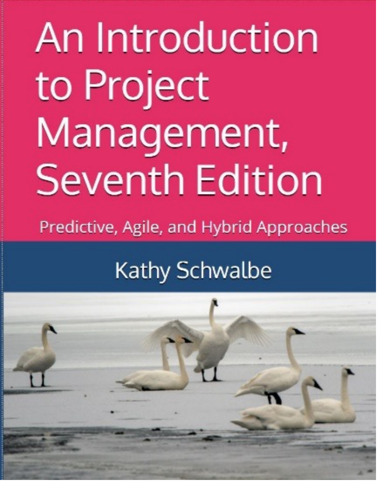


Chapter 2: Project, Program, and Portfolio Selection

Note: See the text itself for full citations. Text website is http://intropm.com.

Learning Objectives

- Describe the importance of aligning projects with business strategy, the strategic planning process, and using a SWOT analysis
- Explain two different approaches to the project planning process—a predictive approach and an agile approach—and compare the roles of product managers versus program or project managers
- 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
- Discuss the program selection process and approaches to creating programs
- Describe the project portfolio selection process using a traditional approach and a lean or agile approach

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
- A strategic plan usually includes the organization's mission, vision, and goals for the next 3-5 years

Nemours Children's Hospital Example

- **Mission:** To provide leadership, institutions, and services to restore and improve the health of children through care and programs not readily available, with one high standard of quality and distinction regardless of the recipient's financial status
- **Vision:** Freedom from disabling conditions
- **Goals:**
  - Be a leader in improving children's health through our integrated health system; becoming a pre-eminent voice for children
  - Care for each and every child as if they were our own
  - Be a great place to work
  - Be effective stewards of all of our assets, continually improving them to advance our mission

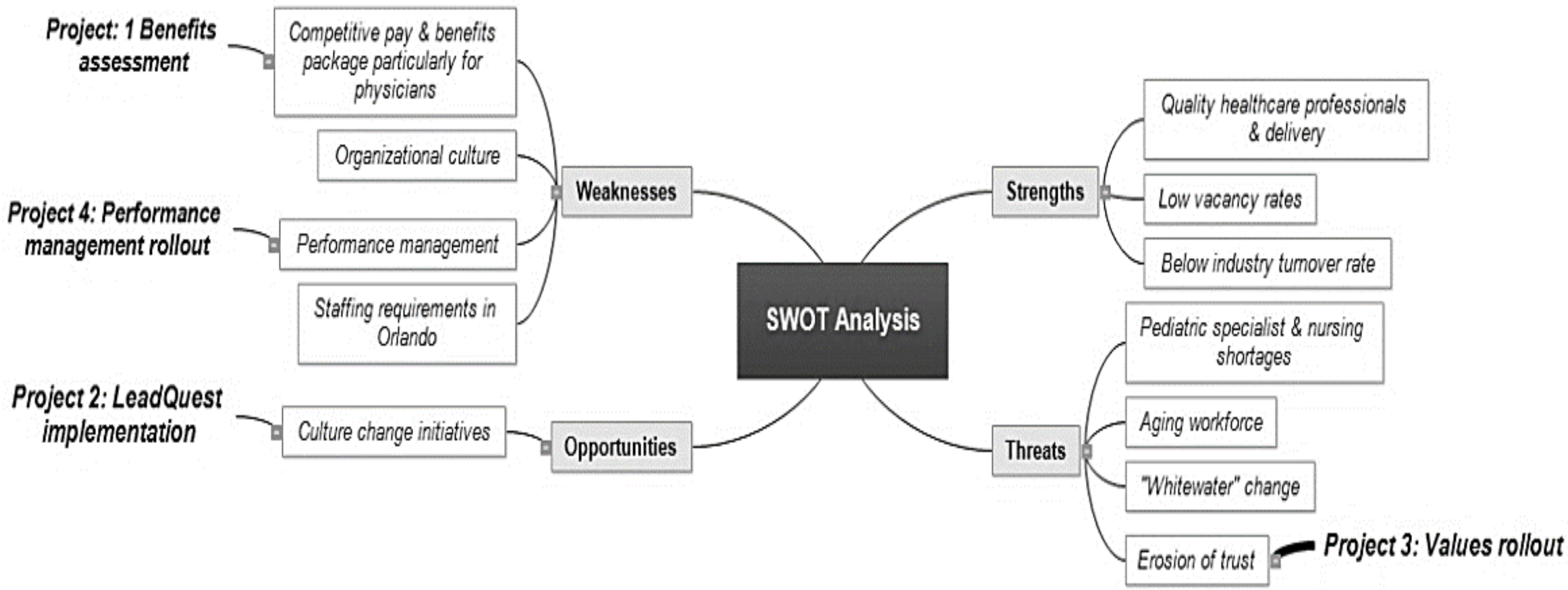
SWOT Analysis

- **SWOT analysis** involves analyzing **S**trengths, **W**eaknesses, **O**pportunities, and **T**hreats
- It can help you identify potential projects, as is shown in the example about four people trying to start a new business

Figure 2-1. Sample SWOT Analysis (Nemours)

	STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS
Stewardship	Financial strength Support from the Trust Debt capacity Triple A credit rating & low cost of capital	Slowdown in managed care rate increases Declining state revenues Declining revenue sources for community organization partners Office of Development infancy	External funding of biomedicalresearch Charitable giving to Nemours Approaching 2008 elections to be able to educate candidates	Cost pressures (labor & professional liability) Bad debt particularly related to growing uninsured & underinsured population Medicaid reimbursement Significant capital needs Change in DE Governor in 2008
Customers	Prevention & Advocacy programs unique among providers Focus on children's health Respected as an expert in child health & health matters	Decline in inpatient admissions Patient and family dissatisfaction as relates to access i.e., phone, scheduling,website navigation	Advocate changes in policies, programs & practices to support child health Increase market share in Delaware & Florida Branding Nemours & other social marketing	Unreimbursed preventative services Intense competition in Delaware Valley Declining birth rate & flat demographics in Delaware Litigious environment
Process	Integrated child health system Robust electronic environment, commitment to use IS in clinical care Priority on patient safety & quality Special programs: Kidshealth, NHPS & BrightStart! Community & government partnerships to advance policy & practice change in prevention	Infrastructure needs at AIDHC	Distinguishing ourselves in clinical quality, patient safety & child health promotion Improve service excellence Address access issues (phone, appointments, bundling) Integration of clinical treatment and community-based prevention	Consumer-driven health plans Pay-for-performance Price transparency Inflation on capital projects Technology obsolescence
People	Quality health care professionals & delivery Low vacancy rates Below industry turnover rate	Competitive pay & benefits package particularly for physicians Organizational culture Performance management Staffing requirements in Orlando	Culture change initiatives	Pediatric specialist & nursing shortages Aging workforce "Whitewater" change Erosion of trust

Figure 2-2. Mind Map of a SWOT Analysis to Help Identify Potential Projects (Created with MatchWare's MindView Business Edition)



Video Highlights

- There are several good videos that show you how to create a mind map. For example, youtube.com includes videos by Tony Buzan, author of *The Mind Map Book: How to Use Radiant Thinking to Maximize Your Brain's Untapped Potential*. Another good video on mind mapping is Mind Map Tutorial: My Secret for Project Management by Sheng Huang
- You can also learn how to use MindView Business software by watching their online tutorials from *www.matchware.com* or *youtube.com*. You can download a special 60-day trial of this software from *www.matchware.com/intropm.*

Traditional And Agile Approaches To Project Planning

- Many organizations follow a traditional approach, often completed in four stages
- To make more timely decision, they may also use an agile approach

Traditional Project Planning Process

- Organizations often follow a detailed planning process for project selection, often done on an annual basis
- Figure 2-3 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*

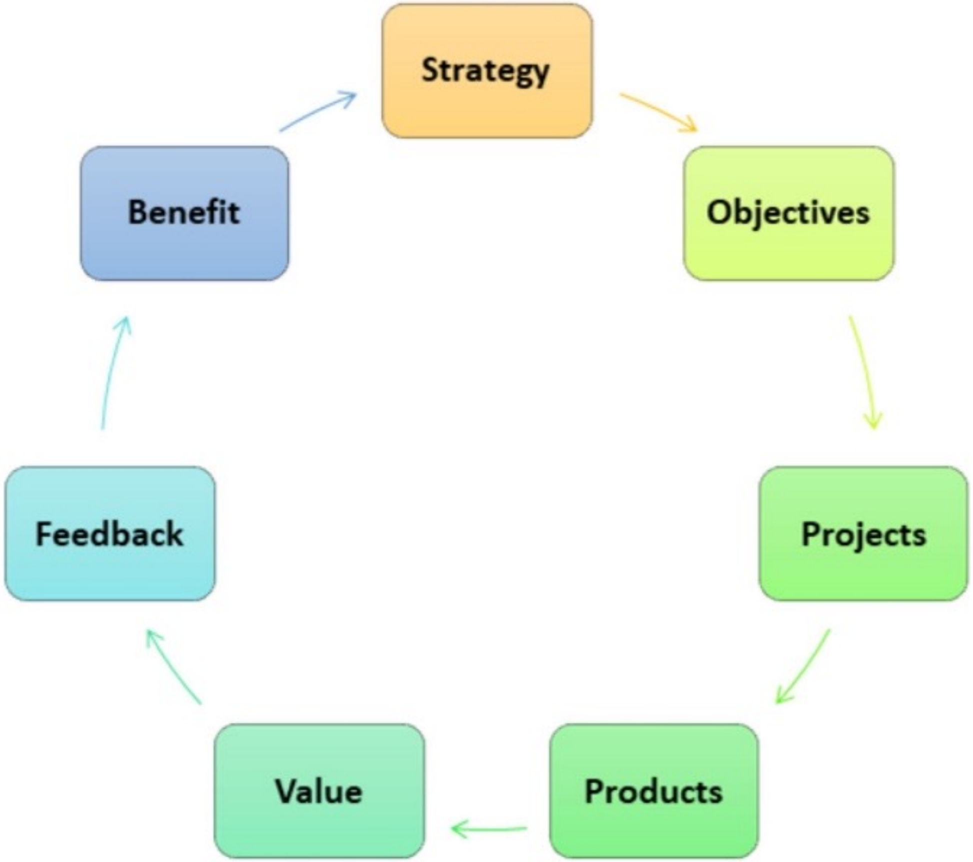
Figure 2-3. Pyramid for a Traditional Project Planning Process

An Agile Approach to Project Planning

- In contrast to the traditional, top-down planning approach, an agile planning approach is much more flexible and allows teams to provide feedback to strategy which can influence a change in direction
- Instead of selecting and funding a specific project, the corporation defines the strategic direction, funds teams, and entrusts them to figure out the best approach to define and deliver the greatest business value
- Instead of annual strategy meetings, agile organizations often hold quarterly business review (QBR) meetings

