BEE/CSS 371 Business of Technology
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Lecture 4

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Tonight’s agenda

1. The concept of a business
2. Chapter 2. Opportunities

The business

TABLE 1.2 Four steps to starting a business.

1.	The founding team or individual has the necessary skills or acquires them.
2.	The team members identify the opportunity that attracts them and matches their skills. They create a solution to match the opportunity.
3.	They acquire (or possess) the financial and physical resources necessary to launch the business by locating investors and partners.
4.	They complete an arrangement or contract with their partners, with investors, and within the founder team to launch the business and share the ownership and wealth created.

An organization may be based on:

1. Radical innovation
2. Incremental change
3. Imitation
4. Rent-seeking

1. **Radical innovation.** Something no one has ever seen before.
2. **Incremental change**. Faster, better, cheaper.
3. **Imitation.** Do something already being done but perhaps a little better.
4. **Rent-seeking.** Make money by owning stuff.

Rent seeking

Rent is income you receive because of what you own, not because of what you do.

Examples

1. Rent on an apartment
2. Royalties on a patent
3. Software license fees
4. Franchise fees
5. Benefits of being a monopoly, like a cable company
6. Interest on a municipal bond
7. Dividends on a stock

If you receive rent, you are a *rentier*.

> ren·tier ***noun*** \räⁿ-ˈtyā\ a person who lives on income from property or securities

Chapter 2.
Opportunities

Opportunities are created when the world changes.

Something becomes possible that wasn’t before.

Innovations

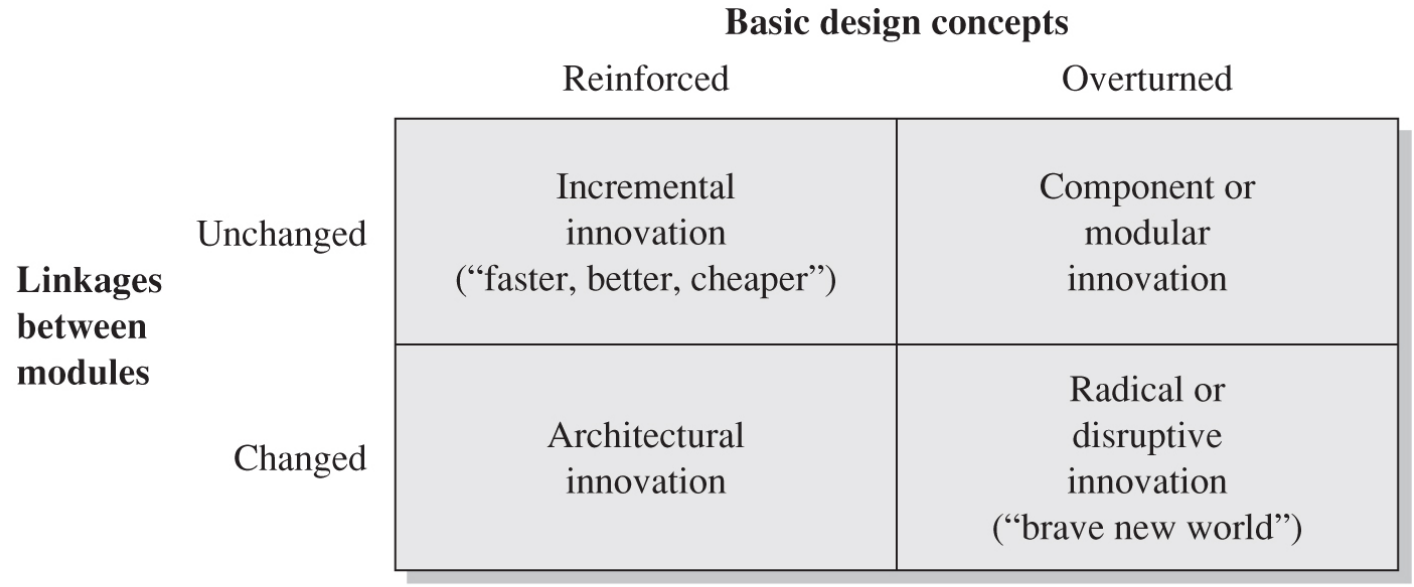


FIGURE 5.4 Four types of innovation.

