

**6-1 Capital Projects****OBJECTIVES**

- *Describe types of capital projects used in business.*
- *Explain factors that affect capital spending decisions.*

**CAPITAL SPENDING ACTIVITIES**

Each day, capital assets serve an important role in your life. The food you eat is processed with equipment. Your classes are in a school building. You may drive or ride in a motor vehicle. A capital project involves the construction or purchase of a long-term asset, such as buildings and equipment. These items are also called capital expenditures, and the process may be referred to as capital spending. Every organization needs and uses five main types of capital projects.

**REPLACEMENT PROJECT**

Buildings get old. Aging machinery can no longer be repaired. When capital projects wear out, companies must replace them. Failure to replace items in a timely manner can result in higher costs, lost sales, and reduced profits.

**COST-SAVING PROJECT**

New technology makes it possible for companies to obtain equipment that reduces operating costs. Computerized temperature controls can reduce energy bills in offices and factories. Robotics may increase production efficiency.

**NEW PRODUCT OR NEW MARKET**

Companies are continually attempting to expand profits through new products or new customers. When a new product is manufactured, revised or additional equipment is usually needed. This type of capital spending occurs in hopes that company sales and profits will increase. Many of today's new products involve intellectual property, which are intangible assets used by companies. These assets commonly include trademarks, brand names, copyrights, patents, and software licensing agreements. For many businesses, intellectual properties are some of their most valuable assets. Companies such as Coca-Cola, Disney, and McDonald's depend on their famous names and characters to attract customers and sell products. When a company decides to sell in a new market, capital spending will likely be required. New stores, office space, or factories are needed in the new geographic region.

**GOVERNMENT-REQUIRED PROJECT**

Every organization faces government regulations that require compliance. For example, to reduce pollutants in the air or water supply, a production company may be required to use certain equipment. To provide for employees or customers with special needs, an organization may be required to adapt doorways, stairs, or work areas.

**SOCIAL BENEFIT PROJECT**

Finally, a company may undertake a project not directly related to its business operations. In an effort to improve employee satisfaction, a decision might be made to build health club facilities or improve parking. Community involvement may include developing a recreational area for young people.

**PROJECT SELECTION FACTORS**

As a company considers certain capital projects, different circumstances may affect these choices. For example, the high cost of one project may result in rejecting several others. Selecting a certain project might create a need for other actions by the company.

**INDEPENDENT PROJECTS**

Quite often, the capital projects being considered are independent, meaning that the projects are not affected by each other. However, other limitations may be present. Capital limitations are present in almost every decision-making situation. Organizations do not have unlimited funds for their capital spending activities, so choices among several projects must be made.

**MUTUALLY EXCLUSIVE PROJECTS**

The selection of a project can sometimes affect other choices. Mutually exclusive projects involve situations in which the acceptance of one project does not allow acceptance of others. For example, land used for a warehouse will not be available

to build additional office space. A capital decision to use factory space for manufacturing clothing will not allow this same space to be used for a food processing facility.

### COMPLEMENTARY PROJECTS

The selection of one capital project can result in a need to accept another one. Complementary projects exist when two or more projects are dependent on one another. For example, a decision by a delivery company to buy new energy-efficient trucks may result in the need to build a new loading dock to handle the different design of the new vehicles.

## 6-2 Capital Budgeting Process

### OBJECTIVES

- Discuss the steps in the capital budgeting process.
- Explain factors that affect the cost of capital.

### Making Capital Decisions

Capital spending, the purchase of long-term assets, is vital for the current and future success of every organization. Buildings, production equipment, computers, trucks, and machine tools are just a few of the capital items commonly used by companies. The method for choosing capital projects is a significant task for managers. Capital budgeting is the process of selecting long-term assets, such as equipment and buildings. As shown in Figure 6-1, this process may be viewed in five steps.

#### 1. SET CAPITAL SPENDING GOALS

The capital projects selected by a company should be influenced by organizational goals. The goals of a business may include expanding sales, reducing costs, and increasing profits. Financial theory emphasizes that the goal of a business should be to maximize the value of the firm. This objective is commonly measured by the market value of the company's stock. Increasing a company's market value involves both short-term profits and long-term growth. Every capital decision should increase the company's attractiveness among current owners and potential future investors. For nonprofit organizations, capital spending goals are slightly different. For these groups, capital projects will be chosen to meet goals such as improved community services, reduced operating costs, and expanded visibility to attract additional donations.