Figure 2-4. Strategy Implementation Circle

Iterative approach focusing on value, feedback, and benefits

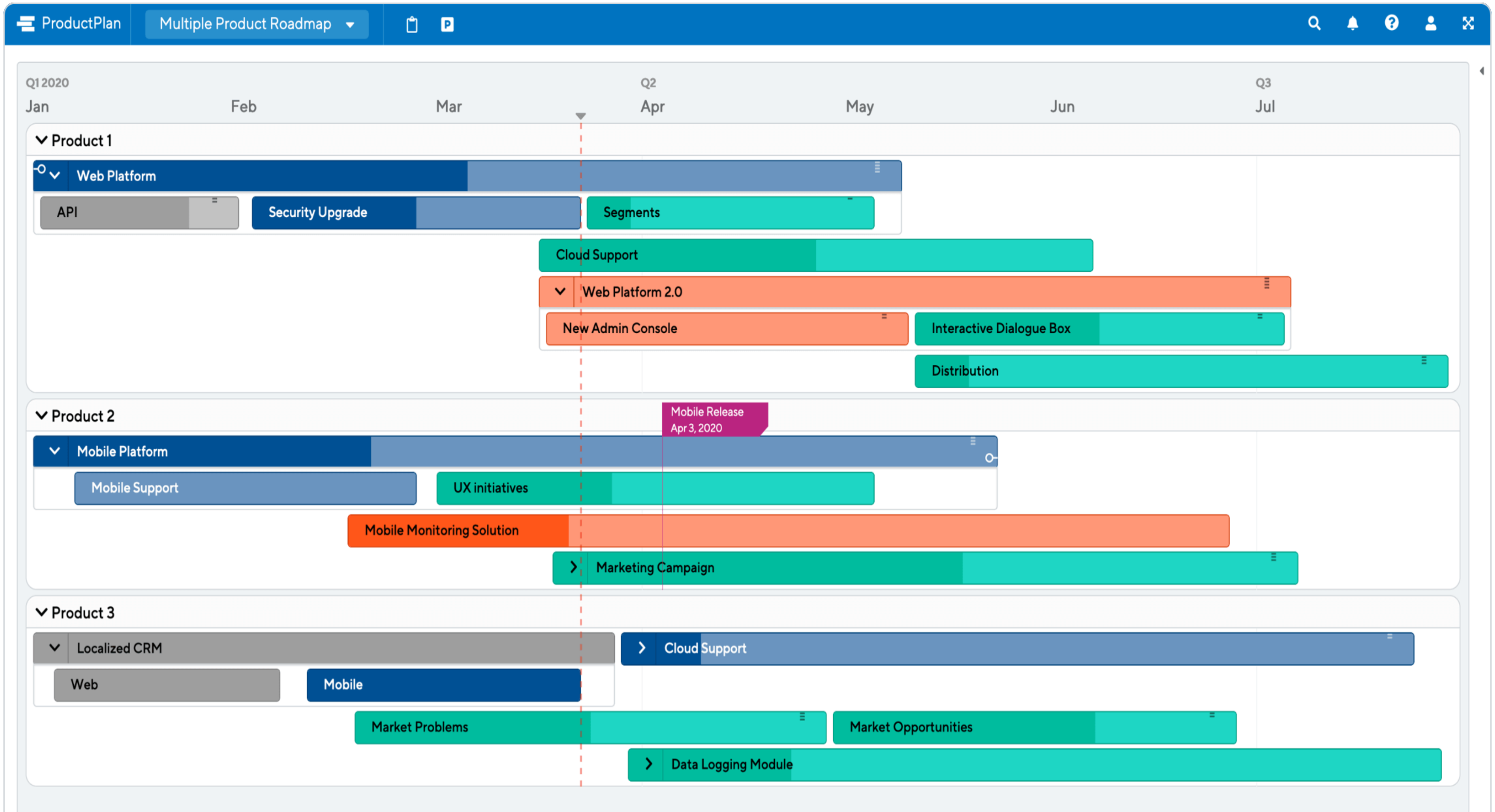


Source: Peter Monkhouse and Joanna Tivig, "Projects deliver Products, Products deliver Strategy (March 12, 2020).

Product Roadmap

- An important artifact for agile planning is a product roadmap.
- A product roadmap is a tool used to show a high-level visual summary of the vision and direction of a product or products over time.
- It can show one product, or it can show many products.

Figure 2-4. Multiple Product Roadmap (used with permission from ProductPlan, 2021)



Product Roadmap Versus Gantt Charts

- A Gantt chart is a standard format for displaying project schedule information by listing project activities and their corresponding start and finish dates in a calendar format.
- A company can use a roadmap and Gantt chart for the same large-scale initiative. The roadmap defines the why behind the project (or program). The Gantt chart establishes how and when.
- Product roadmaps should be created first to focus on strategy. Gantt charts should be created to focus on implementing that strategy.

Product Management Versus Program Management

- Product management is the practice of strategically driving the development, market launch, and continual support and improvement of a company's products. Product managers are responsible not for a specific project or team, but rather for one or more of a company's products—from the moment the concept for that product is conceived until, well, forever.
- Program management involves identifying and coordinating the interdependencies among projects, products, and other important strategic initiatives across an organization.

Best Practice

- In the summer of 2015, the Dutch banking group ING embarked on a journey to shift its traditional organization to an agile model. Their initial focus was on the 3,500 staff members at group headquarters. They tore down physical walls to create more open spaces, allowing more informal interaction between employees.
- When asked to define agility, Schlatmann, former chief operating office, provided the following response: “Agility is about flexibility and the ability of an organization to rapidly adapt and steer itself in a new direction. It’s about minimizing handovers and bureaucracy, and empowering people. The aim is to build stronger, more rounded professionals out of all our people. Being agile is not just about changing the IT department or any other function on its own. The key has been adhering to the ‘end-to-end principle’ and working in multidisciplinary teams, or squads, that comprise a mix of marketing specialists, product and commercial specialists, user-experience designers, data analysts, and IT engineers—all focused on solving the client’s needs and united by a common definition of success.”

