Chapter 11: Project Risk Management

Information Technology Project Management, Sixth Edition

Note: See the text itself for full citations.

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 process of identifying risks and be able to create 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 monitoring and controlling risks

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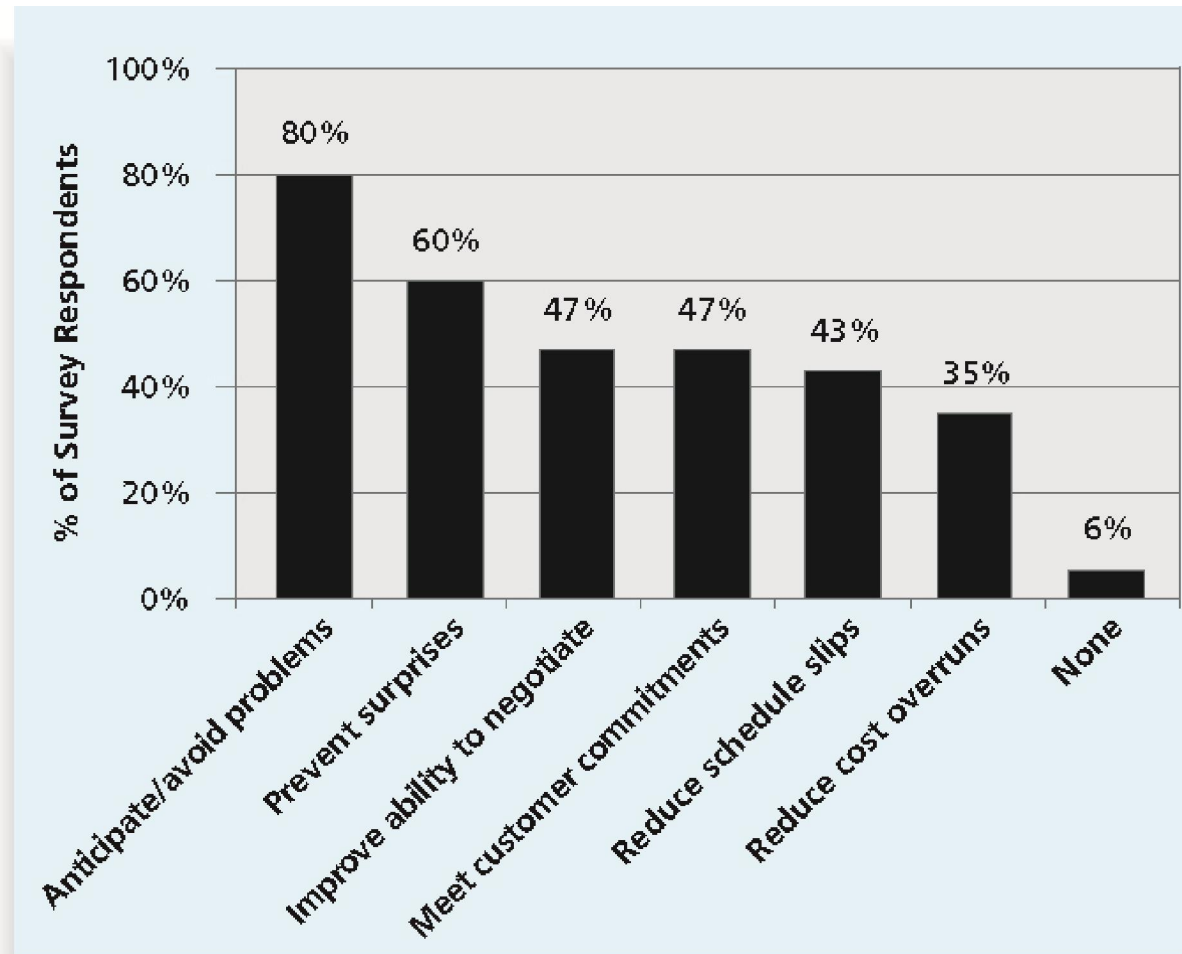
*Kulik, Peter and Catherine Weber, "Software Risk Management Practices – 2001," KLCI Research Group (August 2001).

