



# ***Open innovation in SMEs: Trends, motives and management challenges***

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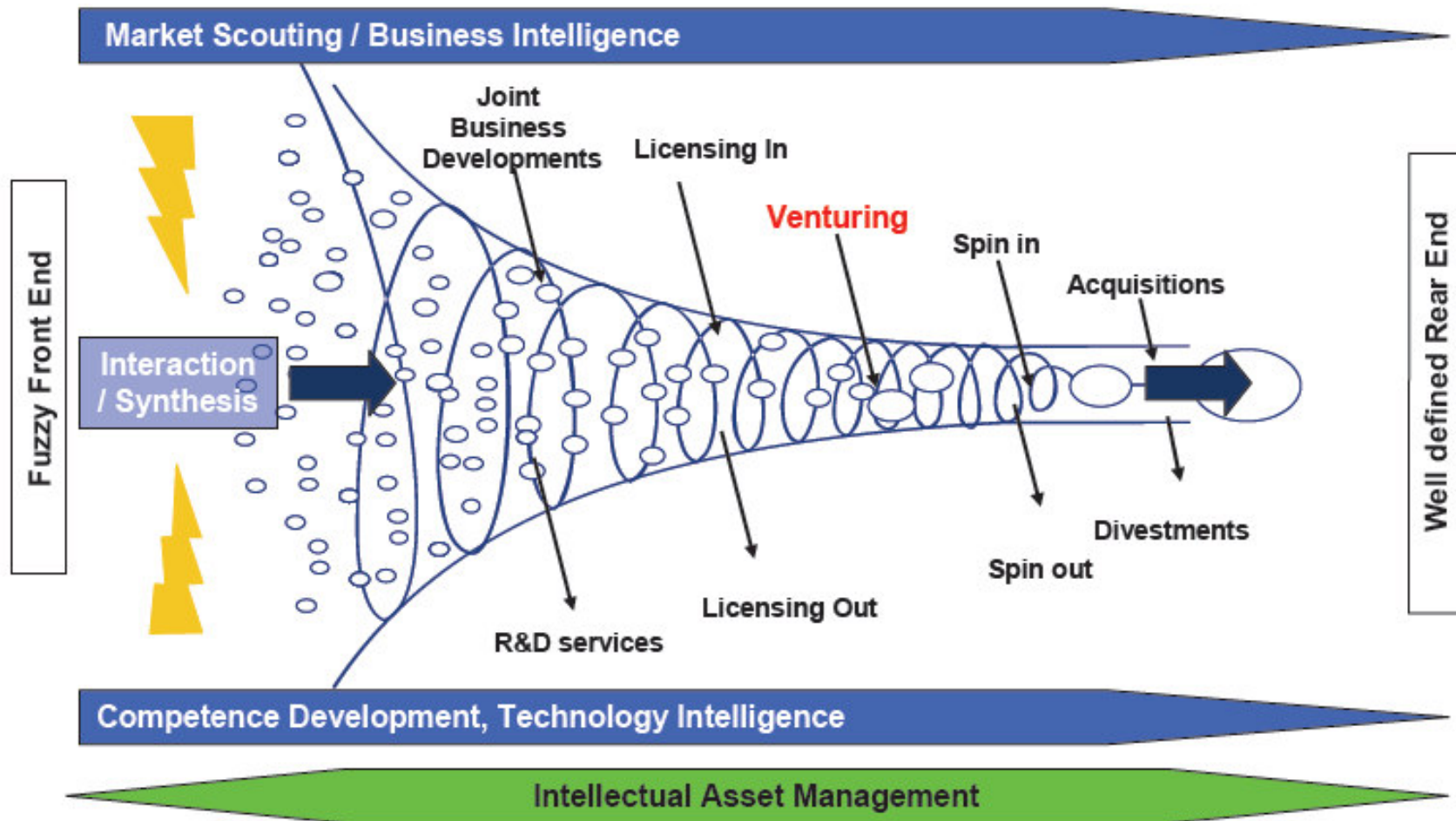
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# OI: Usually about large user firms





# Why to talk about OI in SMEs?

## ■ Definition of OI!

- OI is about **transactions**
- User + Supplier: What's the supplier's story?