#### 2. DETERMINE POTENTIAL PROJECTS

After an organization's capital spending goals are clearly identified, different projects will be considered. For example, if providing customer service is a priority, spending for new computers to answer customer questions may be appropriate. If improving distribution is a necessity, a new warehouse or additional delivery trucks might be considered.

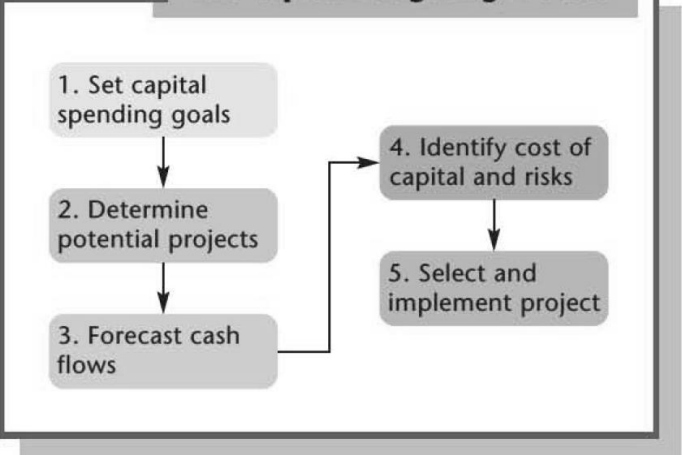
#### 3. FORECAST CASH FLOWS

Next, managers must identify sources and estimate amounts of cash flows for the project. These income and expense items will be the basis for a quantitative project analysis. The two main sources of cash inflows are (1) additional net sales and revenues, and (2) reduced operating expenses. Lower operating expenses create a positive cash flow since money not going out is like money coming in.

When estimating cash flows, managers must be sure to consider only the additional amounts—those that are the direct result of the project. A company's sales may increase or expenses decrease as a result of other factors. A valid analysis must specifically identify the cash inflows and outflows that are a direct result of the capital project being considered.

Another issue to consider when forecasting cash flows is inflation. Often, future cash flows for a project will increase each year. The real value of these amounts may actually be lower due to inflation. A manager's ability to consider inflation when estimating future cash flows is important for a valid analysis.

**FIGURE 6-1** The Capital Budgeting Process



When forecasting cash flows, depreciation is not considered. Depreciation refers to the decrease in the value of an item as a result of time and use. Even though depreciation is a business expense, it is not a cash outflow for capital budgeting purposes. Depreciation is handled this way since it is a non-cash item, that is, money is not paid out when depreciation is recorded. This amount is taken into consideration as a start-up cost for a project.

#### **4. IDENTIFY COST OF CAPITAL AND RISKS**

Financing the capital project is the next step a manager must consider. Cost of capital is the interest rate used to evaluate a capital project. This percentage is often called the discount rate, as it is used to do present value calculations. At this point, managers will also identify and assess potential risks. These uncertainties can range from inflation and lower consumer spending to new government regulations and natural disasters. Risk is often considered in the analysis by using a higher cost of capital. For example, the usual cost of capital for a company may be 7 percent. When evaluating a project of higher risk, using a cost of capital of 8 percent or higher may be appropriate.

#### **5. SELECT AND IMPLEMENT PROJECT**

Managers next decide which of the capital projects will be selected. This analysis will involve both quantitative elements such as cash flows and qualitative factors such as company strengths and weaknesses. Finally, at the completion of this process, the management team puts the project into operation. The project will now require participation by a variety of people in the organization.

### **COST OF CAPITAL**

A significant component of capital budgeting is financing. Companies have two main sources of capital when financing their activities: debt and equity. The cost of using other people's money is an important consideration. Cost of capital, also called required rate of return, is the rate required by lenders and investors who are letting the company use their money.

#### **COST OF DEBT**

Borrowing is a common practice among organizations. Bonds, loans, and other types of debt are major funding sources. Cost of debt is the rate of return required by creditors. This percentage is the rate that lenders expect to receive when allowing someone to use their money. For example, an 8 percent bond issued by a company means the cost of debt is 8 percent. Several common benefits are associated with using debt.

- The company is using the money of others, allowing the business to keep its funds available for other uses.
- The risk for creditors is lower since debts are legal obligations.
- The cost of capital is lower than other funding sources as a result of the lower risk for lenders.
- Interest payments on debt are tax deductible as a business expense.