Methods for Selecting Projects

- Focus on competitive strategy and broad organizational needs
- Perform net present value analysis or other financial projections
- 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 (now part of Toys “R” Us) and Ron Jon Surf Shop
- Broad organizational needs: 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
  - Return on investment
  - Payback analysis

Net Present Value Analysis

- **Net present value (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
- 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

Figure 2-5. Net Present Value Example

Note that total cash flows are equal, but the NPVs are very different.

	A	B	C	D	E	F	G
1	**Discount rate**	**10%**					
2							
3	**PROJECT 1**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total**
4	Benefits	$ -	$ 2,000,000	$ 2,000,000	$ 2,000,000	$ 2,000,000	$ 8,000,000
5	Costs	$ 4,000,000	$ 500,000	$ 500,000	$ 500,000	$ 500,000	$ 6,000,000
6	Cash flow	$ (4,000,000)	$ 1,500,000	$ 1,500,000	$ 1,500,000	$ 1,500,000	**$2,000,000**
7	**NPV**	**$686,180**	Formula: =nv(b1,b6:f6)				
8							
9	**PROJECT 2**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total**
10	Benefits	$ -	$ 3,000,000	$ 3,000,000	$ 3,000,000	$ 3,000,000	$ 12,000,000
11	Costs	$ 2,000,000	$ 2,000,000	$ 2,000,000	$ 2,000,000	$ 2,000,000	$ 10,000,000
12	Cash flow	$ (2,000,000)	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	**$2,000,000**
13	**NPV**	**$1,063,514**	Formula: =nv(b1,b12:f12)				

Figure 2-6. Detailed NPV Calculations

Discount rate	**10%**					
			Year			
PROJECT 1	**1**	**2**	**3**	**4**	**5**	**Total**
Benefits	$ -	$ 2,000,000	$ 2,000,000	$ 2,000,000	$2,000,000	$ 8,000,000
Discount factor	0.91	0.83	0.75	0.68	0.62	
Discounted benefits	$ -	$ 1,652,893	$ 1,502,630	$ 1,366,027	$1,241,843	**$ 5,763,392**
Costs	$ 4,000,000	$ 500,000	$ 500,000	$ 500,000	$ 500,000	$ 6,000,000
Discount factor	0.91	0.83	0.75	0.68	0.62	
Discounted costs	$ 3,636,364	$ 413,223	$ 375,657	$ 341,507	$ 310,461	**$ 5,077,212**
Total discounted benefits - costs, or NPV →						**$ 686,180**
Note: The discount factors are not rounded to two decimal places.						
They are calculated using the formula discount factor =1/(1+discount rate)^year.						

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

Figure 2-7. Intranet Project NPV Example

Discount rate	**8%**					
Assume the project is completed in Year 0			**Year**			
	0	**1**	**2**	**3**	**Total**	
Costs	140,000	40,000	40,000	40,000		
Discount factor	1	0.93	0.86	0.79		
Discounted costs	**140,000**	**37,200**	**34,400**	**31,600**	**243,200**	
Benefits	0	200,000	200,000	200,000		
Discount factor	1	0.93	0.86	0.79		
Discounted benefits	**0**	**186,000**	**172,000**	**158,000**	**516,000**	
Discounted benefits - costs	(140,000)	148,800	137,600	126,400	**272,800**	← **NPV**
Cumulative benefits - costs	(140,000)	8,800	146,400	272,800		
		↑				
ROI →	**112%**					
	Payback in Year 1					

Schwalbe, Information Technology Project Management, Sixth Edition, 2010

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).
3. Calculate the net present value by subtracting the total discounted costs from the total discounted benefits.

Return on Investment

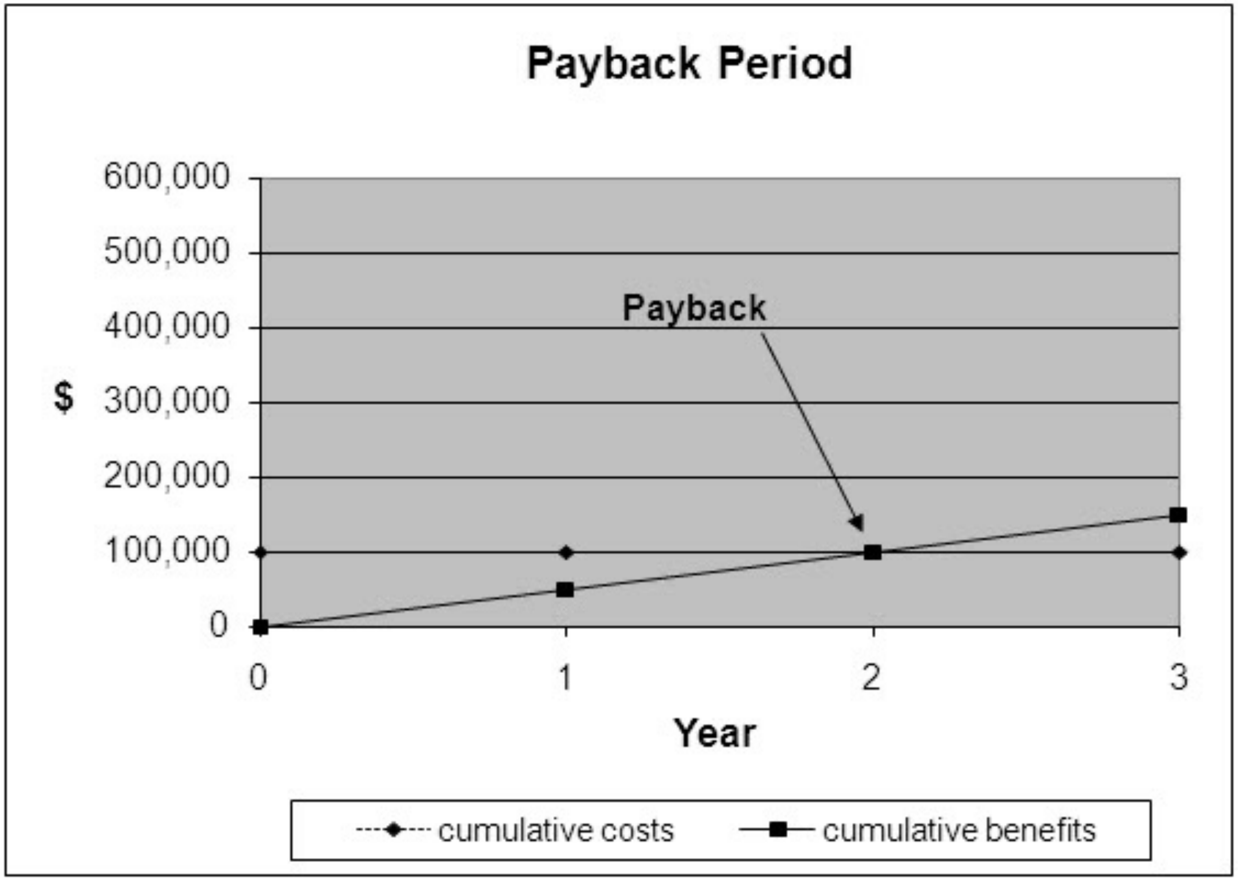
- **Return on investment (ROI)** is the result of subtracting the project costs from the benefits and then dividing by the costs.
- For example, if you invest $100 today and next year your investment is worth $110, your ROI is ($110 – 100)/100, or 0.10 (10 percent)
- Note that the ROI is always a percentage, 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
- You can find the **internal rate of return (IRR)** by finding what discount rate results in an NPV of zero for the project

