The ‘Daedalos Principle’ of Innovation Management:
The Role of Mindset, Systematic Approaches & Diffusion

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DAEDALOS & ICARUS

The Birth of Innovations are Problems... originating from Solutions!

Source: http://ultramagicforest.blogspot.de/2012/03/cautionary-tale.html
Daedalos:

- Was a skilful craftsman (Resources & Know how)
- Had always a strong motive for his inventions (Problems)
- His inventions were triggered by previous inventions (Evolution)
- He faced numerous difficulties and suffered consequences (Obstacles)

“Great innovators had a skill and a desire... The rest was a history of failures. Coming up with something new is fairly easy; Implementing it and making it a success is the real challenge. Innovation is NOT just Ingenuity!”

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DAEDALOS & THE LABYRINTH

Embracing and Dealing with Complexity... Systematic Approaches beyond Brainstorming

Source: http://ovidsmetamorphoses.blogspot.de/2012/02/daedal-fates-of-icarus.html
Systematic Approach for Identifying Innovation Possibilities

  ▪ Study of approx. 100 companies, which have innovated repeatedly
    ─ Database
    ─ Data collection of product and service innovations
    ─ Data collection on displaced products and services

► What is the likelihood that the customers will be attracted to the new idea?
  ▪ The “Buyer Utility Map”

► What price will unlock the greatest number of customers?
  ▪ “The Mass Price Corridor”

► How can a company profitably deliver the new idea in the market at the targeted price?
  ▪ “Business Model Guide”
Buyer Utility Map: The Right Product...
The Buyer Experience Cycle

- How long does it take to find what you need?
- Is the place of purchase attractive and accessible?
- How secure is the transaction environment?
- How rapidly can you make a purchase?

- How long does it take to get the product delivered?
- How difficult is it to unpack and install the new product?

- Does the product require training or assistance?
- Is the product easy to store when not in use?
- How effective are the product’s features and functions?

- Do you need other products and services to make this product work?
- If so, how costly are they?

- Does the product require external maintenance?
- How easy is it to maintain and upgrade the product?
- Does use of the product create waste items?
- How easy is it to dispose of the product?
# Buyer Utility Map: The Right Product...

*Utility Levels in The Buyer Experience Cycle*

<table>
<thead>
<tr>
<th>Buyer Utility Levers</th>
<th>Purchase</th>
<th>Delivery</th>
<th>Use</th>
<th>Supplements</th>
<th>Maintenance</th>
<th>Disposal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Productivity</td>
<td>ABC</td>
<td>Same Utility Lever at another stage</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Simplicity</td>
<td>New Utility Lever at the same stage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Convenience</td>
<td></td>
<td></td>
<td>New Utility Lever at another stage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Fun &amp; Image</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental-Friendliness</td>
<td></td>
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</table>
Advantages:

- It imposes a market-focus on innovation consideration (i.e. How can we improve the lives of our customers?)
- It helps differentiate between simple offering extensions and genuine innovations
- Even though even the most innovative companies occupy just a small number of spaces... There is a total of 36. This reminds people of the unexploited potential for innovation

Shortcomings:

- Does not readily apply to services (this contains the buyer’s experience for products) \texttt{\textless{}\textgreater{} Requires adaptations to become applicable for services}
- Buyer utility is not easily measurable / determined PLUS it depends on the customer
- Implied assumption is that the Buyer is a constant entity... Innovation is not limited to giving the existing customer something new, but also about locating new customers and / or markets!
Creating exceptional utility for the customer is not a guarantee for success... The right price is also a key factor!

Even though it is possible (and sometimes advisable) to test a new product / service with the novelty-seeking, price-insensitive customers, this is also not enough.

