

Timing of Entry

The question posed

Increasing returns suggests that timing of entry can be very important.

There are a number of advantages and disadvantages to being a first mover, early follower or late entrant. These categories are defined as follows:

- **First movers** are the first entrants to sell in a new product or service category (“pioneers”).
- **Early followers** are early to market but not first.
- **Late entrants** do not enter the market until the product begins to penetrate the mass market or later.

when it is best to enter

- There are a number of factors that influence how timing of entry affects firm survival and profits including
 - 1) **market related factors** such as availability of complementary goods, development of enabling technologies, degree of customer certainty; and
 - 2) **firm specific factors** such as capital resources, prior experience and reputation.

First-Mover Advantages

Being a first mover can confer the advantages of:

- 1. Brand loyalty and technological leadership.
- 2. Preemption of scarce assets.
- 3. Exploiting buyer switching costs.
- 4. Reaping increasing returns advantages.

1. Brand Loyalty and Technological Leadership

Brand Loyalty and Technological Leadership can result from early entry.

Consumers may consider the first firm to enter a new technological domain to be the **technological leader**.

This reputation for technological leadership can enhance a company's ability to shape customer expectations (e.g. features, pricing, etc.) and can be sustained if the technology is difficult to imitate or is protected by patent or copyright.

2. Preemption of Scarce Assets

Preemption of Scarce Assets by the first mover can prevent later entrants from accessing key locations and important distribution channels, gaining government permits (e.g. broadcast rights), and can make the development of relationships with suppliers more difficult.

- For example, late entrants that want to provide a wireless communication service face the problem that the government has already auctioned off most of the radio frequencies needed to provide the service. A new firm faces the situation of having to buy or lease (if the government permits these transactions) the needed frequencies from its competitors or not entering.

3. Exploiting Buyer Switching Costs

Exploiting Buyer Switching Costs can enable early movers to keep their customers even if a later entrant offers a superior technology.

These switching cost include the **cost of the product** and the **costs associated with learning** how to use the product (for instance: Qwerty keyboard).

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https://www.youtube.com/watch?v=tIJNusYZXMA&list=PLc6EeKrKYKClN48ow3Irl_sO0zQEY-Vwu&index=55

4. Increasing Returns Advantages

Increasing Returns Advantages are **self-reinforcing** and can be gained in an industry that experiences pressure to adopt a dominant design (as discussed in Chapter 4).

These advantages often culminate in the technology's **entrenchment as a dominant design** (Intel's invention of the first microprocessor in 1971 and Microsoft's introduction of BASIC in 1975 are good examples of these effects).

First-Mover disadvantages

However, first movers often bear disadvantages also:

- 1. High research and development expenses.
- 2. Undeveloped supply and distribution channels.
- 3. Immature enabling technologies and complements.
- 4. Uncertainty of customer requirements.

1. High research and development expenses

Research and Development Expenses for the first mover are higher than those for later entrants because

- 1) their **exploration costs are higher** (they have to pay for research that did not result in a commercially viable product) and
- 2) they bear the cost of **developing production processes and complementary goods** later entrants can leverage without the usually very large upfront investment made by the first mover.

2. Undeveloped supply and distribution channels

Undeveloped Supply and Distribution Channels often characterize the situation faced by a first mover.

A new-to-the-world technology often doesn't have ready-made suppliers or distributors.

The first mover then must either **develop** and produce its own supplies and distribution service, or **assist in the development** of supplier and developer markets (e.g. DEKA's development of the IBOT wheelchair required the firm to invent new ball bearings and develop a machine to produce the bearings).

3. Immature enabling technologies and complements.

Immature Enabling Technologies and Complements also often characterize the situation faced by first movers (For example, **UberAir** developers were reliant on several third parties for the development of batteries, charging infrastructure, a network of sky-ports). Similarly, when complementary products are not readily available the **adoption rate of a technology is slowed** (see Chapter 4).

- This effect has occurred in the development of **hydrogen fuel cell** powered vehicles. Development of this alternative technology has been slowed because there is no ready way to refuel cars using the new technology (see the Theory in Action section in chapter 5 for more details).

