



Chapter 9

Project Procurement Management

Department of Informatics Engineering

Monika Hidayanti, S.Si., M.T.
Department of Mathematics
FMIPA Universitas Padjadjaran

9.1 The Importance of Project Procurement Management



- **Procurement** means acquiring goods and services from an outside source. The term *procurement* is widely used in government; many private companies use the terms *purchasing* and *outsourcing*.
- Organizations or individuals who provide procurement services are referred to as suppliers, vendors, contractors, subcontractors, or sellers; of these terms, *suppliers* is the most widely used.



- The Project Management Institute defines an outside source as a source outside the project team, so the same organisation can be a supplier to the project team, or the project team can be a supplier to another group in the organisation.
- Outsourcing is a hot topic for research and debate, especially the implications of outsourcing to other countries, which is called offshoring.



Gartner estimated the value of the global IT industry to reach \$3.7 trillion, an increase of 4 percent from 2017. The largest spending category is communications services at 39 percent of the total or about \$1.4 trillion.

According to a study by Deloitte, the outsourcing market continues to grow:

- Outsourcing more mature business functions such as IT, human resources, and finance continued to grow, as did additional functions, like real estate, facilities management, and procurement.



- Survey respondents cited the top reasons for outsourcing as cost cutting, focusing on core business, and solving capacity issues.
- “Companies are redefining the benefits of outsourcing by asking their service providers to add value in ways beyond cost cutting, such as enabling mergers and acquisitions (M&A activity, providing needed capacity, and advancing functional capabilities).”



Global Issue

- A recent approach to bringing IT jobs back to the U.S. is called urban onshoring. Software testing in particular has sparked several organizations to work together to meet the need for jobs in low income, high unemployment urban areas, improve quality and efficiency, and reduce overseas costs.



Example:

Doran Jones Inc., a startup consulting firm that does testing work for banks and media companies in Manhattan, partnered with Per Scholas to create the first Urban Development Center (UDC) for software testing projects. The UDC model develops the infrastructure, resources, and jobs in low-income urban neighborhoods as part of a company's Corporate Social Responsibility strategy. Per Scholas is the oldest and largest professional IT workforce development program in New York City. They provide technology education, training, and job placement services for over 4,500 unemployed and low-income adults.



Several start-up companies are applying similar models in an effort to improve bleak neighborhoods, like Hunts Point in the South Bronx. Startup Box, founded by husband and wife team Majora Carter and James Chase, is initially focusing on quality assurance testing for games and apps like Game Chaser. To recruit testers, they hold gaming tournaments in and around Hunts Point and provide feedback on the games to developers, similar to a focus group.



Doran Jones Inc. and Startup Box do not want their work to be viewed as charity projects. “As offshoring becomes more and more problematic in the ever-changing tech world ... on-shoring is a major market opportunity. They can make outsourcing more efficient and diversify the talent pipeline in tech, in addition to bringing some much needed jobs back to the US. Both Startup Box and Doran Jones have plans to replicate this urban on shoring thing in other cities.”



- Politicians debate whether offshoring helps their own country or not.
- Andy Bork, chief operating officer of a computer network service provider, described outsourcing as an essential part of a healthy business diet. He described the idea of good versus bad outsourcing as something like good versus bad cholesterol. He said that most people view offshoring as being bad because it takes jobs away from domestic workers. However, many companies are realizing that they can use offshoring *and* create more jobs at home.



- Other companies, like Walmart, successfully manage the majority of their IT projects in-house with very little commercial software and no outsourcing at all.
- Other organisations are moving IT services back in-house, such as General Motors (GM). Randy Mott, the CIO of GM and former CIO of Walmart, Dell, and Hewlett-Packard, overhauled GM's IT operations and switched from outsourcing 90 percent of its IT services to only 10 percent from 2012 to 2015.



What went Right?

Retailer Zulily, a \$1.5 billion company that celebrated its eight birthday in 2018, is one of a growing number of organizations developing software in-house to meet their need for speed and innovation. CIO Luke Friang said it would be nearly impossible for off-the-shelf software to keep up with their pace. Zulily offers flash sales where items are available for limited times only, and its website technology to track and customize the shopping experience are an essential part of their business strategy. Other companies gaining competitive advantages by developing innovative, in-house software include General Motors and Tesla Motors Inc.



Zulily developed proprietary algorithms that track customers throughout the site and quickly make adjustments to meet changing consumer preferences. The retailer, based in Seattle, sends customers e-mails containing deals targeted to what they've bought from the site and to their page viewing patterns.

Under Friang's leadership for over seven years, the technology team has grown 20-fold. "We're currently making huge investments in our Big Data platform, our AWS migration and our proprietary warehouse management software," Friang said. "We're looking to make significant technology hires this year—currently hiring across product, data science, supply chain and operations."*



Deciding whether to outsource, what to outsource, and how to outsource are important topics for many organisations throughout the world. Organisations are turning to outsourcing to accomplish the following:

- *Access skills and technologies.* Organizations can gain access to specific skills and technologies when they are required by using outside resources.