## ■ High tech

- High-tech start-ups have (science based) **technology capabilities** which large firms need for their long-term growth potential
- External corporate venturing: **win-win situation** after skillful negotiations
- Start-ups are potentially **powerful players**, disrupting the positions of incumbents. Enabled by seed capital, VCFs, etc...



# Why to talk about OI in SMEs?

## ■ All SMEs

- Scarce resources
- Forced to use other firms' technologies (OI "avant la lettre"!)
- MES of many innovation activities is small.
  - e.g. Creativity to make new toys, games, dolls (see: Big Idea)
  - Competitive advantage compared to large firms if innomediaries (technology/idea brokers) are established, shaping the market for ideas
- RQ: Analyze trends, motives and management challenges of SMEs related to OI



# Research method

## ■ Survey

- Only 'active innovators',
  - i.e. firms which have implemented at least one innovation during the last three years and who claim that continuous renewal is part of their corporate strategy.
- Min. 7 years old : evolution
  - Stratified sample:
    - manufacturing and service industries
    - two size classes
- No firms <10 employees (no in-house innovations activities)



# Research method

## ■ Survey

- Data collected in December 2005 by means of computer assisted telephone interviewing (CATI).
- In total 2,230 firms were contacted
  - 1,206 (54%) were willing to participate
  - Non-response bias?
    - The chi-square-tests revealed no significant differences at the 5% level ( $p = 0.23$  for type of industry and  $p = 0.55$  for size classes)
- 605 respondents satisfied both criteria (active innovator and long tenure)



## Distribution of respondents across type of industry and size class

<i>Type of industry</i>	<i>Size class</i>		<i>total</i>
	<i>10-99 employees</i>	<i>100-499 employees</i>	
<b>Manufacturing:</b>			
1. food and beverages (NACE codes 15-16)	40	21	
2. chemicals, rubber and plastics (NACE codes 23-25)	54	22	
3. machinery and equipment (NACE codes 29-34)	19	32	
4. other manufacturers (NACE codes 17-22; 26-28; 35-36)	47	53	
	160	128	<b>288</b>
<b>Services:</b>			
IT (NACE code 72)	53	17	
business services (NACE code 74)	59	24	
other services (NACE codes 50-71; 92-93)	104	60	
	216	101	<b>317</b>
<b>Total</b>	<b>376</b>	<b>229</b>	<b>605</b>



# *How to operationalise OI?*

- Operationalization by focusing on 5 different dimensions of open innovation:
  1. Open innovation strategies
    - outsourcing R&D, spinning out new ventures, and participation in new and or existing companies in the past two years
  2. Networking,
    - Innovation with the different types of partners: complementors, competitors, public knowledge centers, customers, suppliers, and investors
  3. The role of customers
  4. The role of employees, and
  5. Intellectual property strategy
    - Does the firm own IP? Does it out (in) license IP?



# OI practices and their perceived change over time (n=605)

<i>open innovation indicator</i>	<i>Use</i>	<i>Perceived change</i>		
		<i>increase</i>	<i>no change</i>	<i>decrease</i>
Outsourcing R&D	50%	22%	73%	5%
Venturing	29%	14%	85%	2%
Participation in other firms	32%	16%	84%	1%
Network usage in innovation processes	94%	29%	67%	4%
Customer involvement	97%	38%	61%	1%
Employee involvement	93%	42%	57%	1%
License IP to other firms	10%	3%	95%	1%
License IP from other firms	20%	5%	93%	2%

