Asian Innovations: Toyota, Samsung & Lenovo

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A Key Question

- What are the secrets of successful innovations in Asian Global companies?
Innovation Evolution of Mankind
Targets of Innovation: Human Life

- The Necessities of Life
  - Food (食)
  - Clothing (衣)
  - Shelter (住)

- The Affluence of Life (生的豊饒)
  - Work: Agriculture, Business, Manufacturing, Service
  - Society: Law, Education, Hospital, Transportation
  - Entertainment: Music, Dance, Movie, Media
  - Leisure: Travel, Hotel, Restaurant, Hospitality
Innovation of Food

- **Agriculture**
  - Rice: 8,000 B.C.
  - Wheat: 6,000 B.C.
  - Ants?

- **Food**
  - Hot Food: Tasty
  - Open Fire -> Contained Fire: Enabler
  - Stove, Cooking Utensils (Knife, Grater, Pot): Complement

- **Bread**
  - Unleavened Bread: Neolithic
    - Stone-crushed barley & wheat: Stone Age
    - Grinding corn: 5,500 B.C.
  - Leavened Bread (Yeast): Egypt in 4,000 B.C.
    - “Accidental discovery” of yeast and fermentation: Eureka!
    - Pita (Khubz) (Greece, Middle East, Arab), Naan (India Tandoori oven)

- **Noodle**
Innovation of Cloth: Silk

- Silk Fabric: Chinese Empress Leizu, 3,500 BC
- Eureka: Cocoon in a soup -> Silk thread
- Silk Textile: Techniques of Weaving & Dyeing
- National Secret
  - Emperor’s Order
  - 400 AD in India
    - Chinese Princess
    - Mulberry & Silkworm
  - 500 AD in the West
- Silk Road
  - Han Dynasty: 200 BC
Innovation of House

- Cave
- Tree & Leaves
- Wood
- Stone
- Mud
- Sheaf of Rice
- Cement
- Brick
- Steel
- Glass
- …
Innovations in Business

- What are the innovative products?
  - Smartphone
  - Notebook
  - TV
  - Car
  - Air Conditioner: Singapore?

- What are the innovative companies?
  - Apple
  - ?
## Innovation Pioneer vs. Market Leader

<table>
<thead>
<tr>
<th>Product</th>
<th>Pioneer</th>
<th>Leader</th>
</tr>
</thead>
<tbody>
<tr>
<td>Washing Machine</td>
<td>Bendix</td>
<td>LG</td>
</tr>
<tr>
<td>PC</td>
<td>MITS</td>
<td>Lenovo</td>
</tr>
<tr>
<td>Color TV</td>
<td>RCA</td>
<td>Samsung</td>
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<tr>
<td>Hybrid Vehicle</td>
<td>Pieper</td>
<td>Toyota</td>
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<tr>
<td>VoIP</td>
<td>Saerom (Dialpad)</td>
<td>Skype</td>
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<tr>
<td>MP3 Player</td>
<td>Saehan</td>
<td>Apple</td>
</tr>
<tr>
<td>SNS</td>
<td>Cyworld</td>
<td>Facebook</td>
</tr>
<tr>
<td>Smartphone</td>
<td>BlackBerry</td>
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First To Market, First To Fail?
What is Innovation (革新/創新)?

- A New Way of Doing Things
- Creates Value
- Starts with An Idea: Eureka! (Aha!)
  - Luck in Many Cases
- Necessities
  - Enabler: Internet for E-Commerce
  - Complement: Charging Stations for EV
- Matter of Survival: Human & Business
- Question on Sustainability
  - The Curse of Innovation/Invention
    - “First to Market, First to Fail?”
  - Innovation Strategy & Management
Invention and Innovation

- **Source: Creativity**
  - Capability of Original Thinking
  - Production of Novel Ideas & Concepts

- **Invention: New Thing**
  - Creating Something New Not Existing
  - Science & Technology

- **Innovation: New Way of Existing Things**
  - Innovation = Invention + Exploitation?
  - Key for Successful Products & Services
Categories of Innovation

- **Product (& Service)**
  - Innovative Technology
    - Internet, Semiconductor, Secondary Battery, GPS
  - Innovative Products & Services: Combining & Diversifying
    - iPhone, Digital Camera, Nintendo Wii, Navigation, FinTech, MOOCs

- **Process**
  - Innovative Manufacturing: JIT
  - Innovative Value Chain: SCM

- **Business Model**
  - Innovative Way of Doing Business
    - E-Commerce/e-business

- **Management (Idea)**
  - Industrial Research Laboratory: GE
  - Capital-Budgeting Technique: DuPont
  - M&A
Types of Innovation

- **Push vs. Pull: Driving Force**
  - Push by Technology: ERP
  - Pull by Customer Need: Microfinance

- **Technology vs. Management: Subject**
  - TQM, 6 Sigma, Balanced Scorecard, Matrix Organization

- **Sustainable vs. Disruptive: Longevity**
  - Mainframe vs. PC

- **Incremental vs. Radical: Magnitude**
  - Small vs. Dramatic Change
  - Different Levels of Risks

- **Closed vs. Open: Boundary**
  - R&D (NIH) vs. C&D, Crowdsourcing

- **Straight vs. Reverse: Localization**
  - GE Vscan: Ultrasound in India
Why Asian Innovation?

