



Open Innovation network

**OPEN INNOVATION IN
EUROPEAN INDUSTRIES**

EXECUTIVE SUMMARY



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Executive Summary

The European Academic Network for Open Innovation – (OI-Net) is an EU co-financed project designed to promote cooperation on open innovation research and education. It consists of 51 academic and industrial partners from 35 European countries. One of the outcomes of this project is the first **European Survey on Identification of Industrial Needs for Open Innovation Education**.

The OI-Net project partners collected over 500 responses from European companies (large, SMEs, and micro firms) and this executive report provides the summary of the key findings on the adoption of open innovation in companies, self-perceived status of open innovation and importance of skills and abilities that open innovation specialist should possess.

Also this report presents comparison of the open innovation activities between companies who claim to adopt open innovation (adopters), plan to adopt (planners) and those who do not adopt and not planning to adopt it in the future (non adopters).



Findings

Open innovation Adopters vs. Non-adopters vs. Planners

61,5% of companies consider themselves as open innovation adopters (at least on the early stage).

16,3% respondents claim they do not adopt open innovation at the moment, but plan to start in the nearest future.

22,2% of respondents indicated not adopting open innovation and not planning to do so.

Majority of open innovation adopters observe increased ROI (62%), increased market acceptance of innovations (68%) and improved success of their radical innovations (76%) in the last 3 years. However, 59% also note increased risks and 56% - longer product development time.

Organizational Competences in Open Innovation

Naturally, compared to non adopters, companies adopting open innovation, have stronger organizational capabilities in knowledge sourcing and dissemination inside the firm, and also significantly stronger capabilities fostering open innovation within the company (e.g. provide education on open innovation, apply tools and methods to facilitate open innovation, support of top management, rewarding system).

Open innovation in:
Large (more than 250 employees)
SMEs (10-250 employees)
Micro firms (less than 10 employees)

“How companies adopt open innovation and how they identify themselves as open innovation adopters is not always the same thing”

Open Innovation Activities

Inbound open innovation activities (sourcing for technology outside the firm, co-creating with external partners, in-licensing, etc.) are adopted much more often and intensively, than **outbound modes** (free revealing of technologies, out-licensing, surplus technology commercializing, etc.).

In general, **69,6% of companies** in our sample adopt open innovation activities. The average level of open innovation adoption differs for different activities: from maximum 93,3% (Collaboration with external partner) to minimum of 44,3% (IP out licensing).

The **most** intensively adopted open innovation activities are: collaborative innovation; scanning for new ideas; customer co-creation in R&D project and using external networks.

The **least** intensively adopted open innovation activities are: IP in and out licensing; selling initialized technologies; crowdsourcing; free revealing of ideas and IP to external parties.

Open Innovation Skills and Abilities

The survey identified and validated the set of skills and abilities important for open innovation specialist. The defined open innovation profile is common for most companies in the sample, regardless the size of the firm or industry.

Open Innovation research and aims of the report

Over the last decade, open innovation has been widely accepted and implemented by large multinational corporations (Mortara and Minshall, 2011) and SMEs (van de Vrande et al., 2009). It can be observed that the role of open innovation has become more strategic leading to formalization of new open innovation functions and roles in companies (Dabrowska and Podmetina, 2014; Mortara et al., 2014). Not surprisingly, new managerial titles emerged, for example the Vice President for Open Innovation at Unilever, Open Innovation Director at Crown Packaging and Philips (Mortara and Minshall, 2014), Open Innovation Manager at Nike, PepsiCo, Lenovo, GM, Electrolux, Harman.

The adoption of open innovation practices apart from creating new job positions, also changed the way companies recruit new staff and the skills and competences they are seeking (Di Minin et al., 2010). Once a company decides to open up its innovation process, employees are no longer expected to have technical-scientific or managerial expertise only, but, in addition, they should possess certain competences and skills (Bredin and Söderlund, 2006; Huston and Sakkab, 2006).

Numerous scholars have explained some main processes to implement open innovation (Chiaroni et al., 2010), infrastructures, models, mechanisms to sustain its long-term (Di Minin et al., 2010, Enkel et al., 2011, Jeppesen and Lakhani, 2010).

Yet, open innovation research has not explained how firms could prepare their employees to cope with the challenges of external engagement (Salter et al., 2014) while simultaneously design and implement an open innovation strategy. Indeed, Vanhaverbeke and Cloudt (2014) pointed out to the limited open innovation research studying firm's open innovation strategies and managerial decisions to adopt open innovation.

This report responds to the challenge of creating a European wide open innovation policy (Chesbrough et al., 2011) that attracts qualified and experienced researchers to boost R&D, entrepreneurship and society involvement in Europe.

Definition of Open Innovation:

“firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as the firms look to advance their technology. Open Innovation combines internal and external ideas into architectures and systems whose requirements are defined by a business model” (Chesbrough, 2003: p. 43).

“Previous research highlights a lack of knowledge on how firms train their employees for open innovation”

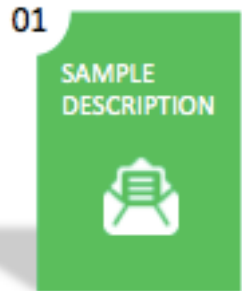
We do so by launching the first European open innovation survey to identify the industry needs for open innovation education.

For the purpose of this executive report, we structured the main findings into two main blocks:

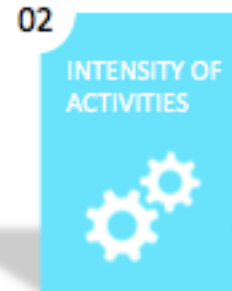
1. Comparison of the results between large, SMEs and micro firms
2. Comparison of the results between adopters of open innovation, non-adopters and planners (those, who do not adopt open innovation but plan to do so in the nearest future).