“Early critical mass” is necessary (esp. nowadays) because of the following reasons:

- **Economies of scale:**
  - Are necessary to cover the high-costs of innovation-development

- **Network externalities:**
  - The value of a number of products or services depend on the total number of people using them (all-or-nothing proposition)

- **Customer sustainability:**
  - Many innovations are relatively easy to imitate and cannot be realistically protected by patents, copyrights, etc.
  - This means that customers need to be convinced from the very beginning that they will not find a better value with a competitor
# Mass Price Corridor: The Right Price... Strategic Pricing

## DEGREE OF SIMILARITY / SUBSTITUTION

<table>
<thead>
<tr>
<th>PRICE</th>
<th>Same Form</th>
<th>Different Form, Same Function</th>
<th>Different Form, Different Function, Same Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Size of bubble -&gt; Relative Market Volume of Alternatives</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Price Level (Step 2)

- **Upper Level Pricing**
  - Difficult to Imitate
  - High degree of:
    - Legal protection
    - Resource protection

- **Mid Level Pricing**
  - Relatively Easy to Imitate
  - Some degree of:
    - Legal protection
    - Resource protection

- **Lower Level Pricing**
  - Easy to Imitate
  - Low degree of:
    - Legal protection
    - Resource protection
The right product at the right price is not necessarily sustainable competitive advantage

A **good business model** is a powerful defence against imitation:

- **Cost Target:**
  - Is it set by the strategic price?
  - Can the product’s raw materials be replaced by unconventional, less expensive ones?
  - Did you significantly eliminate, reduce and outsource high cost, low-value-added activities in your value chain?

- **Partnerships:**
  - What capabilities do you need to achieve the value proposition, and which ones do you lack?
  - Which companies have the missing capabilities?
  - Based on cost, quality, and speed, should you acquire those companies or partner with them?
Pricing Model:

- Is your industry’s pricing model a barrier to your business idea’s success?
- What pricing model: direct selling, leasing, time-share, slice-share, or equity payment, would create a greater profit pool

Evaluating Business Ideas (Summary):
The right product with the right price, from the buyer’s perspective... And the right business model for: delivering it and sustaining innovative advantage.
DAEDALOS & MINOS

Dealing with Innovation Obstacles... Diffusion & Forecasting

Source: http://monkeysinthecupboard.edublogs.org/
Innovations of “Epidemic Proportions”
Reaching The Tipping Point

▶ Tipping Point (the point where a the possible become certain):
  ▪ Decisive moment / event
  ▪ Critical mass
  ▪ Threshold
  ▪ Boiling point

▶ Epidemics Analogy:
  ▪ Applied to innovations (ideas, products, concepts, etc.)
  ▪ Innovations can spread geometrically like viruses provided that the following conditions are in place:
    — Contagiousness (Messenger Function)
    — Resilience (Message Property)

▶ Implied message is that:
  ▪ Innovation adoption is fairly easy to initiate (tipping point) provided resources are concentrated in the right activities
The most effective communication medium for starting “epidemics” is: **Word-to-mouth**

- Starting an epidemic does not require many... But only a few individuals

**Connectors** (To Spread The Message):
- Know a lot of people (many acquaintances – not necessarily “good friends”)
- Have an extensive social network
- Charismatic at making and maintaining relationships

**Mavens** (To Provide The Message):
- Information specialists
- Willing to share and communicate what they perceive as a good idea
- Gain genuine satisfaction by helping others solve their problems

**Salespeople** (To Strengthen The Message):
- Persuasion artists
- Focus on detail
- Sophisticated communication skills (incl. use of body language)
Contagiousness & Resilience
Some Key Metrics

“Monkeysphere”:

- Contagiousness Key Metric (150)*:
  - After several anthropological studies, Robin Dunbar concluded the max group size for humans is 147.8
  - This represents the maximum amount of people that we can have a real social relationship with (i.e. knowing who others are and their relationship to us)

“Magical Seven”:

- Resilience Key Metric (7)**:
  - Psychologist Miller concluded after experiments that there limitations on the amount of information that we are able to receive, process, and remember
  - To deal with this we organise information multi-dimensionally and successively into chunks
    (max: 7±2)


Revisiting The “Epidemic” Analogy
From “Epidemics” to “Flues”...

If we are to accept and entertain the ideas of Gladwell...

• ... If we were to innovate in today’s world of:
  • Rapid technological advancement
  • Information overload
  • Our innovations would have very small chances of becoming “epidemics”...
  • ... In the best case, they could become a “flu”!