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

Figure 2-8. Charting the Payback Period

Year	Costs	Benefits	Cum Costs	Cum Benefits	Cum Cash Inflows
0	100,000	0	100,000	0	-100,000
1	0	50,000	100,000	50,000	-50,000
2	0	50,000	100,000	100,000	0
3	0	50,000	100,000	150,000	50,000



Template Files Available

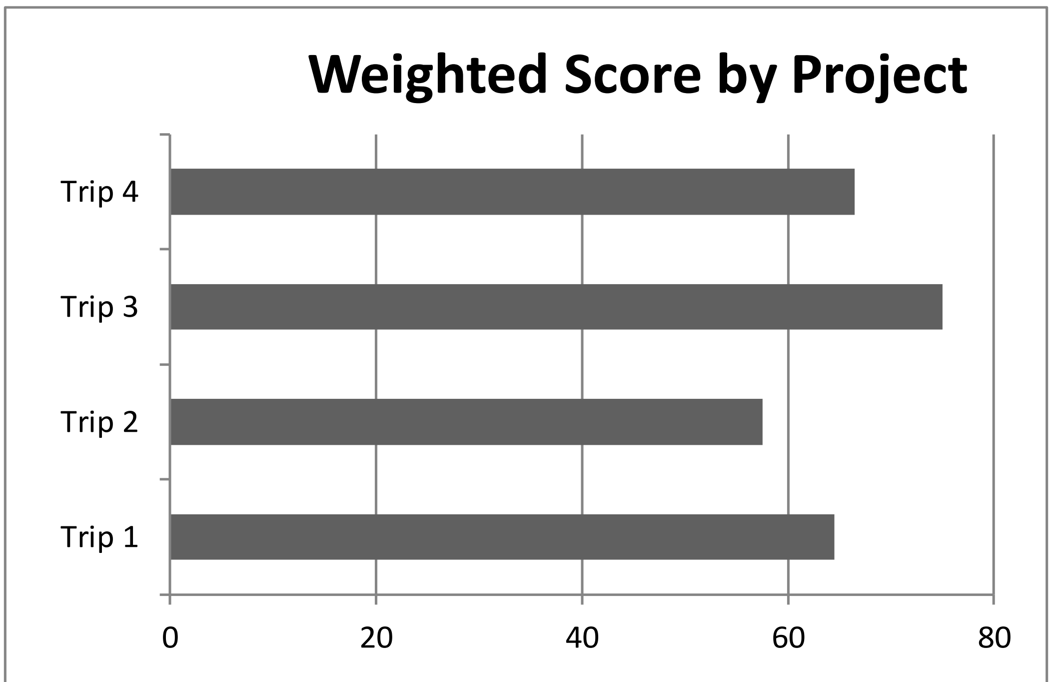
- A template file called *business case financials* is available on the companion website for this text (www.intropm.com) for calculating NPV, ROI, and payback for a project.
- There is another file called *payback period chart* that you can use to create the chart, if needed.

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 2-9. Sample Weighted Scoring Model for Project Selection