Each block will report the results in the same structured way:

- a). Intensity of adoption of open innovation activities (How intensively does your company adopt open innovation activities?)
- b). Change of activities (Which activities should be used more often or less in your company?)
- c). Organizational capabilities in open innovation
- d). Skills and abilities (what skills and abilities should open innovation specialist have?)
- e). Innovation performance



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OPEN INNOVATION AND COMPANY SIZE (LARGE, SMEs, MICRO)

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OPEN INNOVATION AND COMPANY STATUS (ADOPTERS, NON-ADOPTERS, PLANNERS)

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SAMPLE DESCRIPTION

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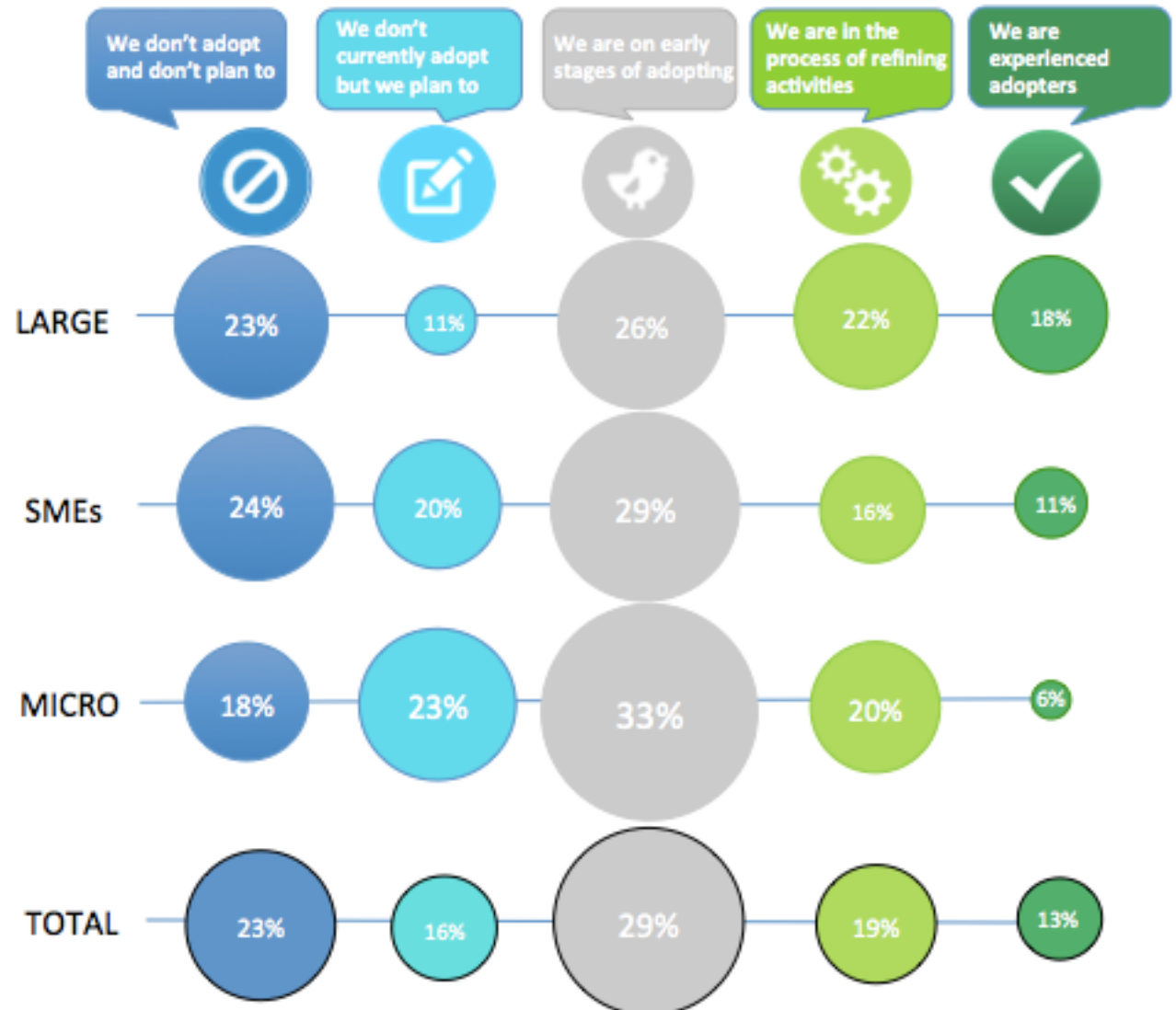


INTENSITY OF ADOPTION OF OPEN INNOVATION ACTIVITIES

Majority of companies (61% of respondents) perceive themselves as adopting open innovation. Out of this number, 29% is at the **early stage** of open innovation adoption. However, 39% of companies **do not** adopt open innovation.

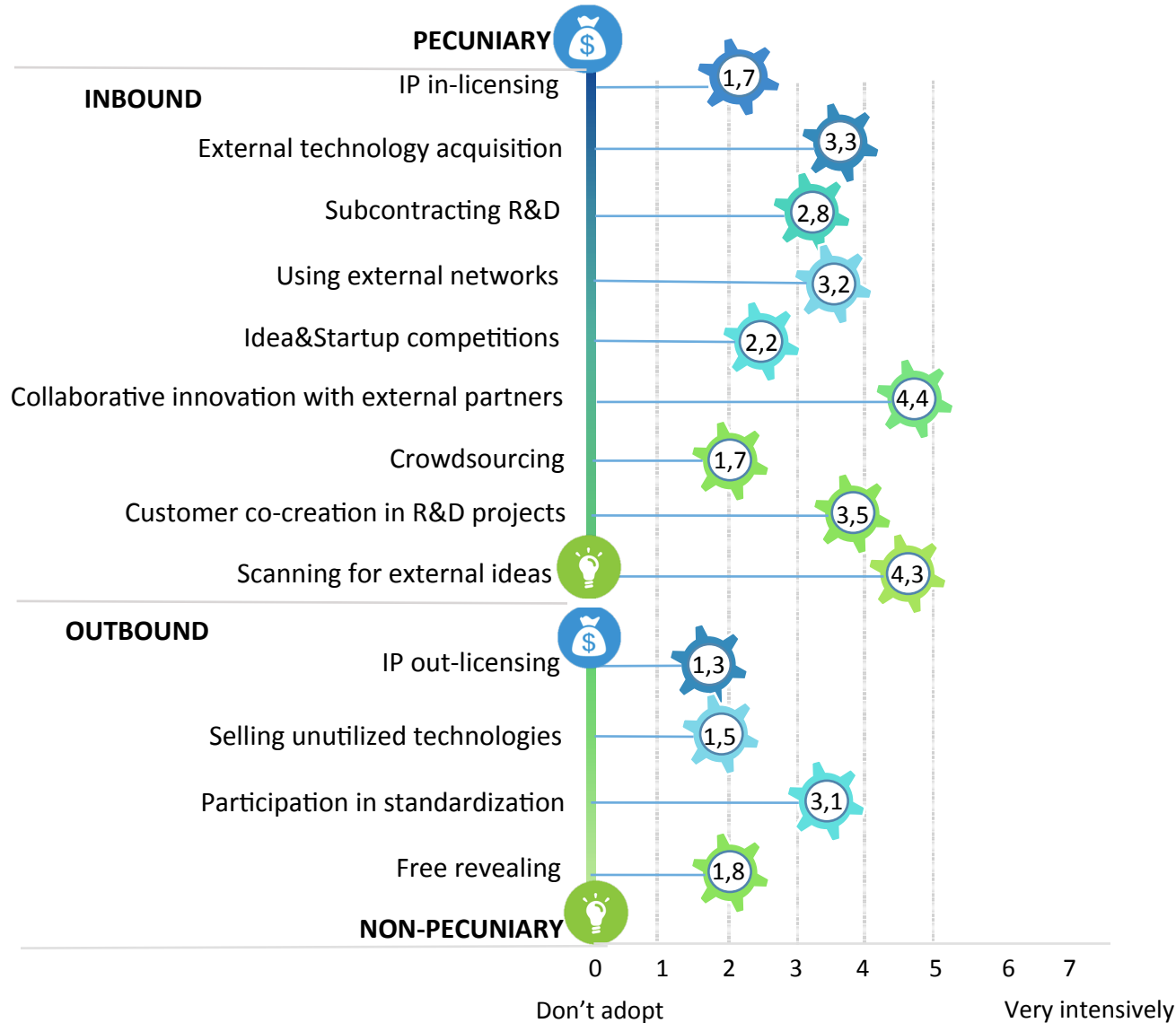
Slightly better penetration of open innovation adoption can be observed in large companies compared to SMEs or micro firms.