Which in turn means:

• Mass-Innovation (e.g. idea factories, mass production of innovation)
• Utility-Impact (i.e. innovation must offer significant advantages to the user)
• Quick-Realisation (i.e. short development and production periods -> if duration is shorter, need to start making money earlier)
• Innovation-Repackaging (i.e. Repackaging an old idea / innovation and selling it as new -> Exploit full-potential)

If trends ≈ “epidemics” and fashions ≈ “flues”, what does this mean for innovation?

It means that innovations have a shorter life-span (are displaced quicker)
### Innovation Diffusion Model

#### Original Model (or Product Life Cycle)

<table>
<thead>
<tr>
<th>Role</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Innovators (2.5%)</strong></td>
<td>Adventurous, Well-educated, Well-informed, Well-off (usually), Risk-takers</td>
</tr>
<tr>
<td><strong>Early Adopters (13.5%)</strong></td>
<td>Respectable, Opinion leaders, Popular, Educated</td>
</tr>
<tr>
<td><strong>Early majority (34%)</strong></td>
<td>Thoughtful, Extensive social network</td>
</tr>
<tr>
<td><strong>Late majority (34%)</strong></td>
<td>Sceptical, Traditional, Lower social status</td>
</tr>
<tr>
<td><strong>Laggards (16%)</strong></td>
<td>Traditionalists, Limited info sources and network, Risk-averse, Lower economic status</td>
</tr>
</tbody>
</table>

Innovation Diffusion Model
Cumulative Version (S-Curve)

- Innovators (2.5%)
- Early Adopters (13.5%)
- Early majority (34%)
- Late majority (34%)
- Laggards (16%)
Innovation Diffusion Model

**Individual Adoption Process**

**External Factors / Influences**
(e.g. formal communication / marketing, mass-media coverage)

**Internal Factors / Influences**
(e.g. word of mouth)

- **Knowledge**
  - Awareness of innovation existence and utility
  - Knowledge on potential usage / application

- **Persuasion**
  - Positive (or negative) opinion development (regarding the innovation)

- **Decision**
  - Activities related to adopting or rejecting the innovation

- **Implementation**
  - Innovation is adopted and put in use
  - Utility / results are produced

- **Confirmation**
  - Innovation is evaluated and adoption decision is revisited

Cognitive biases (e.g. attribution error, hindsight-effect)
Innovation Diffusion Model
Bass’ Innovation Diffusion Formula

Innovation Factor / External Influences

High Value = 0.38
Low Value = 0.03

Imitation Factor / Internal Influences

\[ N_t = N_{t-1} + p (m - N_{t-1}) + q \frac{N_{t-1}}{m} (m - N_{t-1}) \]

Number of adopters at time t (e.g. 2006)
Number of adopters at time t -1 (e.g. 2005)
Market potential (total size of target group)

A “Bass-formula calculator” is available:
http://andorraweb.com/bass/index.php

In practice, there are too many exceptions to the classical diffusion S-curve:

- **Diffusion Interruption:**
  - *Due to another related disruptive innovation (which in turn starts its own diffusion curve)*
  - *It simply does not take off (user resistance, company / industry inertia, practicality / feasibility issues)*

- **Bi-Modal Diffusion:**
  - *Often it is observed that the first “version” of the innovation is not adopted, requiring a second “version” at a later point in time to make it successful*
  - *Timing issues*
  - *Follower advantage - Learning from the mistakes of the first mover*
TEACHING INNOVATION

Problem-Based Learning & Project Management at the Bremerhaven University of Applied Sciences
1st Year: Problem-Based Modules
- Students are presented with a situation case
- Students define the corresponding problem
- Students define solution conditions
- Students develop a solution
- Professor = Coach

2nd Year: Project Management Skills & Know How
- Project Management Course (incl. Method, Tools, Documentation)
- Outreach & Campus Projects (6-8 Weeks)

3rd Year: Innovation Management Skills & Know How:
- Full-Year project with external companies

Disciplinary Domain: Theoretical Domain Business Admin.
Specific Domain Tourism & Cruises

Application Domain: Outreach & Campus Projects
Projects with Companies

Networking

Innovation Competence -> Own Business ->
Alternative Option to Paid Employment

Know-How

References


