Chapter 7: Business Strategy: Innovation and Entrepreneurship

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BA449
Chapter Case 7:  
Netflix: Disrupting the TV Industry
Netflix: Disrupting the TV Industry

• Streaming video is re-shaping the television industry.
  – Netflix accounts for 1/3 of downstream internet traffic

• The rise of Netflix
  – Netflix started after Reed Hastings was annoyed by a $40 late fee at Blockbuster
  – Monthly DVD subscriptions through the mail began
    • Got off to a slow start
  – Approached Blockbuster to purchase 49% of the company, which they declined
    • Blockbuster lost 75% of value from ‘2003–’05
Netflix: Disrupting the TV Industry

• Netflix began streaming content online.
  – Adjusted quickly to consumer preferences
  – Streaming available on many types of devices
  – Broadcast networks began to take notice

• Netflix began creating their own content.
  – Achieved huge success
    • Emmys and Golden Globe awards

• Netflix has achieved huge success.
  – 60 million subscribers
  – Stock appreciated by 4,100%
Netflix: Disrupting the TV Industry

- Netflix re-shaped the TV Industry:
  - Delivery: online streaming
  - Access: episodes can be viewed on-demand
  - Management: programming developed based on algorithms

- Challenges:
  - How to ensure viewing is uninterrupted (buffering)
  - Available titles + broadband limitations hinder growth
Netflix: Disrupting the TV Industry

• Netflix’s growth in the United States seems to be maturing. What other services can Netflix offer that might further demand in the United States? International expansion appears to be a major growth opportunity for Netflix. Elaborate on the challenges Netflix faces going beyond the U.S. market.
Competition Driven by Innovation
Dominant Positions Can Quickly Change Due to Innovation

• Traditional networks vs. cable providers

• Cable providers vs. streaming content

• Typewriters to PC’s to mobile devices

• Innovation can be a powerful strategic force to gain and sustain competitive advantage.
Accelerating the Speed of Technological Change

Exhibit 7.1
What Causes Rapid Technological Diffusion and Adoption

• Initial innovations are foundational for other rapid innovation.
• New business models make innovation possible.
  – Example: Dell’s direct to consumer model
• Satellite and cable distribution systems
  – Enable mass media such as radio and TV
• The emergence of the internet
  – Social networking
  – Viral messaging
The Innovation Process

Exhibit 7.2
Idea, Invention, Innovation, and Imitation

• Idea
  – Abstract concepts or research findings

• Invention
  – Transformation of an idea into product or process
  – The modification and recombination of existing ones

• Innovation
  – Commercialization of an invention by entrepreneurs

• Imitation
  – Copying a successful innovation
What Is Innovation?

A novel and useful idea that is successfully implemented.
Innovation Funnel

- 3,000 Raw Ideas (unwritten)
- 300 Submitted Ideas
- 125 Small Projects
- 4 Major Developments
- 2 Launches
- 1 Successful New Product
The Development of Technology: From Knowledge Generation to Diffusion

Basic Knowledge → Invention → Innovation → Diffusion

Supply side

Demand side

IMITATION

ADOPTION

Joseph A. Schumpeter
The Economics and Sociology of Capitalism
# The Development of Technology: Lags Between Knowledge Generation and Commercialization

<table>
<thead>
<tr>
<th>Basic Knowledge</th>
<th>First Patents</th>
<th>Product Launch</th>
<th>Imitation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xerography</td>
<td>late 19th and early 20th centuries</td>
<td>1940</td>
<td>1958</td>
</tr>
<tr>
<td>Jet Engines</td>
<td>17th-- early 20th centuries</td>
<td>1930</td>
<td>1957</td>
</tr>
</tbody>
</table>
Appropriation of Value:- How are the Benefits from Innovation Distributed?

- Customers
- Suppliers
- Innovator
- Imitators and other “followers”
The Profitability of Innovation

- Legal protection
- Complementary resources
- Imitability of the technology
- Lead time
Legal Protection of Intellectual Property

- **Patents** — exclusive rights to a new product, process, substance or design.
- **Copyrights** — exclusive rights to artistic, dramatic, and musical works.
- **Trademarks** — exclusive rights to words, symbols or other marks to distinguish goods and services; trademarks are registered with the Patent Office.
- **Trade Secrets** — protection of chemical formulae, recipes, and industrial processes.