In the same time, micro firm are very active in planning open innovation adoption and have the highest share of firms on the early stage of open innovation adoption.





HOW INTENSIVELY DOES YOUR COMPANY ADOPT OPEN INNOVATION



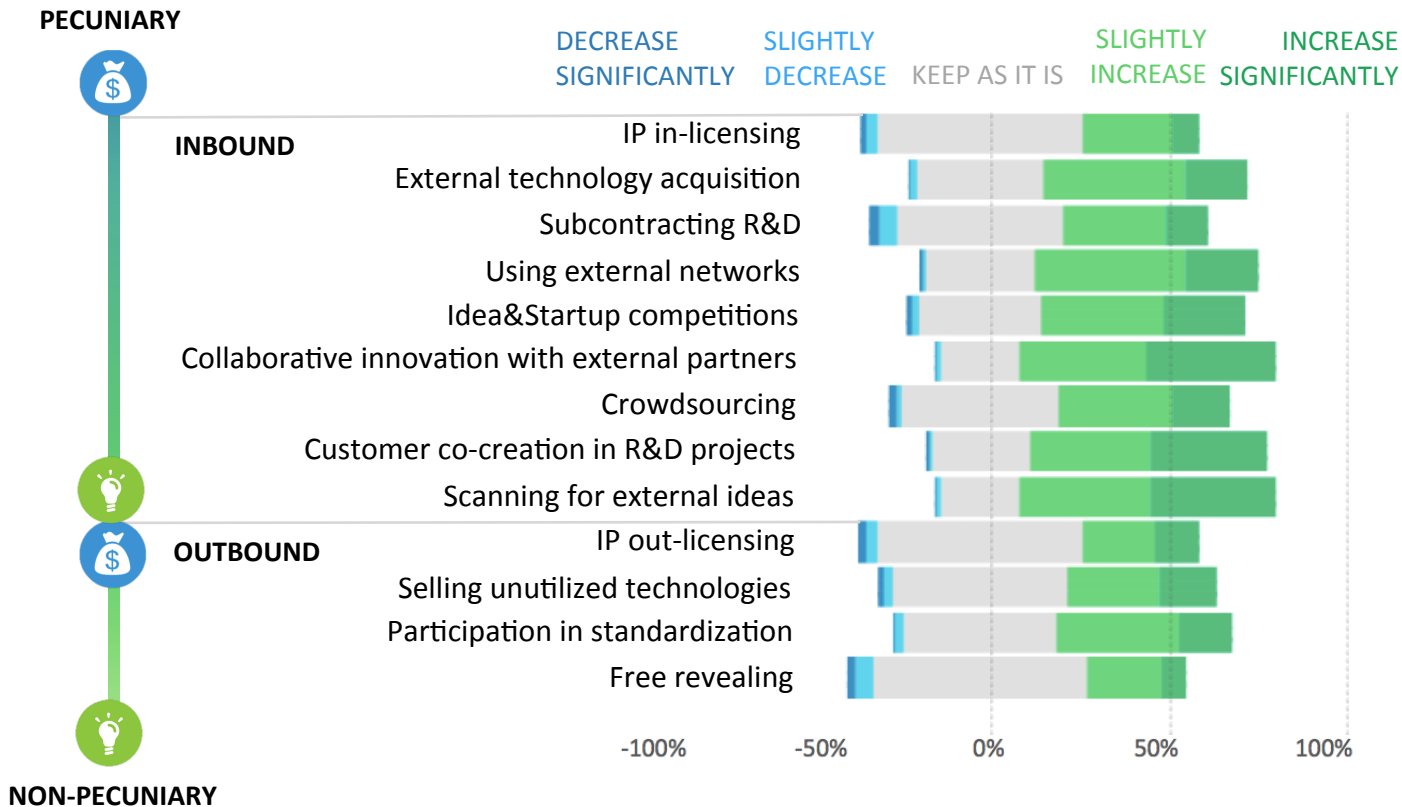
The research on open innovation usually distinguishes between **Inbound** (outside-in) open innovation (external knowledge flows inside the firm), and **Outbound** (inside-out) open innovation (knowledge flows outside the firm).

From the monetary perspective, activities are divided into **Pecuniary (monetary)** and **Non-pecuniary (non-monetary)** dimensions, which illustrate the direct (or not) financial reward and compensation associated with it.

Overall, the inbound open innovation activities such as Collaborative innovation, scanning for external ideas, customer co-creation, are intensively adopted. Outbound open innovation is adopted the least.



CHANGES IN ACTIVITIES



Which of the following activities should be used more often and which should be used less in your company?

Most of our respondents indicated that open innovation activities should be adopted more intensively. The firms see the most needed increase in cooperative and inbound OI: scanning for new ideas, collaborative innovation and customer co-creation in R&D.

As a matter of fact, majority of companies prefer keeping the same level of intensity of outbound open innovation activities.

The less increase is needed in free revealing, IP licensing in and out, and in subcontracting of R&D.

