically portray the activities in a network diagram to display the sequence and dependent relationships of the detailed activities.
7. Estimate activity resources -- determine which types and skills or expertise of resources and how many of each resource are needed for each activity with consideration of the availability of the resources.
8. Estimate activity durations -- make a time estimate for how long it will take to complete each activity, based on the estimate of the resources that will be applied.
9. Develop the project schedule -- develop the overall project schedule, including when each activity is expected to start and finish, as well as the latest times that each activity must start and finish in order to complete the project by the project required completion date.
10. Estimate activity costs -- determine the costs for the types and quantities of resources estimated for each activity using the appropriate labor cost rate or unit cost for each type of resource.
11. Determine budget -- aggregate the cost estimates for each activity.

9. Why must a manager monitor the progress of a project? What can be done if a project is not proceeding according to plan?

A manager must monitor progress to ensure that everything is going according to plan. It is also necessary to measure actual progress and compare it to planned progress.

If at any time during the project the comparison of actual to planned progress reveals that the project is behind schedule, overrunning the budget, or not meeting the technical specifications, corrective action must be taken to get the project back on track within the scope, schedule, and budget constraints of the project objective. These actions include adding or changing resources to make up time and get back on schedule.

10. Think of a project in which you were involved and identify the stakeholders and what “stake” each had in the project.

Answers to this question will vary depending on the student. Check responses to be sure they include the individuals and entities involved in, or who may influence, or may be affected by a project and what stake each had in the project.

11. Describe how a global project can be more complex than a project performed within just one country. How might these elements affect the successful outcome of the global project?

Global projects have several unique influencing factors such as currency fluctuations and exchange rates, country-specific work codes and regulations, corporate joint ventures and partnerships creating entities with a presence and facilities in multiple countries, political relations between countries, and availability of high-demand workforce skills.

Globalization changes the dynamics of the project and adds a layer of complexity that can adversely affect the project outcome if the project participants are not aware of what they might encounter in the way of cultural differences and multinational economic transactions.

12. List some benefits of using project management techniques.

* The ultimate benefit of implementing project management techniques is having a satisfied customer.
* Completing the full project scope in a quality manner, on time, and within budget provides a great feeling of satisfaction.
* It could lead to additional business.
* Successful projects can expand career opportunities.
* A feeling of satisfaction comes from being on a winning team.
* Project management can expand knowledge, enhance skills, and make it easier to undertake more complicated projects.
* When projects are successful, everybody wins!

13. Consider a project in which you are currently involved (or in which you have recently been involved).

a. Describe the objectives, scope, schedule, cost, and any assumptions made.

b. Where are you in the project life cycle?

c. Does this project have a baseline plan? If yes, describe it. If not, create it.

d. Are you or is anyone else monitoring the progress of the project? If so, how? If not, how could you do so?

e. Describe some unexpected circumstances that could jeopardize the success of the project.

f. Describe the anticipated benefits of the project.

Answers to this question will vary depending on the student. Check responses to be sure they include the definition of a project, an endeavor to accomplish a specific objective through a unique set of interrelated activities and the effective utilization of resources.

## Internet Exercises

The Internet Exercises can be a very valuable part of this course. Assignment of these exercises to your students as homework or complete them with students in a computer lab reinforces the concepts in the chapter and exposes the students to additional resources that are available through the Internet. Examination of broad field of project management will reinforce the growth of the project management field. Many organizations are realizing the value of employees having project management training and certifications. Exploration of the project management information could motivate the students to seek additional education or certifications.

## Case Study #1 A Not-For-Profit Organization

This case study involves a meeting of the officers of the student community service organization that collects, buys, and distributes food for the needy. Their funds are almost exhausted and the demand for service is growing.

### Answers to Case Questions

1. What are the needs that have been identified?

The students need to find a way to get more funds.

They need more volunteers.

They need more space.

Some students may point out that they don't have a project plan for how to spend their current funding and need a project plan for their current work.

2. What is the project objective?

At this point they don’t all agree on the objective.

3. What assumptions, if any, should be made regarding the project to be undertaken?

You must always be careful when making assumptions. However, the following statements are made in the case study. Some may or may not actually be true.

* The service organization will run out of funds in two months.
* The local government is not able to provide additional funds.
* The demand for assistance is increasing.
* The volunteers need more space and more volunteers.
* They get some food donations, but maybe not on a regular basis.

4. What are the risks involved in the project?

If the statements in the story are true, then the risk of not succeeding with this project is that the organization will have to shut down and members of the community in need of food will not have this student community service organization as a source of assistance.

### Group Activity

Many community service organizations are facing the same issues as this student community service organization: need for additional funds for operation, need for more volunteers, and need for more donations. Having students learn about how not-for-profit organizations plan their projects and complete funding and donation requests will provide an rich learning opportunity and insight into project management that can only be learned through experience and direct observation.

## Case Study #2 E-Commerce for a Small Supermarket

This case study involves a small supermarket in a rural town with a large and growing elderly population. The owners are discussing the possibility of putting their operation online.

### Answers to Case Questions

1. What are the needs that have been identified?

The owners believe that putting their grocery store on-line will bring increased sales. They also need to repave the parking lot.

2. What is the project objective?

At this point, Matt and Grace haven't decided. They have an idea to create an online ordering site or just have a page with a picture of themselves and the market.

3. What are some things Matt and Grace should do before they talk with the consultant?

They must list and possibly test some of their assumptions. You must always be careful when making assumptions. However, the following statements are made in the case study. Some may or may not actually be true.

* Matt and Grace can increase sales by putting their operation online.
* There is a demand for online services.
* The benefits of doing this will outweigh the costs.

Matt and Grace also need to determine the motivations of the consultant. They need to find out whether the consultant is selling services for web development or is a technical assistance specialist who will provide well-informed suggestions.

4. What should the consultant tell Matt and Grace?

An honest consultant would determine the feasibility of this project. It might very well not be feasible, but it is very possible that the consultant will just give them a price for building the system.

### Group Activity

Have two students act out the parts of Matt and Grace. Then role-play the interaction with the consultant to let Matt and Grace ask questions. Be sure to have the students focus on the needs identification step of the potential project for the store.

### Optional Activity

Have each course participant, or small groups, contact a business that went online and ask the business what led it to that decision and whether the project met its initial expectations.

## Optional Supplemental Activities

1. Contact a local not-for-profit organization in your community. Tell them that you are interested in learning about their operations. Ask them to describe a project they are currently working on. What is the objective? What are the constraints? The resources? The budget? The schedule? If possible, have each team contribute a few hours to the project. Through this process they will be helping someone in need and learning about a real-world project at the same time. Have each group prepare a report that summarizes the project and what they learned from this experience. Give them about three weeks for this effort.
2. Have a project manager be a guest lecturer in class to present the benefits of project management techniques. If the project manager has had international experience, have him or her discuss the complexity of managing an international project.