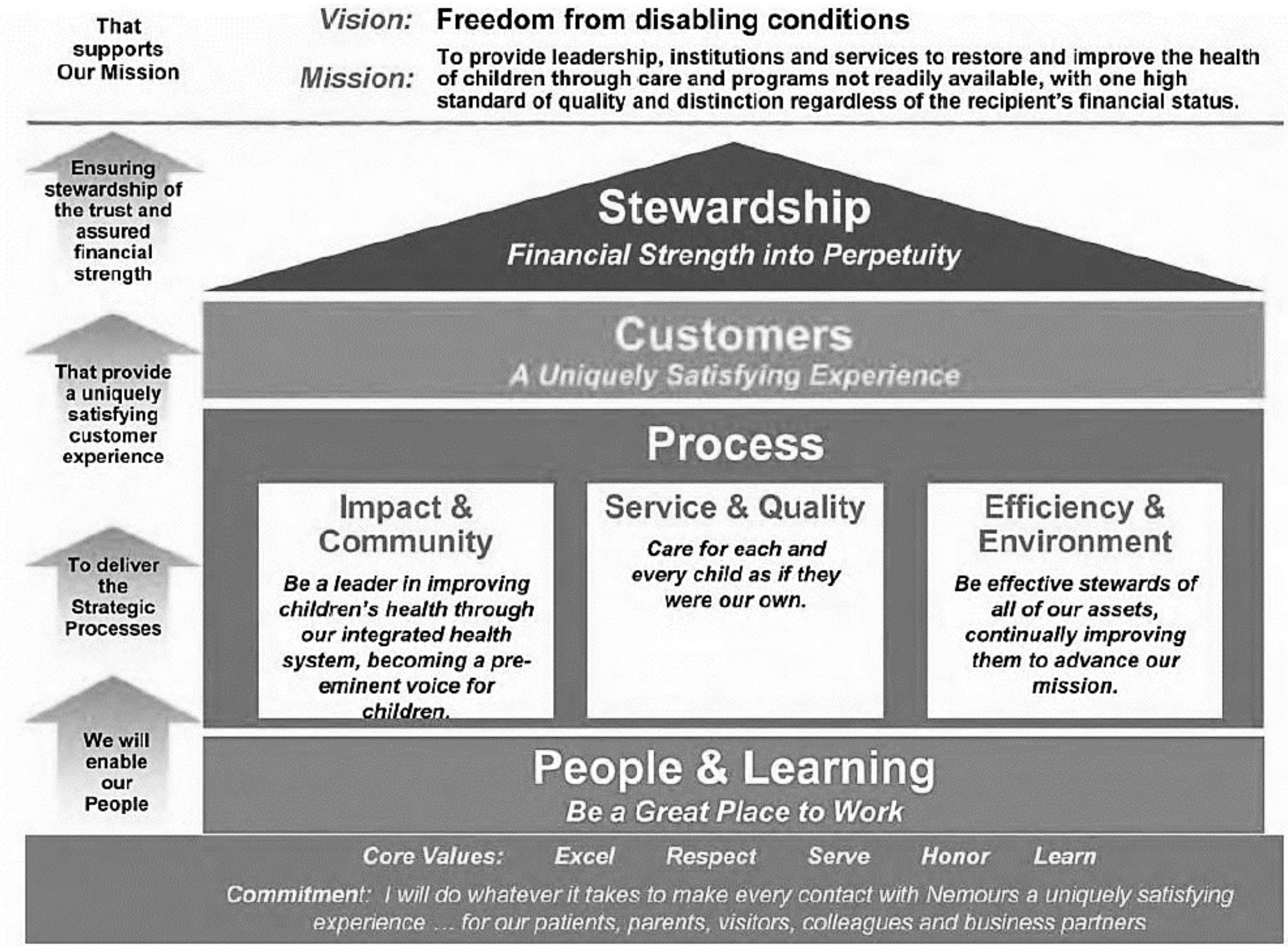
Criteria	Weight	Trip 1	Trip 2	Trip 3	Trip 4
Total cost of the trip	25%	60	80	90	20
Probability of good weather	30%	80	60	90	70
Fun activities nearby	15%	70	30	50	90
Recommendations	30%	50	50	60	90
Weighted Project Scores	**100%**	**64.5**	**57.5**	**75**	**66.5**



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

Figure 2-10. Sample Balanced Scorecard Strategy Map (Nemours)



Problems, Opportunities, and Directives

- **Problems** are undesirable situations that prevent an organization from achieving its goals - can be current or anticipated
- **Opportunities** are chances to improve the organization
- **Directives** are new requirements or regulations 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 related projects, subsidiary programs, and program activities managed in a coordinated manner to obtain benefits 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

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
- 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
- Jackson continued his move making success by directing *The Hobbit* trilogy, with movies released in 2012, 2013, and 2014