- *Reduce both fixed and recurrent costs.* Outsourcing suppliers often can use economies of scale that may not be available to the client alone, especially for hardware and software.

It can also be less expensive to outsource some labor costs to other organizations in the same country or offshore.

Companies can use outsourcing to reduce labor costs on projects by avoiding the costs of hiring, firing, and reassigning people to projects or paying their salaries when they are between projects.



- *Allow the client organisation to focus on its core business.* Most organisations are not in business to provide IT services, yet many have spent valuable time and resources on IT functions when they should have focused on core competencies such as marketing, customer service, and new product design. By outsourcing many IT functions, employees can focus on jobs that are critical to the success of the organisation.



- *Provide flexibility.* Outsourcing to provide extra staff during periods of peak workloads can be much more economical than trying to staff entire projects with internal resources. Many companies cite better flexibility in staffing as a key reason for outsourcing.
- *Increase accountability.* A well-written **contract** —a mutually binding agreement that obligates the seller to provide specified products or services and obligates the buyer to pay for them— can clarify responsibilities and sharpen focus on key deliverables of a project. Because contracts are legally binding, there is more accountability for delivering the work as stated in the contract.



- Organizations must also consider reasons they might *not* want to outsource. When an organisation outsources work, it often does not have as much control over the aspects of projects that suppliers carry out. In addition, an organization could become too dependent on particular suppliers.
- If those suppliers went out of business or lost key personnel, it could cause great damage to a project. Organizations must also be careful to protect strategic information that could become vulnerable in the hands of suppliers.



- Project teams must think carefully about procurement issues and make wise decisions based on the unique needs of their projects and organisations. They must also be aware of political issues.



- Outsourcing can also cause problems in other areas for companies and nations as a whole.
- For example, in 2004 many people in Australia were concerned about outsourcing software development. “The Australian Computer Society says sending work offshore may lower the number of students entering IT courses, deplete the number of skilled IT professionals, and diminish the nation’s strategic technology capability.

Another issue is security, which encompasses the protection of intellectual property, integrity of data, and the reliability of infrastructure in offshore locations.”



- The success of many IT projects that use outside resources is often due to good project procurement management.
- **Project procurement management** includes the processes required to acquire goods and services for a project from outside the performing organisation. Organisations can be either the buyer or the seller of products or services under a contract or other agreement.



There are three main processes in project procurement management:

1) *Planning procurement management* involves determining what to procure and when and how to do it. In procurement planning, one must decide what to outsource, determine the type of contract, and describe the work for potential sellers.

Sellers are providers, contractors, or suppliers who provide goods and services to other organizations. Outputs of this process include a procurement management plan, procurement strategy, bid documents, procurement statement of work, source selection criteria, make-or-buy decisions, independent cost estimates, change request, project documents updates, and organizational process assets updates.



- 2) *Conducting procurements* involves obtaining seller responses, selecting sellers, and awarding contracts. Outputs include selected sellers, agreements, change requests, and updates to the project management plan, project documents, and organizational process assets.
- 3) *Controlling procurements* involves managing relationships with sellers, monitoring contract performance, making changes as appropriate, and closing out contracts. The main outputs of this process include closed procurements, work performance information, procurement documentation updates, change requests, project management plan updates, project documents updates, and organizational process assets.

