Chapter 2: Project, Program, and Portfolio Selection

Introduction to Project Management

Learning Objectives

• Describe the importance of aligning projects with business strategy, the strategic planning process, and using a SWOT analysis.
• Explain the four-stage planning process for project selection, and provide examples of applying this model to ensure the strategic alignment of projects.
• Summarize the various methods for selecting projects, and demonstrate how to calculate net present value, return on investment, payback, and the weighted score for a project.
Learning Objectives (continued)

• Discuss the program selection process, and distinguish the differences between programs and projects.
• Describe the project portfolio selection process and the five levels of project portfolio management.

Opening Case

• Marie Scott, the director of the Project Management Office for Global Construction
  – Had a meeting with several senior managers throughout the company
    • to discuss a process for selecting projects, grouping them into programs, and determining how they fit into the organization’s portfolio of projects
    • With outside consultant to provide an objective view of the theory and practice behind project, programs, and portfolio selection
  – Marie found that they has the lack of understanding of the need for projects to align with business strategy
Aligning Projects with Business Strategy

- Most organizations cannot undertake most of the potential projects identified because of resource limitations and other constraints.
- An organization’s overall business strategy should guide the project selection process and management of those projects.

What Went Wrong?

- With little analysis, an organization selected an enterprise resource planning package and hired a firm to assist with the implementation.
- They did not formally define the benefits of the new system or decide exactly which processes were to be redesigned.
- The project was completed over budget and behind schedule, and instead of helping the company, it prevented it from closing its books for over twelve months.
Strategic Planning

• **Strategic planning**
  – involves determining long-term objectives
    • by analyzing the strengths and weaknesses of an organization,
    • studying opportunities and threats in the business environment,
    • predicting future trends,
    • and projecting the need for new products and services.

• Strategic planning provides
  – important information to help organizations
    • identify and then select potential projects.

SWOT Analysis

• **SWOT analysis** involves analyzing
  – Strengths, Weaknesses, Opportunities, and Threats.

• It can help you identify potential projects,
  – as is shown in the example about four people trying to start a new business.
Four Stage Strategic Planning Process for Project Selection

- Organizations often follow a detailed planning process for project selection.
- Figure 2-2 shows a four-stage planning process for selecting projects.
- *It is very important to start at the top of the pyramid to select projects that support the organization’s business strategy.*
Methods for Selecting Projects

- Focus on competitive strategy and broad organizational needs.
- Perform net present value analysis or other financial projections.
  - Return on Investment
  - Payback Analysis
- Use a weighted scoring model.
- Implement a balanced scorecard.
- Address problems, opportunities, and directives.
- Consider project time frame.
- Consider project priority.
Focusing on Competitive Strategy and Broad Organizational Needs

• Competitive strategies:
  – Cost leadership: Attract customers primarily because products or services are inexpensive.
    • Examples include Walmart and Cub Foods.
  – Focus: Develop products and services for a particular market niche.
    • Examples include Babies “R” Us and Ron Jon Surf Shop.

• Broad organizational needs:
  – Pursue projects that everyone agrees
  – People agree there is a need for a project, they will make funds available, and there is a strong will to make the project succeed.

Performing Financial Projections

• Financial considerations are often an important aspect of the project selection process.

• Three important methods include:
  – Net present value analysis (NPV)
  – Return on investment
  – Payback analysis
Net Present Value Analysis

- **NPV analysis**
  - is a method of calculating the expected net monetary gain or loss from a project by discounting all expected future cash inflows and outflows to the present point in time.

- **Positive NPV**
  - means the return from a project exceeds the **opportunity cost of capital**—the return available by investing the capital elsewhere.

- Projects with higher NPVs are preferred to projects with lower NPVs if all other factors are equal.

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**Figure 2-4. Net Present Value Example**