Types of innovations

1. **Incremental**. Faster, better, cheaper.
2. **Architectural**. Changes the way in which things are linked together. Reconfiguration of an established system in a new way.

   Examples: Facebook, eBay, HDMI replacing S-Video, USB replacing RS-232, DirecTV challenge to cable TV in 1994, wireless replacing wired networks.
3. **Modular**. New components and modules replacing old ones.

   Examples: Flat panels replacing desktop CRTs, LED and CFL bulbs that fit in standard light sockets, driverless cars that work on the same roads and use gas, smartphones replacing dumb ones on the same networks.
4. **Radical or disruptive**. New modules and new architecture.

   Example: Tesla, with electric cars and a network of free solar-powered recharging stations.

Do you think people will steal your new idea?

New ideas

If an idea is *really new*, it's surprisingly hard to give it away.

If it's *really good*, most people will think you're crazy.

Most people have trouble imagining how their life would be different and why they would want that.

1. Fred Smith got a C on his business plan for Fedex.
2. I don’t need navigation because I know where I’m going.
3. I don’t want a cellphone because I don’t want people calling me when I’m in the supermarket.
4. No one’s going to buy CDs because they already have vinyl and why would they want to listen to numbers?
5. No one’s going to buy a $500 phone.

Ballmer Laughs at **iPhone - YouTube**
www.**youtube**.com/watch?v=eywi0h_Y5_U

https://www.youtube.com/watch?v=eywi0h_Y5_U

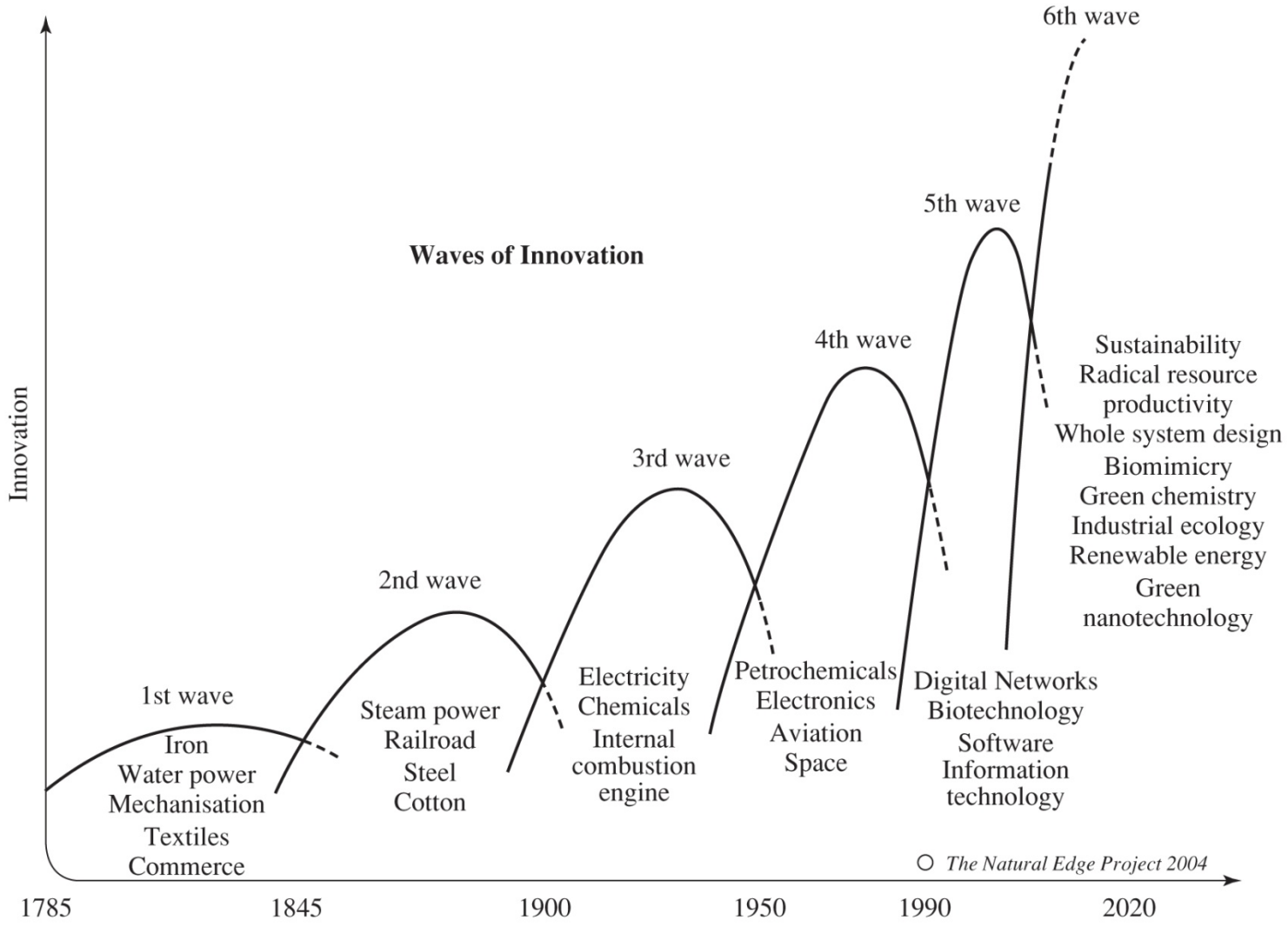
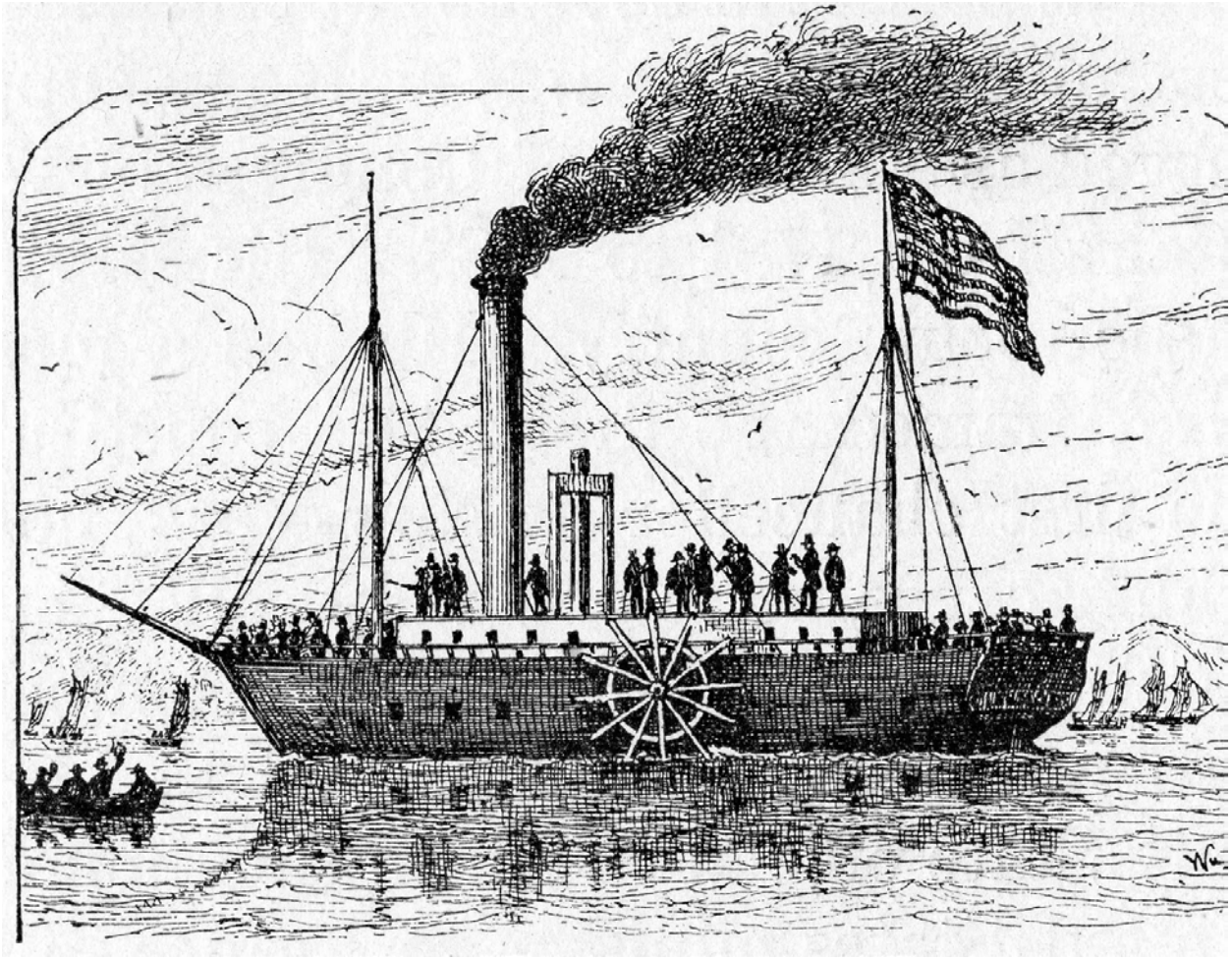


