

Strategic Innovation Management



Zhidebekkyzy Aknur

Lecture 5. Timing of entry

- ▶ 1. Entrants to the market: first movers, early followers, and late entrants
- ▶ 2. First-mover advantages and disadvantages
- ▶ 3. Factors influencing optimal timing of entry

- ▶ The main **objective** of this lecture is to consider the factors influencing optimal timing of entry into the market.

Overview

Some industries are characterized by increasing returns to adoption, meaning that the more a technology is adopted, the more valuable it becomes. In such industries, timing can be crucial—a technology that is adopted earlier than others may reap self-reinforcing advantages such as greater funds to invest in improving the technology, greater availability of complementary goods, and less customer uncertainty.

On the other hand, the same factors that cause increasing returns to adoption may make very early technologies unattractive: If there are few users of the technology or availability of complementary goods is poor, the technology may fail to attract customers. A number of other first-mover advantages, and disadvantages, can shape how timing of entry is related to likelihood of success.

Entrants to the market: first movers, early followers, and late entrants

- ▶ Entrants are often divided into three categories:
- ▶ **first movers** (or pioneers), which are the first to sell in a new product or service category;
- ▶ **early followers** (also called early leaders), which are early to the market *but not first*; and
- ▶ **late entrants**, which enter the market when or after the product begins to penetrate the mass market.

1. FIRST-MOVER ADVANTAGES

Being a first mover may confer the advantages of brand loyalty and technological leadership, preemption of scarce assets, and exploitation of buyer switching costs. Furthermore, in industries characterized by increasing returns, early entrants may accrue learning and network externality advantages that are self-reinforcing over time.

1.1 Brand Loyalty and Technological Leadership

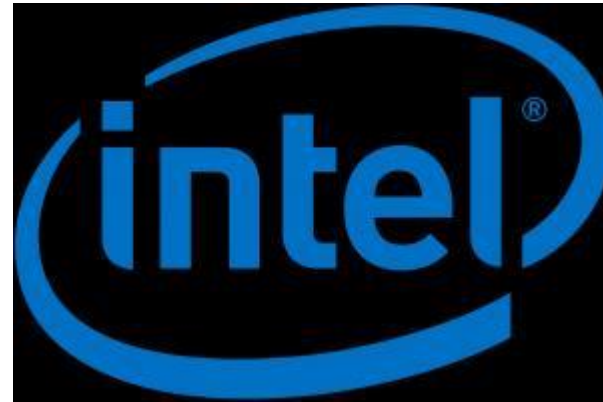
The company that introduces a new technology may earn a **long-lasting reputation as a leader in that technology domain**. Such a reputation can help sustain the company's image, brand loyalty, and market share even after competitors have introduced comparable products. The organization's position as technology leader also enables it to shape customer expectations about the technology's form, features, pricing, and other characteristics. By the time later entrants come to market, customer requirements may be well established.

If aspects that customers have come to expect in a technology **are difficult for competitors to imitate** (e.g., if they are protected by patent or copyright, or arise from the first mover's unique capabilities), being the technology leader can yield sustained **monopoly rents**. Even if the technology characteristics are imitable, the first mover has an opportunity to build **brand loyalty** before the entry of other competitors.

Monopoly rents - The additional returns (either higher revenues or lower costs) a firm can make from being a monopolist, such as the ability to set high prices, or the ability to lower costs through greater bargaining power over suppliers.



Nestlé



L'ORÉAL



▶ Further reading:

▶ <https://www.lifepersona.com/35-examples-of-monopoly-and-oligopoly-companies>

1.2 Preemption of Scarce Assets

Firms that enter the market early can preemptively capture scarce resources such as **key locations, government permits, patents, access to distribution channels, and relationships with suppliers.**

1.3 Exploiting Buyer Switching Costs

Once buyers have adopted a good, they often face costs to switch to another good. For example, the initial cost of the good is itself a switching cost, as is the cost of complements purchased for the good. Additionally, if a product is complex, buyers must spend time becoming familiar with its operation; this time investment becomes a switching cost that deters the buyer from switching to a different product. If buyers face switching costs, the firm that captures customers early may be able to keep those customers even if technologies with a superior value proposition are introduced later.