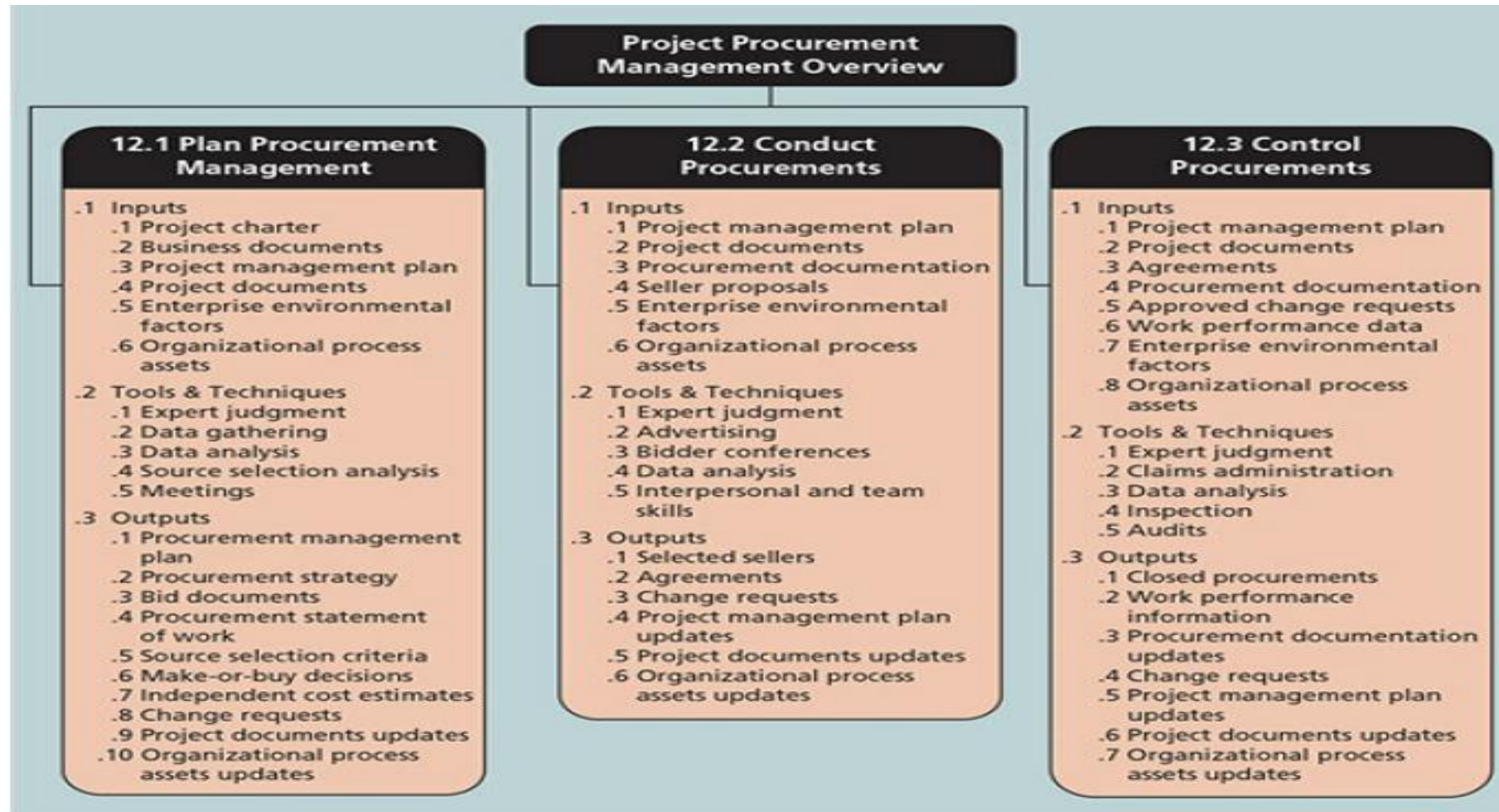


Figure 9.1 Project procurement management overview



9.2 Planning Procurement Management

- Planning procurements involves identifying which project needs can best be met by using products or services outside the organisation. It involves deciding whether to procure, how to procure, what to procure, how much to procure, and when to procure.
- An important output of this process is the **make-or-buy decision**, in which an organization decides whether it should make certain products and perform certain services inside the organization, or if it is better to buy those products and services from an outside organisation. If there is no need to buy products or services from outside the organization, then further procurement management is not needed.



- Inputs needed for planning procurements include the project charter, business documents, the project management plan, project documents enterprise environmental factors, and organisational process assets, such as types of contracts.



9.2.1 Types of Contracts

- Contract type is an important consideration in procurement management. Different types of contracts can be used in different situations.
- Three broad categories of contracts are fixed price or lump sum, cost reimbursable, and time and material.
- A single contract can actually include all three of these categories if it makes sense for a particular procurement.



- 1) **Fixed-price or lump-sum contracts** involve a fixed total price for a well-defined product or service. The buyer incurs little risk in this situation because the price is predetermined. The sellers often pad their estimate to reduce their risk, although they realize their price must still be competitive.

For example, a company could award a fixed-price contract to purchase 100 laser printers with a certain print resolution and print speed to be delivered to one location within two months. In this example, the product and delivery date are well defined. Several sellers could create fixed-price estimates for completing the job. Fixed-price contracts may also include incentives for meeting or exceeding selected project objectives. For example, the contract could include an incentive fee paid if the laser printers are delivered within one month.



- A firm-fixed-price (FFP) contract has the least amount of risk for the buyer, followed by a fixed-price incentive fee (FPIF) contract. A fixed-price with economic price adjustment contract (FP-EPA) includes a special provision for predefined final adjustments to the contract price due to changes in conditions such as inflation or the cost of specific commodities. An FP-EPA contract is intended to protect both the buyer and seller from external conditions beyond their control.



- Contracts can also include incentives to prevent or reduce cost overruns.
- For example, according to the U.S. Federal Acquisition Regulation (FAR) 16.4, fixed-price incentive fee contracts can include a **Point of Total Assumption (PTA)** , which is the cost at which the contractor assumes total responsibility for each additional dollar of contract cost.

Contractors do not want to reach the PTA because it hurts them financially, so they have an incentive to prevent cost overruns.



The PTA is calculated with the following formula:

$$\text{PTA} = (\text{ceiling price} - \text{target price}) / \text{government share} + \text{target cost}$$

For example, given the following information, and assuming that all dollar amounts are in thousands, the PTA will be \$1.2 million:

Ceiling price = \$1,250

Target price = \$1,100

Target cost = \$1,000



Government share: 75 percent

$$PTA = (\$1,250 - \$1,100)/.75 + \$1,000 = \$1,200$$



- 2) **Cost-reimbursable contracts** involve payment to the supplier for direct and indirect actual costs.

Recall from previous chapter that direct costs can be directly related to producing a project's products and services.