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Discount rate</td>
<td>10%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>PROJECT 1</td>
<td>YEAR 1</td>
<td>YEAR 2</td>
<td>YEAR 3</td>
<td>YEAR 4</td>
<td>YEAR 5</td>
</tr>
<tr>
<td>4</td>
<td>Benefits</td>
<td>$0</td>
<td>$2,000</td>
<td>$3,000</td>
<td>$4,000</td>
<td>$5,000</td>
</tr>
<tr>
<td>5</td>
<td>Costs</td>
<td>$5,000</td>
<td>$1,000</td>
<td>$1,000</td>
<td>$1,000</td>
<td>$1,000</td>
</tr>
<tr>
<td>6</td>
<td>Cash flow</td>
<td>$(5,000)</td>
<td>$1,000</td>
<td>$2,000</td>
<td>$3,000</td>
<td>$4,000</td>
</tr>
<tr>
<td>7</td>
<td>NPV</td>
<td>$2,316</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
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<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>PROJECT 2</td>
<td>YEAR 1</td>
<td>YEAR 2</td>
<td>YEAR 3</td>
<td>YEAR 4</td>
<td>YEAR 5</td>
</tr>
<tr>
<td>11</td>
<td>Benefits</td>
<td>$1,000</td>
<td>$2,000</td>
<td>$4,000</td>
<td>$4,000</td>
<td>$4,000</td>
</tr>
<tr>
<td>12</td>
<td>Costs</td>
<td>$2,000</td>
<td>$2,000</td>
<td>$2,000</td>
<td>$2,000</td>
<td>$2,000</td>
</tr>
<tr>
<td>13</td>
<td>Cash flow</td>
<td>$(1,000)</td>
<td>$0</td>
<td>$2,000</td>
<td>$2,000</td>
<td>$2,000</td>
</tr>
<tr>
<td>14</td>
<td>NPV</td>
<td>$3,201</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>

Notice that the sum of the **cash flow**—benefits minus costs, or income minus expenses—is the same for both projects at $5,000.
NPV Considerations

- Some organizations refer to the investment year(s) for project costs as Year 0 instead of Year 1 – and do not discount costs in Year 0.
- The discount rate can vary, – based on the prime rate and other economic considerations.
- You can enter costs as negative numbers instead of positive numbers, and you can list costs before benefits.
→ Project managers should check to see which approaches their organizations prefer when calculating NPV.
Steps for Calculating NPV

1. Determine the estimated costs and benefits for the life of the project and the products it produces.

2. Determine the discount rate.
   - A **discount rate** is the rate used in discounting future cash flows.
   - The annual **discount factor** is a multiplier for each year based on the discount rate and year
     - (calculated as \(1/(1+r)^t\), where \(r\) is the discount rate, and \(t\) is the year).
Steps for Calculating NPV (Cont’d)

3. Calculate the net present value by subtracting the total discounted costs from the total discounted benefits.
   Ex) Year 0: discount factor = $1/(1+0.08)^0 = 1$
   Year 1: discount factor = $1/(1+0.08)^1 = 0.93$
   Year 3: discount factor = $1/(1+0.08)^3 = 0.79$
4. NPV = total discounted benefits – total discounted costs
   = 516,000 – 243,2000 = $272,800

Return on Investment

- **Return on investment (ROI)** is the result of
  - subtracting the project costs from the benefits and then dividing by the costs.
  - For example, if you invest $100 today and next year your investment is worth $110,
    - your ROI is ($110 – 100)/100, or 0.10 (10 percent).
  - Note that the ROI is always a percentage,
    - and the higher the ROI, the better.
- Many organizations have
  - a **required rate of return** for projects
    - The minimum acceptable rate of return on an investment.
Return on Investment (Cont’d)

• **Return on investment (ROI) of Figure 2-6**

  ROI = (total discounted benefits – total discounted costs) / total discounted costs
  = (NPV) / 243,200
  = (516,000 – 243,200) / 243,200
  = 112%

• You can find the **internal rate of return (IRR)** by finding what discount rate results in an NPV of zero for the project.
  – Figure 2-4
  • Set NPV to 0
    – Then, IRR of project1 becomes 27%

Payback Analysis

• **Payback period**
  – is the amount of time it will take to recoup—in the form of net cash inflows—the total dollars invested in a project.

• Payback analysis determines
  – how much time will lapse before accrued benefits overtake accrued and continuing costs.

• Payback occurs in the year when the cumulative benefits minus costs reach zero.

• The shorter the payback period, the better.
Weighted Scoring Models

- A **weighted scoring model** is a tool
  - that provides a systematic process for selecting projects based on many criteria.

- To create a weighted scoring model:
  - Identify criteria important to the project selection process.
  - Assign a weight to each criterion (so they add up to 100 percent).
  - Assign numerical scores to each criterion for each project.
  - Calculate the weighted scores by multiplying the weight for each criterion by its score and adding the resulting values.