Example:

In 1867, Christopher Sholes began experimenting with building a typewriter. At that time, letters were struck on paper by mechanical keys. If two keys were struck in rapid succession, they often would jam. Key jamming was a particularly significant problem in the 1800s, because typewriters then were designed so that keys struck the back side of the paper, making it impossible for users to see what they were typing. The typist thus might not realize he or she had been typing with jammed keys until after removing the page. Scholes designed his keyboard so that commonly used letter combinations were scattered as widely as possible over the keyboard. The **QWERTY** keyboard also puts a disproportionate burden on the left hand (3,000 English words can be typed with the left hand alone, while only 300 can be typed with the right hand alone). This positioning of keys would slow the typing of letter combinations, and thus reduce the likelihood of jamming the keys. Over time, many competing typewriter keyboards were introduced that boasted faster typing speeds or less-tiring typing. For example, the **Hammand and Blickensderfer “Ideal”** keyboard put the most commonly used letters in the bottom row for easy access, and used only three rows total. Another example, the **Dvorak keyboard**, placed all five vowels and the three most commonly used consonants in the home row, and common letter combinations required alternating hands frequently, reducing fatigue. However, QWERTY’s early dominance meant typists were trained only on QWERTY keyboards. By the time Dvorak keyboards were introduced in 1932, tens of millions of typists were committed to QWERTY keyboards—the **switching costs of learning how to type all over again were more than people were willing to bear**. Even after daisywheel keys (and later, electronic typewriters) removed all possibility of jamming keys, the QWERTY keyboard remained firmly entrenched. August Dvorak is said to have died a bitter man, claiming, “I’m tired of trying to do something worthwhile for the human race. They simply don’t want to change!”

QWERTY layout, “Ideal” keyboards and Dvorak keyboard layout



DVORAK Keyboard Layout

	!	@	#	\$	%	^	&	*	()	-	+	Delete
	1	2	3	4	5	6	7	8	9	0	-	=	
Tab	?	<	>	P	Y	F	G	C	R	L	{	}	
	/	,	.								[]	\
	A	O	E	U	I	D	H	T	N	S	"	'	Enter
Shift	:	Q	J	K	X	B	M	W	V	Z			Shift
Ctrl		Alt									Alt		Ctrl

~	!	@	#	\$	%	^	&	*	()	-	+	←		
`	1	2	3	4	5	6	7	8	9	0	-	=	Backspace		
Tab	←	Q	W	E	R	T	Y	U	I	O	P	{	}		
	→											[]	\	
Caps Lock	A	S	D	F	G	H	J	K	L	:	"	'	Enter		
↑										:	:	:	←		
Shift		Z	X	C	V	B	N	M	<	>	?		Shift		
↑									,	.	/		↑		
Ctrl	Win Key	Alt										Alt	Win Key	Menu	Ctrl

1.4 Reaping Increasing Returns Advantages

In an industry with pressures encouraging adoption of a dominant design, the timing of a firm's investment in new technology development may be particularly critical to its likelihood of success. For example, in an industry characterized by increasing returns to adoption, there can be powerful advantages to being an early provider; a technology that is adopted early may rise in market power through self-reinforcing positive feedback mechanisms, culminating in its entrenchment as a dominant design.

Example. Intel's Ted Hoff invented the first microprocessor in 1971, and in 1975, Bill Gates and Paul Allen showed that it could run a version of BASIC that Gates had written. Gates's BASIC became widely circulated among computer enthusiasts, and as BASIC was adopted and applications developed for it, the applications were simultaneously optimized for Intel's architecture. IBM's adoption of Intel's 8088 microprocessor in its PC introduction secured Intel's dominant position, and each of Intel's subsequent generations of products has set the market standard.