#### **COST OF EQUITY**

The required rate of return for stockholders is not as obvious as for creditors. Cost of equity is the required return of the owners in a company. This amount is the percentage company owners expect to earn based on the money they have invested in the company. For example, you might have \$100,000 invested in a company and expect the profits to be 10 percent. Any profit of less than \$10,000 would be disappointing. You might encourage the company to take a different direction. Or, you might sell your ownership in the company to another investor. Company owners (stockholders), like creditors, expect a certain rate of return. This return might be in the form of a share of the profits (dividends) or in the form of increased market value of the company.

### **OPTIMAL CAPITAL STRUCTURE**

Some debt (with a lower cost of capital than equity) is beneficial to a company, but too much debt can result in difficulties. While the cost of debt is lower than the cost of equity, as an organization takes on more debt, its risk increases. More debt increases the likelihood of the company missing debt payments and going bankrupt. In an attempt to have an appropriate balance between the amount of debt and equity, an optimal capital structure is the goal. This structure is the financing combination of a low cost of capital and maximum market value.

One of the most important managerial decisions is how much debt and how much equity to use. Factors to consider include

- The current amount of the company's current debt obligations
- The company's ability to borrow additional funds or issue additional bonds
- The sensitivity of stockholders regarding the current risk of the company due to existing debt
- The past and expected future profitability of the company

**WEIGHTED AVERAGE COST OF CAPITAL (WACC)**

When creating the capital budget, companies develop a weighted average cost of capital (WACC). The WACC is calculated by multiplying the proportions of debt and equity times the capital cost for each. The formula is:

$$WACC = \left( \frac{\text{Percent Debt}}{\text{Debt}} \times \frac{\text{Cost of Debt}}{\text{Debt}} \right) + \left( \frac{\text{Percent Equity}}{\text{Equity}} \times \frac{\text{Cost of Equity}}{\text{Equity}} \right)$$

*Example: If a company has 30 percent debt at a cost of 8 percent and 70 percent equity at a cost of 10 percent, the WACC would be:*

$$WACC = (\text{Percent Debt} \times \text{Cost of Debt}) + (\text{Percent Equity} \times \text{Cost of Equity})$$

$$WACC = (0.30 \times 0.08) + (0.70 \times 0.10)$$

$$WACC = 0.024 + 0.07 = 0.094 = 9.4\%$$

You might think that the WACC declines as a company takes on more debt. This is true, but only up to a certain portion of debt. As more debt is used, risk increases to create a higher cost of both debt and equity, resulting in a higher WACC.

Every organization attempts to minimize its WACC. This will occur when a certain combination of debt and equity is used. The exact combination will vary for every company and changes as risk (from increased use of debt) and interest rates change. Managers continually analyze various economic and company factors to arrive at the optimal capital structure.

**6-3 Capital Project Analysis****OBJECTIVES**

- *Describe tools used to analyze capital projects.*
- *Explain factors that influence capital project decisions.*

**CAPITAL DECISION TOOLS**

How might a company decide which capital project to accept? Several decision-making approaches are available to guide this process.

**PAYBACK METHOD**

If a project that costs \$10,000 brings in \$2,500 a year, the payback is four years. The payback method is used to determine the how long it will take for the cash flows of a capital project to equal the original cost. In the following situation, new machinery that will reduce operating expenses costs \$42,000. With the annual amount of savings for each year shown, the payback would be five years.

Year	Cash Flows
1	\$10,000
2	\$9,000
3	\$9,000
4	\$8,000
5	\$8,000

In this example, it takes until the fifth year for the total cash flows to exceed the original cost of \$42,000.

The payback method has been commonly used for many years. Managers find this method easy to use. The payback method has two drawbacks. First, payback favors short-term projects which may not be in the best interest of the company. Second, this method does not consider the time value of money, which is a significant financial analysis tool.

**NET PRESENT VALUE**

To address the major problem with the payback method, that it does not consider the time value of money, another tool was created. Net present value (NPV) calculates the present value of cash flows for a project minus the initial investment. Three elements are necessary to use the NPV method.

1. Initial investment is the cost of the project, such as new equipment or a building. The initial investment is also called the start-up cost or the initial outlay.
2. Cash flows are the yearly amounts of increased sales or decreased costs. These funds are the financial benefits of the capital project.
3. Cost of capital is the interest rate the company will use to calculate the present value of the cash flows. This percentage is also called the discount rate.

### CALCULATE NET PRESENT VALUE

Calculating net present value involves three steps.

Step 1: Calculate the present value of the cash flows using a 10 percent cost of capital.

Year	Cash Flows
1	\$4,500
2	\$4,500
3	\$4,500

$\$4,500 \times \text{present value of an annuity (see PVA Table)}$

$\$4,500 \times 2.487 = \$11,192$

Step 2: Subtract the initial cost of \$10,000 from the total in Step 1 to obtain the NPV.