Normally, these costs can be traced back to a project in a cost-effective way. Indirect costs are not directly related to the products or services of the project, but they are indirectly related to performing the project. Normally, these costs cannot be traced back to the project in a cost-effective way.



- For example, direct costs include the salaries for people working directly on a project and hardware or software purchased for a specific project. Indirect costs include the cost of providing a work space with electricity and an employee cafeteria. Indirect costs are often calculated as a percentage of direct costs. Cost reimbursable contracts often include fees, such as a profit percentage or incentives for meeting or exceeding selected project objectives. These contracts are often used for projects that include providing goods and services that involve new technologies. The buyer absorbs more of the risk with cost-reimbursable contracts than with fixed-price contracts.



- Three types of cost-reimbursable contracts, in order of lowest to highest risk to the buyer, include cost plus incentive fee, cost plus fixed fee, and cost plus percentage of costs.
- 1. With a **cost plus incentive fee (CPIF) contract** , the buyer pays the supplier for allowable costs (as defined in the contract) along with a predetermined fee and an incentive bonus.



- Example of providing financial incentives to complete an important construction project ahead of schedule. Also, incentives are often provided to suppliers for reducing contract costs. If the final cost is less than the expected cost, both the buyer and the supplier benefit from the cost savings, according to a negotiated share formula.
- For example, suppose that the expected cost of a project is \$100,000, the fee to the supplier is \$10,000, and the share formula is 85/15, meaning that the buyer absorbs 85 percent of the uncertainty and the supplier absorbs 15 percent. If the final cost is \$80,000, the cost savings are \$20,000. The supplier would be paid the final cost and the fee plus an incentive of \$3,000 (15 percent of \$20,000), for a total reimbursement of \$93,000.



2. With a **cost plus fixed fee (CPFF) contract** , the buyer pays the supplier for allowable costs (as defined in the contract) plus a fixed fee payment that is usually based on a percentage of estimated costs. This fee does not vary, however, unless the scope of the contract changes. For example, suppose that the expected cost of a project is \$100,000 and the fixed fee is \$10,000. If the actual cost of the contract rises to \$120,000 and the scope of the contract remains the same, the contractor will still receive the fee of \$10,000.



3. With a **cost plus award fee (CPAF) contract** , the buyer pays the supplier for allowable costs (as defined in the contract) plus an award fee based on the satisfaction of subjective performance criteria. A tip or gratuity that you would give a server in a restaurant would qualify as a simple example, as long as there is no set gratuity percentage. You still pay for the cost of your meal, but you can decide on the tip amount based on your satisfaction with the food, drinks, and service provided. This type of contract is not usually subject to appeals.



4. With a **cost plus percentage of costs (CPPC) contract**, the buyer pays the supplier for allowable costs (as defined in the contract) along with a predetermined percentage based on total costs. From the buyer's perspective, this is the least desirable type of contract because the supplier has no incentive to decrease costs. In fact, the supplier may be motivated to increase costs, because doing so will automatically increase profits based on the percentage of costs. This type of contract is prohibited for U.S. government use, but it is sometimes used in private industry, particularly in the construction industry. All of the risk is borne by the buyer.



3) **Time and material (T&M) contracts** are a hybrid of fixed-price and cost-reimbursable contracts.

For example, an independent computer consultant might have a contract with a company based on a fee of \$80 per hour for services, plus a fixed price of \$10,000 for providing specific project materials. The materials fee might also be based on approved receipts for purchasing items, with a ceiling of \$10,000. The consultant would send an invoice to the company each week or month; the invoice would list the materials fee, the number of hours worked, and a description of the work produced. This type of contract is often used for required services when the work cannot be specified clearly and total costs cannot be estimated in a contract. Many contract programmers and consultants, such as those Marie's company hired in the chapter's opening case, prefer time and material contracts.



- **Unit pricing** can also be used in various types of contracts to require the buyer to pay the supplier a predetermined amount per unit of product or service. The total value of the contract is a function of the quantities needed to complete the work. Consider an IT department that might have a unit price contract for purchasing computer hardware. If the company purchases only one unit, the cost might be \$1,000. If the company purchases 10 units, the cost might be \$10,000. This type of pricing often involves volume discounts.

For example, if the company purchases between 10 and 50 units, the contracted cost might be \$900 per unit. If the company purchases more than 50 units, the cost might go down to \$800 per unit. This flexible pricing strategy is often advantageous to both the buyer and the seller.



- Any type of contract should include specific clauses that account for unique project issues.

For example, if a company uses a time and material contract for consulting services, the contract should stipulate different hourly rates based on the level of experience of the individual contractors. The services of a junior programmer with no Bachelor's degree and less than three years' experience might be billed at \$40 per hour, whereas the services of a senior programmer with a Bachelor's degree and more than 10 years of experience might be billed at \$80 per hour.



- **Figure 9-2** summarizes the spectrum of risk to the buyer and the supplier for different types of contracts. Buyers have the least risk with firm-fixed-price contracts, because they know exactly what they must pay the supplier. Buyers have the most risk with cost plus percentage of costs (CPPC) contracts because they do not know the supplier's costs in advance, and the suppliers may be motivated to keep increasing costs. From the supplier's perspective, a CPPC contract carries the least risk and a firm-fixed-price contract carries the most risk.