2. FIRST-MOVER DISADVANTAGES

- ▶ Despite the great attention that first-mover advantages receive, there are also arguments for not entering a market too early.
- ▶ In a historical study of 50 product categories, Gerard Tellis and Peter Golder found that market pioneers have **a high failure rate—roughly 47 percent**—and that the mean market share of market pioneers is 10 percent.
- ▶ By contrast, early leaders (firms that enter after market pioneers but assume market leadership during the early growth phase of the product life cycle) **averaged almost three times the market share of market pioneers.**

Example:

- ▶ Tellis and Golder point out that the market may often perceive first movers to have advantages because it has misperceived who the first mover really was. For example, while today few people would dispute **Procter & Gamble's** claim that it “created the disposable diaper market,” in actuality, Procter & Gamble entered the disposable market almost **30 years** after **Chux**, a brand owned by a subsidiary of Johnson & Johnson.
- ▶ In the mid-1960s, *Consumer Reports* ranked both products as best buys. However, over time Pampers became very successful and Chux disappeared, and eventually people began to reinterpret history.



2.1 Research and Development Expenses

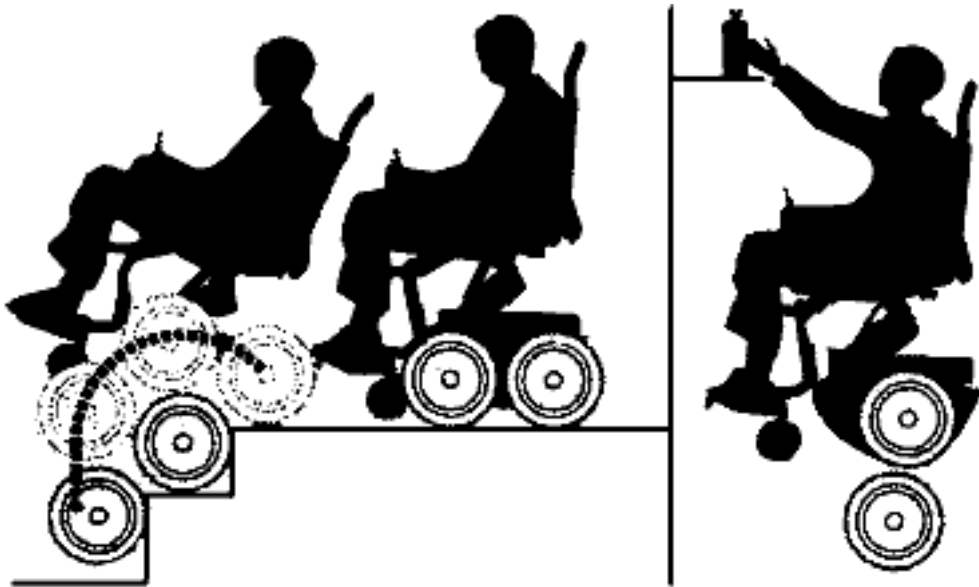
Developing a new technology often entails significant research and development expenses, and the first to develop and introduce a technology typically bears the brunt of this expense. By the time a firm has successfully developed a new technology, it may have borne not only the expense of that technology but also the expense of exploring technological paths that did not yield a commercially viable product. This firm also typically bears the cost of developing necessary production processes and complementary goods that are not available on the market. **Since the new product development failure rate can be as high as 95 percent, being the first to develop and introduce an unproven new technology is expensive and risky.**

By contrast, **later entrants** often do not have to invest in exploratory research. Once a product has been introduced to the market, competitors can often ascertain how the product was created. The later entrant can also observe the **market's response** to particular features of the technology and decide how to focus its development efforts. Thus, the **later entrant can both save development expense and produce a product that achieves a closer fit with market preferences.**

2.2 Undeveloped Supply and Distribution Channels

When a firm introduces a new-to-the-world technology, often no appropriate suppliers or distributors exist. The firm may face the daunting task of developing and producing its own supplies and distribution service, or assisting in the development of supplier and developer markets.

