OPEN INNOVATION: Broadening the scope

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Corporate growth strategy

Philip's objectives
Sales in 2005 30 billion Euro
5-6% CAGR
2-3% average organic growth in the next 5 years ≈ 3.1 – 4.8 billion Euro
10-15% operating profit
How to fight the commodity trap: Increased innovation but no growth

**Philips**
- Progress in new product creation but growth has been failing:
- New products for stagnating market do not lead to growth (= speeding up the PLC)
- Needed: *business creation* rather than product creation or
  - Create your own market space

Although sales from new products increases Philips does not grow

**Philips Group sales**
- Amounts in EUR million

**New product revenues**

Source: SVB materials since 2001, CTO office
Real growth comes from new markets AND new products; break away innovation

Profit & growth consequences new launches
Based on business launches of 108 companies

Source: Kim and Mauborgne – Blue ocean strategy
Breakaway innovation takes a lot of time for reaching large business sizes

*Immediate growth requires acquisition of early growth ventures*

![Graph showing CAGR and revenue growth over time](image)

Source: Loek Nijman - Philips

Technology has no value in itself

*Value is determined by its BM*

*DYNEEMA: DSMs strongest fiber* (20 times stronger than steel)

- Customers are not interested in technical characteristics of the product

- Translate **product characteristics** into sales arguments
  - show value of the product in the customer’s value chain
  (e.g. Dyneema in fishing nets: stronger, smaller fibres, less resistance, less fuel costs, OR higher speed, higher fishing productivity)

- Make sure you can convince the whole value system the final customer (Dyneema in airbags)
Why business models are hard to manage: Mapping across domains

Technical Inputs: e.g., feasibility, performance

Business Model
- target market
- value prop.
- key attributes
- value chain
- how paid
- value network

Economic Outputs: e.g., value, price, profit

Measured in technical domain    Measured in social domain

The Business Model

- Identifies a market segment
  - Users to whom the technology is useful and the purpose for which it will be used

- Articulates the value of the proposed offering
  - Value created for users by the offering based on the technology

- Focuses on the key attributes of the offering

- Defines the value chain to create and deliver that offering (+ complementary assets)

- Creates a way for getting paid
  - Cost structure and target margins

- Establishes the value network / eco-system needed to sustain the model
What is Open Innovation?

“Open innovation is the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively.”

Chesbrough, Vanhaverbeke, West
A Closed Innovation System

Science & Technology Base
Research Investigations
Development
New Products /Services

The Market

Source: Henry Chesbrough

The Virtuous Circle for R&D

Fundamental Technology Breakthroughs

Increased investment in R&D
New Products and Features

Increased Sales and Profits via existing business model

Source: Henry Chesbrough
What changed?
New Division of Innovation Labor

- Increasingly mobile trained workers
- More capable universities
- Knowledge distributed more widely throughout the world
- Diminished US hegemony in many leading technology fields
- Erosion of oligopoly market positions
- Deregulation (EU-liberalization)
- Enormous increase in Venture Capital

Source: Henry Chesbrough

The Virtuous Circle Broken

Fundamental Technology Breakthroughs

IPO or acquisition

Increased investment in R&D

New Products and Features

Increased Sales and Profits

Venture Capital helps team focus on new market, new business model

The outside option

Key engineers exit to form new company

RIP

Source: Henry Chesbrough
The economic pressures on innovation


OI: Filling the gaps with external technology

OI: Growing new businesses and profiting from others’ use of your technology

Technology Insourcing

Internal Technology Base

External Technology Base

Licensing

Technology Spin-offs

New Market

Current Market

Other Firm’s Market


US Industrial R&D: by Size of Enterprise

The new business model of open innovation

Opening the scope of open innovation

A. external venturing (NBD) – application areas for OI are much broader

- OSS and other user communities (Von Hippel)
- standard setting lead-users (B2B)
- systemic innovations (role of system orchestrators)
- value networks (Open commercialization)
- eco-systems of firms
- technological & institutional environment
- etc…
Opening the scope of open innovation

C. Focus on large, technology user firms

♦ OI is about transactions
  → user + supplier → the high-tech start-up story?

♦ How innovative start-ups can approach effectively large user firms
  ♦ Technology push idea – every high tech company with a promising technology should have access to large companies
  ♦ Better: Scouting, cooperation in precompetitive R&D networks, fairs, VCFs, etc…

♦ What is the start-up or SME's business model? Manageable value networks?

Opening the scope of open innovation

D. From firm to network perspective:

♦ Value added to be created by a value network: group vs. group competition (changing business architecture)

♦ "Revisit the unit and mode of analysis: from dyadic relations to industry-wide architectures"
  (Jacobides et al. 2006, RP, p. xx).
The Flavr Savr tomato
Calgene 1994

The Flavr Savr tomato ripens on the vine – resulting in fuller flavor. It is modified so that it remains firm after harvesting.

The traditional tomato must be harvested while it is still green and firm so that it is not crushed on the way to the supermarket.

The traditional tomato is sprayed with ethylene after shipping to induce ripening.