*Also, private contracts between firms and between a firm and its employees can restrict the transfer of technology and know how.*
<table>
<thead>
<tr>
<th>Method</th>
<th>Processes</th>
<th>Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patents to prevent duplication</td>
<td>3.52</td>
<td>4.33</td>
</tr>
<tr>
<td>Patents to secure royalty income</td>
<td>3.31</td>
<td>3.75</td>
</tr>
<tr>
<td>Secrecy</td>
<td>4.31</td>
<td>3.57</td>
</tr>
<tr>
<td>Lead time</td>
<td>5.11</td>
<td>5.41</td>
</tr>
<tr>
<td>Moving quickly down the learning curve</td>
<td>5.02</td>
<td>5.09</td>
</tr>
<tr>
<td>Sales or service efforts</td>
<td>4.55</td>
<td>5.59</td>
</tr>
</tbody>
</table>

1 = not at all effective  7 = very effective

The Technology Transfer Process

- Research
  - $29.5 billion

- Disclosure
  - 13,039 disclosures

- IP Decision
  - 6,375 patent applications
  - 4,362 licenses
  - 454 new companies
  - 3,764 issued patents

- IP Protection

- Commercialization Strategy

- Licensing

Source: AUTM
Licensing Survey:
FY 2000
## Alternative Strategies for Exploiting Innovation

<table>
<thead>
<tr>
<th>Licensing</th>
<th>Outsourcing certain functions</th>
<th>Strategic Alliance</th>
<th>Joint Venture</th>
<th>Internal Commercialization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small risk, but limited returns also (unless patent position very strong)</td>
<td>Limits investment, but dependence on suppliers &amp; partners</td>
<td>Benefits of flexibility; risks of informal structure</td>
<td>Shares investment &amp; risk. Risk of partner conflict &amp; culture clash</td>
<td>Biggest risks &amp; benefits. Allows complete control</td>
</tr>
<tr>
<td>Few</td>
<td>Allows outside resources &amp; capabilities To be accessed</td>
<td>Permits pooling of the resources/capabilities of more than one firm</td>
<td></td>
<td>Substantial resource requirements</td>
</tr>
<tr>
<td>Konica licensing its digital camera to HP</td>
<td>Pixar’s movies (e.g. “Toy Story”) marketed &amp; distributed by Disney.</td>
<td>Apple and Sharp build the “Newton” PDA</td>
<td>Microsoft and NBC formed MSNBC</td>
<td>TI’s development of Digital Signal Processing Chips</td>
</tr>
</tbody>
</table>
## The Comparative Success of Leaders and Followers

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>INNOVATOR</th>
<th>FOLLOWER</th>
<th>WINNER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jet Airliners</td>
<td>De Havilland (Comet)</td>
<td>Boeing (707)</td>
<td>Follower</td>
</tr>
<tr>
<td>Float glass</td>
<td>Pilkington</td>
<td>Corning</td>
<td>Leader</td>
</tr>
<tr>
<td>X-Ray Scanner</td>
<td>EMI</td>
<td>General Electric</td>
<td>Follower</td>
</tr>
<tr>
<td>Office P.C.</td>
<td>Xerox</td>
<td>IBM</td>
<td>Follower</td>
</tr>
<tr>
<td>VCRs</td>
<td>Ampex/Sony</td>
<td>Matsushita</td>
<td>Follower</td>
</tr>
<tr>
<td>Diet Cola</td>
<td>R.C. Cola</td>
<td>Coca Cola</td>
<td>Follower</td>
</tr>
<tr>
<td>Instant Cameras</td>
<td>Polaroid</td>
<td>Kodak</td>
<td>Leader</td>
</tr>
<tr>
<td>Pocket Calculator</td>
<td>Bowmar</td>
<td>Texas Instruments</td>
<td>Follower</td>
</tr>
<tr>
<td>Microwave Oven</td>
<td>Raytheon</td>
<td>Samsung</td>
<td>Follower</td>
</tr>
<tr>
<td>Plain Paper Copiers</td>
<td>Xerox</td>
<td>Canon</td>
<td>Not clear</td>
</tr>
<tr>
<td>Fiber Optic Cable</td>
<td>Corning</td>
<td>many companies</td>
<td>Leader</td>
</tr>
<tr>
<td>Video Games Players</td>
<td>Atari</td>
<td>Nintendo/Sega/Sony</td>
<td>Followers</td>
</tr>
<tr>
<td>Disposable Diapers</td>
<td>Proctor &amp; Gamble</td>
<td>Kimberly-Clark</td>
<td>Leader</td>
</tr>
<tr>
<td>Web browser</td>
<td>Netscape</td>
<td>Microsoft</td>
<td>Follower</td>
</tr>
<tr>
<td>PDA</td>
<td>Psion, Apple</td>
<td>Palm</td>
<td>Follower</td>
</tr>
<tr>
<td>MP3 music players</td>
<td>Diamond Multimedia</td>
<td>Sony (&amp;others)</td>
<td>Followers</td>
</tr>
</tbody>
</table>
Uncertainty & Risk Management in Tech-based Industries