For example, when **DEKA Research** began developing its **selfbalancing IBOT wheelchair**, it needed a type of ball bearing for which there were no suppliers. DEKA was forced to develop a machine to mold the bearings. According to Dean Kamen, the company's founder, "Nobody here planned to invent new ball bearings, but in order to make this engine practical we have to dev that doesn't exist."



2.3 Immature Enabling Technologies and Complements

- ▶ When firms develop technologies, they often rely on other producers of **enabling technologies**.
- ▶ **Enabling technologies** - Component technologies that are necessary for the performance or desirability of a given innovation.
- ▶ Many products also require **complementary goods** to be useful or valuable. Computers need software, cameras need film, automobiles need service, gasoline, and roads. When new technologies are introduced to a market, important complements may not yet be fully developed, thus hindering adoption of the innovation.
- ▶ **Theory in Action.** *The development of vehicles powered by hydrogen fuel cells provides an excellent example of how a lack of complementary technologies and infrastructure can pose serious obstacles for early movers.*

2.4 Uncertainty of Customer Requirements

A first mover to the market may face **considerable uncertainty about what product features customers will ultimately desire and how much they will be willing to pay for them**. For a very new product technology, market research may be of little help. Customers may have little idea of the value of the technology or the role it would play in their lives. As a consequence, first movers may find that their early product offerings must be revised as the market begins to reveal customer preferences.

Example. When **Kodak** introduced the 8-mm video camera in the late 1980s, it expected that customers would flock to the design's smaller size and superior recording ability. Instead, consumers rejected the product. The 8-mm video cameras were more expensive, and consumers had not yet recognized a need for this product and were unsure of what value it could provide. Kodak decided to withdraw from the market. However, by the early 1990s, consumers had become more comfortable with the concept of 8-mm video camera technology, and several competitors (most notably **Sony**) successfully entered this market.



First Movers and Followers - Who Wins?

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 Cyril	First mover
Microwave	Raytheon	Samsung	Follower
Personal computer	MITS (Altair)	Apple IBM	Followers
Personal computer operating system	Digital Research	Microsoft (MS-DOS)	Follower
Smartphones	IBM (Simon)	Apple Nokia	Followers
Social networking sites	SixDegrees.com	MySpace Facebook	Followers
Spreadsheet software	VisiCalc	Microsoft (Excel) Lotus	Followers
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

FACTORS INFLUENCING OPTIMAL TIMING OF ENTRY

In very early market stages, a technology may be underdeveloped and its fit with customer needs unknown. In late market stages, a technology may be well understood, but competitors may have already captured controlling shares of the market.

How does a firm decide whether to attempt to pioneer a technology category or to wait while others do so?

The answer will depend on **several factors**, including:

- ▶ customer certainty
- ▶ the margin of improvement offered by the new technology
- ▶ the state of enabling technologies and complementary goods
- ▶ the threat of competitive entry
- ▶ the degree to which the industry exhibits increasing returns
- ▶ firm's resources.

1. How certain are customer preferences?

When new-to-the-world technologies are first developed, customers may have difficulty understanding the technology and its role in their life. Both producers and customers may face considerable ambiguity about the importance of various features of the technology.

As producers and customers gain experience with the technology, features that initially seemed compelling may turn out to be unnecessary, and features that had seemed unimportant may turn out to be crucial.

Other things being equal, less customer uncertainty favors earlier timing of entry.

Example. Many of the companies that raced to establish an online presence in the e-commerce frenzy of the late 1990s believed that their **Web sites** needed exciting graphics and sounds to be competitive. Graphics and sound, however, turned out to be the downfall of many early Web sites. Many customers did not have high-speed Internet access or computers with enough processing power to quickly download the Web sites, making multimedia Web sites an annoyance rather than an attraction.

