

STRATEGIC MANAGEMENT OF Technological Innovation

Sixth Edition

Melissa A. Schilling

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What is the importance of Technological Innovation?

Importance of Technological Innovation (1)

In many industries technological innovation is now the **single most important driver of competitive success** and because the **pace** of innovation has increased many firms now rely on **products developed within the prior five years** for a large portion of their sales and profits. This period is reduced to **three years** for firms in **fast-paced industries** such as computers, software and telecommunications

Importance of Technological Innovation (2)

- Innovation is also a very powerful driver of **increased effectiveness and efficiency** in producing goods and bringing them to market;
- firms that do not constantly innovate to make their development, production, and distribution processes more effective and efficient are likely to fall behind their competitors.

Importance of Technological Innovation (3)

The **globalization of markets** has played a significant role in increasing the importance of innovation as a competitive strategy by increasing competitive pressure.

Importance of Technological Innovation (4)

- Technological innovations also help firms to develop and produce more product variants enabling them to **out-focus** their competitors.
 - For example, **Toyota produces 21 different passenger vehicle lines, each with several different models** and Samsung introduced 52 unique smartphones in 2014.

Importance of Technological Innovation (5)

Adoption of these new technologies has triggered industry-wide shifts to **shortened development cycles** and **more rapid new product introductions**

Importance of Technological Innovation (6)

The **proportion of funds** for technological innovation **provided by firms** relative to government funding has been **increasing** but **governments do play a significant role** in the innovation process.

Impact of technological Innovation on Society (1)

Technological innovation **increases the range of goods and services available** to a society, and the **efficiency of providing them**.

For example, innovation has increased the development of new medical treatments and the efficiency of food production.

Impact of technological Innovation on Society (1)

The **Solow residual** is the GDP growth represented by technological change.

Average world GDP per capita has risen steadily since 1971 and cannot be attributed solely to the growth of labor and capital inputs.

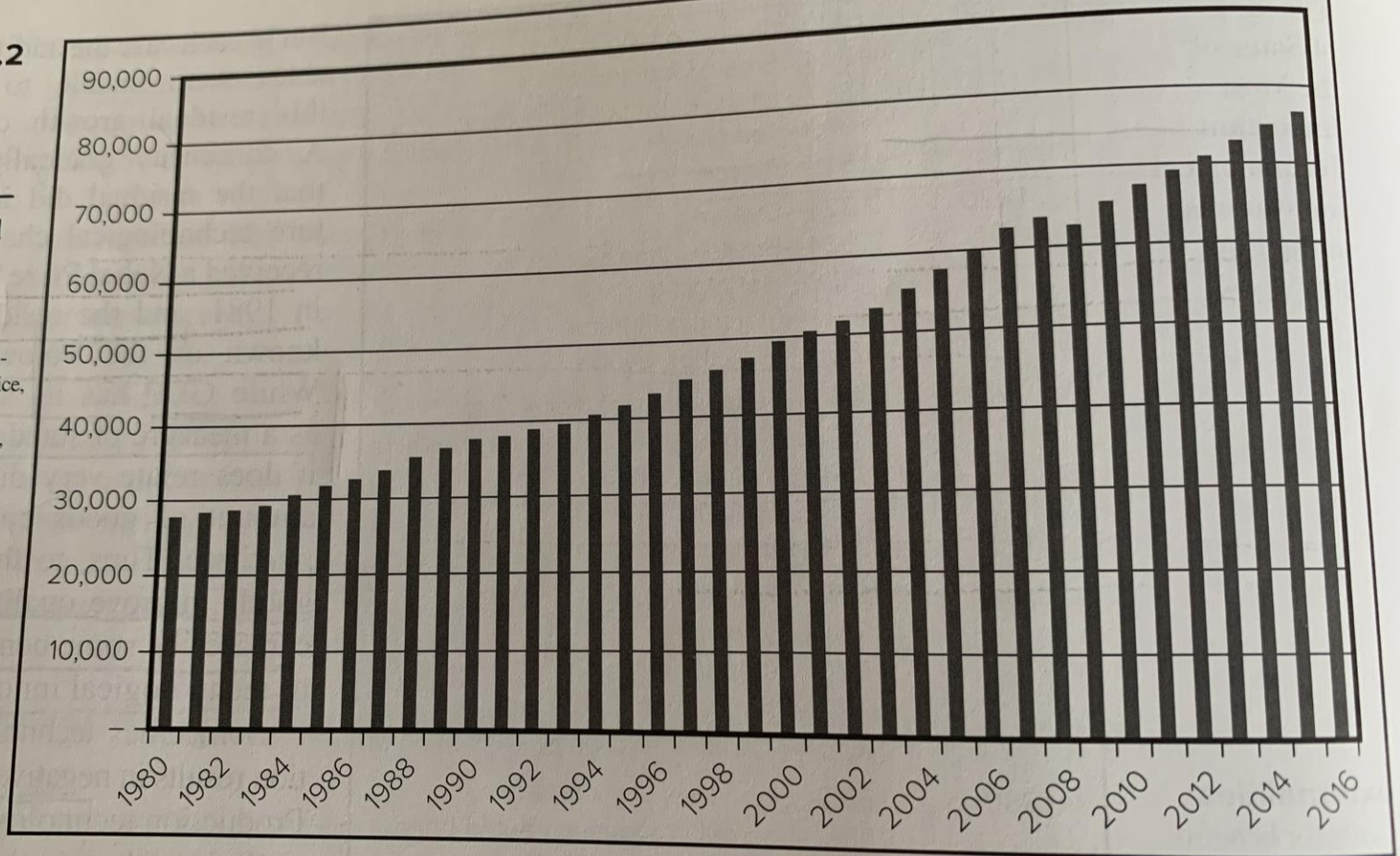
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4 Chapter 1 Introduction

