

A black and white photograph of several sailboats racing on a choppy sea. The boats are leaning to the left, and white spray is visible from their bows. The background is a dark, textured sea.

STRATEGIC^{13e} MANAGEMENT

An Integrated Approach
Theory & Cases

HILL • SCHILLING • JONES

CHAPTER 7

Strategy and Technology

LEARNING OBJECTIVES

- Understand the tendency toward standardization in many high-technology markets
- Describe the strategies that firms can use to establish their technology as the standard in a market
- Explain the cost structure of many high-technology firms, and articulate the strategic implications of this structure
- Explain the nature of technological paradigm shifts and their implications for enterprise strategy

FACTORS THAT ACCELERATE CUSTOMER DEMAND (1 of 2)

Technical standards

- Set of technical specifications that producers adhere to when making the product or component.

Format wars

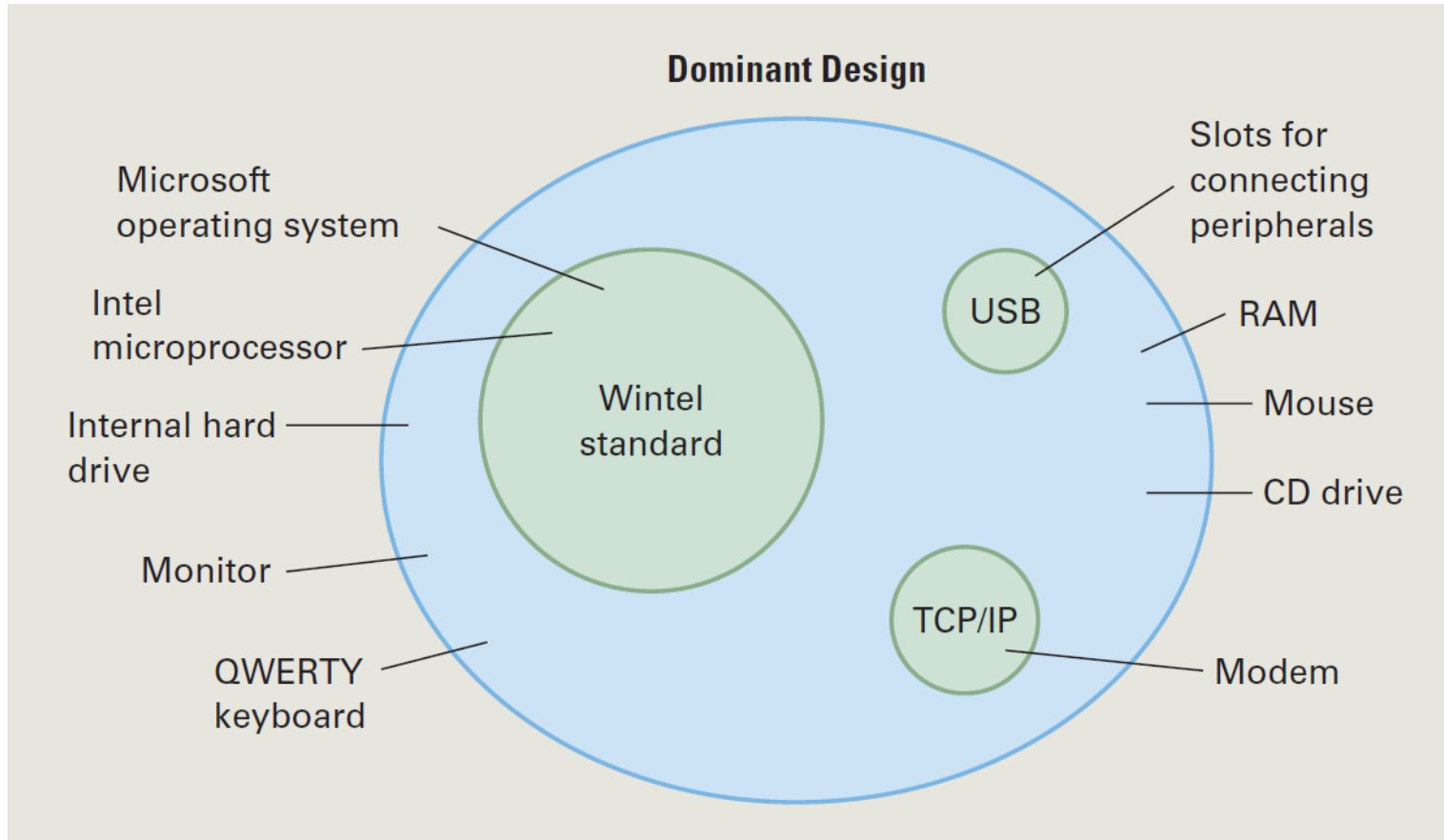
- Battles to control the source of differentiation, and the value that such differentiation can create for the customer.

