Innovation Capability and the Maturity Model

with a case studies of Apple Computer, Inc. and iPod

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Think Different
Overview

• Literature Review
• The Framework: 4 Different Contexts
• the Maturity Model: extending the framework
• Case Studies: Apple Computer & iPod
• Conclusion & Recommendations: applying the Maturity Model
## Literature Review

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<th>J. Barney</th>
<th>J. Christensen</th>
<th>J. Guan and N. Ma</th>
<th>B. Lawson and D. Samson</th>
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Literature Review

- Sen & Egelhoff: relationship between innovation capabilities and the use of technical alliance
- Christensen: creating new disruptive growth business requires the ability to create new market and disrupting the business model from low end
- Parhalad & Ramaswamy: ability to shift focus away from products and services onto experience environment to create unique value
# the Framework Explained

<table>
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<th>4 Different Contexts</th>
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<td><strong>3. Management</strong></td>
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<td>a. Knowledge and Learning</td>
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<td>a. R&amp;D</td>
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<td>b. Marketing</td>
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<td>c. Manufacturing</td>
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the Framework (I. Strategy)

- Vision
  - objectives and targets want to achieve
  - offensive strategy for trying to create future
  - requires comprehensive planning to achieve the vision
the Framework (I. Strategy)

- Technical Alliance
  - acquire product innovation to supplement existing innovation capability
  - one-to-one partnership: leverage core competence to each other
  - multiple parties: leader and followers
  - open group: collaborating for new technology development
the Framework (1. Strategy)

- **Merger and Acquisition**
  - the *rate* and *size* of M&A
  - right targets for supplement competence

- **Technology Adoption**
  - mapping product mix to Technology Adoption Life Cycle
  - high innovation capability => more products in Innovators, Early Adopters and Early Majority
the Framework
(2. Organization Aspects)

• Resource Allocation and Planning
  - able to **effectively assign, balance, combine and direct** resources to the required functions
  - **proper planning & appropriate allocation** => no bias
the Framework
(2. Organization Aspects)

• **People (Champions)**
  - requires different *key individuals* at different stages
  - *gatekeepers, product champions* and *project sponsors*
  - *top management support* => driving force & elevates motivation
the Framework
(2. Organization Aspects)

- Intangible Resource & Assets
  - innovation & manufacturing process
  - quality control
  - bargaining power to suppliers and distributors
  - => hard to imitate & deeply rooted
the Framework
(2. Organization Aspects)

- Financial Performance
  - net sales, sales growth & gross margin
  - comparing mainstream & innovation products

- Culture
  - failure friendly, failure = milestone for success
  - mutual respect
  - encourage open innovation culture
the Framework (3. Management)

- Knowledge & Learning
  - easily circulated and accessible
  - ability to process, interpret & manipulate
  - feed back intelligence into innovation process
    => remove uncertainty & unknown
  - systematically monitor trends
  - learning from competitors
  - learning from success & failure
the Framework (3. Management)

• **Customer Relationship**
  • discover customer *problems & needs*
  • *reliability & quality* of customer information
  • **CRM** => accurate, correct insight to problems

• **Supplier & Distributor Relationship**
  • external parties => *hard to control*
  • important to achieve *better time-to-market*
  • bargaining power
the Framework

(4. Business Functions)

• R&D
  • multidisciplinary character
  • balance between technological and marketing skills
  • detailed planning and excellent execution
  • high R&D spending preferred
  • measuring innovation output & no. of patents issued
the Framework (4. Business Functions)

- **Marketing**
  - right timing of product introduction
  - balance between technology push & market pull
  - pricing, promotion, branding
  - slight influence
  - marketing as front-end to gather information to different business units
the Framework
(4. Business Functions)

• **Manufacturing**
  • ability to *produce products* based on *design spec.*
  • in *reasonable timeframe*
  • *process quality*
the Maturity Model

- Idea: **Capability Maturity Model** from SEI
- 5 Maturity Levels
  - **evolutionary** plateau
  - achieving a **mature software process**
- continuous process improvement
the Maturity Model

Capability Maturity Model

Maturity Model for Innovation Capability
the Maturity Model

1. **Discrete**
   
   The organization has **no formal innovation process**. The innovation product is developed **by chances** or in **ad-hoc** manner. There is no concrete planning for resource allocation for implementing and generating innovations.