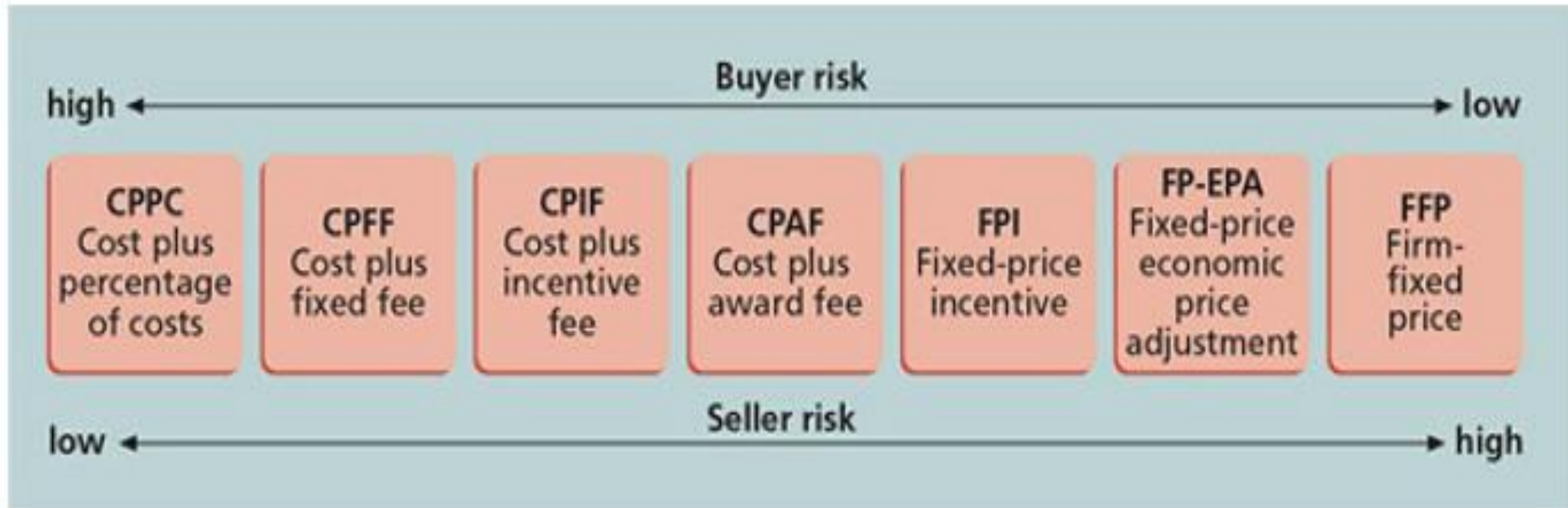


Figure 9.2 Contract types versus risk



- Time and material contracts and unit-price contracts can be high or low risk, depending on the nature of the project and other contract clauses.
- For example, if an organization is unclear in describing the work that needs to be done, it cannot expect a supplier to sign a firm-fixed price contract. However, the buyer could find a consultant or group of consultants to work on specific tasks based on a predetermined hourly rate. The buying organization could evaluate the work produced each day or week to decide if it wants to continue using the consultants. In this case, the contract would include a **termination clause** —a contract clause that allows the buyer or supplier to end the contract.



- Some termination clauses state that the buyer can terminate a contract for any reason and give the supplier only 24 hours' notice. Suppliers, by contrast, must often give a one-week notice to terminate a contract and must have sufficient reasons for the termination. The buyer could also include a contract clause that specifies hourly rates based on the education and experience of consultants. These contract clauses reduce the risk incurred by the buyer while providing flexibility for accomplishing the work.



- It is important to understand why a company would want to procure goods or services and what inputs are needed to plan purchases and acquisitions. In the opening case, Marie's company hired outside consultants to help complete an operating system conversion project because it needed people with specialized skills for a short period of time. This is a common occurrence in many IT projects. It can be more effective to hire skilled consultants to perform specific tasks for a short period of time than to hire or keep employees on staff full time.



- However, it is also important to define clearly the scope of the project, the products, services, or results required, market conditions, and constraints and assumptions.

9.2.2 Tools and Techniques for Planning Procurement Management



- Several tools and techniques are available to help project managers and their teams in planning procurement management, including make-or-buy analysis (a type of data gathering), expert judgment, and market research (a type of data gathering).

1. **Make-or-Buy Analysis**

Make-or-buy analysis is a general management technique used to determine whether an organization should make a product or perform a service inside the organization or buy it from someone else. This form of analysis involves estimating the internal costs of providing a product or service and comparing the estimate to the cost of outsourcing.



- Consider a company that has 1,000 international salespeople with laptops. Using make-or-buy analysis, the company could compare the cost of providing those services using internal resources to the cost of buying the same services from an outside source. If supplier quotes were less than the company's internal estimates, the company would have to consider outsourcing the training and user support services. Another common make-or-buy decision, though more complex, is whether a company should develop an application itself or purchase software from an outside source and customize it to the company's needs.