Dominant design

- Common set of features or design characteristics.

TECHNICAL STANDARDS

Figure 7.3 Technical Standards for Personal Computers



BENEFITS OF STANDARDS

- Guarantees compatibility between products and their complements.
- Reduces confusion in the minds of consumers.
- Reduces production costs.
- Reduces risks associated with supplying complementary products.
- Leads to low-cost and differentiation advantages for individual companies.
- Helps raise the level of industry profitability.

ESTABLISHMENT OF STANDARDS

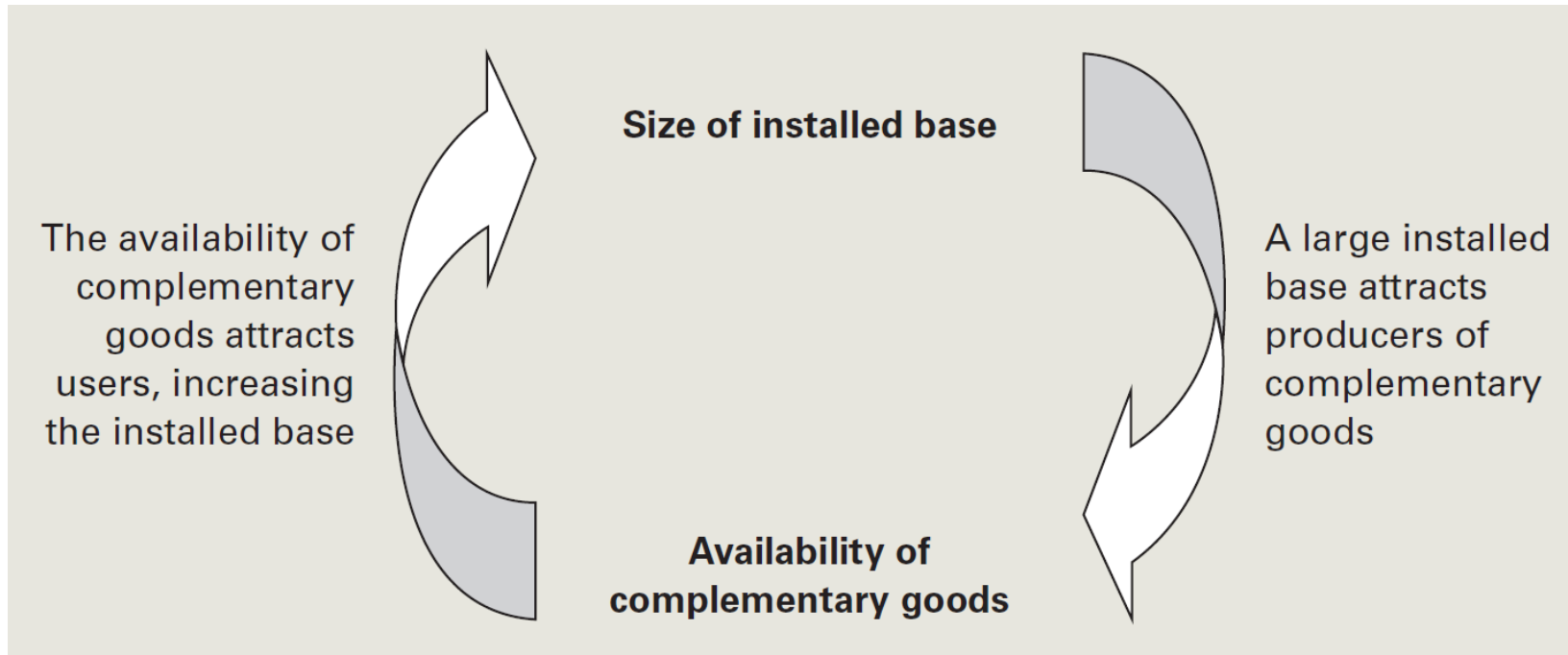
- Standards emerge in an industry when the benefits of establishing are recognized.
- Technical standards are set by cooperation among businesses, through the medium of an industry association.
- When the government sets standards they fall into the public domain.
- **Public domain** - Any company can freely incorporate the knowledge and technology upon which the standard is based into its products.

