Chapter 11:
Project Risk Management

Information Technology Project Management

Learning Objectives

- Understand what risk is and the importance of good project risk management
- Discuss the elements involved in risk management planning and the contents of a risk management plan
- List common sources of risks in information technology projects

Learning Objectives (continued)

- Describe the risk identification process, tools and techniques to help identify project risks, and the main output of risk identification: a risk register
- Discuss the qualitative risk analysis process and explain how to calculate risk factors, create probability/impact matrixes, and apply the Top Ten Risk Item Tracking technique to rank risks

Learning Objectives (continued)

- Explain the quantitative risk analysis process and how to apply decision trees, simulation, and sensitivity analysis to quantify risks
- Provide examples of using different risk response planning strategies to address both negative and positive risks
- Discuss what is involved in risk monitoring and control
- Describe how software can assist in project risk management

The Importance of Project Risk Management

- Project risk management is the art and science of identifying, analyzing, and responding to risk throughout the life of a project and in the best interests of meeting project objectives

- Risk management is often overlooked in projects, but it can help improve project success by helping select good projects, determining project scope, and developing realistic estimates

Research Shows Need to Improve Project Risk Management

- Study by Ibbs and Kwak shows risk has the lowest maturity rating of all knowledge areas
- A similar survey was completed with software development companies in Mauritius, South Africa in 2003, and risk management also had the lowest maturity
- KLCI study shows the benefits of following good software risk management practices

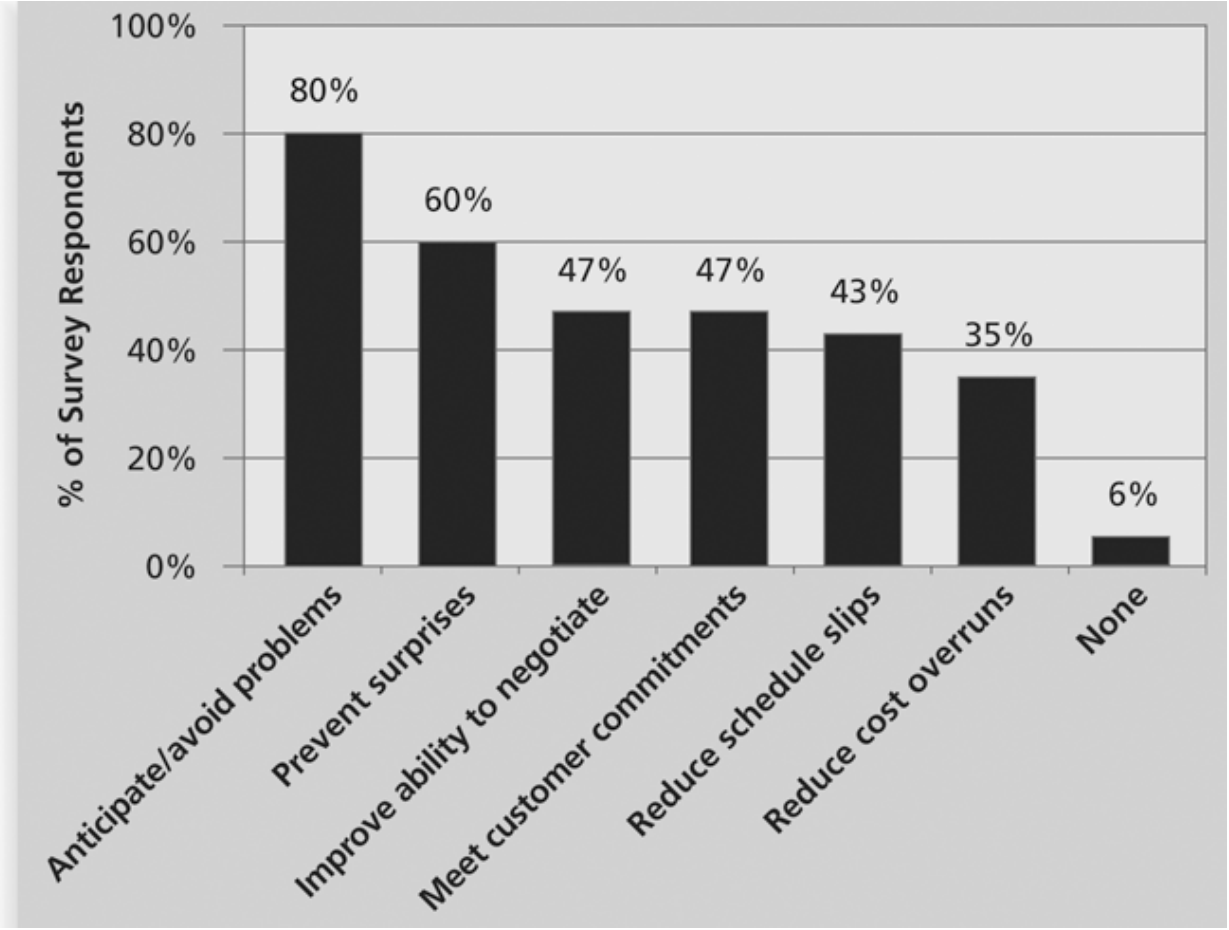
Table 11-1: Project Management Maturity by Industry Group and Knowledge Area*