SEARCH! | WHAT'S ON TV? | INSIDE PBS | PBS STATIONS | TALK TO US | SITE MAP

PBS **online**
education, culture, citizenship

Come and visit one of our neighborhoods

- Kids
- TeacherSource
- Adult Learning
- Online NewsHour
- News & Views
- History
- Science
- Technology
- Arts
- ShopPBS

KOSOVO UPDATE

April 29, 1999

shop **PBS**

NOVA/PBS: Lost on Everest
Dead men tell no tales... but their cameras might. Join the search for two long-lost climbers.

The Living Edens: Borneo
Explore the rich biodiversity of this island in the clouds.

Forgotten Fires
Follow one small town's struggle to overcome the flames of hatred.

African-American Journey
This week marks the centennial of Duke Ellington. Learn more about this jazz pioneer.

Select a PBS Online Web site GO

Free Screen Savers
Liven up your desktop with screen savers from your favorite shows.

PBS Previews
Find out what's coming online and on-air. Our free e-mail newsletter makes it easy.

Home Sweet Homepage
Like this place? Make PBS Online your homepage with just a few simple clicks.

[Search](#) | [What's On TV?](#) | [Inside PBS](#) | [PBS Stations](#) | [Talk To Us](#) | [Site Map](#) |
[Privacy Policy](#) · [Rules of the Road](#) · [Sponsorship Opportunities](#)

IF PBS DOESN'T DO IT, WHO WILL?

GO.com ABC.com, part of the GO Network [Sign in] Where to Go

abc NEWS Evidence of a 10th Planet Found

what's **on** tonight
Primetime TV Schedule
check out...

>> **ABC Store**
Look like a million!!! Buy millionaire merchandise.

>> **ABC Soaps**
After all, you only have One Life to Live.

>> **ABC News**
An exclusive look at John Gotti's prison life.

Who Wants to Be a Millionaire Who doesn't?
click here!

abc.com

Wednesday, November 10, 1999

The Drew Carey Show
on their toes...

He's taken on Mimi. He's on LIVE this week. Next week, Drew takes on the Internet! Gee what's left?

abc search
abc.com
the web
GO

home
abc primetime
abc daytime
abc tgif
abc news
abc sports
1 saturday morning
abc shows
message boards
help

what's **hot**

Norm
Norm
A date with Norm? He'll whine and dine you.

20/20 Wednesday
When having it all isn't enough. Diane Sawyer investigates an untimely death.

20/20 Wednesday

The Practice

Two Guys and a Girl
Find out if Berg's a chip off the old block...

ABC Shows A-Z



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

The degree to which the technology represents an improvement over previous technologies increases a firm's likelihood of successful early entry.

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

More mature enabling technologies allow earlier entry; less mature enabling technologies may favor waiting for enabling technologies to be further developed.

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

If the value of an innovation hinges critically on the availability and quality of complementary goods, then the state of complementary goods determines the likelihood of successful entry. Not all innovations require complementary goods, and many more innovations can utilize existing complementary goods. Some firms have the resources and capabilities to develop both a good and its complements, while others do not. 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.

5. How high is the threat of competitive entry?

If there are significant **entry barriers** or few potential competitors with the resources and capabilities to enter the market, the firm may be able to wait while customer requirements and the technology evolve. **If entry barriers are low**, the market could quickly become quite competitive, and entering a market that has already become highly competitive can be much more challenging than entering an emerging market. **If the threat of competitive entry is high**, the firm may need to enter earlier to establish brand image, capture market share, and secure relationships with suppliers and distributors.