NETWORK EFFECTS, POSITIVE FEEDBACK, AND LOCKOUT

- **Network effects** - Network of complementary products as a primary determinant of the demand for an industry's product.
- Positive feedback loops - Increase in demand for a technology that triggers an increase in demand for products that support it.
- Alternative standards get locked out as consumers are unwilling to bear the switching costs.

POSITIVE FEEDBACK LOOP

Figure 7.4 Positive Feedback Cycle from Indirect Network Effects



STRATEGIES FOR WINNING A FORMAT WAR (1 of 2)

- Make network effects work in one's favor and against competitors.
- Build the installed base for the standard as rapidly as possible.
- Ensure a supply of complements.
- Leverage killer applications.
 - **Killer applications** - Applications or uses of a new technology or product so compelling that customers adopt them in droves, killing competing formats.

STRATEGIES FOR WINNING A FORMAT WAR (2 of 2)

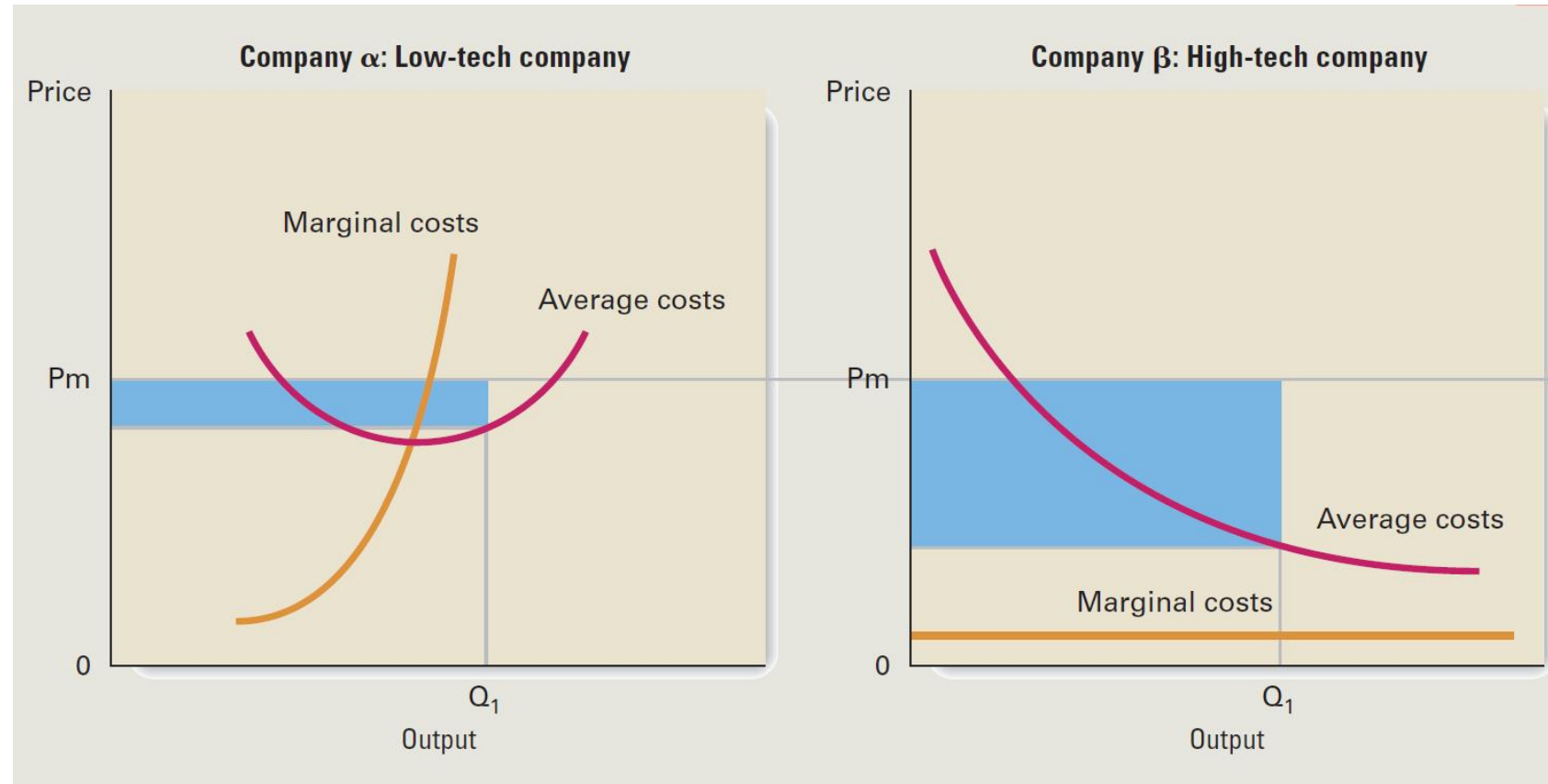
- Pursue aggressive pricing and marketing.
 - **Razor and blade strategy** - Pricing the product low to stimulate demand, and pricing complements high.
- Cooperate with competitors.
- License the format.