**Sources of uncertainty**
- Technological uncertainty
  - Selection process for standards and dominant designs emerge is complex and difficult to predict, e.g. future of 3G
- Market uncertainty
  - Customer acceptance and adoption rates of innovations notoriously difficult to predict, e.g. PC, Xerox copier, Walkman

**Cooperating with lead users**
- Early identification of customer requirements
  - Assistance in new product development

**Strategies for managing risk**
- Flexibility
  - Keep options open
  - Use speed of response to adapt quickly to new information
  - Learn from mistakes
- Limiting risk exposure
  - Avoid major capital commitments (e.g. lease don’t buy)
  - Outsource
  - Alliances to access other firms’ resources & capabilities
  - Keep debt low
Sources of Network Externalities

• User linkages, e.g.
  – Telephone systems—only value of telephone is connection to other users
  – Video game consoles—same platform allows users to exchange games and play interactively
  – On-line auction—value of auction depends on number of buyers and sellers participating
    Also, social identification—listening to same music, watching same TV shows, wearing same clothes in order to conform

• Availability of complementary products, e.g.
  – Most PC applications software written for Windows, not Mac.
  – In economy autos, easier to get parts and repair for a Ford Focus than for a Maruti or Proton

• Economizing on switching costs, e.g.
  – In suites of office software, users of Microsoft Office more likely to avoid switching costs that users of Lotus SmartSuite when they move jobs
Competing for Standards: Value Appropriation vs. Market Acceptance

Maximize value appropriation
Maximize market acceptance

LOOSE
VHS
IBM-PC
IBM

TIGHT
Betamax
Mac

IBM-PC vs. Betamax
IBM-PC vs. Mac

Loose vs. Tight
The Conditions for Creativity: “Operating” and “Innovating” Organizations

<table>
<thead>
<tr>
<th>Structure</th>
<th>Operating Organization</th>
<th>Innovating Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bureaucratic. Specialization and division of labor. Hierarchical</td>
<td>Flat organization without hierarchical control. Task-oriented</td>
</tr>
<tr>
<td></td>
<td>control</td>
<td>project teams.</td>
</tr>
<tr>
<td>Processes</td>
<td>Operating units controlled and coordinated by top management</td>
<td>Processes directed toward generation, selection, funding and</td>
</tr>
<tr>
<td></td>
<td>which undertakes strategic planning, capital allocation and</td>
<td>development of ideas. Strategic planning flexible, financial and</td>
</tr>
<tr>
<td></td>
<td>operational planning.</td>
<td>operating controls loose.</td>
</tr>
<tr>
<td>Reward Systems</td>
<td>Financial compensation, promotion up the hierarchy, power and</td>
<td>Autonomy, recognition, equity participation in new ventures</td>
</tr>
<tr>
<td></td>
<td>status symbols.</td>
<td></td>
</tr>
<tr>
<td>People</td>
<td>Recruitment and selection based upon the needs of the organization</td>
<td>Key need is for idea generators which combine required technical</td>
</tr>
<tr>
<td></td>
<td>structure for specific skills: functional and staff specialists,</td>
<td>knowledge with creative personality traits. Managers must act as</td>
</tr>
<tr>
<td></td>
<td>general managers, and operatives.</td>
<td>sponsors and orchestrators.</td>
</tr>
</tbody>
</table>

*Note: The highlighted text in the image is not included in the natural text representation.*
Strategic and Social Entrepreneurship
Entrepreneurship

• Undertake economic risk to innovate
  – Results in new products, processes, and organizations