- Many organizations also use make-or-buy analysis to decide whether to purchase or lease items for a project.
- For example, suppose that a project requires a piece of equipment that has a purchase price of \$12,000 and daily operating costs of \$400. Suppose that you could lease the same piece of equipment for \$800 per day, including the operating costs. You can set up an equation so that you can see when the purchase cost equals the lease cost and determine when it makes sense financially to lease or buy the equipment.



- In this example, d is the number of days you need the piece of equipment. The equation would be

$$\$800/\text{day} = \$12,000 + \$400/\text{day}$$

Subtracting $\$400/\text{day}$ from both sides, you get

$$\$400/\text{day} = \$12,000$$

Dividing both sides by $\$400$, you get

$$d = 30$$



- In other words, the purchase cost would equal the lease cost in 30 days. So, if you need the equipment for less than 30 days, leasing would be more economical. If you need the equipment for more than 30 days, you should purchase it. In general, leasing is often cheaper for meeting short-term needs, but more expensive for long-term needs.



2. Expert Judgment

Experts both from inside and outside an organization can provide excellent advice in planning purchases and acquisitions. Project teams often need to consult experts within their organization as part of good business practice. Internal experts might suggest that the company in the preceding example could not provide training and support for the 1,000 laptop users because the service involves so many people with different skill levels in so many different locations. Experts in the company might also know that most of their competitors outsource this type of work and know who the qualified outside suppliers are. It is also important to consult legal experts because contracts for outsourced work are legal agreements.



Experts outside the company, including potential suppliers themselves, can also provide expert judgment. For example, suppliers might suggest an option for salespeople to purchase the laptops themselves at a reduced cost. This option would solve problems that would otherwise be created during employee turnover—exiting employees would own their laptops and new employees would purchase a laptop through the program. An internal expert might then suggest that employees receive a technology bonus to help offset what they might view as an added expense. Expert judgment, both internal and external, is an asset in making many procurement decisions.



3. Market Research

Market research is very important in planning procurements. Many potential suppliers are often available for goods and services, so the project team must choose suppliers carefully. Some organizations have a preferred vendor list and detailed information about them. A wealth of information is also available online, and numerous conferences are held where attendees can see and discuss new products.



9.2.3 Procurement Management Plan

The following materials can be included in procurement management plan:

- Guidelines for types of contracts to be used in different situations
- Standard procurement documents or templates to be used, if applicable
- Guidelines for creating contract work breakdown structures, statements of work, and other procurement documents
- Roles and responsibilities of the project team and related departments, such as the purchasing or legal department
- Guidelines for using independent estimates to evaluate sellers
- Suggestions for managing multiple providers
- Processes for coordinating procurement decisions with other project areas, such as scheduling and performance reporting



- Constraints and assumptions related to purchases and acquisitions
- Lead times for purchases and acquisitions
- Risk mitigation strategies for purchases and acquisitions, such as insurance contracts and bonds
- Guidelines for identifying prequalified sellers and organizational lists of preferred sellers
- Procurement metrics to assist in evaluating sellers and managing contracts



9.2.4 Statement of Work

- The **statement of work (SOW)** is a description of the work required for the procurement. Some organizations use the term *statement of work* for a document that describes internal work as well.
- If a SOW is used to describe only the work required for a particular contract, it is called a *contract statement of work*.
- The contract SOW is a type of scope statement that describes the work in sufficient detail to allow prospective suppliers to determine if they can provide the required goods and services and to determine an appropriate price.
- A contract SOW should be clear, concise, and as complete as possible. It should describe all services required and include performance reporting. It is important to use appropriate wording in a contract SOW, such as *must* instead of *may*.



- For example, *must* means that something has to be done; *may* implies that a choice is involved in doing something or not. The contract SOW should specify the products and services required for the project, use industry terms, and refer to industry standards.
- Many organizations use samples and templates to generate SOWs. **Figure 9-3** provides a basic outline or template for a contract SOW that Marie's organization could use when hiring outside consultants or purchasing other goods or services.



- For example, for the operating system conversion project, Marie's company should specify the manufacturer and model number for the hardware involved, the former operating systems and new ones for the conversion, and the number of pieces of each type of hardware involved.
- The contract SOW should also specify the location of the work, the expected period of performance, specific deliverables and when they are due, applicable standards, acceptance criteria, and special requirements.
- A good contract SOW gives bidders a better understanding of the buyer's expectations. A contract SOW should become part of the official contract to ensure that the buyer gets what the supplier bid on.



Statement of Work (SOW)

- I. **Scope of Work:** Describe the work to be done in detail. Specify the hardware and software involved and the exact nature of the work.
- II. **Location of Work:** Describe where the work must be performed. Specify the location of hardware and software and where the people must perform the work.
- III. **Period of Performance:** Specify when the work is expected to start and end, working hours, number of hours that can be billed per week, where the work must be performed, and related schedule information.
- IV. **Deliverables Schedule:** List specific deliverables, describe them in detail, and specify when they are due.
- V. **Applicable Standards:** Specify any company or industry-specific standards that are relevant to performing the work.
- VI. **Acceptance Criteria:** Describe how the buyer organization will determine if the work is acceptable.
- VII. **Special Requirements:** Specify any special requirements such as hardware or software certifications, minimum degree or experience level of personnel, travel requirements, and so on.