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

Risk Utility

- **Risk utility** or **risk tolerance** is the amount of satisfaction or pleasure received from a potential payoff

  - Utility rises at a decreasing rate for people who are risk-averse

  - Those who are risk-seeking have a higher tolerance for risk, and their satisfaction increases when more payoff is at stake

  - The risk-neutral approach achieves a balance between risk and payoff

Figure 11-2. Risk Utility Function and Risk Preference

Risk-Averse — utility / potential payoff

Risk-Neutral — utility / potential payoff

Risk-Seeking — utility / potential payoff
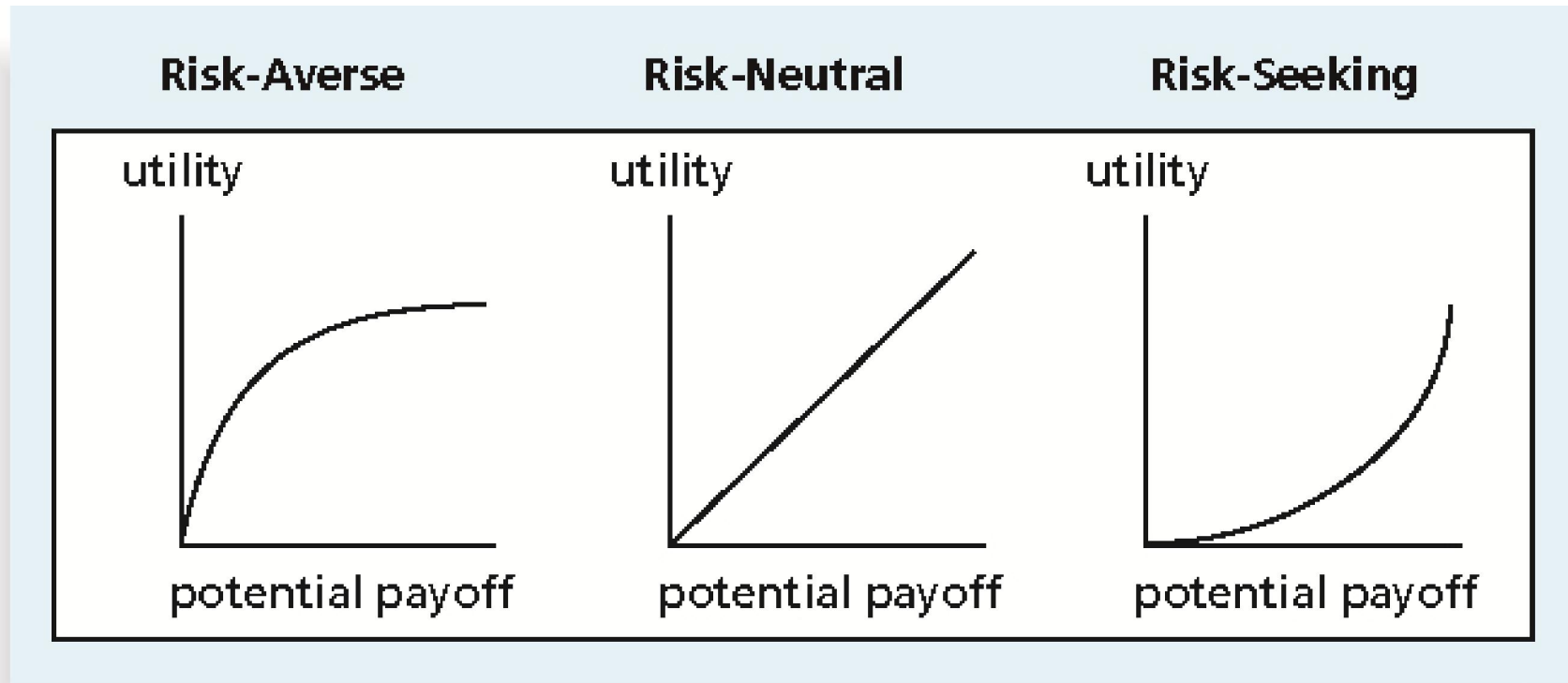
Project Risk Management Processes

▸ **Planning risk management**: deciding how to approach and plan the risk management activities for the project

▸ **Identifying risks**: determining which risks are likely to affect a project and documenting the characteristics of each

▸ **Performing qualitative risk analysis**: prioritizing risks based on their probability and impact of occurrence

Project Risk Management Processes (continued)

- **Performing quantitative risk analysis**: numerically estimating the effects of risks on project objectives

- **Planning risk responses**: taking steps to enhance opportunities and reduce threats to meeting project objectives

- **Monitoring and controlling risks**: 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

Planning
Process: **Plan risk management**
Output: Risk management plan
Process: **Identify risks**
Output: Risk register
Process: **Perform qualitative risk analysis**
Output: Risk register updates
Process: **Perform quantitative risk analysis**
Output: Risk register updates
Process: **Plan risk responses**
Outputs: Risk register updates, risk-related contract decisions, project management plan updates, project document updates

Monitoring and Controlling
Process: **Monitor and control risks**
Outputs: Risk register updates, organizational process assets updates, change requests, project management plan updates, project document updates