FIGURE 1.5 Waves of innovation throughout history.

When a new wave arrives, there is often a sailing ship phenomenon.

The Nina, the Pinta and the Santa Maria in 1492.
Source: http://pedemacarrao.wordpress.com/2014/04/page/13/



1807 Robert Fulton's steamboat

Source: http://blog.insidetheapple.net/2010/08/robert-fulton-and-age-of-steam.html

The response from the sailing ship industry was to build faster sailing ships, known as tall ships.

Source: https://en.wikipedia.org/wiki/Tall_ship#mediaviewer/File:N.R.P._Sagres,_navio-escola._For%C3%A7as_Armadas_Marinha_Portuguesa..jpg

Steam won.

The **Sailing Ship Effect** is a phenomenon in business by which the introduction of a new technology to a market accelerates the innovation of an incumbent technology.

The term was coined by W.H. Ward in 1967 in reference to advances made in sailing ships in the second half of the 1800s in response to the introduction of steamships.

According to Ward, in the 50 years after the introduction of the steam ship, sailing ships made more improvements than they had in the previous 300 years.

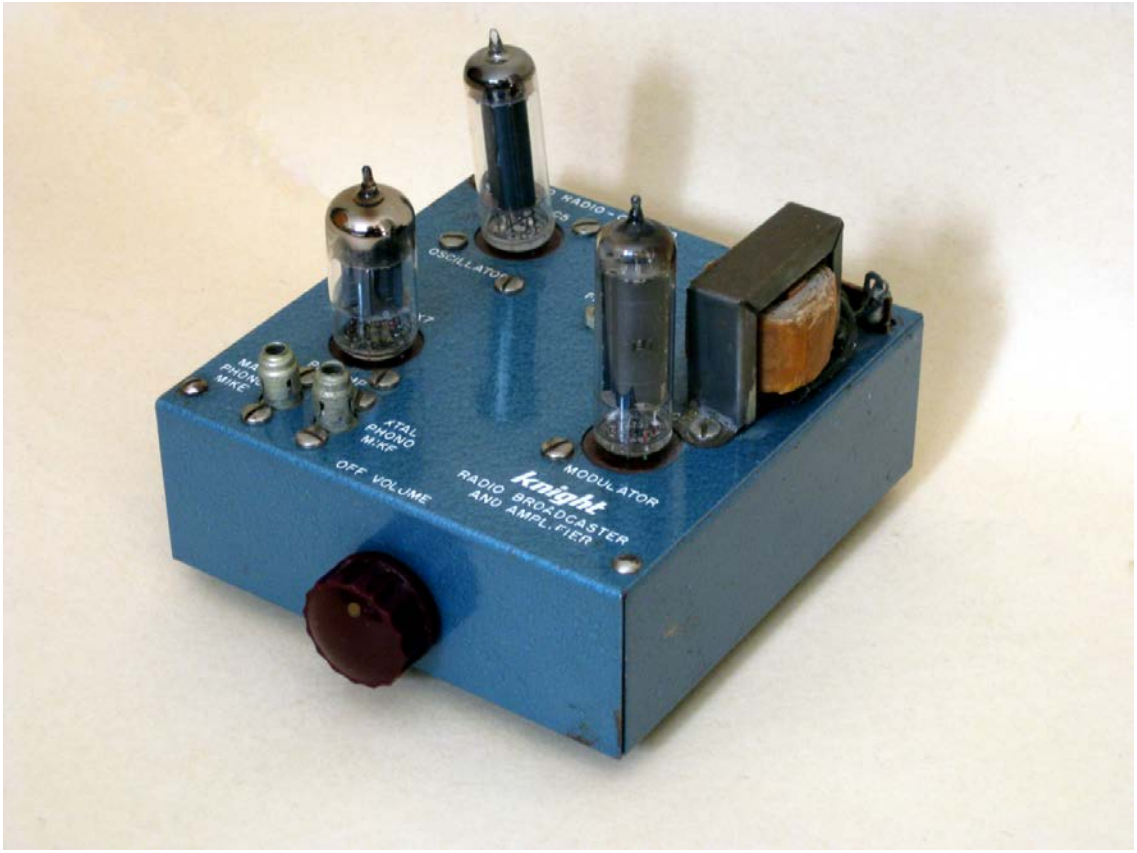
Source: Wikipedia, https://en.wikipedia.org/wiki/Sailing_Ship_Effect

Possible explanations

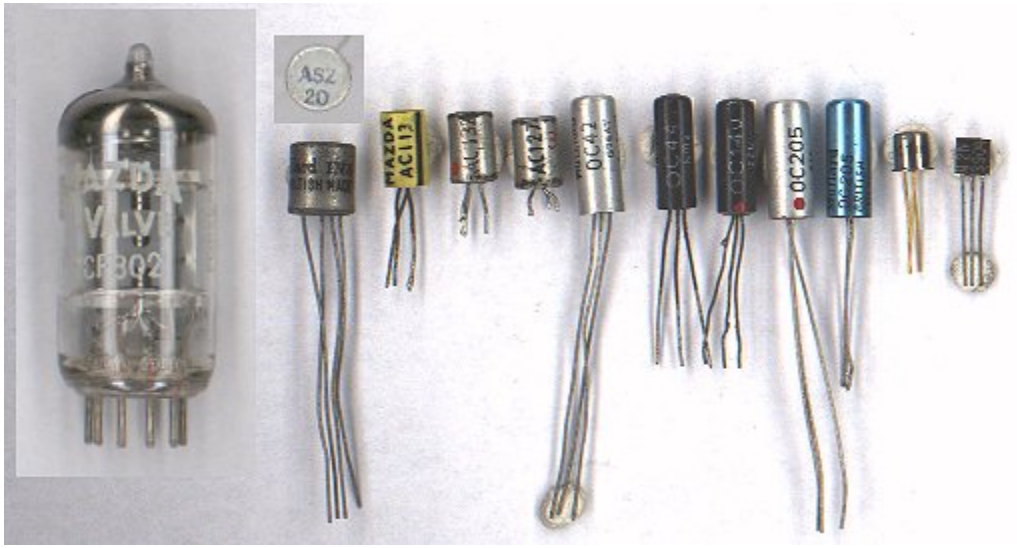
1. Old technologies improve in an attempt to avoid being replaced.
2. Components of new technology "spill over," improving incumbent technologies.
3. New technologies generate new notoriety for old technologies.