The diagram features three gears. On the left, a dark blue gear with a light blue center is labeled 'ACTIVITIES'. It is connected to a light blue gear on the right labeled 'INTENSITY'. A smaller black gear with a white center labeled 'OI' is positioned above the 'INTENSITY' gear. A dashed green and white ring with an ampersand '&' in the center connects the two main gears. A vertical white line separates the left blue background from the right white background. Curved arrows indicate the direction of rotation for each gear.

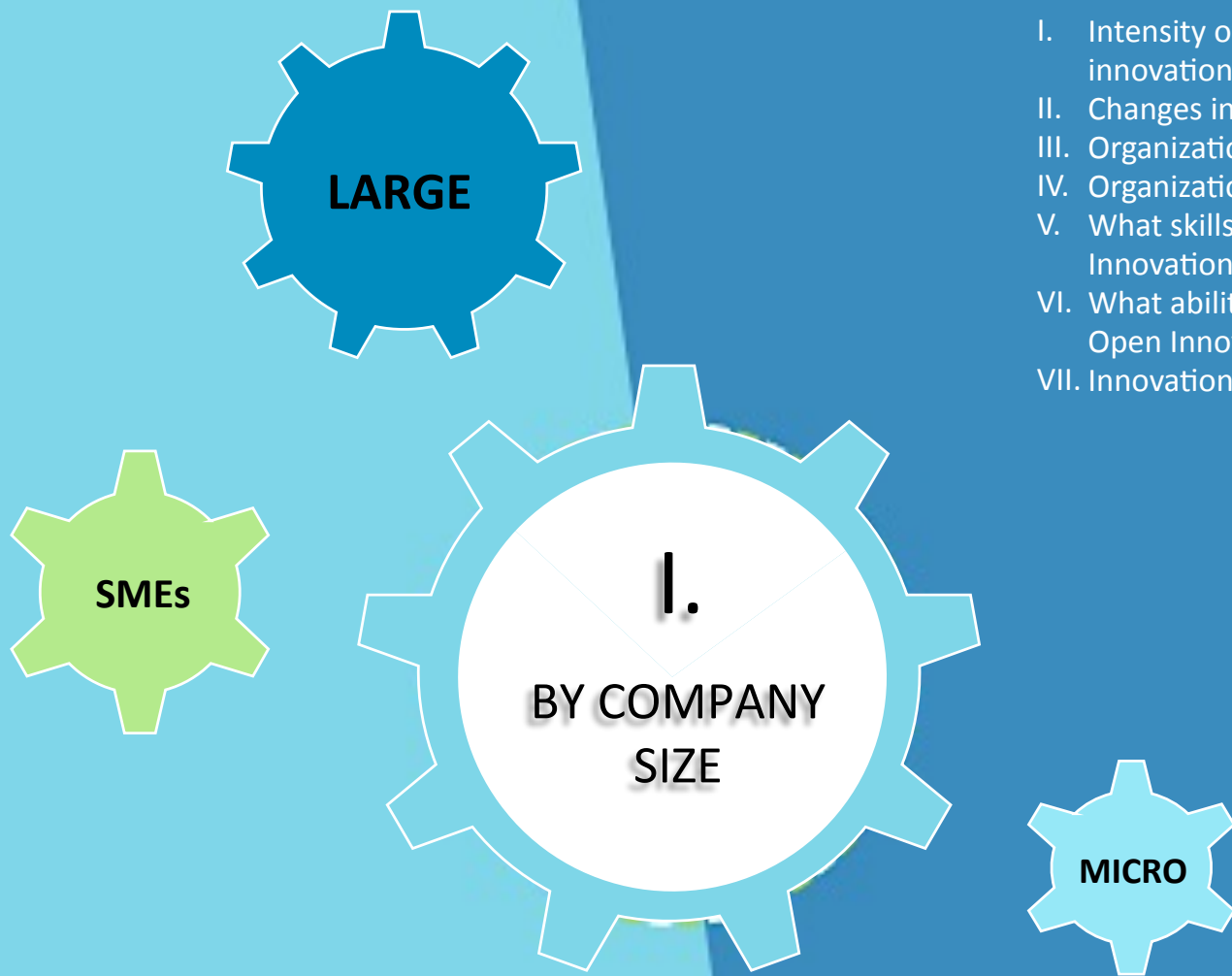
ACTIVITIES

II. BY COMPANY STATUS

OI

INTENSITY

I. BY COMPANY SIZE

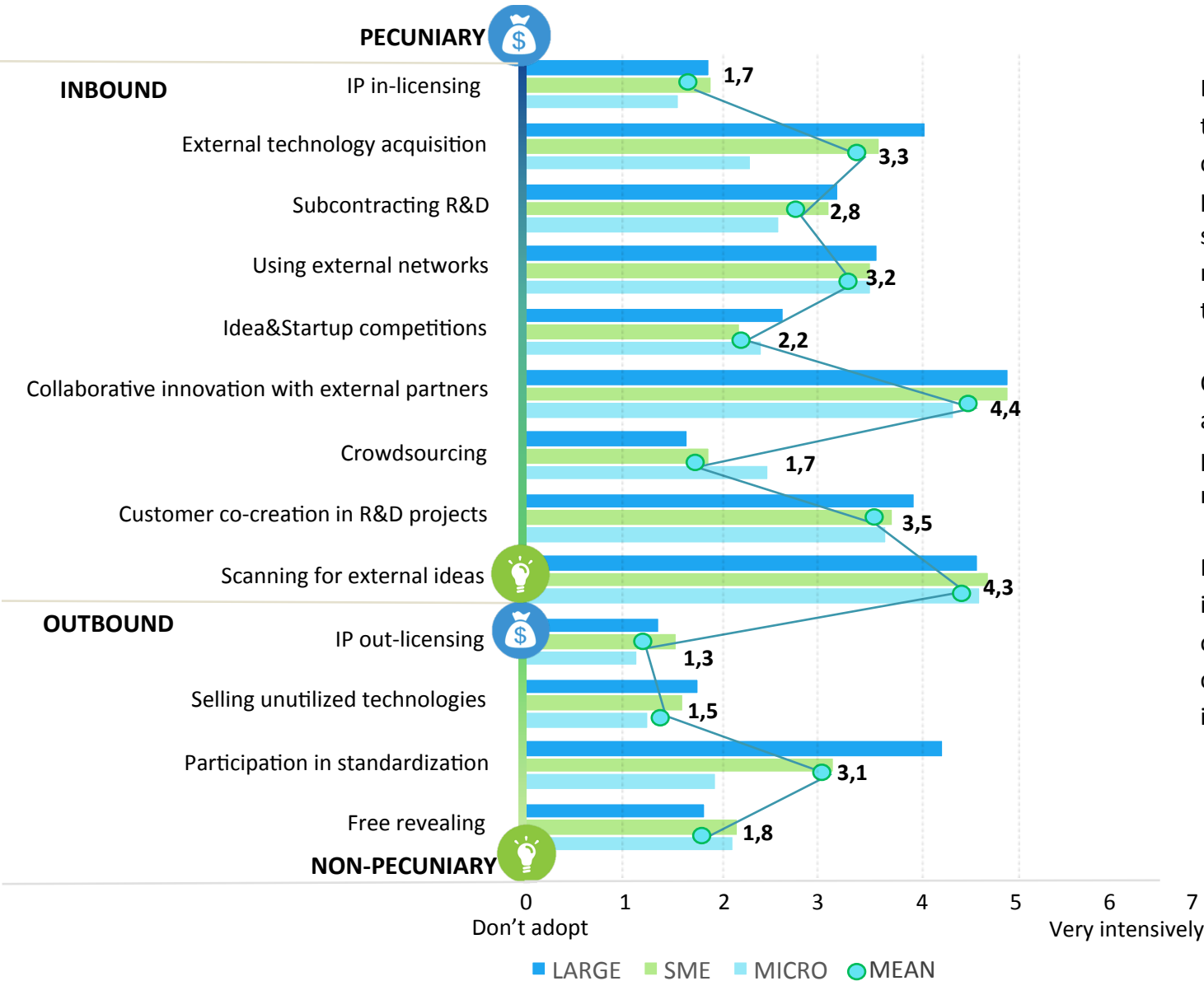


OPEN INNOVATION AND COMPANY SIZE (LARGE, SMEs, MICRO)

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INTENSITY OF ADOPTION OF OPEN INNOVATION ACTIVITIES



Large firms more intensively acquire external technologies, participate in idea and start up competition, involve customers in R&D projects, and, naturally participate in standardization. However, they are more reluctant to crowdsourcing and free revealing than SMEs or Micro firms.