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

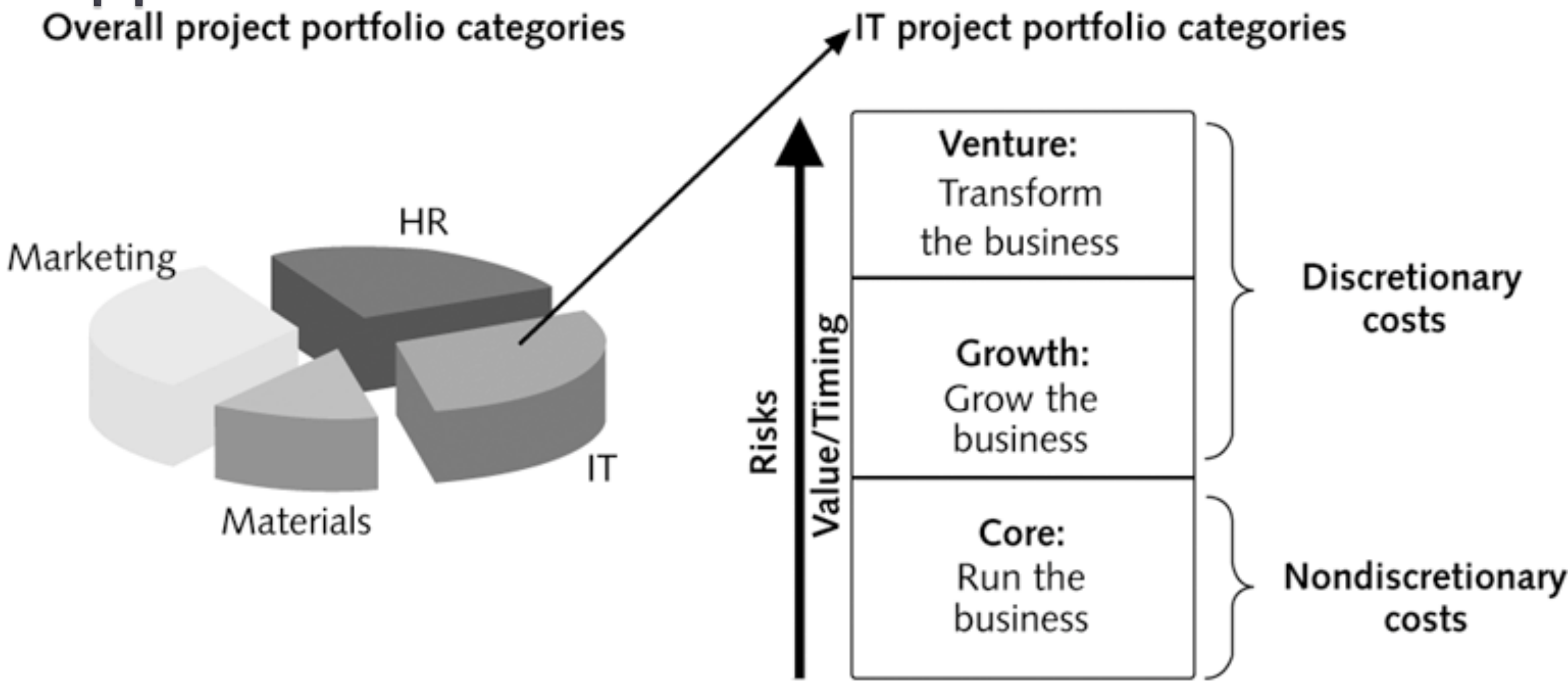
What Went Right?

- A 2019 survey of 223 engineering and construction industry experts found that innovative leaders (the top 20%) were way ahead of others in terms of governance and controls. Most of these innovative leaders (69%) had integrated their project management systems with multiple tools for projects and portfolios. As a result, 66% of their projects came within 90% of their planned schedules.
- Across all industries, organizations that excel in project management complete 92 percent of their projects successfully compared to only 33 percent in organizations that do not have good project management processes. Poor project performance, including poor portfolio management, costs over $97 million for every $1 billion invested in projects and programs.11

Sample Approaches for Creating a Project Portfolio

- Figure 2-11 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
  - Growth: Projects that help increase revenues
  - Core: Projects that help run the business