Source: Wikipedia, https://en.wikipedia.org/wiki/Sailing_Ship_Effect

Tubes versus transistors



Through the mid 1960s, electronics used tubes. This is a little Knight-Kit AM transmitter I built around 1963. I was probably 12.



In the mid 1960s, transistors hit.

Source: http://www.cjseymour.plus.com/elec/basicfab/VTRANS.jpg

The Sony 6-transistor radio was suddenly everywhere.

Source: http://p2.la-img.com/468/12546/3492860_1_l.jpg

RCA responded with the Nuvistor, a tiny vacuum tube in a metal package that made it look sort of like a transistor.

Source: http://upload.wikimedia.org/wikipedia/commons/b/ba/Nuvistor_530.jpg

Transistors won.

Other examples

1. **Old technology improving.** More efficient gas automobiles, engines with superchargers and cylinder deactivation, 8-speed transmissions.

2. **Spill over.** Hybrid cars that combine some of the benefits of electric.

3. **Notoriety.** Fascination with old technology, often for all the reasons it lost.

A $600 tube pre-amp for your iPod.

“The FX 10 is housed in a heli-arc welded chassis, and the cover is made from heat-resistant safety glass. The output unit uses two matched pairs of EL84/6BQ5 power tubes, with a pair of 12AX7s in the pre-amplifier.”

Source: http://www.needledoctor.com/Jolida-FX10-Integrated-Stereo-Tube-Amplifier

$20,000 laser turntable for vinyl LPs.

“One of its biggest appeals for audiophiles is the fact that its electronics are entirely analogue – the signal is not digitised as part of the signalling and playback process.”

Source: http://eandt.theiet.org/magazine/2011/11/lasers-get-groovy.cfm

Pull vs. Push

Demand pull

Market need → Product / service → Technology
Example: Square

Technology push

Technology → Product / service → Market need
Example: Twitter

Power of *serendipity*.

TABLE 2.1 Nine categories of opportunity.

1.	Increasing the value of a product or service
2.	New applications of existing means or technologies
3.	Creating mass markets
4.	Customization for individuals
5.	Increasing reach
6.	Managing the supply chain
7.	Convergence of industries
8.	Process innovation
9.	Increasing the scale of the firm

Examples

1. **Increasing value:** Improved performance, better quality.
2. **New applications:** Credit card for hotel doors.
3. **Mass market:** VMWare for developers → operation workloads.
4. **Customization:** Spotify personalized streaming music.
5. **Increased reach:** Expand overseas.
6. **Supply chain:** Wal-Mart or Costco.
7. **Convergence:** Supercomputing and other technologies → Genetic engineering
8. **Process:** Fedex
9. **Scale:** Consolidation, e.g., railroads, cable TV, financial institutions