Ripe and Increased Flavour + Longer shelf life

Ripe but decreased Flavour.

Supermarket

Supermarket

Two examples from Calgene:
Flavr Savr tomato

Consumers

Value proposition:
Better taste for 2.5 to 3.5 times the price

Fresh tomato market $5 billion

Flavr Savr:
30% of premium + 15% premium of superpremium = $375 million. How realistic is this?

40 (+60) grocers

7 packers

11 growers

Lots of channel partners required

Calgene

Motivation?
Why would they partner with Calgene?
Value proposition?

Why take on channel partners?
- to assure supply
- to reap retail margins
Two examples from Calgene: Bromotol Cottonseed (herbicide resistant)

- All growers
  - increased yield
  - increased market share

No changes for these groups

Value distribution among VC-players
- Everyone should be better off than in competing offerings

VC-wide value creation
- Relative attractiveness of product offering
- Configuration of VC
- Value drivers
- Etc...

Set up strategies
- Thin market problems
- Risk sharing (contracts)
- Etc...

Value distribution among VC-players

Government
- E.g. environmental policy

VC-management
- External transaction management
- Supporting activities
- Specialized assets
- Etc...

Competing offerings
- Existing and new

Value constellations from a management point of view
Opening the scope of open innovation

E. How to source external technology?

- BM but not organization structure, culture, dynamics of corporate strategy, routines, internal technology transfers
- External Venturing @ DSM
- How to manage OI?

How to organize for OI?
External Venturing at XYZ

- Pitfall: It is not acceptable to use the financial participation as a power tool to enforce cooperation on terms of the investing company

Start-up
XYZ-V
XYZ-BU

Once there is a financial participation there is no deal how to handle the transfer of technology!

Is it an interesting investment?
Yes? Then a minority participation
How to organize for OI?
External Venturing at DSM

- **Rationale:**
  - Strategic return, not a financial return
  - One of the BU should benefit from it
  - Therefore: Negotiation is a *three way* negotiation
    There are *two deals* packaged into *one overall deal*

1. Option creation:
   Is it an interesting investment?

2. Option exercising:
   Can the new technology create a new business in the future?

DSM-V
Start-up
DSM-BU

How to organize for OI?
External Venturing at DSM

- Result: negotiate to get a maximal win-win situation
- Both firms can offer each other a lot
- The large firm:
  - business and market intelligence
  - application technology
  - marketing know-how
  - large scale manufacturing
  - credibility among large potential clients
  - patent writing skills
  - …
- Start-up:
  - new technology, business model, etc..
  - entrepreneurial risk taking and decision making
  - …
How to organize for OI?
External Venturing at DSM

Six reasons not to start a power play with external ventures:
1. Bad reputation: when the large, investing firm is looking for interesting start-ups as a recurrent practice
2. Pushing too hard for a particular application (based on the business model and proposed application of the large, investing firm)
   - Market potential of start-up technologies is still very uncertain because of the early stage technology. *Keep options open* for unintended but interesting applications.
   - limits business potential of start-up (and thereby shareholders value)

   ..

How to organize for OI?
External Venturing at DSM

Six reasons not to start a power play with external ventures:
3. Might *kill the spirit of good cooperation.*
4. *Kill entrepreneurial spirit by creating* another "corporate puppet on a string"
5. *Could limit exit possibilities and exit value* for other shareholders (by lock-in to/dependency on corporate)
6. *Could result in litigation* if perceived as abuse of economic power
Managing open innovation

OI Strategies for Achieving Advantage in a Crowding Market for External Technologies

Problem
- Companies increasingly pay higher prices for proprietary external technologies and face a growing number of competitors with equal access to non-proprietary ones
- Technology suppliers know their price
- Simple tactics to acquire relevant technology will only worsen the situation

OI management implies:
1. Integrate Open Innovation into Business Strategy
2. Deepen Connection-Making Capabilities
3. Motivate Potential Partners to Make Connections
4. Align Business Assets to Capture Value

Source: R&T Executive Council
1. Integrate Open Innovation into Business Strategy

- **Challenge:**
  - To protect returns through differentiation, companies must integrate open innovation activities with strategic planning.
  - Integrate open innovation into business strategy to target external opportunities that uniquely fit a firm's capabilities.

- **Example: R&D-Marketing Misalignment**
  - Technical possibility not translatable into customer benefits.
  - Product specifications do not describe degree of competitive differentiation required.
  - Consequences for internal innovation:
    - Development priorities not linked to opportunities for competitive differentiation.
  - Consequences for external innovation:
    - Technology sourcing strategy not targeted at most advantaged possibilities.

Source: R&T Executive Council

2. Deepen Connection-Making Capabilities

- **Challenge:**
  - By allowing connections to happen simply by chance, organizations risk missing much of the value they can provide.
  - However, approaches to systematize connection-making are typically costly and resource intensive.

- **Connection-Focused Performance Management**
  - Expectation of network making skills embedded in all technical employees’ performance criteria.
  - Manager assessments are realigned to ensure accountability for behavior change.

- **Connection-Making Leadership Rotations**
  - Talented Connection-Makers lead dedicated cross-industry connection teams to surface technology solutions from external sources during initial stages of “big bet” projects.