• Agents who introduce change, such as:
  – Reed Hastings: Netflix
  – Jeff Bezos: Amazon
  – Oprah Winfrey: Harpo Productions
  – Elon Musk: Tesla Motors, Solar City, SpaceX, PayPal
Strategic Entrepreneurship

• The pursuit of innovation using tools and concepts from strategic management

• Fundamental questions are:
  – How to combine entrepreneurial actions…
  – How to discover and/or create new opportunities…
  – How to exploit existing opportunities…
  – …in the pursuit of competitive advantage

• Example: Apple
  – Innovation in mobile devices
Social Entrepreneurship

• The pursuit of social goals AND
• Creation of a profitable business
• Example: Jimmy Wales
  – Founder of Wikipedia
    • 500 million users per month
  – One of the first to grasp the power of an open source method
  – Goal: provide knowledge on very large-scale
  – Wikipedia supports are via donations not advertising
    • Typifies a sense of idealism
  – https://www.youtube.com/watch?v=oVFPW0r4jWk
• **18th century Scottish Enlightenment creates Encyclopedia Britannica (E.B.)**
  - 65,000 topics by 4,000 scholars
  - In 1991, E.B. sales $650M (market was $1.2 billion annually)
    - Price ~$2,000 per set of books

• **Microsoft launches Encarta in 1993 for $99 ea.**
  - By 1996 Encarta U.S. sales over $100M & E.B. ~$300M

• **Mr. Wales launches Wikipedia in 2001 for $0 ea.**
  - 3.6 million articles in English (40 times Encyclopedia Britannica !)
    - 18 million total in 281 languages
  - In ‘09 Microsoft **shut down** Encarta
  - Peer-reviewed study of 42 topics found 4 errors in Wiki...3 in E.B.
  - Leverages the “wisdom of crowds”
Wikipedia, through its open-source (crowdsourcing) model for content, disrupted the encyclopedia business (e.g., CD-based Encarta from Microsoft, and Britannica), thereby rendering a traditional business model obsolete. The founder of Wikipedia, Jimmy Wales, is a social entrepreneur who seeks to make the entire repository of human knowledge available to anyone, anywhere for free. If you were the founder of Wikipedia would you want to monetize the business? Why or why not? What are the benefits and costs of a for-profit versus non-profit business?
Innovation and the Industry Life Cycle
Innovations Can Lead to New Industries

- **IT and Logistics:**
  - Created overnight express deliveries (Fed Ex)
  - Created big-box retailing (Walmart)
- **The Internet:**
  - Online retailing (Amazon and eBay)
  - Revolutionized advertising (Yahoo, Google, and Facebook)
- **Nanotechnology:**
  - Medical diagnostics and surgery
  - Lighter and stronger airline components
The Five Phases of an Industry Lifecycle

• Introduction
• Growth
• Shakeout
• Maturity
• Decline

• Supply and demand changes as industries age
• Each stage requires different competencies
Lifecycle of the Smartphone Industry in Emerging and Developed Economies

Exhibit 7.4
Introduction Stage

- Core competency: R&D
- Strategic objective: market acceptance and future growth
- Emphasis: uniqueness and performance
- Capital-intensive
  - Trying new ideas
  - Producing small quantities
- Initial market size: small
- Growth: slow
- Barriers to entry: high
Introduction Stage: Network Effects

- The positive effect that one user has on the value of a product for other users
- Example: Apple’s iPhone

Exhibit 7.5
Apple Leverages Network Effects to Propel Growth

• Apple launched iPhone in summer ‘07

  ➢ Launched app store a year later
    ❖ Small programs but BIG business!
      - Over $4 billion in 2012

  ➢ Virtuous cycle of 10 billion Apple apps downloaded by 2011
    ❖ Apps increase value of the iPhone (& iPad too!)
    ❖ More devices sold, incentivizes software developers
    ❖ Recent iBook store likely to grow the network effects still more

  ❖ Update: The explosive growth of the iPhone is due to Apple App Store offering the largest selection of apps to its users. The 1.5 million apps available were downloaded 75 billion times as of spring 2015. Apple argues that users have a better experience because the apps take advantage of the tight integration of hardware and software provided by the iPhone. The availability of apps, in turn, leads to network effects that increase the value of the iPhone for its users.
Growth Stage