Figure 2-7. Charting the Payback Period

- Sum discounted costs and benefits respectively
Figure 2-8. Sample Weighted Scoring Model for Project Selection

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Weight</th>
<th>Project 1</th>
<th>Project 2</th>
<th>Project 3</th>
<th>Project 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supports key business objectives</td>
<td>25%</td>
<td>90</td>
<td>90</td>
<td>50</td>
<td>20</td>
</tr>
<tr>
<td>Has a strong internal sponsor</td>
<td>15%</td>
<td>70</td>
<td>90</td>
<td>50</td>
<td>20</td>
</tr>
<tr>
<td>Has a strong customer support</td>
<td>15%</td>
<td>50</td>
<td>90</td>
<td>50</td>
<td>20</td>
</tr>
<tr>
<td>Uses a realistic level of technology</td>
<td>10%</td>
<td>25</td>
<td>90</td>
<td>50</td>
<td>70</td>
</tr>
<tr>
<td>Can be implemented in one year or less</td>
<td>6%</td>
<td>20</td>
<td>20</td>
<td>50</td>
<td>10</td>
</tr>
<tr>
<td>Provides a positive NPV</td>
<td>20%</td>
<td>50</td>
<td>70</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Has low risk in meeting scope, time, and cost goals</td>
<td>10%</td>
<td>20</td>
<td>50</td>
<td>50</td>
<td>90</td>
</tr>
<tr>
<td>Weighted Project Scores</td>
<td>100%</td>
<td>55</td>
<td>78.5</td>
<td>50</td>
<td>41.5</td>
</tr>
</tbody>
</table>

Weighted Scoring Models (Cont’d)

- Weighted Score for Project 1
  \[25\%*90 + 15\%*70 + 15\%*50 + 10\%*25 + 5\%*20 + 20\%*50 + 10\%*20 = 56\]
Implementing a Balanced Scorecard

• Dr. Robert Kaplan and Dr. David Norton
  – developed another approach to help select and manage
    projects that align with business strategy.

• A balanced scorecard is a methodology
  – that converts an organization’s value drivers—such as
    customer service, innovation, operational efficiency,
    and financial performance—to a series of defined
    metrics.

• Visit www.balancedscorecard.org for more
  information on using this approach to select projects.

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**Figure 2-9. Balanced Scorecard Example**

**Mission:** Provide responsive, professional finance and accounting services for the people who defend America

**Vision:** Best Value to our customers
- World-class provider of finance and accounting services
- Trusted, innovative financial partner
- One Organization, One identity
- Employer of choice, providing a progressive and professional work environment

**Goals**
- Fully satisfy customer requirements and aggressively resolve problems to deliver best value services
- Use performance metrics to drive best business practices and achieve high quality results
- Optimize the mix of our military, civil, and contractor workforce
- Establish collaborative relationships with leaders
- Deliver business intelligence to enable better decisions
- Ensure everyone is working towards the same vision and can connect what they’re doing to make that vision a reality
- Embrace continuous learning for our workforce to ensure critical, high-quality skills sets
- Develop the next generation of DFAS leadership

**Perspectives**

**CUSTOMER PERSPECTIVE**
- Improve client/customer satisfaction

**FINANCIAL PERSPECTIVE**
- Reduce cost to the client/customer
- Expand the use of competitive sourcing

**INTERNAL PERSPECTIVE**
- Improve and leverage quality
- Encourage innovation
- Deliver system solutions

**GROWTH & LEARNING PERSPECTIVE**
- Enhance employee competence
- Increase employee satisfaction
- Enhance ability to recruit and retain DFAS talent
- Develop climate for action
Problems, Opportunities, and Directives

- **Problems** are undesirable situations that prevent an organization from achieving its goals. These problems can be current or anticipated.
- **Opportunities** are chances to improve the organization.
- **Directives** are new requirements imposed by management, government, or some external influence.

Project Time Frame

- Another approach to project selection is based on
  - the time it will take to complete a project
  - or the date by which it must be done.
- For example, some potential projects must be finished within a specific time period. If they cannot be finished by this set date, they are no longer valid projects.
  - Some projects can be completed very quickly—within a few weeks, days, or even minutes.
    - However, even though many projects can be completed quickly, it is still important to prioritize them.
Project Priority

- Many organizations prioritize projects as being high, medium, or low priority based on the current business environment.
- Organizations should always focus on high-priority projects.

Program Selection

- Recall that a program is a group of projects managed in a coordinated way
  - to obtain benefits and control not available from managing them individually.
- After deciding which projects to pursue, organizations need to decide if it is advantageous to manage several projects together as part of a program.
- There might already be a program that a new project would logically fall under,
  - or the organization might initiate a program and then approve projects for it.
- Ex: a construction firm develops hundreds of houses in the same geographical area
Example Reasons for a Construction Firm to Create Housing Programs

- *Save money*: A construction firm can purchase materials, obtain services, and hire workers for less money if it is managing the construction of one hundred houses instead of just one house.
- *Save time*: One person or group can be responsible for similar work, such as obtaining all the permits for all the houses.
- *Increase authority*: The program manager can use authority in multiple situations, such as negotiating better prices with suppliers and obtaining better services in a more timely fashion.