Theory In Action

Obstacles to the Hydrogen Economy.

- Hydrogen offers an inexhaustible and environmentally fuel source that could be used to power automobiles and the electrical grid that serves homes and businesses.
- However, several serious obstacles stood in the way of utilizing hydrogen for energy:
 - Hydrogen vehicles would require a new fueling infrastructure.
 - Isolating hydrogen for energy in an environmentally-friendly way required a major shift to windmills or solar energy which were not considered mature technologies.
 - **Implementing hydrogen as a primary energy source required the cooperation of numerous stakeholders, including government, automakers, oil (or other energy) companies, etc.**

4. Uncertainty of customer requirements

Uncertainty Regarding Customer Requirements can cause first movers to incur great **expense to learn** what customers want (market research may have little value when customers do not yet know how they will use the product) and are willing to pay for and **refine products** accordingly.

4. Uncertainty of customer requirements

- For example, **Kodak** was the first to introduce the 8mm video camera in the late eighties but withdrew from the market due to a poor response from customers.
- As you know the story does not end well for Kodak. By the early 1990's customers became more comfortable with the technology and **Sony** successfully entered this market leaving Kodak to play catch up or not reenter at all.
- This may have been a case where Kodak would have been better off by spending on **customer education efforts**.

First-Mover Advantages and Disadvantages

The market often perceives first movers as having advantages because it has misperceived who was first.

Product	First Mover	Notable Follower(s)	The Winner
8 mm video camera	Kodak	Sony	Follower
Disposable diaper	Chux	Pampers Kimberly Clark	Followers
Float Glass	Pilkington	Corning	First mover
Groupware	Lotus	AT&T	First Mover
Instant camera	Polaroid	Kodak	First mover
Microprocessors	Intel	AMD Cyrilx	First Mover
Personal computer	MITS (Altair)	Apple IBM	Followers
Spreadsheet software	VisiCalc	Microsoft (Excel) Lotus	Followers

First-Mover Advantages and Disadvantages

Product	First Mover	Notable Follower(s)	The Winner
Video game console	Magnavox	Atari Nintendo	Followers
Web browser	NCSA Mosaic	Netscape Microsoft (Internet Explorer)	Followers
Word processing software	MicroPro (Wordstar)	Microsoft (MS Word) Wordperfect	Followers
Workstation	Xerox Alto	Sun Microsystems Hewlett Packard	Followers

Source: R. M. Grant, *Contemporary Strategy Analysis* (Malden, MA: Blackwell Publishers, 1998); D. Teece, *The Competitive Challenge: Strategies for Industrial Innovation and Renewal* (Cambridge, MA: Ballinger, 1987); and M. A. Schilling, "Technology Success and Failure in Winner- Take-All Markets: Testing a Model of Technological Lock Out," *Academy of Management Journal* 45 (2002), pp. 387–98.

Factors Influencing Optimal Timing of Entry

How does a firm decide whether to pioneer a technology category or wait until while others do? The answer depends on several factors including

1. - **customer certainty,**
2. - **the margin of improvement** offered by the new technology,
3. - **the state of enabling technologies**
4. – **influence and availability of complementary goods,**
5. - **the threat of competitive entry,**
6. - **the degree to which the industry exhibits increasing returns**
7. - **the firm's losses**
8. - **firm's resources**
9. **firm's reputation**

1. How certain are customer preferences?

More certain customer preferences favor early entry. Both companies and consumers **learn** which features create the most value as they gain experience with the product (there are exceptions such as drug development targeting certain diseases or symptoms where the customer requirements are clear from the outset).

Features initially thought to be important may not be (e.g. exciting graphics and sounds were initially thought to be needed to establish an e-commerce presence) and **features initially thought to be unnecessary or not as important turn out to be important** to customers

1. How certain are customer preferences?

For instance: Sony's Playstation2 console included the ability to play music CDs or DVDs that Sony thought was of secondary importance to the functionality supporting game playing. As it turned out some consumers purchased the console for the CD and DVD functions and purchased only a few games. This was bad news for Sony because consoles are sold at or near cost to increase adoption and profits are derived from game sales.