- Demand increases rapidly.
  - First-time buyers rush to purchase.
  - Proof of concept completed
- Competitive rivalry: muted (due to growth)
- Product /service standards emerge
  - A common set of features and design choices
- Basis of competition: process innovation
- Core competencies:
  - Manufacturing
  - Marketing
Some Standards Die Hard: QWERTY vs. DSK

- QWERTY introduced in 1870s
  - *Slowed down* typing to avoid jamming keys
- Dvorak introduced in 1930s
  - *Minimized* finger reach to *speed up* typing
Growth Stage: Product vs. Process Innovation

Exhibit 7.6
Shakeout Stage

- Firms begin to compete more intensely.
  - Weaker firms forced out
  - The industry consolidates
  - Only the strongest competitors survive.

- Biggest competitive weapon: low price
Maturity Stage

• Few large firms remain.
  – They enjoy economies of scale.

• Additional market demand is limited.

• Market has reached maximum size.

• Competitive intensity: increases
Decline Stage

- Demand falls, often rapidly.
- Strong pressure on prices
- Four strategic options to pursue:
  - **Exit**: bankruptcy/liquidation
  - **Harvest**: reduce further investments
  - **Maintain**: support at a given level
  - **Consolidate**: buy rivals, near monopoly (e.g., IBM mainframes)
Many innovators do not successfully transition from one stage of the industry life cycle to the next.

Exhibit 7.7
Technology Enthusiasts

- 2.5% of the total market potential
- Often have an engineering mind
- Pursue new technology proactively
- Enjoy using beta versions
- Tinker with the product’s imperfections
  - Often provide (free) feedback and suggestions
- Example: 8,000 beta testers of Google Glass
  - A mobile computer that is worn like a pair of glasses.
Early Adopters

• 13.5% of the total market potential
• Demand is driven by:
  – Imagination and creativity
  – Intuition and imagination
  – “What can this new product do for me / my business?”
• Firm needs to communicate the product’s potential applications in a more direct way.
• Example: people in line at Apple Stores waiting for the Apple Watch
Early Majority

- 34% of the total market potential
- Main consideration: “Is this practical?”
- Weigh the benefits and costs carefully.
- Observe early adopters using the product.
  - Rely on endorsements
- This group is key to catching the growth wave.
- Example: Fisker vs. Tesla
Late Majority

- 34% of the total market potential
- Not as confident in their ability to master the technology
- Prefer to wait until standards have emerged
- Prefer to buy from well-established firms
Laggards

- 16% of total market potential
- Adopt a new product only if necessary
- Generally don’t want new technology
- Typically not pursued as future customers
- Their demand is small
Crossing the Chasm: Applied to the Mobile Phone Industry

Exhibit 7.8
## Features and Strategic Implications of the Industry Life Cycle

### Exhibit 7.9

<table>
<thead>
<tr>
<th>Life Cycle Stages</th>
<th>Introduction</th>
<th>Growth</th>
<th>Shakeout</th>
<th>Maturity</th>
<th>Decline</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Core Competency</strong></td>
<td>R&amp;D, some marketing</td>
<td>R&amp;D, some manufacturing, marketing</td>
<td>Manufacturing, process engineering</td>
<td>Manufacturing, process engineering, marketing</td>
<td>Manufacturing, process engineering, marketing, service</td>
</tr>
<tr>
<td><strong>Type and Level of Innovation</strong></td>
<td>Product innovation at a maximum; process innovation at a minimum</td>
<td>Product innovation increasing; process innovation decreasing</td>
<td>After emergence of standard: product innovation decreasing rapidly; process innovation increasing rapidly</td>
<td>Product innovation low; process innovation high</td>
<td>Product innovation at a minimum; process innovation at a maximum</td>
</tr>
<tr>
<td><strong>Market Growth</strong></td>
<td>Slow</td>
<td>High</td>
<td>Moderate and slowing down</td>
<td>None to moderate</td>
<td>Negative</td>
</tr>
<tr>
<td><strong>Market Size</strong></td>
<td>Small</td>
<td>Moderate</td>
<td>Large</td>
<td>Largest</td>
<td>Small to moderate</td>
</tr>
<tr>
<td><strong>Price</strong></td>
<td>High</td>
<td>Falling</td>
<td>Moderate</td>
<td>Low</td>
<td>Low to high</td>
</tr>
<tr>
<td><strong>Number of Competitors</strong></td>
<td>Few, if any</td>
<td>Many</td>
<td>Fewer</td>
<td>Moderate, but large</td>
<td>Few, if any</td>
</tr>
<tr>
<td><strong>Mode of Competition</strong></td>
<td>Non-price competition</td>
<td>Non-price competition</td>
<td>Shifting from non-price to price competition</td>
<td>Price</td>
<td>Price or non-price competition</td>
</tr>
<tr>
<td><strong>Type of Buyers</strong></td>
<td>Technology enthusiasts</td>
<td>Early adopters</td>
<td>Early majority</td>
<td>Late majority</td>
<td>Laggards</td>
</tr>
<tr>
<td><strong>Business-Level Strategy</strong></td>
<td>Differentiation</td>
<td>Differentiation</td>
<td>Differentiation, or integration strategy</td>
<td>Cost-leadership or integration strategy</td>
<td>Cost-leadership, differentiation, or integration strategy</td>
</tr>
<tr>
<td><strong>Strategic Objective</strong></td>
<td>Achieving market acceptance</td>
<td>Staking out a strong strategic position; generating “deep pockets”</td>
<td>Surviving by drawing on “deep pockets”</td>
<td>Maintaining strong strategic position</td>
<td>Exit, harvest, maintain, or consolidate</td>
</tr>
</tbody>
</table>
Types of Innovation
Markets and Technology Framework