Source: R&T Executive Council
3. Motivate Potential Partners to Make Connections

- **Challenge:**
  - How to become a “Partner of Choice” - corporate reputation is important
  - Market power is not sufficient to attract external technologies, on the contrary, size can sometimes deter potential partners
- **benefits**
  - Decreased Rate of Partner Refusal
  - Privileged Access to Technology of Core Partners
  - Potential Partners Motivated to Look for Connections
    - lower costs to find creative connections
- **but misperceptions about large companies**
  - “They Are Builders Not Buyers”
  - “They Are Too Big to Work With”
  - “They Are an Industry Outsider”

Source: R&T Executive Council

4. Align Business Assets to Capture Value

- **Challenge:**
  - Sony:
    - owned both the hardware and content assets to lead the digital portable music market, but failed to connect these technology and business capabilities
    - In contrast, Apple’s integration of its iPod portable device with content provided on the iTunes Music Store, enabled the company to dominate the portable audio market
- **Capability building**
  - Recognizing that difficult-to-replicate business assets are key to establishing an enduring competitive position in new markets,
  - seek new opportunities in high-growth areas with technical relevance to a firm's core capabilities…
  - look for capability gaps
  - build a strategy to tap into external sources

Source: R&T Executive Council
Opening the scope of open innovation

G. Inter-organizational knowledge transactions

- The Arrow (1971) Information paradox + transaction costs are high
- Traditional: patent protection
- Now: + How firms create markets for technology? (Arora; brokering firms)
  - Innocentive
  - Ninesigma, …
  - Indiegoup

Shifting roles and the emergence of (intermediate) technology markets

Source: Adapted from Jos Put - DSM
Shifting roles and the emergence of (intermediate) technology markets

Silent drivers of open innovation

1. Changing MES of R&D activities
2. Restructuring
3. Globalization
4. Technology life cycles – see Chesbrough, 2006

Source: Adapted from Jos Put - DSM
MES in R&D as a silent driver of OI

Restructuring companies as a silent driver of OI

Philips
Restructuring companies as a silent driver of OI

Philips

R&D OI campus

Applied technologies

Running businesses

• Downsizing
• Other functions
• In-sourcing
• Lic & spin-offs
• OI campus

• Profit center
• Downsizing
• Ext & int clients
• Clashes with BU

• In-sourcing
• Looser link with R&D and AT
• Clashes with AT

Linking OI to ambidexterity
Corporate growth strategy

Growth

Organic growth

Acquisitions

Venturing

Current applications / products

Future opportunities

Ambidexterity: Organizational DNA of CoreCo and NewCo is different

<table>
<thead>
<tr>
<th></th>
<th>CoreCo</th>
<th>NewCo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff</td>
<td>Operational experts</td>
<td>Creators, inspirers</td>
</tr>
<tr>
<td>Structure</td>
<td>Hierarchy</td>
<td>Flat</td>
</tr>
<tr>
<td>System</td>
<td>Accountability, fixed compensation</td>
<td>Learning, variable compensation</td>
</tr>
<tr>
<td>Culture</td>
<td>Risk averseness</td>
<td>Risk tolerance</td>
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Source: V. Govindarajan and C. Timble (2005) 10 Rules for Strategic Innovators
### CoreCo and NewCo are different

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<td>BM</td>
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<td>Forget the old BM</td>
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<tr>
<td>Assets</td>
<td>Everyday improvement utilization of all assets</td>
<td>Borrow, but only the strategic assets</td>
</tr>
<tr>
<td>Mistakes</td>
<td>Minimize all mistakes by using 6Σ &amp; TQM</td>
<td>Learn, by doing mistakes early and cheap</td>
</tr>
</tbody>
</table>

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### Organizing for ambidexterity: DSM Organization

Organizing for ambidexterity: DSM Organization

```
 DSM Innovation Center
  Pharma
  DSM Pharmaceutical Products
  DSM Anti-infectives
  Nutrition
  Human Nutrition & Health
  Animal Nutrition & Health
  Performance Materials
  DSM EPDM
  DSM Engineering Plastics
  Industrial Chemicals
  DSM Fiber Intermediates
  DSM Melamine
  DSM Agro

Managing Board
  Innovation Center
  Competences & Services
```

10 Rules for Strategic Innovators by V. Govindarajan and C. Timble
How to understand OI as a dynamic capability?

Trends, customers techn. development

Corp. strategy formation process

Enabling LT strategy

Which capabilities to build?

LT opportunity recognition

Capability building

Strat. focus of internal & external venturing

CV, NBD, incubating, etc...

Searching for external partners

OI contacts (e.g. universities, start-ups, etc...)
Practicing Open Innovation

- **Websites**
  - http://www.openinnovation.net
  - http://www.openinnovation.eu
  - http://www.openinnovatie.nl
  - On-line open innovation scan

- **Seminars**
  - Customized management courses about OI
  - Cases and management tool development

- **European Center for OI**

- **Wintercourse CE and OI at High Tech Campus (8-14 November 2007)**