2. **Established**
   
   The innovation process is **well defined**. Innovation awareness is **spread across the major business units** such as R&D, marketing, manufacturing that involves innovation in their processes. **Resource is allocated adequately** for innovation to kick off.
3. **Strategic**

The innovation process is **systematic**, and becomes a **standard** within the organization. The company shares a **vision** that innovation is core to company success and becomes a main business strategy of the company. Innovation awareness therefore is **at corporate level**. Resource for innovation activities is sufficient and is **properly planned**.

4. **Optimized**

Optimization is made to innovation process and other innovation related activities in order to achieve better **efficiency** and **effectiveness**. **Relationships** with external parties such as suppliers and distributors, customer must be improved at this stage. **Information and knowledge** that gathered from innovation experience must be **understood** and widely **accessible**.
the Maturity Model

5. **Adaptive**

Information and knowledge from innovation experiences are systematically gathered to make it useful in the innovation process and add values to the organization. A learning organization is built for adapting to external environmental change that affects innovation direction.

Maturity Model for Innovation Capability
Limitation of the Maturity Model

- cannot guarantee the success of products
- not a silver bullet => not address all the issues
- top-down framework: should use other bottom-up approaches to compensate and balance the limitations
- rather new; need more actual practices
Case Studies:
Apple Computer, Inc. & iPod

- Background
  - incorporated on Jan 3, 1977
  - 27th anniversary

- Products
  - Macintosh desktop and notebook computer
  - Mac OS X operation systems
  - iPod digital players
  - collection of software and peripherals
Case Studies:

Apple Computer, Inc. & iPod

• Business Strategy
  • **Digital hub** - bringing best personal computing experience by combining functions from digital devices and software
  • **Retail** - operates its own retail store and online store, reduce channel sales importance

• Education

• Creative professionals
Case Studies: Apple Computer, Inc. & iPod

- Financial Performance

<table>
<thead>
<tr>
<th>Year</th>
<th>Net Sales</th>
</tr>
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<tbody>
<tr>
<td>2003</td>
<td>$0.00</td>
</tr>
<tr>
<td>2002</td>
<td>$1,000.00</td>
</tr>
<tr>
<td>2001</td>
<td>$2,000.00</td>
</tr>
</tbody>
</table>

Net Sales

- Services
- Software
- Peripherals
- Mac Sales
Case Studies:
Apple Computer, Inc. & iPod

- Financial Performance
Case Studies:
Apple Computer, Inc. & iPod

- Financial Performance

<table>
<thead>
<tr>
<th>Company</th>
<th>Gross Margin %</th>
<th>R&amp;D %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple</td>
<td>27.5</td>
<td>8</td>
</tr>
<tr>
<td>Dell</td>
<td>18.2</td>
<td>1.1</td>
</tr>
<tr>
<td>HP</td>
<td>26.3</td>
<td>5</td>
</tr>
<tr>
<td>IBM</td>
<td>37</td>
<td>5.7</td>
</tr>
</tbody>
</table>
Case Studies :
Apple Computer, Inc. & iPod

- R&D
  - 189, 178, 144 patents filed

- Technology Alliance & Adoption
  - support open standards : Firewire, MPEG4
  - adoption of right technologies : Firewire, AirPort
  - open source software
Case Studies:
Apple Computer, Inc. & iPod

- Merger & Acquisition
  - Not very active
  - Important buyout: NeXT, Emagic & PowerSchool
  - meet their strategy
Case Studies:
Apple Computer, Inc. & iPod

