### Phase III: Managerial Decision and Approval

The final responsibility for making the investment rests with an executive in the firm who possesses the appropriate level of authority. Combining top management's sense of the firm's overall business strategy with the recommendation of the investment review committee, a decision is made. The choices are to reject the proposal outright or to accept the proposed investment (either as is or with revisions) for immediate or deferred implementation. Typically, the larger the financial commitment an investment requires, the higher the level in the management hierarchy that is required for commitment approval. For very large investments, board approval is generally necessary.

## 1.5 Case Study—CP3 Pharmaceuticals Laboratories Inc.

Figure 1-4 presented a three-phase, eight-step process for carrying out a disciplined approach to the investment evaluation and decision process. In this section, we use a hypothetical example to walk through a typical investment evaluation for a relatively small project. It involves the desire of CP3 Pharmaceuticals Laboratories Inc. (a fictional name for a real company) to invest $547,000 to install a new materials-handling system. The example begins with the identification of the idea and concludes with the final go–no go decision.

### Example: Investing in a New Materials-Handling System

Susan Chambliss is a vice president for business development at CP3 Pharmaceuticals Laboratories Inc. The members of CP3's business development group scout for new investment opportunities for the company on an ongoing basis. Most firms of any size have such a group. Investment opportunities for CP3 can include new products or new markets for existing products. Therefore, it is not at all unusual that someone from this group, Susan in this instance, identifies a promising investment opportunity.[9]

CP3 operates a medical-packaging operation at its Austin, Texas, facility that has significant costs from product waste. Susan has identified a new materials-handling system that offers the potential for substantial cost savings through waste reduction, reduced head count in the manufacturing area, and savings through plastic recycling. Figure 1-5 provides details of the proposed project, in the format of the company's capital expenditure request form.

Before initiating a formal analysis of the proposed investment, Susan engages in informal discussions with senior executives on CP3's strategic planning committee. This committee reviews all major investment proposals that the firm undertakes and makes recommendations about the projects' viability. The makeup of this committee at CP3 is typical of such committees at other companies: It includes the company treasurer, the chief financial officer (CFO), the chief operating officer (COO), and the chief executive officer (CEO).

[9] This does not mean that all investment ideas originate in business development. To the contrary, in a healthy firm, investment ideas come from all over the firm. At some point, however, if the investment is significant, the business development group is involved.

## Figure 1-5 Capital Expenditure Request Form

**1. Executive Summary**

CP3 Pharmaceuticals Laboratories' Austin, Texas, plant is requesting $547,000 to purchase and install a new scrap materials-handling system for its medical-packaging operations. Purchasing the new system will allow the plant to meet the following objectives:

- Reduce waste in the firm's packaging operations, for savings of $300,000 per year.
- Reduce head count from the test area. Estimated savings of $35,000 per year.
- Recycle plastic materials that historically were part of waste, with disposal cost of $8,800 per year.
- Earn a 20% rate of return on invested capital.

**2. Proposal and Justification**

CP3's medical-packaging unit is expected to produce over 400 million vials of over-the-counter drugs this year. The packaging of these vials will generate 1.5 million pounds of scrap plastics. Of this total, one-third can be recycled, and the remainder becomes scrap. Under the present method, the scrap is collected in bins at the end of each of six production lines. The bins are then collected every 15 minutes and transferred to a grinding room, where the scrap is either ground for resale or transported to trash. At present, the disposal cost for the 1 million pounds of scrap plastic is $8,800 per year.

The proposed scrap materials-handling system involves placing a small grinder at the end of each production line that can grind the plastic, then sending the scrap via vacuum tubes to a scrap collection site in another part of the plant. The ground-up scrap can then all be sold for $300,000 per year, while eliminating the scrap-disposal cost of $8,800 per year.

**3. Financial Analysis**

| | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|
| Capital spending | (547,000) | | | | | |
| Impact on revenue/(expense) | | | | | | |
| Scrap revenue | | 300,000 | 300,000 | 300,000 | 300,000 | 300,000 |
| Labor savings | | 35,000 | 35,000 | 35,000 | 35,000 | 35,000 |
| Reduced recycle costs | | 8,800 | 8,800 | 8,800 | 8,800 | 8,800 |
| Total impact | | 343,800 | 343,800 | 343,800 | 343,800 | 343,800 |
| Less: Depreciation (5 years) | | (109,400) | (109,400) | (109,400) | (109,400) | (109,400) |
| Net operating income b/tax | | 234,400 | 234,400 | 234,400 | 234,400 | 234,400 |
| Less: Taxes (40%) | | (93,760) | (93,760) | (93,760) | (93,760) | (93,760) |
| Net operating profit after tax | | 140,640 | 140,640 | 140,640 | 140,640 | 140,640 |
| Plus: Depreciation expense | | 109,400 | 109,400 | 109,400 | 109,400 | 109,400 |
| Less: Capital expenditures | (547,000) | — | — | — | — | — |
| Project free cash flow (Project FCF) | (547,000) | 250,040 | 250,040 | 250,040 | 250,040 | 250,040 |

| | |
|---|---|
| Net present value (NPV) | $200,773 |
| Payback (in years) | 2.19 years |
| Internal rate of return (IRR) | 35.8% |

**4. Risks**

The grinders and vacuum transport systems have been tested for over a month with only two minor failures. The failures relate to stoppages at the end of line 4, which carries some of the larger scrap pieces. This problem has been addressed by increasing the size of the grinder on that line and by installing sensors to provide an alert that a stoppage is about to occur so the operator can stop the process and clear the grinder and vacuum tubes.