FIGURE 1.2
Gross Domestic Product per Capita, 1989–2016 (in Real 2010 \$US Billions)

Source: USDA Economic Research Service, www.ers.usda.gov, accessed April 16th, 2018.



Impact of technological Innovation on Society (2)... However

The **story is not all positive**, however. Sometimes technological innovation results in **negative externalities** such as pollution and medical technologies can have unanticipated consequences.

Innovation by Industry: The Importance of Strategy

Successful innovators have **clearly defined innovation strategies and management processes** that result in a greater percentage of successful products and shorter development cycles.

Innovation by Industry: The Importance of Strategy

How Long Does New Product Development Take?

Cycle time varies with the “innovativeness” of the project.

Incremental improvements take less time than next generation improvements while new-to-the-world products or technologies take the longest.

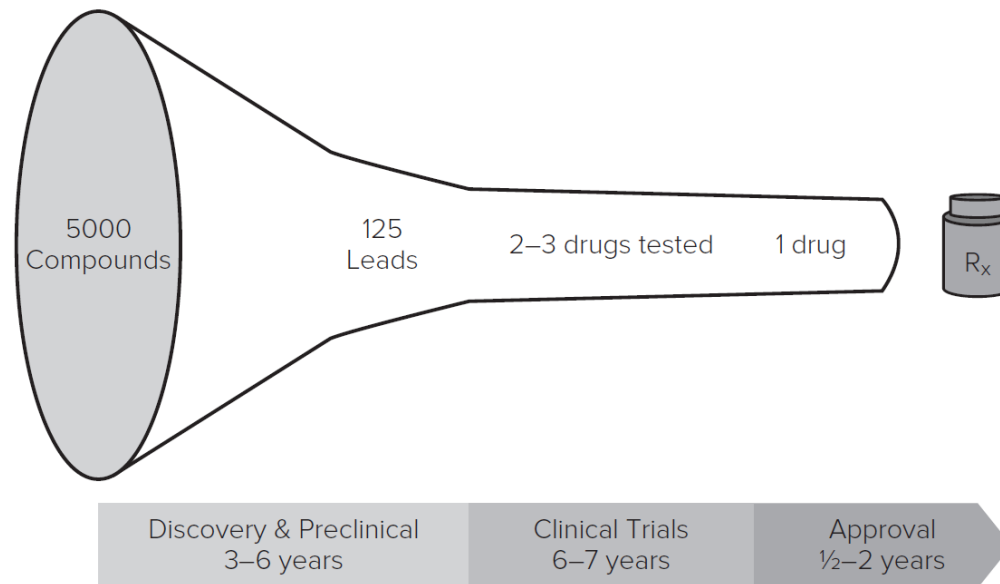
Innovation by Industry: The Importance of Strategy

The Innovation Funnel depicts the new product development process as beginning with many new product ideas going in the wide end and ending with very few projects making it through the development process (the bottom of the funnel).

Innovation Funnel

Successful innovation requires carefully crafted strategies and implementation processes.

- Most innovative ideas do not become successful new products.
 - For example, The New Product Development Funnel in Pharmaceuticals.