6. Is the industry likely to experience increasing returns to adoption?

In industries that have increasing returns to adoption due to strong learning curve effects or network externalities, allowing competitors to get a head start in building an installed base can be very risky. If a competitor's offering builds a significant installed base, the cycle of self-reinforcing advantages could make it difficult for the firm to ever catch up. Furthermore, if there are forces encouraging adoption of a single dominant design, a competitor's technology may be selected. If protection mechanisms such as patents prevent the firm from offering a compatible technology, the firm may be locked out

7. Can the firm withstand early losses?

first mover often bears the bulk of the expense and risk of developing and introducing a new innovation. First movers thus often need significant amounts of capital that either is available internally (in the case of large firms) or can be accessed externally (e.g., through the debt or equity markets). Furthermore, the first mover must be able to withstand a significant period with little sales revenue from the product. On the other hand, firms with significant resources also may be able to more easily catch up to earlier entrants. By spending aggressively on development and advertising, and leveraging relationships with distributors, a late entrant may be able to rapidly build brand image and take market share away from earlier movers.

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

A firm with significant capital resources not only has the capability to withstand a slow market takeoff, but also can invest such resources in accelerating market takeoff. The firm can invest aggressively in market education, supplier and distributor development, and development of complementary goods and services.

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

In addition to capital resources, a firm's reputation and credibility can also influence its optimal timing of entry. A firm's reputation can send a strong signal about its likelihood of success with a new technology. Customers, suppliers, and distributors will use the firm's track record to assess its technological expertise and market prowess. Customers may use the firm's reputation as a signal of the innovation's quality, and thus face less ambiguity about adopting the innovation. A firm with a well-respected reputation for successful technological leadership is also more likely to attract suppliers and distributors.

Summary

- ▶ 1. A first mover may be able to build brand loyalty and a reputation for technological leadership, preemptively capture scarce resources, and exploit buyer switching costs.
- ▶ 2. First movers may also benefit from increasing returns to adoption due to learning curve effects and network externalities.
- ▶ 3. Some studies, however, argue that first movers may have higher failure rates. First movers have to bear the brunt of R&D expenses and may face considerable consumer ambiguity. Second movers can capitalize on the R&D and marketing efforts of the first mover, producing a technology that costs less to develop and that corrects for any of the first mover's mistakes.
- ▶ 4. First movers may also face poorly developed supplier markets, distribution channels, and availability of complementary goods, all of which can increase the challenge of successfully launching their new product or service. Enabling technologies may also be immature, hindering the new technology's performance.
- ▶ 5. The biggest disadvantage many first movers face is uncertainty over customer requirements. Customers themselves may be uncertain about what features or form they desire in a new innovation. A firm may have to withstand significant losses before customer preferences become more certain.
- ▶ 6. The optimal timing of entry is thus a function of several factors, including the margin of advantage offered by the new innovation, the state of enabling technologies and complements, the state of customer expectations, the threat of competitive entry, whether the industry faces increasing returns, and a firm's resources.
- ▶ 7. Firms that have fast-cycle development processes have more options when it comes to timing. Not only does a fast-cycle developer have an advantage in introducing innovations earlier, but it also can be its own fast follower by quickly introducing refined versions of its own technology.

Questions:

- ▶ 1. What are some advantages of entering a market early? Are there any advantages to entering a market late?
- ▶ 2. Name a successful (a) first mover, (b) early follower, and (c) late entrant. Identify 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?

- ▶ **Literature:**
 1. Melissa Schilling: Strategic Management of Technological Innovation, McGrawHill, International Edition 2011.
 2. Tidd, J., Bessant, J.R. 2014. Strategic innovation management. Wiley, Hoboken.
 3. Innovation management / authors Borut Likar ... [et al.] ; editor Borut Likar, co-editors Peter Fatur, Urška Mrgole ; translation Arslingue K. Žontar, TEFL, TBE. - 1st. ed. - El. knjiga. - Ljubljana: Korona plus - Institute for Innovation and Technology, 2013
 4. Kupeshova S. Innovation Management. Almaty, "Kazakh universiteti". 2011. - 160 c.

Thank you for your attention!