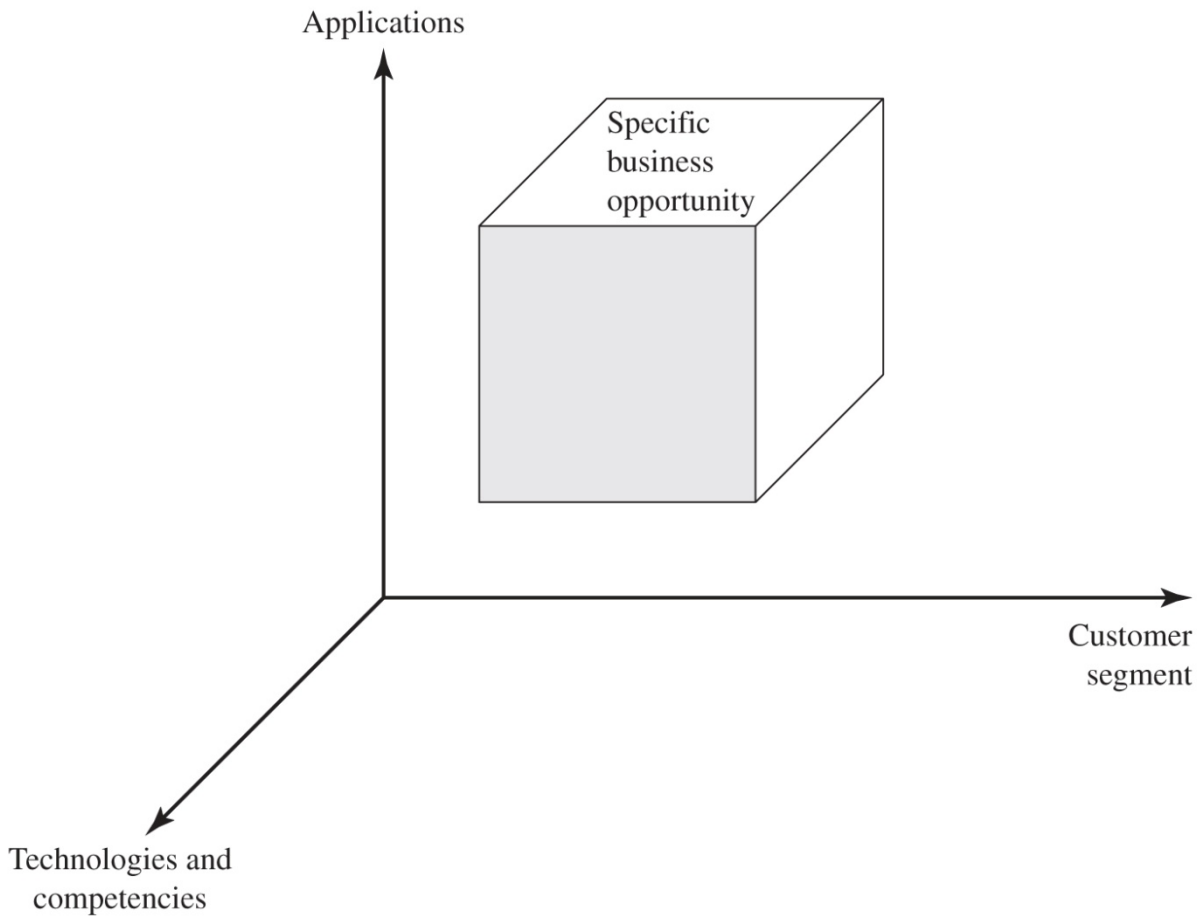


FIGURE 2.2 Finding a specific business opportunity with a combination of customer segment, technology and competencies, and applications.

Trends

TABLE 2.4 Social and cultural trends that will create opportunities.

- Aging of the baby-boom generation
- Increasing diversity of the people of the United States (e.g., Latino population)
- Two-working-parent families
- Rising middle class of developing nations
- Changing role of religious organizations
- Changing role of women in society
- Pervasive influence of media—television, DVDs, Internet

TABLE 2.5 Trends and opportunities.