Figure 9.3 Statement of work (SOW) template



9.3.5 Procurement or Bid Documents

Planning procurements also involves preparing the documents needed for potential sellers to bid on a project and determining the evaluation criteria for the contract award. The project team often uses standard forms and expert judgment as tools to help create relevant procurement documents and evaluation criteria.



Three common examples of procurement documents include a Request for Proposal (RFP), a Request for Quote (RFQ), and a Request for Information (RFI). A **Request for Proposal (RFP)** is a document used to solicit proposals from prospective suppliers. A **proposal** is a document prepared by a seller when there are different approaches for meeting buyer needs. For example, if an organization wants to automate its work practices or solve a business problem, it can write and issue an RFP so suppliers can respond with proposals. Suppliers might propose various hardware, software, and networking solutions to meet the organization's need. Selections of winning sellers are often made on a variety of criteria, not just the lowest price. Developing an RFP is often a time-consuming process. Organizations must plan properly to ensure that they adequately describe what they want to procure, what they want sellers to include in their proposals, and how they will evaluate proposals.



- Although RFPs have been used for many years, outsourcing experts say the process is becoming less appealing in several IT procurement processes. “In today’s dynamic era of technology change, the traditional RFP simply takes too long and costs too much.



- A **Request for Quote (RFQ)** is a document used to solicit quotes or bids from prospective suppliers. A **bid**, also called a *tender* or *quote* (short for *quotation*), is a document prepared by sellers to provide pricing for standard items that the buyer has clearly defined. Organizations often use an RFQ for solicitations that involve specific items.
- For example, if a company wanted to purchase 100 personal computers with specific features, it might issue an RFQ to potential suppliers. RFQs usually do not take nearly as long to prepare as RFPs, nor do responses to RFQs. Selections are often based on the lowest bid. A Request for Information (RFI) is sometimes used before issuing an RFP or RFQ to get more information on the goods and services to be acquired.



- Writing a good RFP is a critical part of project procurement management, but many people have never had to write or respond to one. To generate a good RFP, expertise is invaluable.
- Many examples of RFPs are available within different companies, from potential contractors, and from government agencies. Legal requirements are often involved in issuing RFPs and reviewing proposals, especially for government projects. It is important to consult with experts who know the contract planning process for particular organisations.



- Government agencies are often required to make procurement information open to the public. For example, Houston First Corporation provides access to several documents from www.houstonfirst.com/do-business/.



9.2.6 Source Selection Criteria

- It is very important for organizations to prepare some form of evaluation criteria for source selection, preferably before they issue a formal RFP. Organisations use criteria to rate or score proposals, and they often assign a weight to each criterion to indicate its importance.
- Some examples of criteria and weights include the technical approach (30 percent weight), management approach (30 percent weight), past performance (20 percent weight), and price (20 percent weight).



9.3 Conducting Procurements

After planning for procurement management, the next process involves deciding whom to ask to do the work, sending appropriate documentation to potential sellers, obtaining proposals or bids, selecting a seller, and awarding a contract. Prospective sellers do some of the work in this process, normally at no cost to the buyer or project. The buying organization is responsible for advertising the work, and for large procurements, the organization often holds some sort of bidders' conference to answer questions about the job. Two of the main outputs of this process are a selected seller and agreements.



Organizations can advertise to procure outside goods and services in many different ways. Sometimes a specific supplier might be the top choice for the buyer. In this case, the buyer gives procurement information just to that company. If the preferred supplier responds favorably, the organizations proceed to work together. Many organizations have formed good working relationships with certain suppliers.



A bidders' conference, also called a *supplier conference* or *pre-bid conference*, is a meeting with prospective sellers prior to preparation of their proposals or bids. These conferences help ensure that everyone has a clear, common understanding of the buyer's desired products or services. In some cases, the bidders' conference might be held online via a webcast or using other communications technology. Buyers will also post procurement information on a website and post answers to frequently asked questions. Before, during, or after the bidders' conference, the buyer may incorporate responses to questions into the procurement documents as amendments. Notice that in the example in the previous section that the buyer added a pre-proposal conference and created several letters of clarification for this fairly small procurement.



Once buyers receive proposals or bids, they can select a supplier or decide to cancel the procurement. Selecting suppliers or sellers, often called *source selection*, involves evaluating proposals or bids from sellers, choosing the best one, negotiating the contract, and awarding the contract. It can be a long, tedious process, especially for large procurements. Several stakeholders in the procurement process should be involved in selecting the best supplier for the project. Often, teams of people are responsible for evaluating various sections of the proposals. There might be a technical team, a management team, and a cost team to focus on each major area. Buyers typically develop a short list of the top three to five suppliers to reduce the work involved in selecting a source.