$\text{NPV} = \$11,192 - \$10,000 = \$1,192$

Step 3: Evaluate the result. In this situation, the projected cash flows have a present value of \$11,192, which is greater than the initial cost of \$10,000. The result is a positive NPV of \$1,192.

In general, if the NPV is positive, accept the project. If the NPV is negative, reject the project. When considering several projects, accept the one with the highest NPV.

Managers should be aware of the limitations of NPV analysis. First, while the initial outlay is based on reliable costs, the projected cash flows are estimates. Accuracy of these projected figures will depend on the skill and experience of managers. Also, the cost of capital used in the analysis may change. Additional risk or increased interest rates can result in a higher cost of capital with a lower NPV.

### INTERNAL RATE OF RETURN

Managers are often interested in the rate of return of a project. The internal rate of return (IRR) is the discount rate at which the net present value is zero. IRR provides decision-makers with the rate of return for a capital project. Several methods can be used to calculate IRR. First, financial calculators will likely have an IRR function key. In addition, software or online calculators are available to determine the internal rate of return. Least desirable, but sometimes necessary, is using the trial-and-error method. A major drawback of IRR is that it reports a percentage rather than a dollar amount. One project may have an IRR of 17 percent while another is only 8 percent. The first project may only involve \$100,000 while the second is for \$1.2 million. The IRR looks more attractive for the smaller project, but the company will likely maximize its value by accepting the larger project.

### ADDITIONAL ANALYSIS FACTORS

In the process of using the various methods to evaluate capital projects, some additional issues should be considered.

### OPPORTUNITY COST

Whenever a decision is made to take one course of action, something else is given up. Opportunity cost is the value of the alternative that is given up when a decision is made. Sometimes these opportunity costs may involve items that cannot be measured in monetary value.

When a capital projects decision is being made, working capital is an example of an opportunity cost. Cash, accounts receivable, and inventory are usually required for the operation of a project. While these items are still in the company, they are not available to be used for other purposes. Since these current assets are not available for use in other ways, their value is an opportunity cost of the project.

**SUNK COST**

Companies may have situations in which an expense must be paid whether a project is accepted or not. For example, the cost to research a new project will occur whether or not the company decides to produce the item. A sunk cost is an expense that has been paid that will not affect capital decisions. These expenses may include equipment that has been purchased but that may not be used. Sunk costs are not considered in a capital spending analysis since the decision to accept or reject the project will not affect whether the expense will occur.

**RISK ANALYSIS**

Uncertainty is present in all financial decisions. These risks may be viewed from geographic, economic, social, and political perspectives.

- **Geography.** Changing weather conditions can ruin agricultural crops. A rough terrain can result in difficulties with transportation. Various geographic factors can be the basis of increased capital project risk.
- **Economic Conditions.** Higher prices, changing currency values, and low consumer spending create uncertainty. Economic risks such as inflation and changing interest rates must be considered in the capital budgeting process.
- **Social and Cultural Factors.** In one country, a certain action may be considered a bribe. In another culture, the same action may be viewed as an accepted way of doing business. Cultural differences as a result of traditions, religion, and family relations can create uncertainty when doing business in different regions. While these situations are not directly influenced by government actions, these circumstances may be viewed as informal trade barriers.
- **Political and Legal Restrictions.** In contrast, specific government regulations restricting certain business activities are formal trade barriers. Packaging laws, import taxes, and labor safety standards can affect the cost and success of a capital project. Political risk is also affected by changes in governments as a result of elections or military action.

**6-4 Business Expansion Strategies****OBJECTIVES**

- *Explain business growth and expansion actions.*
- *Identify actions for reducing global business risks.*

**BUSINESS GROWTH ACTIONS**

Organizations continually seek out and evaluate capital decisions that will provide current profits and long-term growth. Managers make decisions that they hope will improve the company's future success.

**ORGANIZATIONAL STRATEGIES**

When planning for successful growth and expansion, a company must consider the structure of its organization.

- **Centralized Organization.** In a centralized organization, decisions are made at company headquarters. This type of structure allows for better control but may not be as flexible when adapting to local market needs around the world.
- **Decentralized Organization.** In contrast, a decentralized organization allows company decisions to be made at lower levels of the organization. In these companies, managers of local stores and factory supervisors in different countries have greater authority. They can make decisions about advertising and branding without consulting corporate headquarters.

**EXPANSION METHODS**

Often, growth of a company can be the result of a merger, for example, if a supermarket chain buys other grocery stores.