→ If customer needs are well understood, it is more feasible to enter the market earlier.

2. How much improvement does the innovation provide over previous solutions?

The higher the improvement the more likely a firm is going to be successful entering early because the product will more rapidly gain customer acceptance.

→ An innovation that offers a dramatic improvement over previous generations will accrue more rapid customer acceptance

3. Does the innovation require enabling technologies, and are these technologies sufficiently mature?

Readily available enabling technologies facilitate early entry and vice versa.

→ If the innovation requires enabling technologies (such as long-lasting batteries for cell phones), the maturity of these technologies will influence optimal timing of entry.

4. Do complementary goods influence the value of the innovation, and are they sufficiently available?

If the firm's innovation requires complementary goods that are not available on the market and the firm is unable to develop those complements, successful early entry is unlikely.

→ Not all innovations require complementary goods, but for those that do (for example, games for video consoles), availability of complements will influence customer acceptance.

5. How high is the threat of competitive entry?

Entry barriers and the **profit potential** of the technology (i.e. high margins) both play a role in assessing the threat of competitive entry.

High entry barriers enable a firm to delay entry. But if a firm delays entry when entry barriers are low and the value of the technology is high they are likely to face a very competitive situation when they do enter.

---> If there are significant entry barriers, there may be less need to rush to market to build increasing returns ahead of others.

6. Are there increasing returns to adoption?

Early entry is advisable if an industry is likely to experience increasing returns to adoption.

If a competitor enters earlier and builds a large installed base it may be very difficult to get consumers to switch products (especially if the competitor's technology has been established as the dominant design).

→ If so, allowing competitors to get a head start can be very risky.

7. Can the firm withstand early losses?

Large capital reserves enable a firm to weather long periods of market confusion and low sales.

On the other hand these same resources can also enable a firm to enter later because they can more easily catch up (e.g. Nestle was able to leverage its brand name and strong capital position to overtake General Food's Maxim as a late entrant).

https://www.youtube.com/watch?v=eCrPsuOXcMM&list=P_Lc6EeKrKYKClN48ow3lrj_sO0zQEY-Vwu&index=60

→The first mover bears the bulk of R&D expenses and may endure a significant period without revenues; the earlier a firm enters, the more capital resources it may need.

8. Does the firm have resources to accelerate market acceptance?

If a firm can invest in market education, supplier and distributor development, and can sponsor the development of complementary goods and services then it is more likely to be successful with early entry than a firm that cannot underwrite these kinds of efforts.

→ Firms with significant capital resources can invest in aggressive marketing and supplier and distributor development, increasing the rate of early adoption.

9. Is the firm's reputation likely to reduce the uncertainty of customers, suppliers, and distributors?

The positive effects of a strong reputation can improve the chances of successful early entry by reducing consumer uncertainty with regard to the utility of the new technology and its quality.

In addition, a firm that is thought to be a technological leader is also more able to attract suppliers and distributors (e.g. Microsoft's announcement that it would enter the personal digital assistant market caused many distributors to wait for Microsoft's product).

→ Innovations from well-respected firms may be adopted more rapidly, enabling earlier successful entry.

Whether and When to Enter?

- Will Mitchell studied 30 years of data on whether and when an incumbent in one subfield of the medical diagnostic imaging industry would enter another subfield. He found:
 - If only one firm can produce an inimitable good, it can enter if and when it wants. If several firms could produce a good that will subsequently be inimitable, they race to capture the market.
 - If good is highly imitable, firms prefer to wait while others invest in developing the market.
 - Firms were more likely to enter if they had specialized assets that would be useful in the new subfield or if their current products were threatened by the new subfield.
 - Firms entered earlier when their core products were threatened and there were several potential rivals.

Strategies to Improve Timing Options

To have more choices in its timing of entry, a firm needs to be able to develop the innovation early or quickly.

A firm with fast-cycle development processes can be both an early entrant and can quickly refine its innovation in response to customer feedback.

In essence, a firm with very fast-cycle development processes can reap both first- and second-mover advantages.