Out of all open innovation activities, SMEs adopt collaborative innovation with external partners and scanning for external ideas the most.

Micro firms use external networks, participate in idea and start up competition, collaborate on innovation with external partners, involve customers in co-creation process, as intensively as SMEs and large firms.

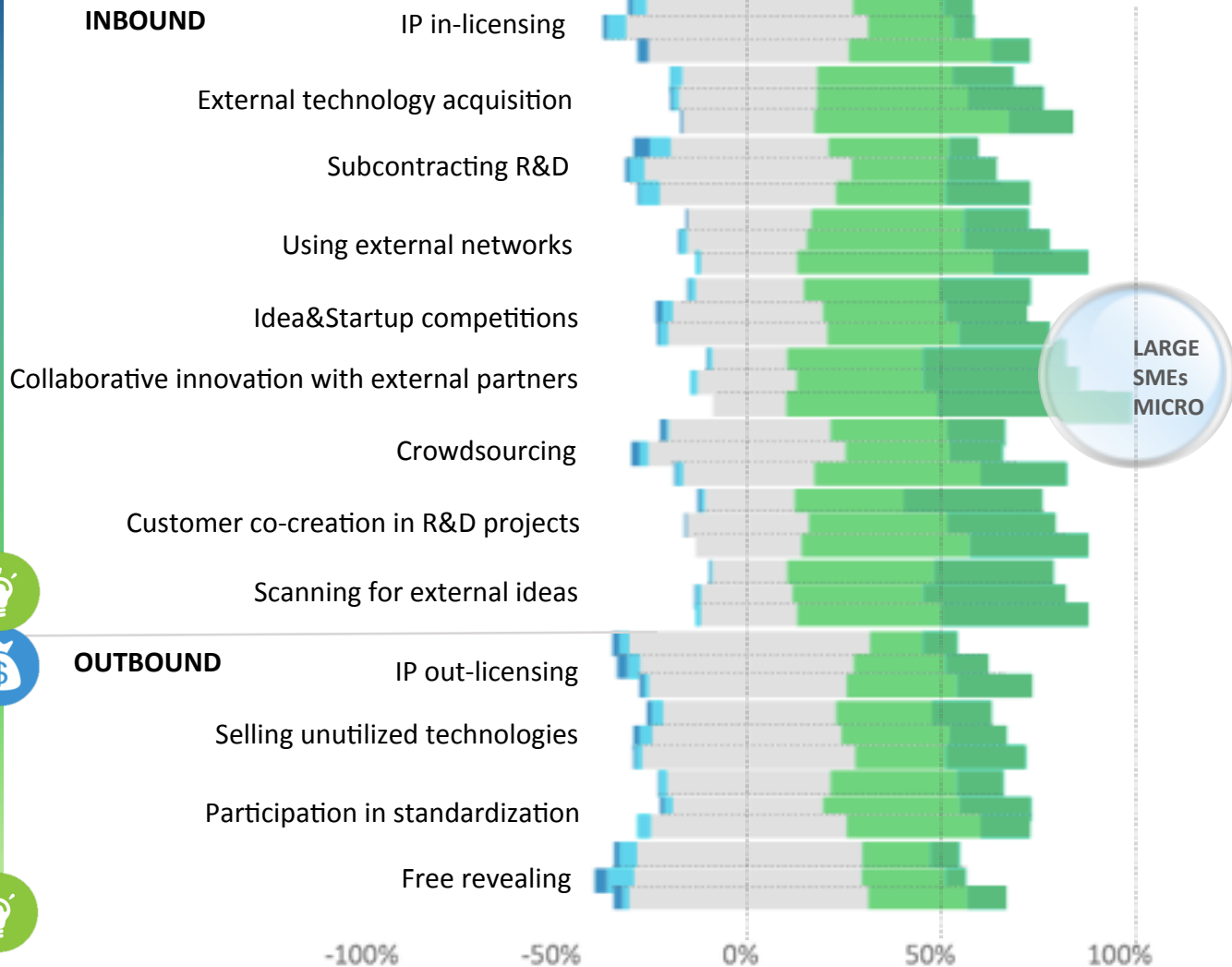


CHANGES IN ACTIVITIES

PECUNIARY



DECREASE SIGNIFICANTLY SLIGHTLY DECREASE KEEP AS IT IS SLIGHTLY INCREASE INCREASE SIGNIFICANTLY



Which of the following activities should be used more often and which should be used less in your company?

In general, micro enterprises are more willing to enhance the degree of adoption of OI activities. The most needed increase for them lies in Collaborative innovation with external partners, crowdsourcing, IP in-licensing and IP out-licensing.