KEY: 1 = LOWEST MATURITY RATING **5 = HIGHEST MATURITY RATING**

Knowledge Area	Engineering/ Construction	Telecommunications	Information Systems	Hi-Tech Manufacturing
Scope	3.52	3.45	3.25	3.37
Time	3.55	3.41	3.03	3.50
Cost	3.74	3.22	3.20	3.97
Quality	2.91	3.22	2.88	3.26
Human Resources	3.18	3.20	2.93	3.18
Communications	3.53	3.53	3.21	3.48
Risk	**2.93**	**2.87**	**2.75**	**2.76**
Procurement	3.33	3.01	2.91	3.33

*Ibbs, C. William and Young Hoon Kwak. "Assessing Project Management Maturity," *Project Management Journal* (March 2000).

Figure 11-1: Benefits from Software Risk Management Practices*



*Kulik, Peter and Catherine Weber, "Software Risk Management Practices – 2001," KLCI Research Group (August 2001).

Negative Risk

- A dictionary definition of risk is "the possibility of loss or injury"
- Negative risk involves understanding potential problems that might occur in the project and how they might impede project success
- Negative risk management is like a form of insurance; it is an investment

Risk Can Be Positive

- Positive risks are risks that result in good things happening; sometimes called opportunities
- A general definition of project **risk** is an uncertainty that can have a negative or positive effect on meeting project objectives
- The goal of project risk management is to minimize potential negative risks while maximizing potential positive risks

Best Practice

- Some organizations make the mistake of only addressing tactical and negative risks when performing project risk management
- David Hillson (*www.risk-doctor.com) suggests* overcoming this problem by widening the scope of risk management to encompass both *strategic risks* and *upside opportunities,* which he refers to as *integrated risk management*