Approaches to Creating Programs

- Some new projects naturally fall into existing programs, such as houses being built in a certain geographic area.
- Other projects might spark the need for developing a new program.
  - For example, Global Construction (see the opening case) might win a large contract to build an office complex in a foreign country. Instead of viewing the contract as either one huge project or a part of an existing program, the company should manage the work as a single program that comprises several smaller projects.
Media Snapshot

• Instead of viewing each movie for *Lord of the Rings* as a separate project, the producer, Peter Jackson, decided to develop all three movies as part of one program.
  – “By shooting all three films consecutively during one massive production and postproduction schedule, New Line Cinema made history. Never before had such a monumental undertaking been contemplated or executed. The commitment of time, resources, and manpower were unheard of as all three films and more than 1,000 effects shots were being produced concurrently with the same director and core cast.”
  – Jackson said that doing detailed planning for all three movies made it much easier than he imagined to produce them, and the three movies were completed in less time and for less money by grouping them together
• The budget for the three films was reported to be $270 million, and they grossed over $1 billion before the end of 2004


Best Practice

• Why is it that some companies, like Proctor & Gamble, Johnson and Johnson, Hewlett Packard, and Sony, are consistently successful in New Product Development (NPD)? Because they use a disciplined, systematic approach to NPD projects based on best practices, including focusing NPD on business strategy. Robert Cooper’s study compared companies that were the best at performing NPD with those that were the worst. For example:
  – 65.5 percent of companies performing the best at NPD align projects with business strategy.
  – 46 percent of companies performing the worst at NPD align projects with business strategy.
  – 65.5 percent of best performing NPD companies have their resource breakdown aligned to business strategy.
  – 8 percent of worst performing companies do.*

Project Portfolio Selection

- It’s crucial to focus on enterprise success when creating project portfolios.
- There may be a need to cancel or put several projects on hold, reassign resources from one project to another, suggest changes in project leadership, or take other actions
  - that might negatively affect individual projects or programs to help the organization as a whole.
- For example, a university might have to close a campus in order to provide quality services at other campuses.

What Went Right?

- Jane Walton, the project portfolio manager for IT projects at Schlumberger, saved the company $3 million in one year by simply organizing the organization’s 120 IT projects into one portfolio.
- She found that 80 percent of the organization’s projects overlapped, and fourteen separate projects were trying to accomplish the same thing. The company canceled several projects and merged others to reduce the newly obvious redundancy.
- Mercy Health Partners’ chief information officer, Jim Albin, says project portfolio management helped his company improve its IT services and reduce costs by $4 million.
Sample Approaches for Creating a Project Portfolio

• Figure 2-10 illustrates one approach for project portfolio management in which there is one large portfolio for the entire organization.
  – Sections of the portfolio are broken down to improve the management of projects in each sector.
• The IT projects are broken down into three categories:
  – Venture: Projects that help transform the business.
    • Ex: Web Cam of Global Constructions for customers or suppliers
  – Growth: Projects that help increase revenues.
    • Ex: Chinese or Japanese web site
  – Core: Projects that help run the business.
    • Ex: provide new computers for new employees

Figure 2-10. Sample Project Portfolio Approach
Five Levels of Project Portfolio Management

1. Put all of your projects in one list.
2. Prioritize the projects in your list.
3. Divide your projects into several categories based on types of investment.
   - Growth strategy, profit margins, marketing, materials
4. Automate the list.
   1. Putting projects into computerized systems
5. Apply modern portfolio theory, including risk-return tools that map project risks.
   - Fig 2-11
     - No projects in the lower-right quadrant
       - That have low relative value with high risk

Figure 2-11. Sample Project Portfolio Risk Map
Case Wrap-Up

- Marie and the team discussed the input from the meeting with CEO, Doug Armbruster.
- Doug and his staff had a presentation to explain that the company was doing well and that they had no intention of either letting anyone go or cutting major programs.
- They believed that using project portfolio management would help them select and manage projects better.
- Everyone felt better and became more open to work with Marie’s group to improve their project, program, and portfolio management processes.

Chapter Summary

- An organization’s overall business strategy should guide the project selection process and management of those projects.
- The four-stage planning process helps organizations align their projects with their business strategy.
- Several methods are available for selecting projects:
  - Financial methods (net present value, return on investment, and payback)
  - Weighted scoring models
  - Balanced scorecards
  - Addressing problems, opportunities, and directives
  - Project time frame
  - Project priority
- The main criteria for program selection are the coordination and benefits available by grouping projects together into a program.
- The goal of project portfolio management is to help maximize business value to ensure enterprise success.