COSTS IN HIGH-TECHNOLOGY INDUSTRIES

- Similar cost economics.
 - Very high fixed costs and very low marginal costs.
- Law of diminishing returns - Marginal costs rise as a company tries to expand output.
- Profitability increases when a company shifts from a cost structure with increasing marginal costs to higher fixed costs with lower marginal costs.

COST STRUCTURES

Figure 7.5 Cost Structures in High-Technology Industries

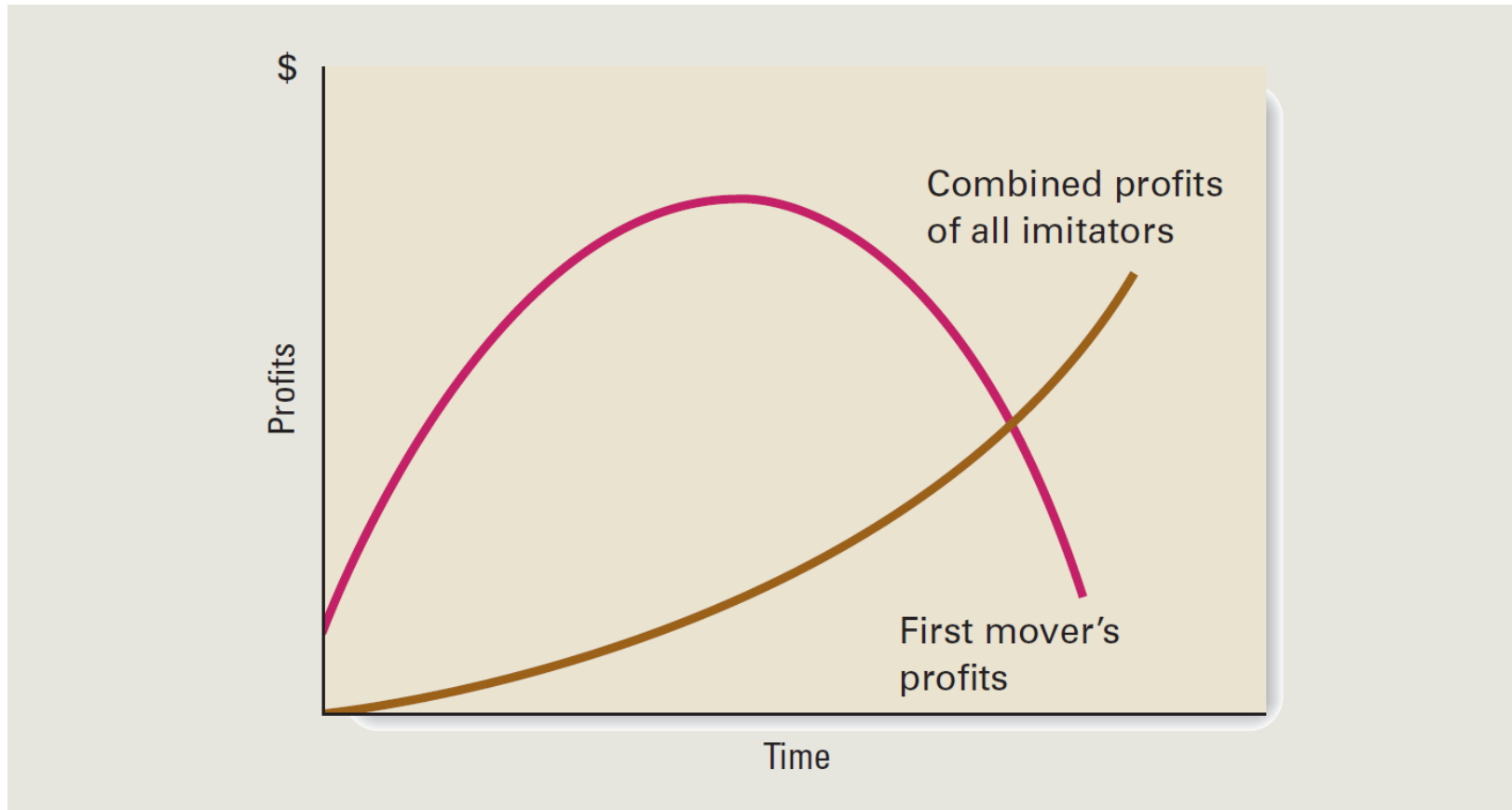


FIRST MOVER

- **First mover** - Firm that pioneers a particular product category or feature by being first to offer it to the market.
 - Creation of a revolutionary product results in a monopoly position.
- **First-mover advantage** - Pioneering new technologies and products that lead to a competitive advantage (slowing the rate of imitation).
- **First-mover disadvantages** - Competitive disadvantages associated with being first.

IMITATION AND PROFITS

Figure 7.6 The Impact of Imitation on Profits of a First Mover



FIRST MOVER ADVANTAGES AND DISADVANTAGES

Advantages

- Opportunity to exploit network effects and positive feedback loops.
- Ability to establish brand loyalty .
- Ability to increase sales volume ahead of rivals.
- Ability to create switching costs for customers.
- Can accumulate knowledge.

Disadvantages

- Bear significant pioneering costs.
- More prone to making mistakes.
- Risk of building the wrong resources and capabilities.
- Risk of investing in inferior or obsolete technology.

STRATEGIES FOR EXPLOITING FIRST-MOVER ADVANTAGES

- Develop and market the innovation.
- Develop and market the innovation jointly with other companies.
 - Through a strategic alliance or joint venture.
- License the innovation to others and allow them to develop the market.

FACTORS TO CONSIDER WHEN SELECTING A STRATEGY (1 of 2)

- Complementary assets
 - Required to exploit a new innovation and gain a competitive advantage.
 - Help build brand loyalty and achieve rapid market penetration.
- Height of barriers to imitation
 - Higher the barriers, longer it takes for rivals to imitate.
 - Give the innovator more time to build an enduring competitive advantage.

FACTORS TO CONSIDER WHEN SELECTING A STRATEGY (2 of 2)

- Capable competitors
 - Companies that can move quickly to imitate the pioneering company.
 - Competitors' capability depends on their:
 - research and development skills (ability to reverse-engineer and develop a comparable product).
 - access to complementary assets (marketing, sales, manufacturing capabilities).