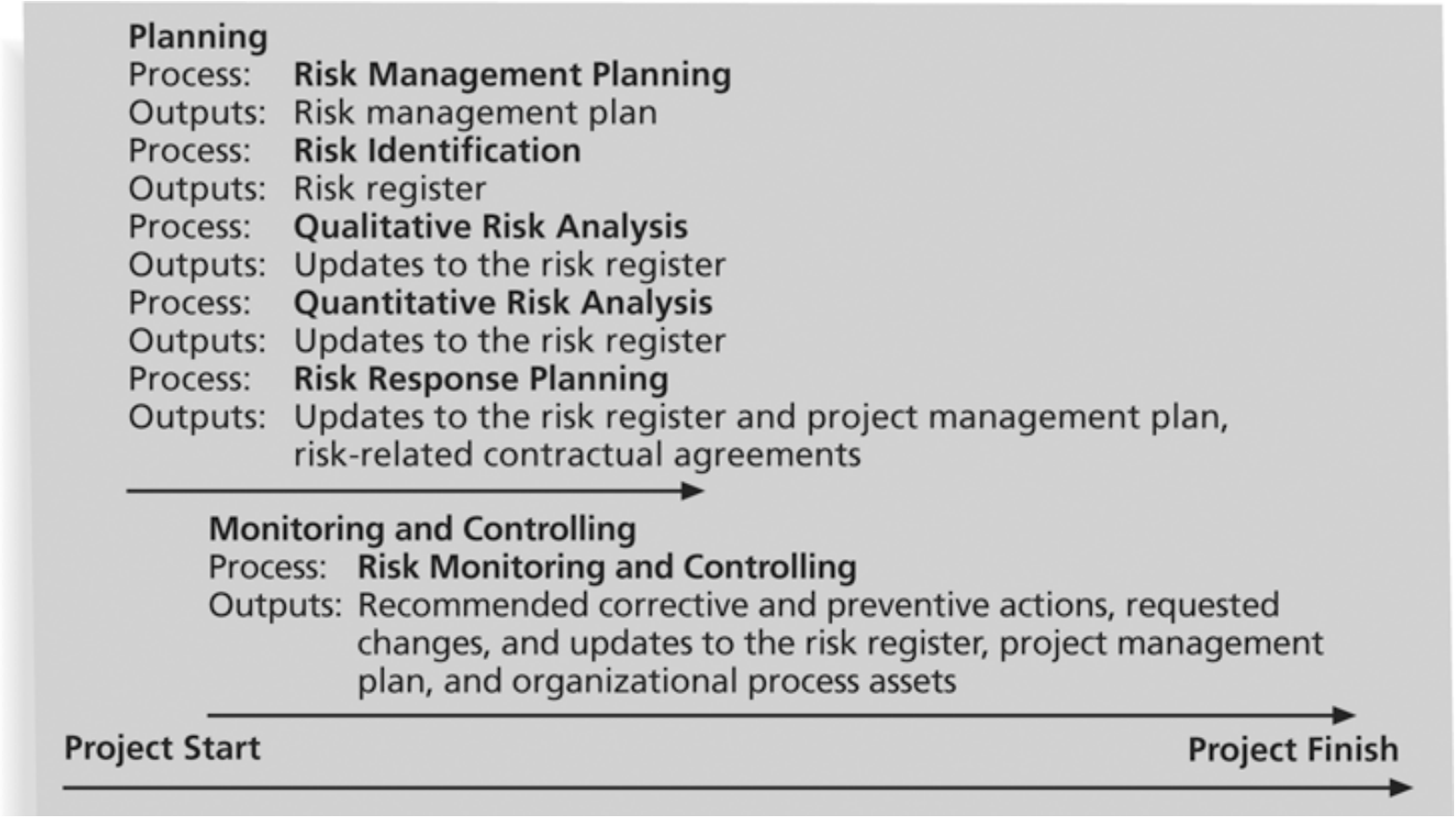
Project Risk Management Processes

- **Risk management planning**: deciding how to approach and plan the risk management activities for the project
- **Risk identification**: determining which risks are likely to affect a project and documenting the characteristics of each
- **Qualitative risk analysis**: prioritizing risks based on their probability and impact of occurrence

Project Risk Management Processes (continued)

- **Quantitative risk analysis**: numerically estimating the effects of risks on project objectives
- **Risk response planning**: taking steps to enhance opportunities and reduce threats to meeting project objectives
- **Risk monitoring and control**: monitoring identified and residual risks, identifying new risks, carrying out risk response plans, and evaluating the effectiveness of risk strategies throughout the life of the project

Figure 11-3: Project Risk Management Summary



Risk Management Planning

- The main output of risk management planning is a **risk management plan**—a plan that documents the procedures for managing risk throughout a project
- The project team should review project documents and understand the organization's and the sponsor's approaches to risk
- The level of detail will vary with the needs of the project