- A conceptual model to categorize innovations:
  - Market (existing/new) dimension
  - Technology (existing/new) dimension

- Four types of innovation emerge:
  - Incremental
  - Radical
  - Architectural
  - Disruptive

- Each type of innovation has different strategic implications
Types of Innovation

Exhibit 7.10

- Architectural Innovation
- Radical Innovation
- Incremental Innovation
- Disruptive Innovation
From King Gillette to King of Incremental Innovation

1930s

2011
From King Gillette to King of Incremental Innovation

• Gillette invented the safety razor in 1903

  ➢ A radical innovation at the start
  ➢ Innovative business model
    ❖ Make money from the blades NOT the razors
  ➢ Incremental innovation
    ❖ Moved from 1 to six blades (so far…)
  ➢ Top selling blades today! Over $1 billion in sales
    ❖ Prices steady to higher for the blades!
Incremental vs. Radical Innovation

• **Incremental Innovation:**
  – Builds on established knowledge base
  – Results from steady improvement
  – Targets existing markets with existing technology
  – Example: Gillette blades: from one to six!

• **Radical Innovation:**
  – Draws on novel methods and materials
  – Forms from an entirely new knowledge base
  – Forms from a recombination of existing knowledge
  – Example: X-ray technology
Examples of Radical Innovation

- The iPhone
- The Ford Model T
- The X-Ray
- The Airplane
- Genetic engineering
- Decoding of the human genome
Why Are Incumbent Firms Focused On Incremental Innovation?

• Economic Incentives:
  – Established companies are focused on defending their position
  – Organizational inertia:
    – Established companies rely on formalized business processes and structures

• Innovation Ecosystem:
  – Established companies are part of an ecosystem:
    • Suppliers, buyers, complementors
Architectural vs. Disruptive Innovation

• **Architectural Innovation:**
  – Leverages existing technology into new markets
  – Alters the architecture of a product
  – A new product, with known components, used in a novel way (e.g., commercializing xerography invention)

• **Disruptive Innovation:**
  – Leverages new technologies in existing markets (e.g., mini-mills in the steel industry; also laptop computers)
  – New product / process meets existing customer needs
Disruptive Innovation Invading Different Market Segments from the Bottom Up

Examples of Disruptive Innovations:
• Mini steel mills (vs. integrated steel mills)
• Japanese car makers entering the U.S.
• Personal computers (vs. mainframe computers)
• Netbooks (vs. laptops and desktops)
• Portable ultrasound (vs. large, stationary ultrasound equipment)
• Angioplasty (vs. open-heart surgery)

Technology Trajectory (purple line)—used by disruptive innovator to invade market segments from the bottom up

Segment 1
Segment 2
Segment 3
Segment 4
How Dollar Shave Club Is Disrupting Gillette

- Gillette: six blades, $10 per cartridge
- Dollar Shave Club: low cost alternative
  - 1 razor and 5 cartridges per month for $1
  - Using business model innovation
- Results:
  - 12,000 people signed up within the first 48 hours.
  - Received $20 million in venture capital funding
  - It remains to be seen whether they can disrupt this industry.
How to Respond to Disruptive Innovation

• Continue to innovate
  – Stay ahead of the competition

• Guard against disruptive innovation
  – Protect the low end of the market

• Disrupt yourself
  – Rather than wait for others to disrupt you
  – Called reverse innovation
    • An innovation that was developed for emerging economies before being introduced in developed economies.
GE’s Innovation Mantra: Disrupt Yourself!

