Chapter 3: types and Patterns of Innovation

Main topic

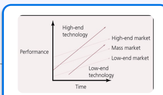
Types of Innovation

- Product v.s. Process
  - Product Innovation: Goods, services, embodied in the outputs of an organization
  - Process Innovation: In the way an organization conducts its business
- **Radical v.s. incremental**
  - **Radical Innovation**: ***New and different*** from previously ***existing products and processes***
  - **Incremental Innovation**: May involve only ***minor change*** from ***existing practices***
- Competence-Enhancing v.s. Competence-Destroying
  - Competence-enhancing: Build on the firm's existing knowledge base
  - Competence-destroying: Renders a firm's existing competencies obsolete
- **Architectural v.s. Component**
  - **Architectural Innovation**: Change the *overall design* of the system or the way *components interact*
  - Component Innovation: Change one or more components of a product system without significantly affecting the overall design
- Sustaining v.s. Disruptive
  - Sustaining: Targets *high-end* customer, provide *better performance* than previously available
  - Disruptive: Introduce o products that are *not good as* currently available products. Simpler, convenient, cheap, *appeal to new customer (+)*

Discontinuous Technology

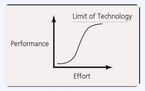
- Discontinuous Technology: a technology ***fulfills a similar market need*** by building on an ***entirely new knowledge base***
- Traits
  - Discontinuous Technology can **prevent** existing technologies from **reaching their limits**
  - Technology discontinuity may **initially have lower performance** than incumbent technology
  - Discontinuous Technology may **displace** incumbent technology when it has a **steeper s-curve** or **higher performance limit**
- switching to a new technology
  - Why don't
    - Switch costs
    - Technical myopia
    - Misjudgment of market signals
    - Lose vigilence
    - Cultural barriers of enterprises
  - Factors of benefits
    - New technology advantages
    - The technology fit with the firm's current ability
    - Complementary resources
    - Expected rate of diffusion

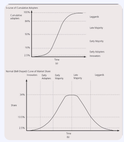
Zero Segment



- Technology often improves faster than customer requirements
- Enables low-end technologies to eventually meet the needs of the mass market
- **Conclusion**: if low-end market is neglected, it can become a breeding ground for powerful competitors

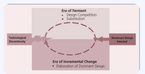
Technology S-Curve

- Both the **rate of a technology's improvements** and it's **rate of diffusion to the market** follow s-shaped curve
- S-curve in **Technology Improvement**
  - ***Technology*** improves slowly at first - poorly understood
  - Then accelerates - understanding increases
  - Tapers off as approaches limits
  - 

    Subtopic
- S-curve in **Technology Diffusion**
  - **Technology diffusion**: the spread of a technology through a population
  - S-curve
    - ***Adoption*** is slow at first - technology is unfamiliar
    - Accelerates - technology becomes better understood
    - Market is saturated and rate of new adoption decline
  - Slower than Information diffusion
    - Require acquiring **complex** knowledge
    - Require **complementary** resources
  - Factors of diffusion
    - Perceived attributes of Innovation
      - Compatinility
      - Complexity
      - RA
      - Triability
    - Type of innovation decision
      - Optional
      - Collective
      - Authority
    - Communication channels
    - Nature of social system
    - Promotion efforts
  - 
    Adopter Categories
    - Innovator
    - Early adopters
    - Early majority
    - Late majority
    - Laggards

steeper, higher limits

Technology Cycles

- Fluid & Specific
  - Fluid stage: uncertainty about the technology
  - Specific phase: after a **dominant design**, focus on incremental improvements
- Ferment & incremental
  - Era of ferment: a period of turbulence until a dominant design is selected
  - Era of incremental change: dorms cease to invest in learning alternative designs, focus on developing competencies related to dominant design
  - 

    Subtopic