Large firms and SMEs appear slightly more conservative although they also see the necessity of increasing the degree of OI activities adoption.

NON-PECUNIARY





ORGANIZATIONAL CAPABILITIES

Open innovation organizational capabilities 1: “What we do to foster Open innovation”

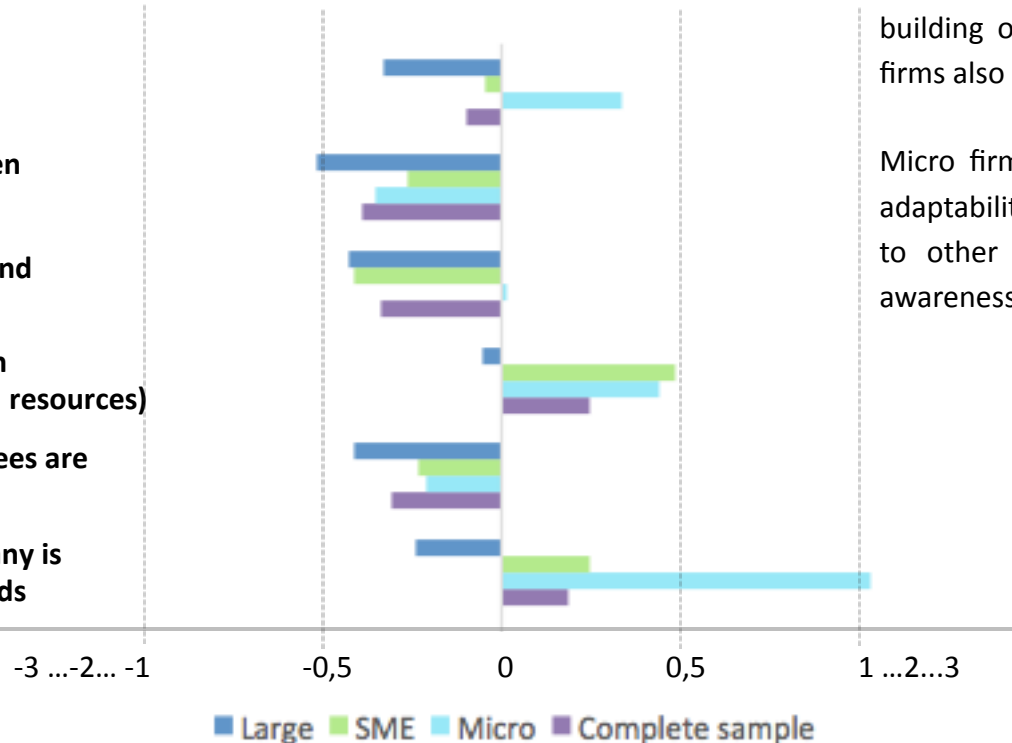
The characteristics of organizational capabilities related to open innovation were evaluated using 7 item Likert scale from “completely disagree” to “fully agree”. After conducting factor analysis, we found out that the set of capabilities fall into 2 groups, presented on this and the next slides.

The first group of capabilities describe what company does to organize and facilitate open innovation (fostering skills, provide education, apply tools and methods to facilitate open innovation, support of top management, rewarding employees and designing proper organization structure).

As sample average, respondents report the highest score of organizational capabilities related to 1) managerial support of open innovation by allocating enough resources and 2) designing open organizational structure. And surprisingly, the management of SMEs and micro firms provide more support in open innovation and develop open organizational structure, than large companies. In case of building open organizational structure, micro firms also outperform SMEs several times.

Micro firms, due their small size and higher adaptability, also possess superior compared to other firms, open innovation skills and awareness, which are fostered in the firm.

- Open innovation skills and awareness are fostered within our organization**
- We provide education and training on open innovation for our employees**
- We apply interactive collaboration tools and methods to facilitate open innovation**
- (Top) management strongly supports open innovation activities (by allocating enough resources)**
- Open innovation activities by our employees are rewarded**
- The organizational structure in our company is designed to be open according to our needs**





ORGANIZATIONAL CAPABILITIES

Open innovation organizational capabilities 2: How we function?

The second group of capabilities set the organizational behavior – employees attitudes towards external ideas and sharing own knowledge and technologies with others, failure tolerance,

cross-functional collaboration, porous organizational borders, ability to source knowledge from outside and disseminate it within organization.

These capabilities are much stronger developed in all firms, then open innovation capabilities from previous slide.

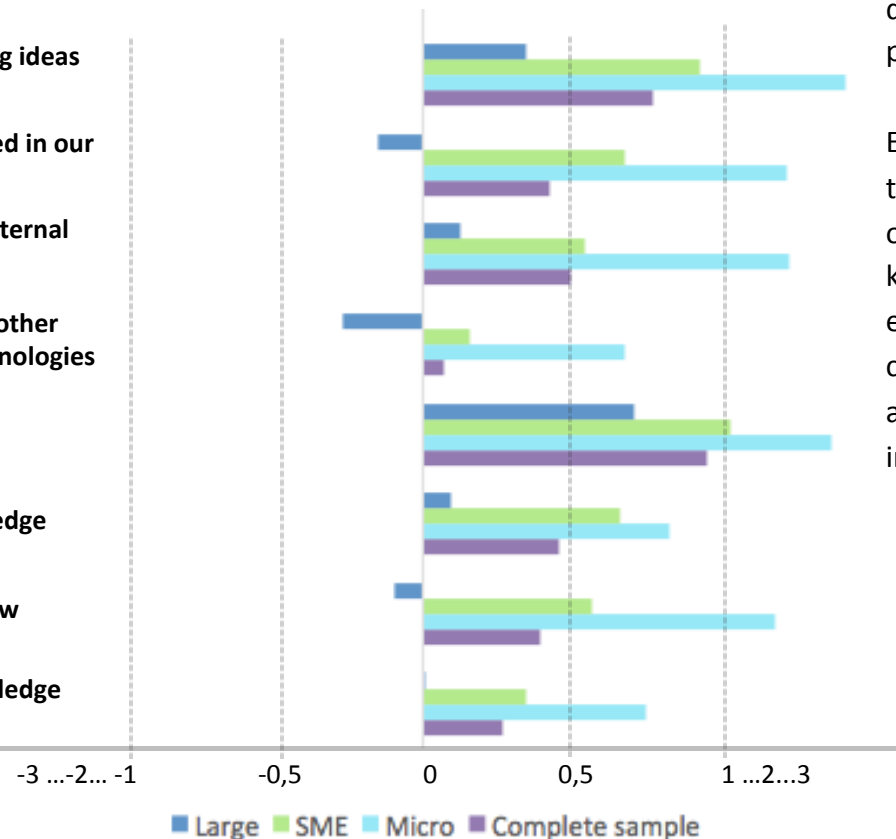
OPEN INNOVATION AND COMPANY SIZE

Micro firms have stronger attitude towards these set of capabilities, then SMEs and large firms.