# Open innovation practices across three clusters

	<i>cluster1 (n=133)</i>	<i>cluster2 (n=411)</i>	<i>cluster3 (n=61)</i>	<i>F-value</i>
Outsourcing R&D	70%	48%	21%	22,2**
Venturing	40%	27%	15%	7,4**
Participation in other firms	44%	31%	11%	10,5**
Network usage in innovation processes	99%	100%	44%	317,7**
Customer involvement	98%	99%	77%	66,5**
Employee involvement	98%	99%	38%	388,9**
License IP to other firms	44%	1%	0%	181,6**
License IP from other firms	86%	0%	5%	351,5**

# Perceived change of open innovation practices across three clusters

	cluster1 (n=186)	cluster2 (n=262)	cluster3 (n=157)	F-value
<i>Perceived change:</i>				
Outsourcing R&D	0.21	0.18	0.07	1,9
Venturing	0.17	0.11	0.05	3,5 <sup>^</sup>
Participation in other firms	0.23	0.14	0.02	7,4 <sup>**</sup>
Network usage in innovation processes	0.29	0.27	0.05	5,1 <sup>*</sup>
Customer involvement	0.52	0.38	0.05	19,5 <sup>**</sup>
Employee involvement	0.53	0.43	0.07	18,2 <sup>**</sup>
License IP to other firms	0.11	0.00	0.00	13,0 <sup>**</sup>
License IP from other firms	0.17	0.00	-0.03	24,4 <sup>**</sup>
<i>Sector and size distributions::</i>				
Share of manufacturing firms (versus service firms)	58%	45%	43%	3,7 <sup>^</sup>
Share of firms with 100-499 employees (vs. 10-99 empl.)	55%	34%	25%	12,0 <sup>**</sup>

Mean score with increase coded 1, no change coded 0 and decrease coded -1

\*\* p < 0.001, \* p < 0.01, ^ p < 0.05



# Classification of open innovation motives

<i>Category</i>	<i>Description</i>
Control	Increased control over activities, better organization of complex processes
Focus	Fit with core competencies, clear focus of firm activities
Renewal	Improved product development, process-/ market- innovation, integration of new technologies
Knowledge	Gain knowledge, bring expertise to the firm
Costs	Cost management, profitability, efficiency
Capacity	Cannot do it alone, counterbalance lack of capacity
Market	Keep up with current market developments, customers, increase growth and/or market share
Utilization*	Optimal use of talents, qualities, and ideas of current employees
Policy*	Organization principles, management conviction that involvement of employees is desirable
Motivation*	Involvement of employees in the innovation process increases their motivation and commitment

\* Only used for coding motives related to employee-involvement

# Perceived change of open innovation practices across three clusters

<i>Motive</i>		<i>Type of open innovation</i>					
		Outsourcing R&D (n=134)	Venturing (n=83)	Participation in other firms (n=94)	Network usage (n=175)	Customer involvement (n=232)	Employee involvement (n=256)
Control	%	1	1	3	1	1	9
Focus	%	3	8	0	1	0	-
Renewal	%	8	23	24	21	19	-
Knowledge	%	44	4	6	35	5	-
Costs	%	9	13	11	2	2	-
Capacity	%	13	0	5	7	3	-
Market	%	14	31	36	22	61	13
Utilization	%	-	-	-	-	-	30
Policy	%	-	-	-	-	-	15
Motivation	%	-	-	-	-	-	22
Other	%	8	19	14	11	10	11
<b>Total</b>	%	100	100	100	100	100	100



# Classification of open innovation barriers

<i>Category</i>	<i>Description</i>
Administration	Bureaucracy, administrative burdens, conflicting rules
Finance	Obtaining financial resources
Knowledge	Lack of technological knowledge, lack of competent personnel, lack of legal/administrative knowledge
Marketing	Insufficient market intelligence, market affinity, marketing problems with new products
Organization/culture	Balancing innovation and daily tasks, communication problems, aligning partners, organization of innovation
Resources	Costs of innovation, time needed
Property rights	Ownership of developed innovations, user rights when different parties cooperate
Quality of partners	Partner does not meet expectations, deadlines are not met
User acceptance	Adoption problems, customer requirements misjudged
Customer demand	Customer demand too specific, innovation appears not to fit the market
Competent employees	Employees lack knowledge/competences, not enough labor flexibility
Commitment	Lack of employee commitment, resistance to change
Idea management	Employees have too many ideas, no management support