Table 11-2: Topics Addressed in a Risk Management Plan

- Methodology
- Roles and responsibilities
- Budget and schedule
- Risk categories
- Risk probability and impact
- Risk documentation

Contingency and Fallback Plans, Contingency Reserves

- **Contingency plans** are predefined actions that the project team will take if an identified risk event occurs
- **Fallback plans** are developed for risks that have a high impact on meeting project objectives, and are put into effect if attempts to reduce the risk are not effective
- **Contingency reserves** or **allowances** are provisions held by the project sponsor or organization to reduce the risk of cost or schedule overruns to an acceptable level

Common Sources of Risk in Information Technology Projects

- Several studies show that IT projects share some common sources of risk
- The Standish Group developed an IT success potential scoring sheet based on potential risks
- Other broad categories of risk help identify potential risks

Table 11-3: Information Technology Success Potential Scoring Sheet

Success Criterion	**Relative Importance**
User Involvement	19
Executive Management support	16
Clear Statement of Requirements	15
Proper Planning	11
Realistic Expectations	10
Smaller Project Milestones	9
Competent Staff	8
Ownership	6
Clear Visions and Objectives	3
Hard-Working, Focused Staff	3
Total	**100**

Broad Categories of Risk

- Market risk
- Financial risk
- Technology risk
- People risk
- Structure/process risk

What Went Wrong?

- KPMG, a large consulting firm, published a study in 1995 that found that 55 percent of **runaway** projects—projects that have significant cost or schedule overruns—did *no risk* management at all; 38 percent did some (but half did not use their risk findings after the project was underway); and 7 percent did not know whether they did risk management or not
- The timing of risk management is also an important consideration

Risk Breakdown Structure

- A **risk breakdown structure** is a hierarchy of potential risk categories for a project
- Similar to a work breakdown structure but used to identify and categorize risks