- GE Healthcare – global leader in diagnostics
  - Ultrasound machine for research hospitals – $250,000
    - Limited market for these in developing countries
  - 2002 local team at GE China – developed portable US
    - Laptop-based technology – Under $30,000 for U.S. rollout
  - 2009 introduced a handheld US – about $10,000
    - Vscan - large cell phone – shaped device
      - It’s a cross between an iPod and a flip phone
      - Doctors can hang it around their neck
The Internet as Disruptive Force: The Long Tail

- Long tail in a digital world
  - Both opportunity and threat
  - 80% sales in a given category are NOT “hits”
    - Pareto principle
  - Technology enables easier access to the ‘tail’
    - Selling “less of more”
    - Online firms can gain a large share of revenue from selling a small number of nearly unlimited choices

- Short head is the mainstream
  - Available at brick & mortar stores
    - Significant inventory costs
The Internet and inventory management software drive down costs to match customer demand, increasing the tail to the black dotted line.

The Short Head and the Long Tail

80-20 Rule or Pareto Principle:
80% of sales comes from 20% of selection found in Short Head

Advances in technology create Long Tail

Long Tail
The Long-Tail Consequences: Selling Less of More

25% to 45% of sales for online retailers is from products NOT available in traditional retail stores.
Closed vs. Open Innovation

• **Closed Innovation**
  - New products discovered, developed, and commercialized internally

• **Open Innovation**
  - Ideas and innovation can originate from external sources
    - Customers
    - Suppliers
    - Universities
    - Start-ups
    - Competitors
What Caused the Shift from Closed to Open Innovation?

• Increasing supply and mobility of skilled workers
• Availability of options to commercialize ideas
  – Example: Spinning out new ventures
• Increasing capability of suppliers globally
• Exponential growth of venture capital
Closed Innovation vs. Open Innovation

Panel A: Closed Innovation

Boundary of the Firm

Research Projects

Research → Development → The Market

Panel B: Open Innovation

Boundary of the Firm

Research Projects

Research → Development → New Market

Research Projects

Current Market

Exhibit 7.12
Contrasting Principles: Closed vs. Open Innovation

<table>
<thead>
<tr>
<th>Closed Innovation Principles</th>
<th>Open Innovation Principles</th>
</tr>
</thead>
<tbody>
<tr>
<td>The smart people in our field work for us.</td>
<td>Not all the smart people work for us. We need to work with smart people inside <em>and</em> outside our company.</td>
</tr>
<tr>
<td>To profit from R&amp;D, we must discover it, develop it, and ship it ourselves.</td>
<td>External R&amp;D can create significant value; internal R&amp;D is needed to claim (absorb) some portion of that value.</td>
</tr>
<tr>
<td>If we discover it ourselves, we will get it to market first.</td>
<td>We don’t have to originate the research to profit from it; we can still be first if we successfully commercialize new research.</td>
</tr>
<tr>
<td>The company that gets an innovation to market first will win.</td>
<td>Building a better business model is often more important than getting to market first.</td>
</tr>
<tr>
<td>If we create the most and best ideas in the industry, we will win.</td>
<td>If we make the best use of internal and external ideas, we will win.</td>
</tr>
<tr>
<td>We should control our intellectual property (IP), so that our competitors don’t profit from it.</td>
<td>We should profit from others’ use of our IP, and we should buy others’ IP whenever it advances our own business model.</td>
</tr>
</tbody>
</table>

Absorptive Capacity

• A firm’s ability to:

  – Understand external technology developments
  – Evaluate these external developments
  – Integrate them into current products or create new ones
Absorptive Capacity and a Firm’s Technical Knowledge

Internal R&D

Absorptive capacity

Technical knowledge

Spillovers of competitors’ knowledge, Extra-industry knowledge

Adapted from: Cohen and Levinthal, 1990