UberAir

In April 2017, Uber announced UberAir, an on-demand air transportation service. Uber's on-demand ride-sharing service had disrupted traditional taxi and livery. However, ride sharing was based on an innovative business model and a software application.

UberAir would leverage Uber's existing business model and software programs, but required major technological development in air transportation, infrastructure for air traffic control, and a network of landing pads.

Uber estimated initial operating costs would be \$5.73 per passenger mile but with efficient pooling could be as low as \$1.84 per passenger mile. With fully autonomous operation, could be as low as 44 cents per passenger mile.

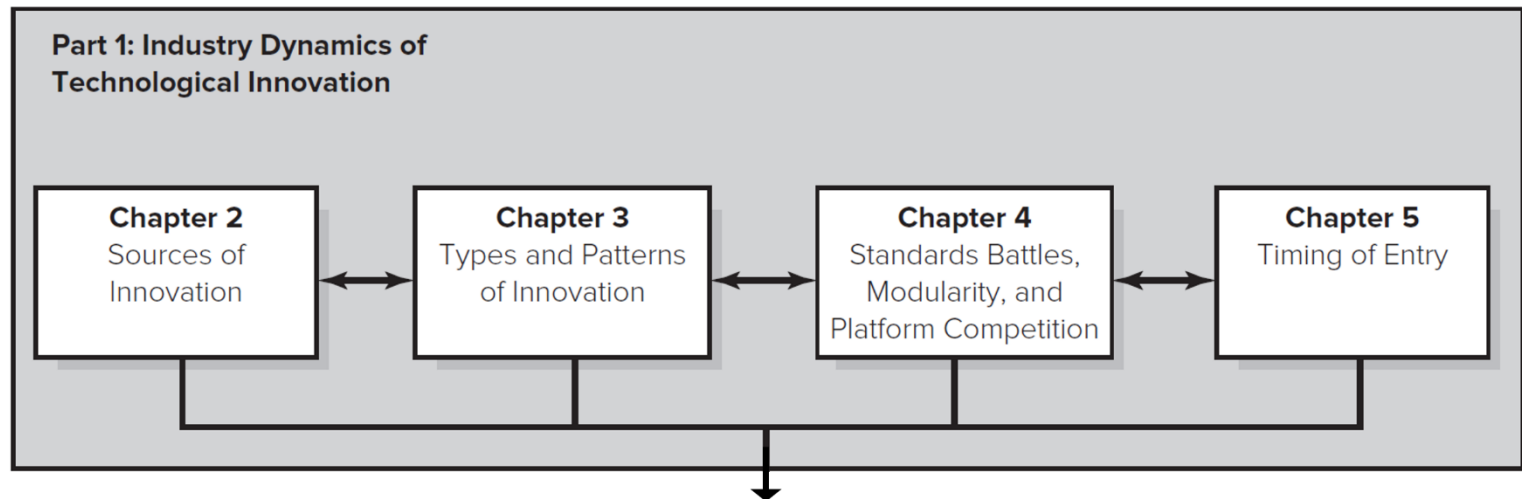
As of June, 2018, the company had plans for testing the service in Dallas and Los Angeles by 2020, and was seeking an international launch city. It planned to have commercial deployment of the service by 2023.

https://www.youtube.com/watch?v=LMgLWvfXPdw&list=PLc6EeKrKYKClN48ow3I_rj_sO0zQEY-Vwu&index=57

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.



UberAir

Discussion Questions:

1. Will there be increasing returns to adoption for an early mover in air taxi service? If so, what will they be?
2. What are the disadvantages of entering the air taxi market early?
3. What are the important complementary goods and enabling technologies for the air taxi market? Are they available in sufficient quality and economy?
4. Is Uber well positioned to be a dominant player in this market? What resources will it need to be successful?
5. Overall, would you say Uber's entry into the air taxi market is too early, too late, or about right?

Discussion Questions

1. What are some of the advantages of entering a market early? Are there any advantages to entering a market late?
2. Can you think of an example of a successful a) first mover, b) early follower, and c) late entrant? Can you think of unsuccessful examples of each?
3. What factors might make some industries harder to pioneer than others? Are there industries in which there is no penalty for late entry?