SMEs also report capabilities higher than large firms, in sourcing applying technologies from outside, disseminating and collaborating with partners.

Employees in large organizations display the negative attitudes towards having other companies receiving and using knowledge and technologies more than employees of SMEs on Micro sized companies. Also, new external ideas are accepted and disseminated worse than in SMEs of Micro firms.

- Our employees have positive attitudes towards applying ideas and technologies from outside the company**
- New external ideas are easily accepted and disseminated in our organization**
- Our competitive advantage lies in collaborating with external partners**
- Our employees have positive attitudes towards having other companies receiving and using our knowledge and technologies**
- Externally obtained knowledge is integrated into our products, processes, and services**
- We accept the possibility of mistakes in external knowledge sourcing**
- The borders of our company are open for knowledge flow from outside-in and from inside-out**
- Relevant departments are actively participating in knowledge sourcing and knowledge exchange**

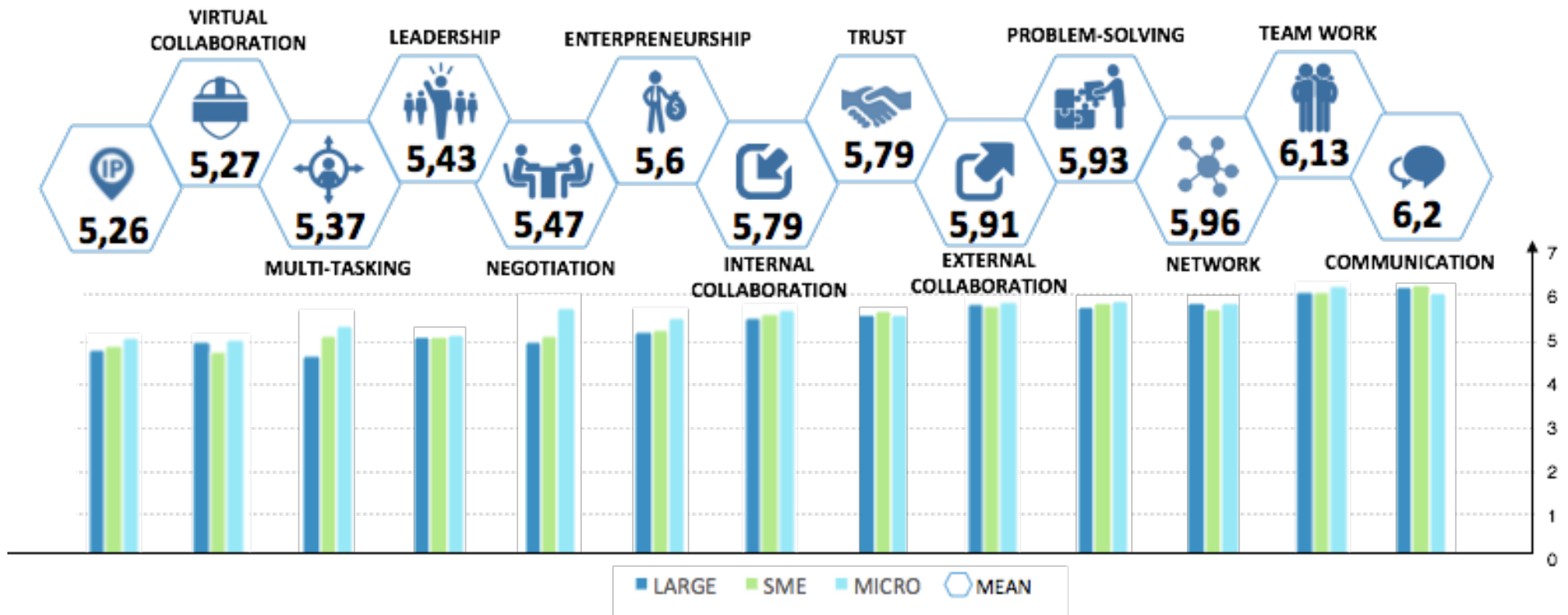




WHAT SKILLS AND KNOWLEDGE AN OPEN INNOVATION SPECIALIST HAVE?

Companies indicated the high importance of mention set of skills which open innovation specialist should possess. The most important skills are communication, networking, team working, problem solving and external collaboration.

The strong cooperation skills are essential for building competence in open innovation, requiring extensive interaction with external partners and effective cross-functional cooperation. Problem-solving skills are important for open innovation in terms of acting fast in finding optimal decisions for newly emerged tasks.