Figure 2-11. Sample Project Portfolio Approach

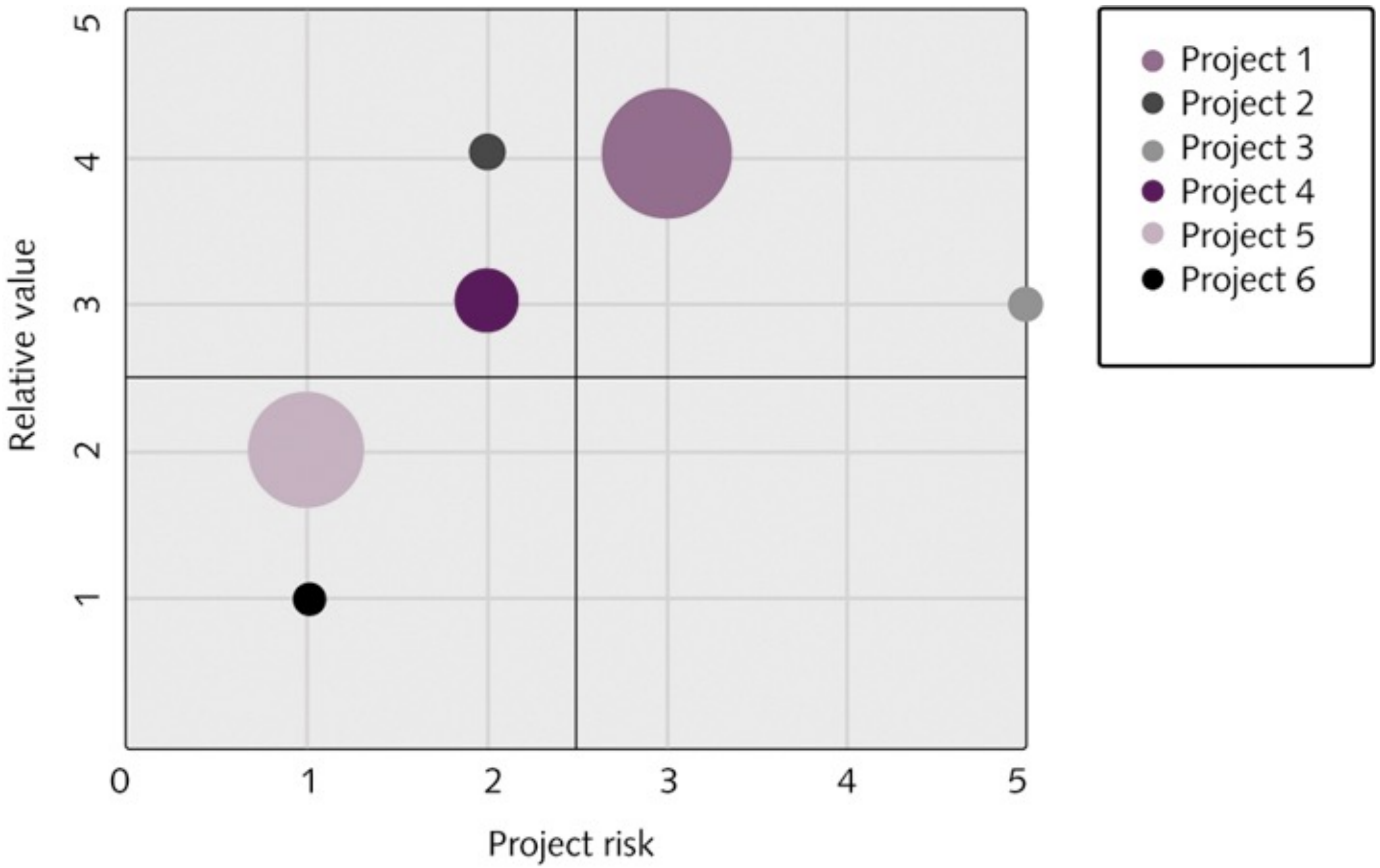


Schwalbe, Information Technology Project Management, Sixth Edition, 2010

Five Levels of Project Portfolio Management – Traditional Approach

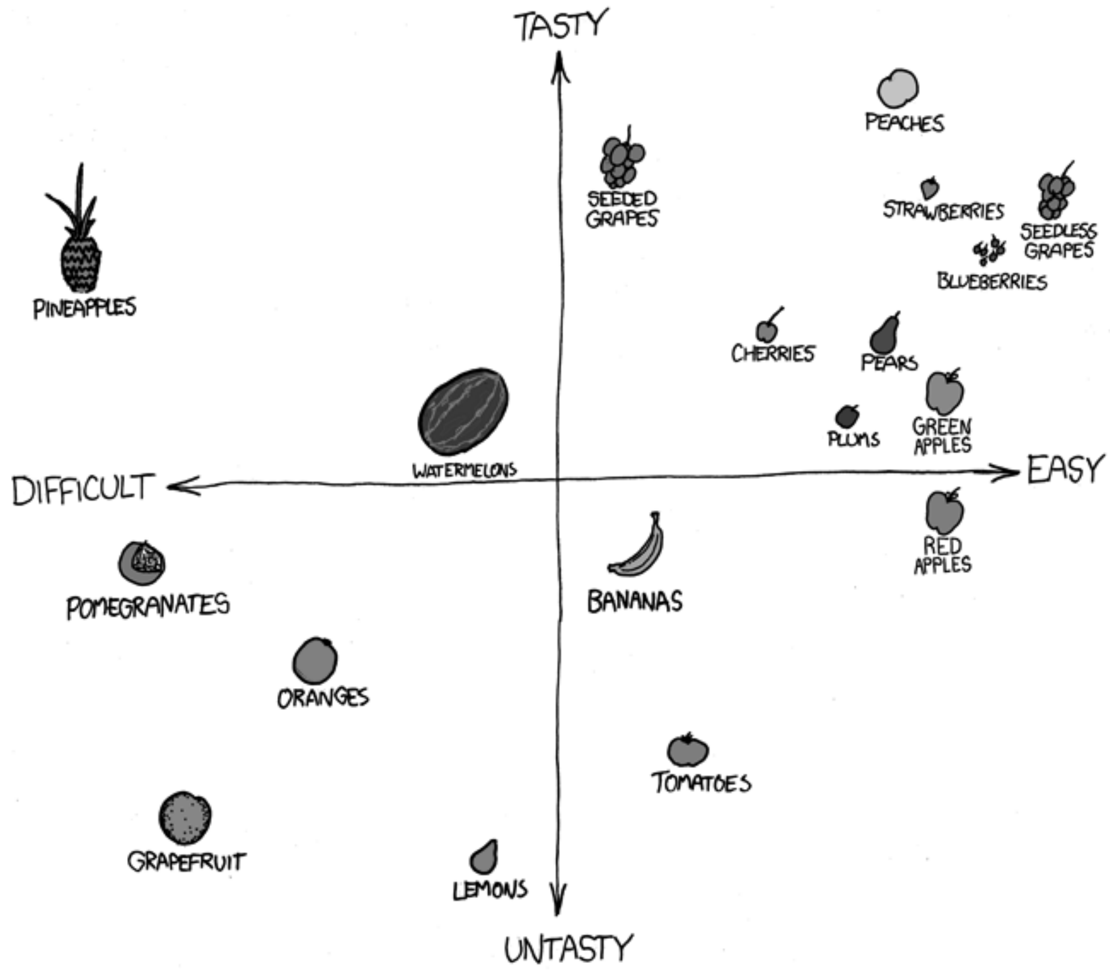
1. Put all of your projects in one list
2. Prioritize the projects in your list
3. Divide your projects into several categories based on types of investment
4. Automate the list
5. Apply modern portfolio theory, including risk-return tools that map project risks

Figure 2-12. Sample Project Portfolio Risk Map



Schwalbe, Information Technology Project Management, Sixth Edition, 2010

Figure 2-13. Deciding What Fruit to Eat (www.xkcd.com)



Lean Project Portfolio Management

- **Lean** is a management approach that focuses on creating more value for customers by eliminating waste and optimizing processes.
- Focuses on the following:
  - Defining desired outcomes and asking teams to determine the work needed to produce those outcomes
  - Focusing more on value delivery than managing costs
  - Revisiting past decisions, plans, budgets, and finances at least every quarter based on market feedback

Chapter Summary

- An organization's overall business strategy should guide the project selection process and management of those projects
- Many organizations follow a traditional approach, often completed in four stages. To make more timely decisions, they can also use an agile approach.
- Several methods are available for selecting projects, including financial methods (net present value, return on investment, and payback); weighted scoring models; balanced scorecards; addressing problems, opportunities, and directives; project time frame; and project priority
- The main criteria for program selection are the coordination and benefits available by grouping projects
- The goal of project portfolio management is to help maximize business value to ensure enterprise success