- **Marketing**
  - 20% of net sales
  - strong brand image
  - innovative product name: iMac, iPod, iLife
  - using marketing name, not technical name:
    - Firewire for IEEE1394, QuickTime for movie standard, Rendezvous for multicast DNS, AirPort & AirPort Express for 802.11b & 802.11g
Case Studies:
Apple Computer, Inc. & iPod

- Senior Management & Product Champions
  - Steve Jobs, CEO
  - Philip Schiller, Worldwide Product Marketing
  - Jonathan Rubinstein for Hardware Engineering
  - Avadis Tevanian for Software Technology
  - Sina Tamaddon for Application
iPod and Music Business

- iPod
  - first introduced in Oct 2001
  - hard disk based - 1.8”
  - 5GB - 1200 songs
  - impressive hardware design, simple interface
iPod and Music Business

• 2nd Generation - replace mechanical wheel to solid-state touch wheel

• 3rd Generation - dock connector, Mac & PC

• 4th Generation - cheaper, thinner, lighter with redesigned interface (ClickWheel)
iPod and Music Business

- **iPod mini**
  - introduced Jan 2004
  - smaller, 5 stylish colors
  - 1” 4GB hard disk

- **Steve Jobs:** “while iPod is leader in high-end, disk-based portable player market, we want to compete with high-end flash-based players with 512MB capacity.”

- sold at $249, the same price range to 512MB players ($200 - $300)
iPod and Music Business

- **Q3’03** - sales of 3G iPod (Mac & PC)
- **Q1’04** - seasonal sales and iTunes Music Stores
- **Q4’04** - iPod mini ships internationally Music Stores in UK, FR & DE
iPod and Music Business

- iTunes and iTunes Music Stores
  - not making money, but to boost iPod sales
- iTunes
  - previously as MP3 jukebox for Mac
  - new version support both Mac & PC - the same time 3G iPod is introduced
  - added DRM and access to iTunes Music Stores - the same time ITMS launched
- Digital Music Management Software
iPod and Music Business

- iTunes Music Stores
  - launched on April 2003
  - $0.99 for song and $9.99 for album - US only
  - June 2004 - UK, FR & DE
  - 100 million songs sold - July 2004
  - * Change the way people think: downloading music is illegal, now become legal
  - * Digital Rights Management
iPod and Music Business

iPod + iTunes + iTunes Music Stores
(Hardware) + (Software) + (Content)

= 

*end-to-end music offering*
Conclusions

• What kind of company Apple is?

  • experience design company - Digital Hub, iMac, iPod + iTunes + ITSM

• Technical Alliance - joining open groups

• Technology Adoption - many products are in Innovators & Early Adopters categories

• M&A - relatively low, but right targets
Conclusions

- R&D spending - 8%, more than industry leaders
- Patent filing - adequate
- Sustain mainstream products (Mac) and able to develop successful newstream product (iPod)
- iPod + iTunes + ITMS: demonstrates strong communications between top management & various R&D teams
- Sales and Marketing: retail and online stores, strong brand image, better understanding user buying experience
Problems & Recommendations

• Mac sales stay flat
  • Mac sales provide resource for newstream innovation (iPod)
  • newstream activities generate value and knowledge => further strengthen innovation capability that helps mainstream

• iPod + iTunes + ITMS
  • Develop more consumer electronic products
  • combining hardware, software, content & services
Problems & Recommendations

• Out-sourced manufacturing to ODM - time-to-market is important for innovative products
• improve manufacturer relationship
• faster & easier to implement

• Apple experienced limited quantities of important components - G5 from IBM, 1” HD from Hitachi
• improve supplier relationship
• better planning and estimation of supplier’s inventory level
Applying the Maturity Model

• Recognized as high innovative company
• Achieve **Level 3** only (Strategic)
• For higher maturity level:
  • improve supplier and manufacturer relationships
  • **knowledge of learning experience** to flow back to organization level for improving mainstream products

**Discrete** → **Established** → **Strategic** → **Optimized** → **Adaptive**

**Maturity Model for Innovation Capability**
Thank you!