The Strategic Management of Technological Innovation (1)

A firm's **innovation projects** should **align** with its **resources and objectives**, leverage its **core competencies** and should help the firm achieve its **strategic intent**.

The Strategic Management of Technological Innovation (2)

- A firm's **organizational structure and control systems** should encourage the generation and efficient implementation of innovative ideas and
- a firm's **new product development processes** should maximize the technical and commercial success of each project.

The Strategic Management of Technological Innovation (3)

To achieve these goals, a firm needs

- **An in-depth understanding of the dynamics of innovation,**
- **A well-crafted innovation strategy,**
- **well-designed processes** for implementing the innovation strategy.

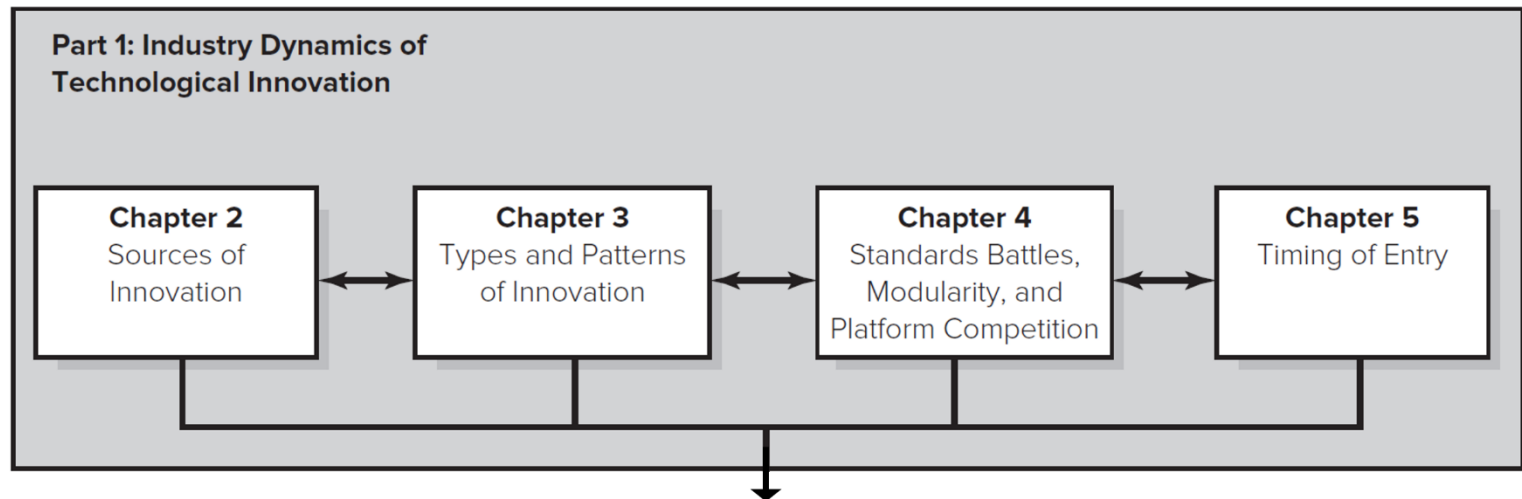
Course Overview: Part 1

Part I focuses on how and why innovation occurs in an industry and why some innovations rise to dominate others.

Course Overview: Part 1

Part One: The foundations of technological Innovation.

2. Sources of innovation.
3. Types and patterns of innovation.
4. Standards battles and design dominance.
5. Timing of Entry.