**5. Project Timeline**

It will take three months to get the new system up and running, because the installation must work around production shifts already in place.

Because Susan will ultimately need the approval of this committee, it makes sense that she begins by showing her idea, while still in the formative stage, to one or more of the members. Given the time and effort associated with the analysis of a new investment opportunity, she wants a preliminary indication that the project has a reasonable chance of approval before going forward. For example, maybe company executives are considering the possible closure or sale of the medical-packaging operations. If so, then it clearly would not make sense for Susan to invest time or energy to form a working group to explore her idea further.

After several informal discussions, Susan concludes that the new materials-handling system has promise, so she initiates the study. For a project as small as this one, Susan simply assigns the project to a single financial analyst. For very large and complex projects, she might form a team consisting of several people who possess the requisite skills to understand and evaluate the investment opportunity.

Susan asks the analyst to prepare a report for formal submission of the project to the strategic planning committee. The information in Figure 1-5 is an abbreviated version of a firm's typical investment evaluation report. The report begins with a list of the various reasons why the group believes the project is likely to be successful and includes the project's net present value, internal rate of return, and payback. (These are all concepts that we review in later chapters.) The financial analyst who prepared the analysis also included specific cost and cash flow projections to back up the summary analysis. These estimates span a period of five years, ending in 2020. If this project were larger, the report would probably address several other important issues as well. For example, it might include an estimate of the expected impact of the investment on CP3's reported earnings for several future quarters, an analysis of various scenarios involving key cost and revenue drivers to highlight the risks inherent in the investment, and a discussion of how the firm can finance the project, as well as the project's risks.

When the project analysis report is completed, the strategic planning committee often has another analyst prepare an independent assessment of the proposal's merits. This review checks the assumptions and methodology of the original project valuation estimate. A key concern with regard to the integrity of the investment evaluation process is that the project review and analysis group be truly independent of the analysts who prepared the initial project report.

## Addressing the Possibility of Decision Bias

Biases of various sorts can enter into the analysis of new investment proposals. For example, Susan and members of the project analysis team may be biased if they have *incentives* to get the deal approved. Indeed, because Susan's job is to identify good opportunities for the firm, her bonus and her ability to keep her job may depend on her ability to get her ideas approved. Bias may also enter the process simply because of *human nature:* Psychologists have found that individuals tend to be overconfident and overly optimistic about their own ideas.

### The Role of the Strategic Planning Committee As the Skeptical Boss

In light of the potential for bias in favor of new investments, the strategic planning committee must play the role of a skeptical boss. Very simply, this committee has the task of reviewing major investment proposals and attempting to ferret out any bias in their

analysis that arises out of the natural tendency for project champions to be overconfident and overly optimistic. The members of the strategic planning committee understand that projects are often completed at 50% over budget and are rarely completed under budget. They also understand that realized rates of return are almost always lower than projected rates of return. With this in mind, the strategic planning committee's role requires that its members work through the assumptions and the analysis carefully and question everything. If the controls in the firm are functioning properly, the strategic planning committee must sign off on the analysis before the project can go forward.

Although the strategic planning committee carefully reviews the analysis on which the project is based, its members may also have a broader perspective. They may consider issues that go beyond the attributes of this specific project. For example, they might consider the possibility of moving the business offshore and closing down the Austin plant, in which case the new project makes little sense.

The strategic planning committee is likely to consider carefully the firm's alternatives for financing the project. If the project can be funded internally, it is more likely to be approved than if it requires external funding. If the project were so big that it would require the firm to issue equity, the ultimate approval for the project might depend on whether the firm's top management believed this a good time to issue equity—a decision that has nothing to do with the particular attributes of the project.

If the strategic planning committee recommends approval, the proposal is then sent to the executive who has sign-off authority on the capital expenditure. In the case of the scrap-materials-handling system, CP3's CEO is the decision maker. The CEO is likely to consider the same issues that the strategic planning group considered. He or she, of course, has less time to review the specifics of the proposal than did the strategic planning committee and relies on the analysis done for that group.

The CEO then takes very large projects to the board of directors for final approval. Generally, if the project has the backing of the firm's executive, the board is unlikely to turn down the project, but board members may question some of the aspects of the contractual structure. For example, directors may question the compensation and governance structure of the firms that are being acquired. They may also question how the project is financed, particularly if the project requires an external-equity issue.

## 1.6 Summing Up and Looking Forward

### Final Comments—The Investment Decision-Making Process

Our discussion of the investment decision-making process makes a number of important observations that influence the content and structure of the rest of this text:

- *The process can be very costly.* The process of project origination, evaluation, and approval is expensive and time-consuming. Of course, scrimping on the analysis of major projects can be even more expensive if it leads to project failures or missed opportunities.
- *The process can be subject to biased estimates that arise from conflicts of interest and incentive problems.* It is natural for members of the team that champions a proposal to become personally committed to the success of the project; as a result, their analyses may become biased. There is often a financial incentive attached to getting the project approved. For example, year-end bonuses may be tied to getting deals