- **Horizontal Integration.** Horizontal integration is a merger between two or more companies in the same type of business. The benefits of this situation include higher income levels as well as an ability to buy materials and supplies more efficiently, in larger quantities.
- **Vertical Integration.** Another type of merger is vertical integration. In this situation, a company expands through increased involvement in different stages of production and distribution. A food processing company may buy its own farmland and obtain a shipping company. Vertical integration is especially used in developing economies where outsourcing of various business functions may not be possible.

**PRODUCT VARIATIONS**

Companies often grow by offering more and different products. New flavors, different package sizes, and varied brands can create business expansion. For example, in recent years new cereal products have included freeze-dried fruit and additional types of grains.

### DIVERSITY OF MARKETS

Expanded business activities can also be a result of new markets. A market is defined as where and to whom a business sells. Business locations can grow in different regions of the country or into other countries. Geographic expansion may also occur when a company sells in a variety of areas—urban, suburban, small town, and rural. The audience of a business also may expand. Instead of just selling to younger consumers, a company may adapt its products to attract older customers. Some companies sell only to households and individual consumers. These are referred to as B2C (business to consumer). For example, a home lawn-care service or housecleaning business would be B2C. In contrast, B2B (business to business) organizations sell to other businesses. A company that repairs buses or a business that supplies parts to an electronics manufacturer would be considered B2B. Many companies expand to cover both B2C and B2B activities. An auto repair firm may service cars for individuals (B2C) while also providing oil changes for business vehicles (B2B).

### REDUCING GLOBAL RISKS

Financial, economic, and other business risks are an ongoing concern for managers in every setting. These uncertainties are intensified when doing business in another country. To reduce international business risk, four actions are suggested.

### CONDUCT BUSINESS IN SEVERAL REGIONS

If a company's global business activities are focused on one or two countries, the organization faces a risky situation. If political unrest or poor economic conditions occur, lower profits are likely. If a company manufactures and sells products in several regions of the world, the risk is reduced.

### DIVERSIFY PRODUCT LINES

Dependency on one or two products can be risky. If demand for a company's main product declines, profits may disappear. Producing and selling a variety of items can reduce risk. Diversification is the offering of a variety of products or services. While this term most often refers to investing in different types of securities and industries, it is also valid for capital projects. A diversified product portfolio may include cookies and crackers, ice cream, bottled water, cosmetics, and oral hygiene products in the same company. This portfolio of products will allow a company to balance lower sales in one division with higher sales in its other product lines.

### INVOLVE LOCAL OWNERSHIP

Working with a local owner can be viewed favorably by a country's government. A company that is completely owned by people from another country is viewed with more suspicion, creating greater risk. The use of local partnerships can reduce this uncertainty. A joint venture is an agreement between two or more companies to share a business project. These types of arrangements between companies in different countries can contribute to business success for all parties involved.

### EMPLOY LOCAL MANAGEMENT

Hiring local managers can create favorable relationships in a foreign business environment. These supervisors have knowledge of local customs and cultural business practices. A working environment involving local managers will usually reduce risk.

## Chapter Summary

- *Capital spending refers to construction or purchase of a long-term asset, such as buildings or equipment. The types of capital projects are replacement projects, cost-saving projects, new products/markets, gov't-required projects, social benefit projects.*
- *Independent projects are not affected by other projects. Mutually exclusive projects involve situations in which the acceptance of one project does not allow acceptance of others. Complementary projects exist when 2+ projects are dependent on one another.*
- *The five steps of the capital budgeting process are (1) set capital spending goals, (2) determine potential projects, (3) forecast cash flows, (4) identify the cost of capital, and (5) select and implement the project.*
- *Cost of capital has two elements. Cost of debt is the rate of return required by creditors. Cost of equity is the rate of return required by the owners. The optimal capital structure is the combination with a low cost of capital and maximum market value.*
- *Three main capital budgeting decision methods are commonly used: (1) the payback method, (2) net present value (NPV), and (3) internal rate of return (IRR).*
- *Sunk costs are expenses that have been incurred and cannot be recovered. The risks of a capital project are commonly created by geography, economic conditions, social and cultural factors, and political and legal restrictions.*
- *In centralized organizations, decisions are made at company HQ. A decentralized organization allows business decisions to be made at lower levels of the organization. Horizontal integration is a merger between 2+ companies in the same type of business. With vertical integration, a company expands through increased involvement in different stages of production & distribution.*
- *Reducing global business risk may be achieved by conducting business in several regions, having a diverse product line, involving local owners, and employing local management.*