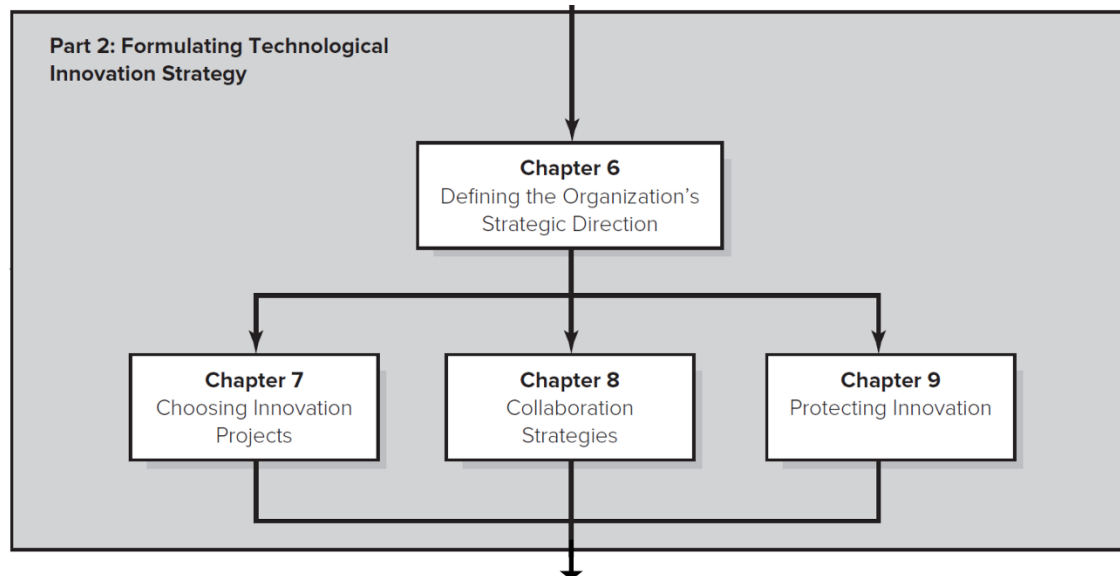
Course Overview: Part 2

Part II focuses on the formulation of **technological innovation strategy**.

Course Overview

Part Two: Formulating Technological Innovation Strategy.

- 6. Defining the organization's strategic direction.
- 7. Choosing innovation projects.
- 8. Collaboration strategies.
- 9. Protecting innovation.



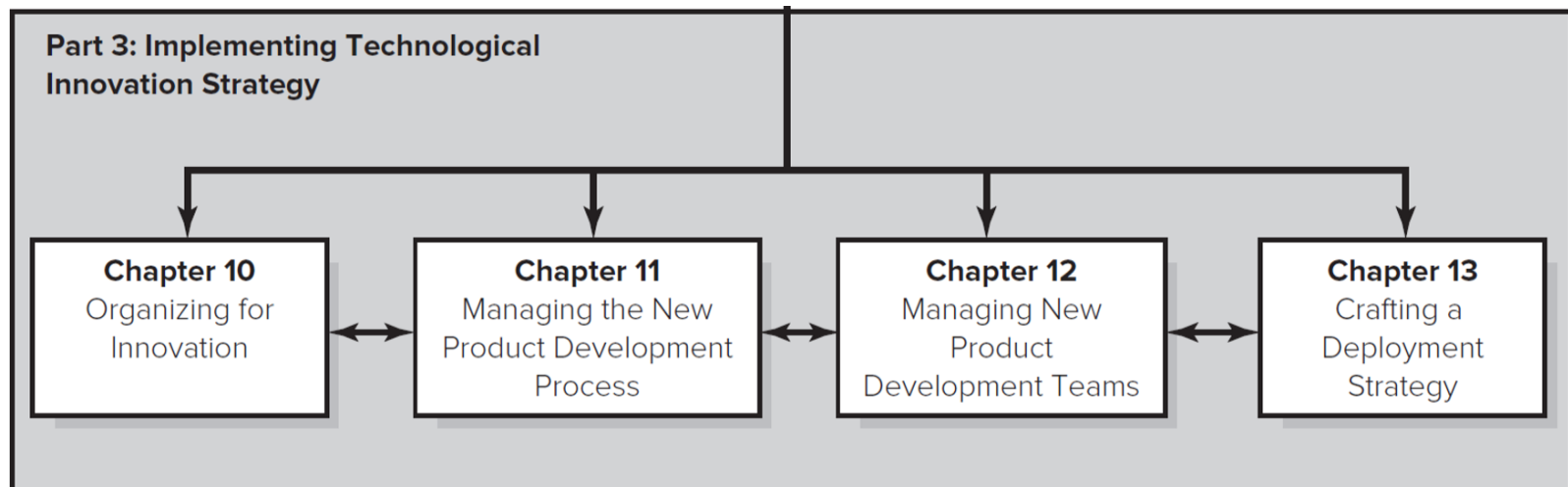
Course Overview: Part 3

Part III focuses on **implementation**

Course Overview: Part 3

Part Three: Implementing Technological Innovation Strategy.

- 10. Organizing for innovation.
- 11. Managing the new product development process.
- 12. Managing new product development teams.
- 13. Crafting a deployment strategy.



[Access the text alternative for these images](#)

Discussion Questions

1. Why is innovation so important for firms to compete in many industries?
2. What are some of the advantages of technological innovation? Disadvantages?
3. Why do you think so many innovation projects fail to generate an economic return?