Project Start   Project Finish

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

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
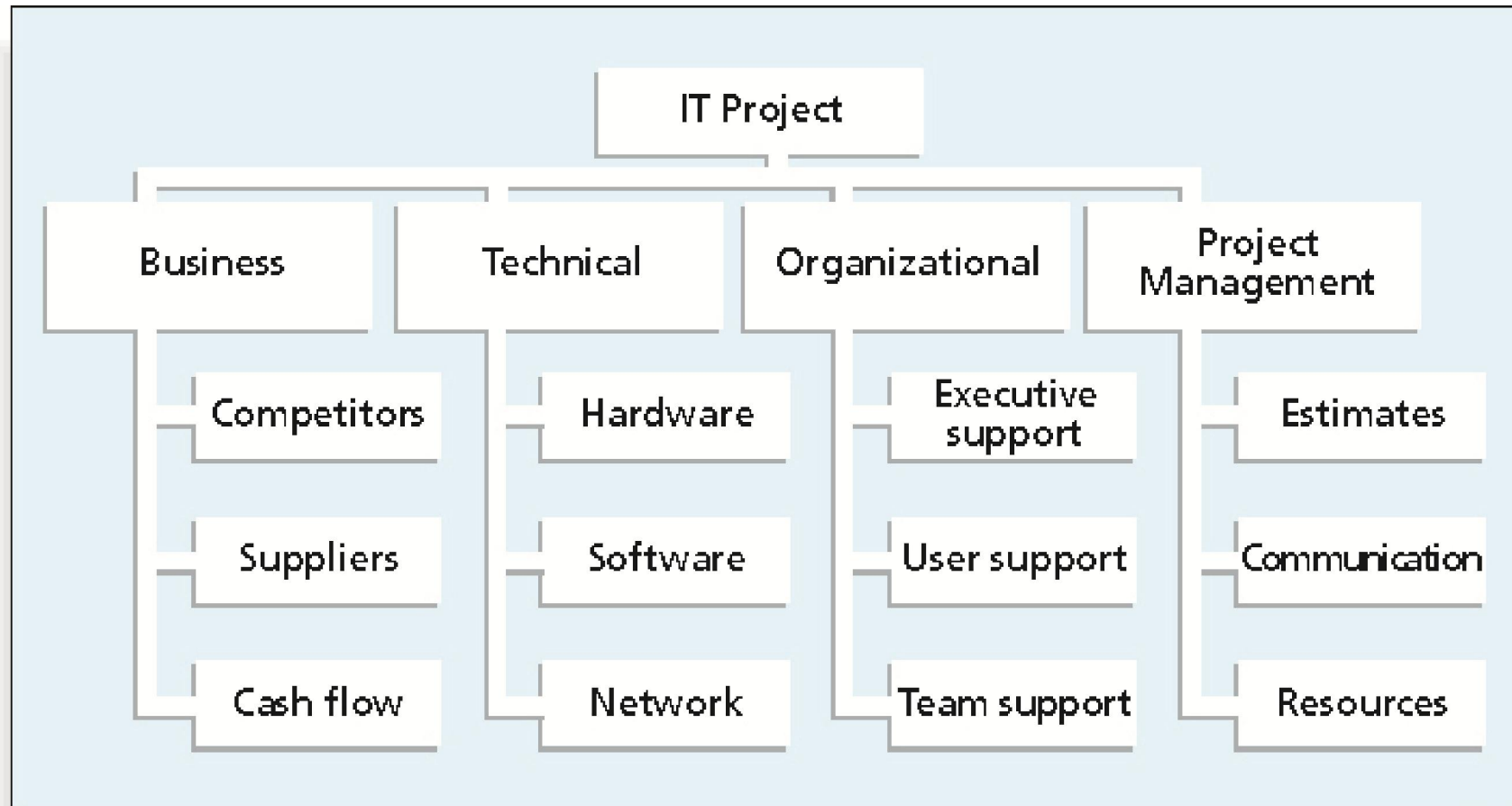
Figure 11-4. Sample Risk Breakdown Structure

Risk Breakdown Structure:
- **IT Project**
  - **Business**
    - Competitors
    - Suppliers
    - Cash flow
  - **Technical**
    - Hardware
    - Software
    - Network
  - **Organizational**
    - Executive support
    - User support
    - Team support
  - **Project Management**
    - Estimates
    - Communication
    - Resources

Information Technology Project Management, Sixth Edition

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

Identifying Risks

▸ Identifying risks 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 without judgment
- An experienced facilitator should run the brainstorming session
- Be careful not to overuse or misuse brainstorming