- Experts in source selection highly recommend that buyers use formal proposal evaluation sheets during source selection. **Figure 9-4** provides a sample proposal evaluation sheet that the project team might use to help create a short list of the best three to five proposals.



- To calculate the score for a criterion, multiply the weight of the criterion by the rating for the proposal. Add the scores to provide the total weighted score for each proposal. The proposals with the highest weighted scores should be included in the short list of possible sellers. Experts also recommend that technical criteria should not be given more weight than management or cost criteria. Many organisations have suffered the consequences of paying too much attention to the technical aspects of proposals.



- For example, the project might cost much more than expected or take longer to complete because the source selection team focused only on technical aspects of proposals. Paying too much attention to these technical aspects is especially likely to occur on IT projects. However, it is often the supplier's management team—not the technical team—that makes procurement successful.



		Proposal 1		Proposal 2		Proposal 3		Etc.	
Criteria	Weight	Rating	Score	Rating	Score	Rating	Score		
Technical approach	30%	90	27	80	24	70	21		
Management approach	30%	85	25.5	75	22.5	85	25.5		
Past performance	20%	95	19	70	14	75	15		
Price	20%	75	15	95	19	80	16		
Total score	100%		86.5		79.5		77.5		

Figure 9.4 Sample proposal evaluation sheet



- After developing a short list of possible sellers, organizations often follow a more detailed proposal evaluation process. For example, they might list more detailed criteria for important categories, such as the management approach.



9.4 Controlling Procurements

- Controlling procurements ensures that the seller's performance meets contractual requirements. The contractual relationship is a legal relationship, which means it is subject to state and federal contract laws. It is very important that appropriate legal and contracting professionals be involved in writing and administering contracts.



It is critical that project managers and team members watch for constructive change orders. Constructive change orders are oral or written acts or omissions by someone with actual or apparent authority that can be construed to have the same effect as a written change order.



For example, if a member of the buyer's project team has met with the contractor on a weekly basis for three months to provide guidelines for performing work, the team member can be viewed as an apparent authority. If the team member tells the contractor to redo part of a report that has already been delivered and accepted by the project manager, the action can be viewed as a constructive change order and the contractor can legally bill the buyer for the additional work. Likewise, if the apparent authority tells the contractor to skip parts of a critical review meeting in the interests of time, the omission of that information is not the contractor's fault.



It is important to follow other good practices related to project procurement:

- Changes to any part of the project need to be reviewed, approved, and documented by the same people in the same way they approved the original part of the plan.
- Evaluation of any change should include an impact analysis. How will the change affect the scope, time, cost, and quality of the goods or services being provided? There must also be a baseline to understand and analyze changes.



- Changes must be documented in writing. Project team members should document all important meetings and telephone calls.
- When procuring complex information systems, project managers and their teams must stay closely involved to make sure the new system will meet business needs and work in an operational environment. Do not assume that everything will go well because you hired a reputable supplier. The buying organization needs to provide expertise as well.
- Have backup plans in case the new system does not work as planned.
- Several tools and techniques can help in contract administration, such as a formal contract change control system, buyer-conducted procurement performance reviews, inspections and audits, performance reporting, payment systems, claims administration, and records management systems.



- Controlling procurement also involves closing procurements, which is sometimes referred to as contract closure. Contract closure involves completion and settlement of contracts and resolution of any open items.

9.5 Using Software to Assist in Project Procurement Management



Many companies are now using more advanced software to assist in procurement management. The term *e-procurement* often describes various procurement functions that are now done electronically, as follows:

- *Web-based ERP (Electronic Resource Planning)*: Creating and approving purchasing requisitions, placing purchase orders, and receiving goods and services by using a software system based on Internet technology.



- *E-MRO (Maintenance, Repair, and Overhaul)*: The same as web-based ERP, except that the goods and services ordered are MRO supplies that are not related to a particular product.
- *E-sourcing*: Identifying new suppliers for a specific category of purchasing requirements using Internet technology.
- *E-tendering*: Sending requests for information and prices to suppliers and receiving the responses of suppliers using Internet technology.
- *E-reverse auctioning*: Using Internet technology to buy goods and services from a number of known or unknown suppliers.



- *E-informing*: Gathering and distributing purchasing information with internal and external parties using Internet technology.
- *E-marketsites*: Expands on web-based ERP to open up value chains. Buying communities can access preferred suppliers' products and services, add to shopping carts, create requisitions, seek approval, receive purchase orders, and process electronic invoices with integration to suppliers' supply chains and buyers' financial systems.



The four main capabilities of procure-to-pay suites for indirect procurements include the following:

- *E-purchasing functionality*: Provides a self-service solution to requisition and order goods and services through the use of catalogs, e-forms, or free-text orders (for when users cannot find items in a structured format).



- *Catalog management capabilities*: Includes catalog content upload, content update evaluation tools, and catalog search tools.
- *E-invoicing*: Enables the interchange and storage of legally valid invoices in electronic format.
- *Accounts Payable Invoice Automation (APIA)*: Allows approval and control of incoming invoices through either automatic or manual approvals by automatic workflows.