# Barriers to different types of open innovation

<i>Motive</i>		<i>Type of open innovation</i>				
		Venturing (n=40)	Participation in other firms (n=45)	Network usage (n=53)	Customer involvement (n=68)	Employee involvement (n=88)
Administration	%	28	13	10	-	-
Finance	%	10	0	5	-	-
Knowledge	%	5	5	-	-	-
Marketing	%	10	5	-	-	-
Organization/culture	%	35	75	48	30	-
Resources	%	5	0	7	10	17
Property rights	%	-	-	5	10	-
Quality of partners	%	-	-	24	-	-
User acceptance	%	-	-	-	13	-
Customer demand	%	-	-	-	28	-
Competent employees	%	-	-	-	-	24
Commitment	%	-	-	-	-	51
Idea management	%	-	-	-	-	8
Other	%	8	3	-	8	-
<b>Total</b>	%	100	100	100	100	100



# Practicing Open Innovation

## ■ Websites

- <http://www.openinnovation.net>
- <http://www.openinnovation.eu>
- <http://www.openinnovatie.nl>

## ■ Seminars

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

## ■ European Center for OI (platform) – July 2007

## ■ Summercourse CE and OI at High Tech Campus (8-14 November 2007)





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### [Course Corporate Entrepreneurship and Open Innovation](#)

From March 29-30 and April 2-3-4, 2007, the second European course on Corporate Entrepreneurship and Open Innovation will take place at Conference Hotel Willibrordhaeghe in Deurne in the Netherlands. Go to [Events](#) to view the info.

### [Managing technologies in Research Organization: Framework for Research Surplus Portfolio](#)

In the article by Sari Viskari and Marko Torkelli of Lappeenranta University of Technology, titled "*Managing technologies in Research Organization: Framework for Research Surplus Portfolio*", the concept of Research Surplus Portfolio (RSP) is constructed based on literature with regards to intellectual capital management and portfolio management.



### [A Select Set of Companies Sustain Superior Financial Performance While Spending Less on R&D Than Their Competitors](#)

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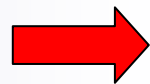
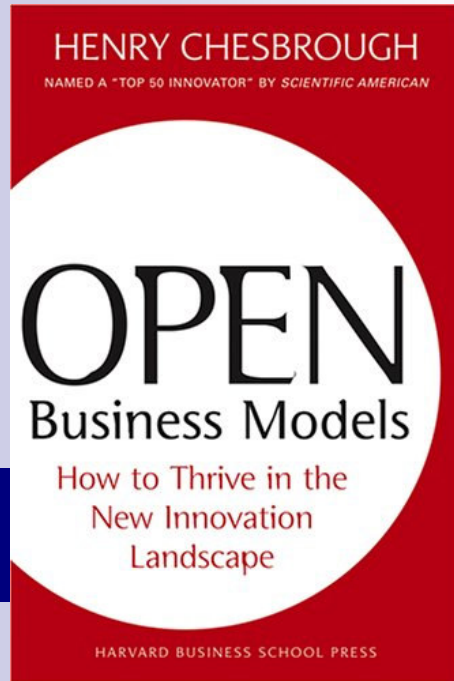
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## Implementing open innovation



EUROPA

- Management oriented
- European based companies as examples
- Topics that have not been analyzed in Chesbrough (2003; 2006)
- Focus on implementation and organization of OI
- Chesbrough, Vanhaverbeke, Gassmann, Clarysse,
- Late 2008
- Case studies, management tools, etc...