INNOVATION STRATEGIES

Table 7.1 Strategies for Profiting from Innovation

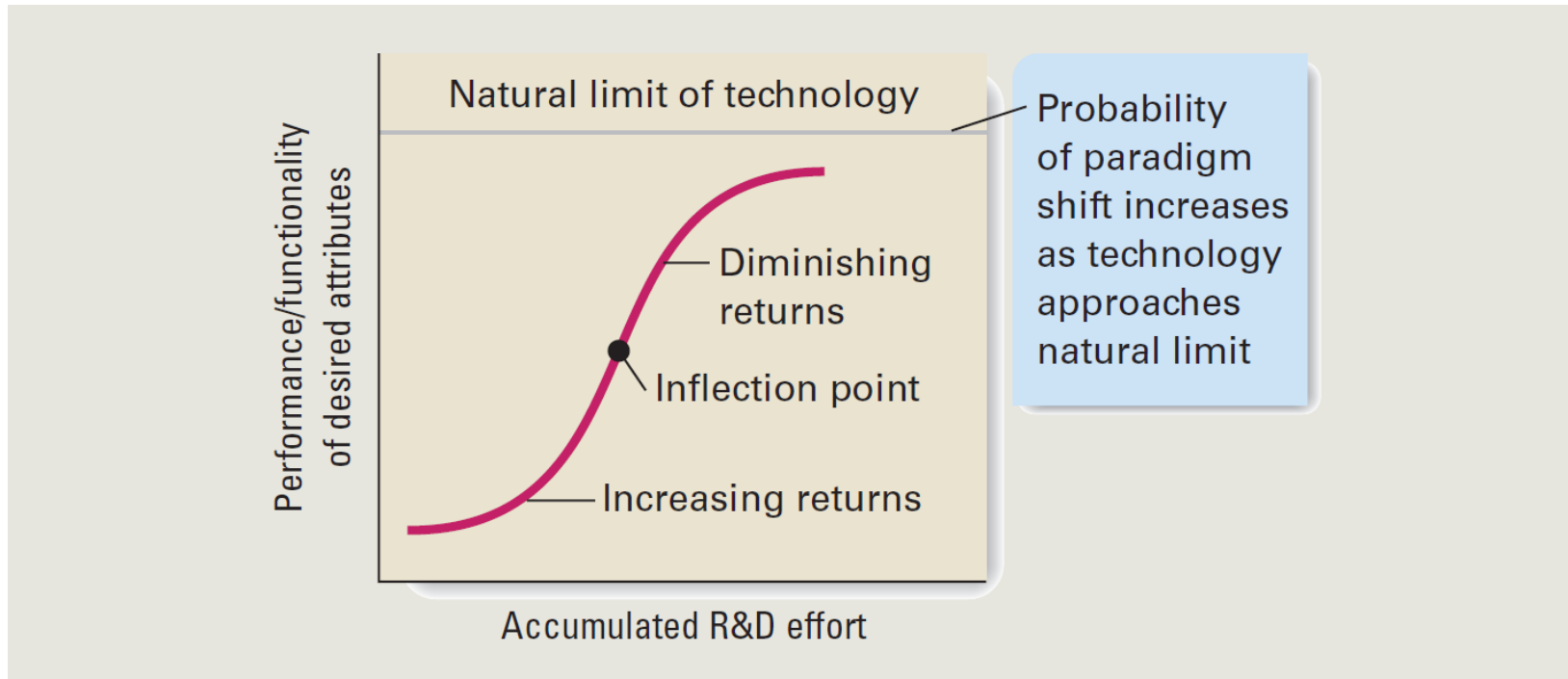
Strategy	Does the Innovator Have the Required Complementary Assets?	Likely Height of Barriers to Imitation	Existence of Capable Competitors
Going it alone	Yes	High	Very few
Entering into an alliance	No	High	Moderate number
Licensing the innovation	No	Low	Many

TECHNOLOGICAL PARADIGM SHIFT

- **Technological paradigm shift** - Shifts in new technologies that:
 - revolutionize the structure of the industry.
 - dramatically alter the nature of competition.
 - require companies to adopt new strategies for survival.
- Occur in an industry when:
 - established technology is approaching or is at its natural limit.
 - new disruptive technology has entered the marketplace and is invading the main market.