Figure 11-4: Sample Risk Breakdown Structure

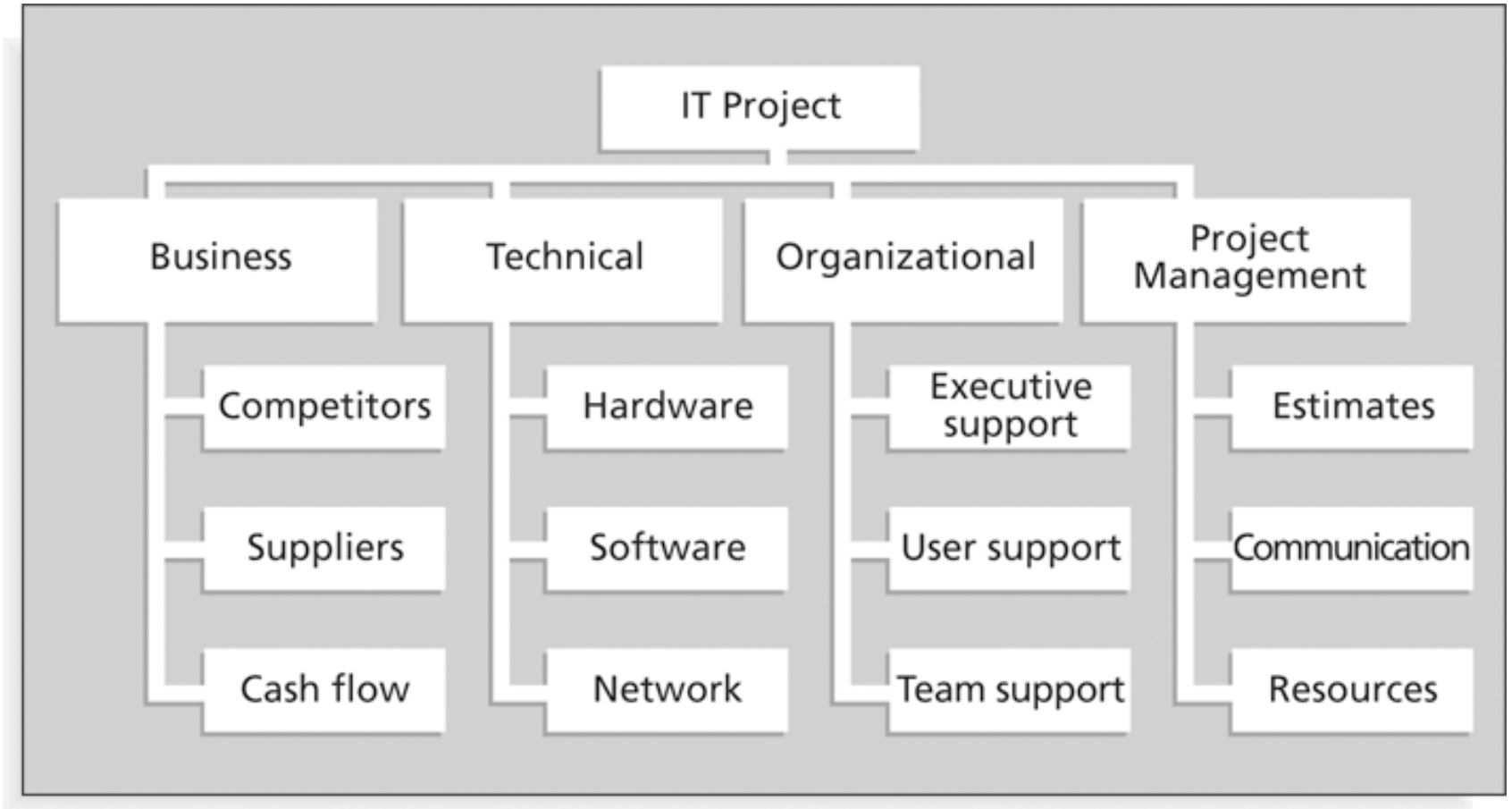


Table 11-4: Potential Negative Risk Conditions Associated With Each Knowledge Area

Knowledge Area	Risk Conditions
Integration	Inadequate planning; poor resource allocation; poor integration management; lack of post-project review
Scope	Poor definition of scope or work packages; incomplete definition
Time	Errors in estimating time or resource availability; errors in determining the critical path; poor allocation and management of float; early release of competitive products
Cost	Estimating errors; inadequate productivity, cost, change, or contingency
Quality	Poor attitude toward quality; substandard design/materials/workmanship; inadequate quality assurance program
Human Resources	Poor conflict management; poor project organization and definition of responsibilities; absence of leadership
Communications	Carelessness in planning or communicating; lack of consultation with key stakeholders
Risk	Ignoring risk; unclear analysis of risk; poor insurance management
Procurement	Unenforceable conditions or contract clauses; adversarial relations

Risk Identification

- **Risk identification** is the process of understanding what potential events might hurt or enhance a particular project
- Risk identification tools and techniques include:
  - Brainstorming
  - The Delphi Technique
  - Interviewing
  - SWOT analysis

Brainstorming

- **Brainstorming** is a technique by which a group attempts to generate ideas or find a solution for a specific problem by amassing ideas spontaneously and without judgment
- An experienced facilitator should run the brainstorming session
- Be careful not to overuse or misuse brainstorming
  - Psychology literature shows that individuals produce a greater number of ideas working alone than they do through brainstorming in small, face-to-face groups
  - Group effects often inhibit idea generation

Delphi Technique

- The **Delphi Technique** is used to derive a consensus among a panel of experts who make predictions about future developments
- Provides independent and anonymous input regarding future events
- Uses repeated rounds of questioning and written responses and avoids the biasing effects possible in oral methods, such as brainstorming

Interviewing

- **Interviewing** is a fact-finding technique for collecting information in face-to-face, phone, e-mail, or instant-messaging discussions

- Interviewing people with similar project experience is an important tool for identifying potential risks

SWOT Analysis

- SWOT analysis (strengths, weaknesses, opportunities, and threats) can also be used during risk identification

- Helps identify the broad negative and positive risks that apply to a project