- Life science: Genetic engineering, genomics, biometrics
- Information technology: Internet, wireless device, cloud computing
- Food preservation: Improved distribution of food
- Video gaming: Learning, entertainment
- Speech recognition: Interface between computers and people
- Security devices and systems: Identification devices, baggage checkers, protective clothes
- Nanotechnology: Devices 100 nanometers or less for drug delivery, biosensors
- Renewable energy: Solar cells and wind turbines
- Fuel cells: Electrochemical conversion of hydrogen or hydrocarbon fuels into electric current
- Superconductivity: Energy savings on utility power lines
- Designer enzymes: Protein catalysts that accelerate chemical reactions in living cells for consumers and health products
- Cell phones: Communications and computing
- Software security: Blocking unsolicited e-mail (spam), preventing "phishing"
- Robots: Teams of small coordinated robots for monitoring and safety functions

Evaluating the opportunity

1. Market engagement
2. Opportunity evaluation

Test your idea with potential customers and develop a plan to reach them.

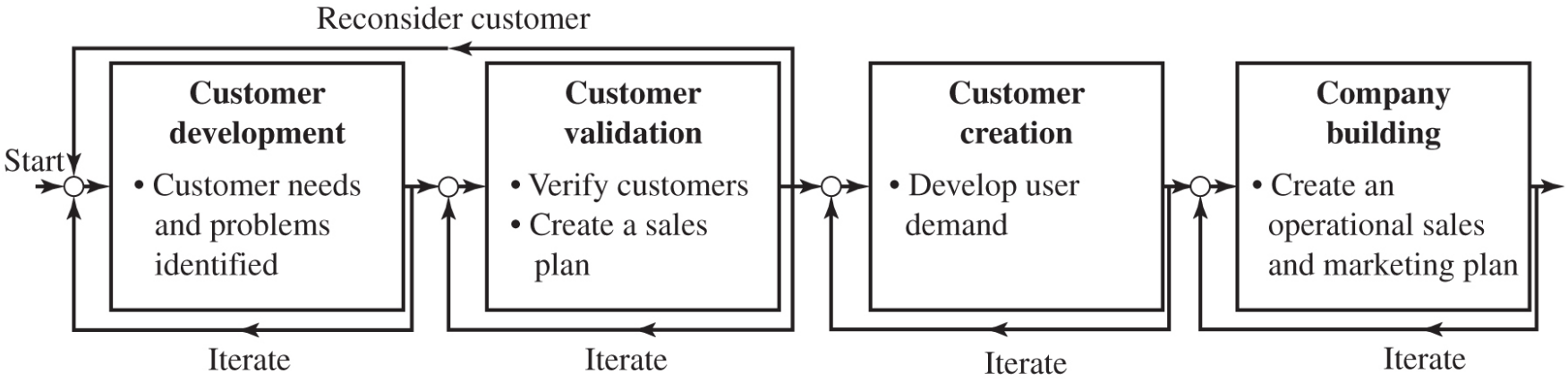


FIGURE 11.5 The customer development process.

Collecting customer opinions

How should you structure a focus group or an interview to get the most useful information?

Focus groups

1. Determine the purpose and goal.
2. Identify and attract appropriate participants.
3. Prepare opening and key questions.
4. Use simple, open-ended questions.
5. Encourage critical feedback.
6. Analyze the results for patterns and outliers.

Customer interviews

1. Know your goals and questions ahead of time.
2. Indentify and attract appropriate participants.
3. Ask open-ended questions.
4. Encourage brutal honesty and be prepared.
5. Focus on listening, not talking.
6. Avoid steering or influencing the interviewee.
7. Ask follow-up questions.
8. Confirm what you heard by paraphrasing.
9. Ask for introductions to other customers.
10. Write up your notes as soon as possible.

Evaluate the opportunity and decide.

What are the important characteristics of good opportunity?

TABLE 2.3 Five characteristics of an attractive opportunity.

- Timely—a current need or problem
- Solvable—a problem that can be solved in the near future with accessible resource
- Important—the customer deems the problem or need important
- Profitable—the customer will pay for the solution and allow the enterprise to profit
- Context—a favorable regulatory and industry situation

You have to pick, so how do you compare dissimilar choices?