- Asia
  - Population
  - Economy

- New Innovation Landscape
  - Shift in World’s Innovation Energy
    - Global Innovation Powerhouse
  - Innovation Capability
    - R&D Capability: Human Resource, Reverse Brain Drain
    - Accelerated Innovation (Shanzai Innovation): Xiaomi
    - Jugaad Innovation (Frugal Innovation): Vscan, Incubator
  - Fast Follower -> Leading-Edge
Cases of Asian Innovative Companies

- Innovative Companies in Japan, Korea, China
  - Toyota
    - Automobiles
  - Samsung (Electronics)
    - DRAM, Smartphone, TV
  - Lenovo
    - PC, Smartphone
Toyota

- **Toyota Production System (TPS)**
  - JIT & Automation (自動化)

- **JIT: Just-In-Time**
  - Kanban System
  - Idea: Eureka
    - Supermarket Restocking
    - Pull vs. Push
  - Elimination of Wastes
    - Work-In-Process
  - Weakness?
    - No Room for Error
      - Human and Nature
    - Burden on SC
MRP and JIT

- **MRP:** Material Requirements Planning
  - Production Volume -> Bill of Materials -> Material Requirements

- **MRP II:** Manufacturing Resource Planning
  - Total Resource: Materials + Machines + Labor

- **ERP:** Enterprise Resource Planning
  - Integrated Enterprise
  - A Backbone of Business
  - SAP, Oracle, …

- **JIT:** Just-In-Time
Toyota Production System (TPS)

- Kanban (看板) Cards & Andon (行灯, Signboard)
- Many Tried to Imitate But Failed. Why?
- Hidden Factors: Software
  - Extreme Accuracy in Specification
  - Rigidity But Flexibility (Adaptability)
  - Respect for People
A Secret of TPS: Accurate Specification of Details

- **Work:** Content, Sequence, Timing, Outcome
- **Relationship:** Direct & Unambiguous Connection
  - Supplier-Customer Relationship: Baton Passing
  - Time Required to Respond Requests (in Seconds)
- **Production Line:** Simple & Clearly Specified
  - Every Pathway is Specified: Not Based On Availability
- **Improvement:** Specify How To Improve
  - Empowerment & Continuous Improvement (Kaizen)
  - Open to Criticism: Freedom to Voice Contrary Opinions
Samsung (Electronics): Repeat

- Innovations
  - Memory: DRAM
  - TV: HDTV, 3DTV, UDTV
  - Smartphone: Galaxy 5

- Management
  - Speed
  - Fierce Peer Competition: Culture

- Leadership
  - Ownership Management
  - Empowerment to Professional Management
Characteristics of Electronic Products: RAM

- Exponential Technology: Moore’s Law
  - Optoelectronics
  - Printing Design Mask on Silicone Wafer
  - Fast Disruptions
Moore’s 2nd Law (Rock’s Law)

- The Cost of a Semiconductor Chip Fabrication Plant Doubles Every 4 Years
  - Over $3 Billion, Samsung $10 Billion
Samsung’s Fast Speed Capability in Innovation

- **Fast Big Decisions**
  - Chairman & CEOs

- **Huge Investment**
  - R&D Manpower: More Than 5,000 Ph.D.s
  - Facilities: U$ 10 Billion

- **Vertical Integration**
  - Group-Level Integration
  - Smartphone Case
    - Microprocessor, Memory, Display, Battery, …

- **Speed Culture**
  - Team Work: Military Operation (24 Hours 7 Days a Week)
  - Mach Management
Lenovo

- Global Top PC Maker
  - Tablet, Smartphone

- Successful M&As
  - IBM
    - A Boa Swallowed An Elephant
  - Medion (German)

- Management Style
  - Chinese & Western
    - Chairman: Chinese -> Western -> Chinese
    - Executive Committee: 9 Members from 6 Nations
Lenovo’s Management

- Ownership Culture: True Owner
  - Family Business Without Kinship: Emotional Bond
  - Long-Term Orientation: 3-5 Year Plan
  - Balancing Owner vs. Professional Manager

- Harmonization of Chinese/Asian & Western
  - Leadership: Chinese & Western
    - Executive Committee: Monthly One Week Global Tour Meeting
    - Global Leadership Team: 50 Exec’s, Meeting Every 6 Months
  - Language: English
  - Multiple Headquarters: U.S. & Beijing
## Innovations of Asian Companies

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<td>M&amp;A Integration</td>
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Innovation Secrets of Toyota, Samsung, Lenovo

- **Toyota**
  - Specification

- **Samsung**
  - Fast Speed

- **Lenovo**
  - Integration/Harmonization
    - Manufacturing & Marketing
    - M&A
    - Culture: Collectivization
Cultural Aspects of Asian Innovations: China, Korea & Japan (CKJ)

- Common Culture
  - Collectivism
    - Relationship-Orientation
      - Trust: Blood, School, Home Town, Organization, Guanxi
    - Familism: Face (體面)
  - Human Orientation
  - Longtermism
  - Chopstick
Cultural Differences in Innovation

- **Japan**
  - Precision, Deliberation, Patience, Manual
  - Self-Restraint (自制力): Limited Seat, Menu, Profit
  - Toyota: Specification

- **Korea**
  - Boldness, Impatience, Competition
  - Samsung: Speed & Bold Investment

- **China**
  - Guanxi: Reciprocity (互惠), Empathy (共感), Sincerity (真心)
  - Embracing Diversity (包容): DNA for M&A
    - Syngenta (ChemChina), GE Appliance (Haier), Ingram Micro (HNA)
  - Lenovo: Integration/Harmonization
Final Questions

- Can any company imitate or copy successfully the innovations of Toyota, Samsung, or Lenovo?

- What can be the ideal innovation culture?
  - Deliberate/Precise + Bold/Fast + Integrate/Embrace?