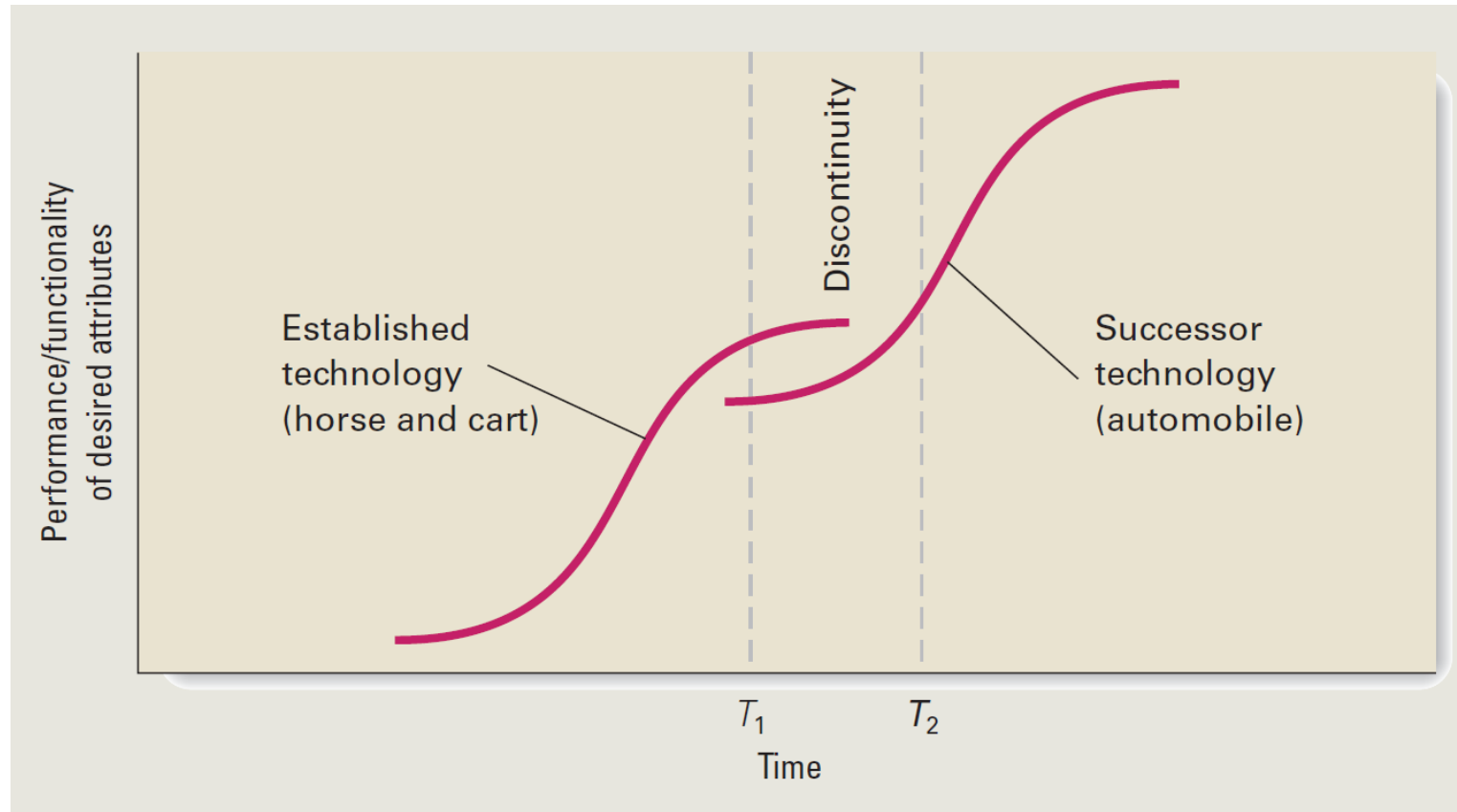
NATURAL LIMITS TO TECHNOLOGY (1 of 3)

Figure 7.7 The Technology S-Curve



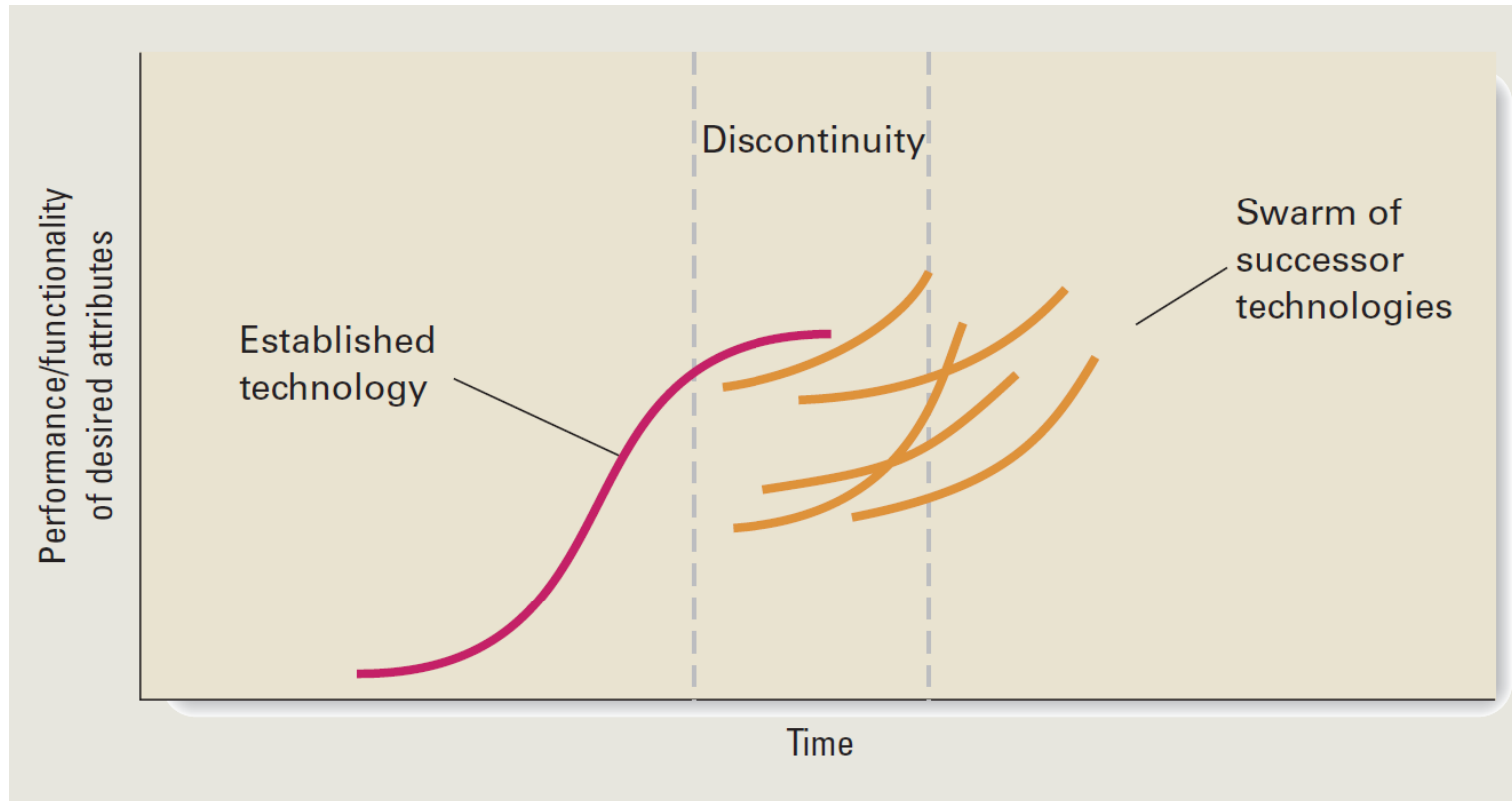
NATURAL LIMITS TO TECHNOLOGY (2 of 3)

Figure 7.8 Established and Successor Technologies



NATURAL LIMITS TO TECHNOLOGY (3 of 3)

Figure 7.9 Swarm of Successor Technologies



STRATEGIC IMPLICATIONS FOR ESTABLISHED COMPANIES

- Being aware of how disruptive technologies can revolutionize markets is a valuable strategic asset.
- Investing in new technologies that may become disruptive technologies.
- Creating an autonomous operating division solely for the disruptive technology.

STRATEGIC IMPLICATIONS FOR NEW ENTRANTS

- Do not face pressures to continue the existing out-of-date business model.
- Do not have to worry about established:
 - customer base.
 - relationships with suppliers and distributors.
- Can focus their energies on the opportunities offered by the new disruptive technology.
- Must decide whether to partner with an established company or go solo.

APPENDIX

NOTE TO INSTRUCTOR: Choose from the following questions (also found in the text at the end of the chapter) to conduct in-class discussions around key chapter concepts.

DISCUSSION:

- What is different about high-tech industries?
Were all industries once high-tech?



DISCUSSION:

- Why are standards so important in high-tech industries? What are the competitive implications of this?



DISCUSSION:

- You work for a small company that has the leading position in an embryonic market. Your boss believes that the company's future is ensured because it has a 60% share of the market, the lowest cost structure in the industry, and the most reliable and highest-valued product. Write a memo to your boss outlining why the assumptions posed might be incorrect.



DISCUSSION:

- You are working for a small company that has developed an electric scooter that is lower cost, lighter, and has longer battery range than most existing electric scooters on the market. What strategies might your company pursue to try to increase your company's success?



DISCUSSION:

- Reread the Strategy in Action 7.1 on Microsoft's "segment zero" threat. Do you think one operating system for smartphones or tablets will become dominant? If so, which one and why?