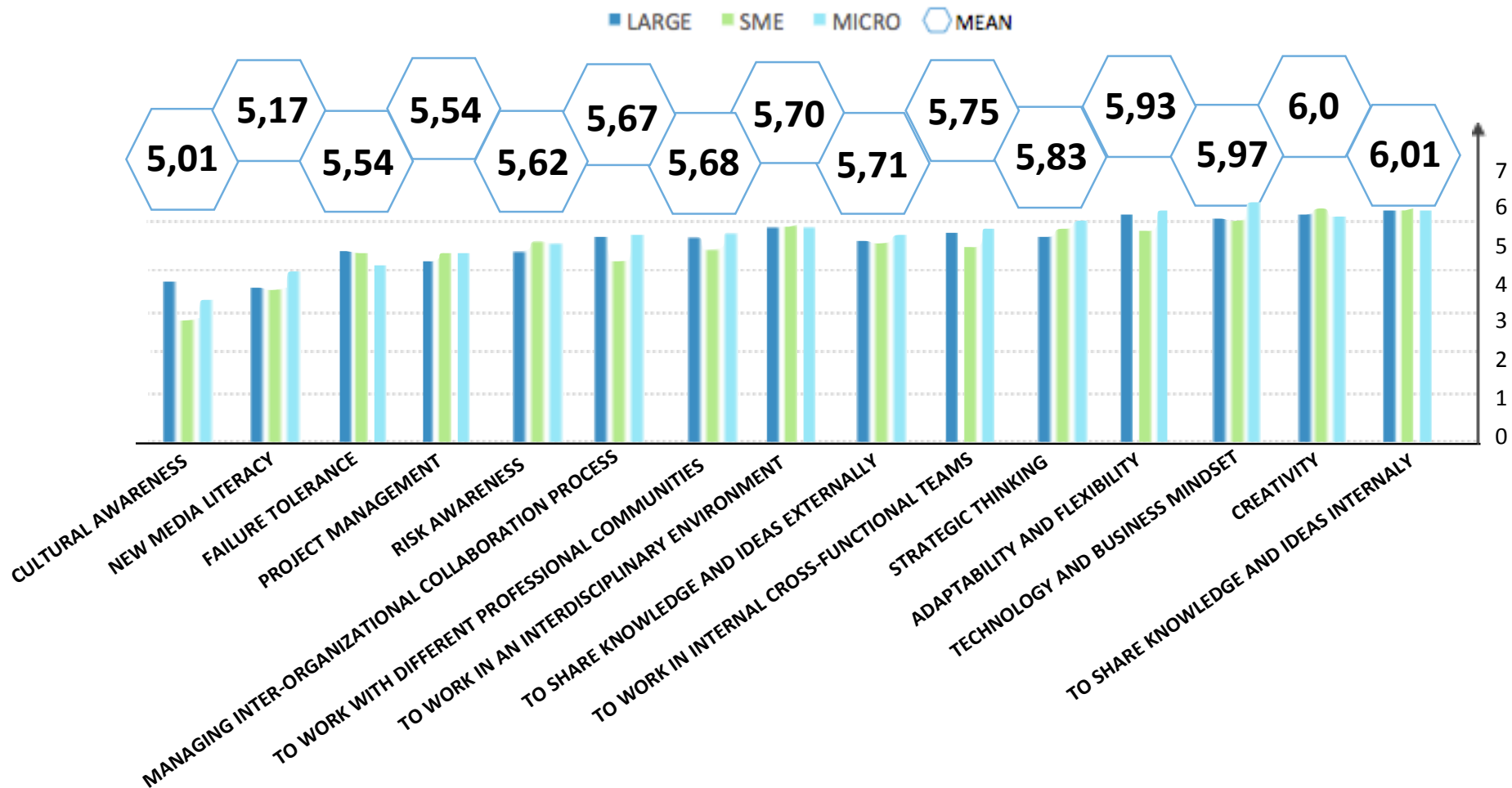




WHAT ABILITIES AND KNOWLEDGE AN OPEN INNOVATION SPECIALIST HAVE?

Ability to share knowledge and ideas is perceived equally important regardless of the company size.

Cultural awareness is relatively less important for SMEs than for micro and large firms.





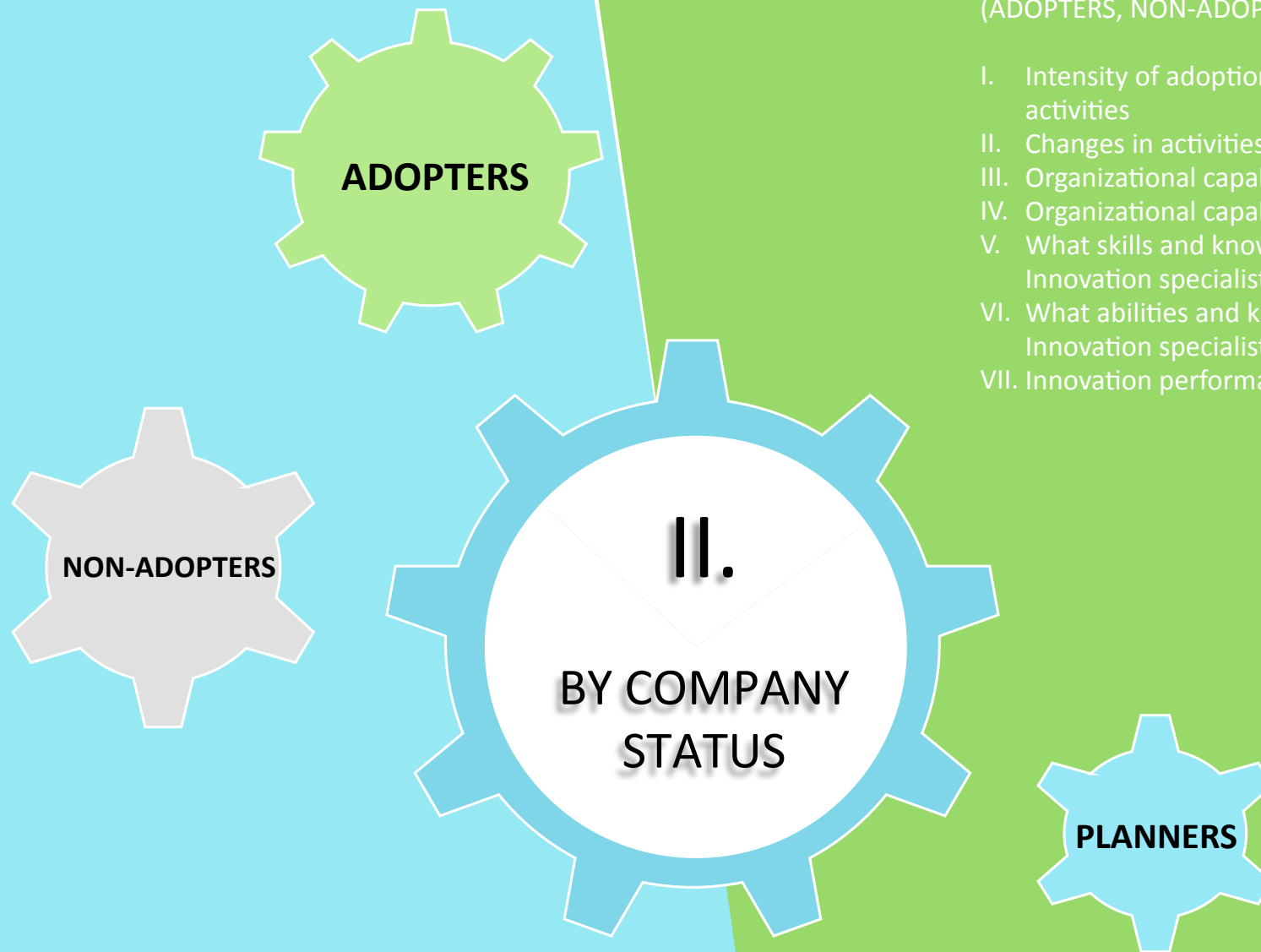
INNOVATION PERFORMANCE

Please evaluate the innovation performance of your company over the last 3 years

In general, respondents report the increase of performance indicators.

However, 61% of respondents indicated that the risks of innovation activities has increased over the last three and new product and service development time decreased only within 19% of cases.



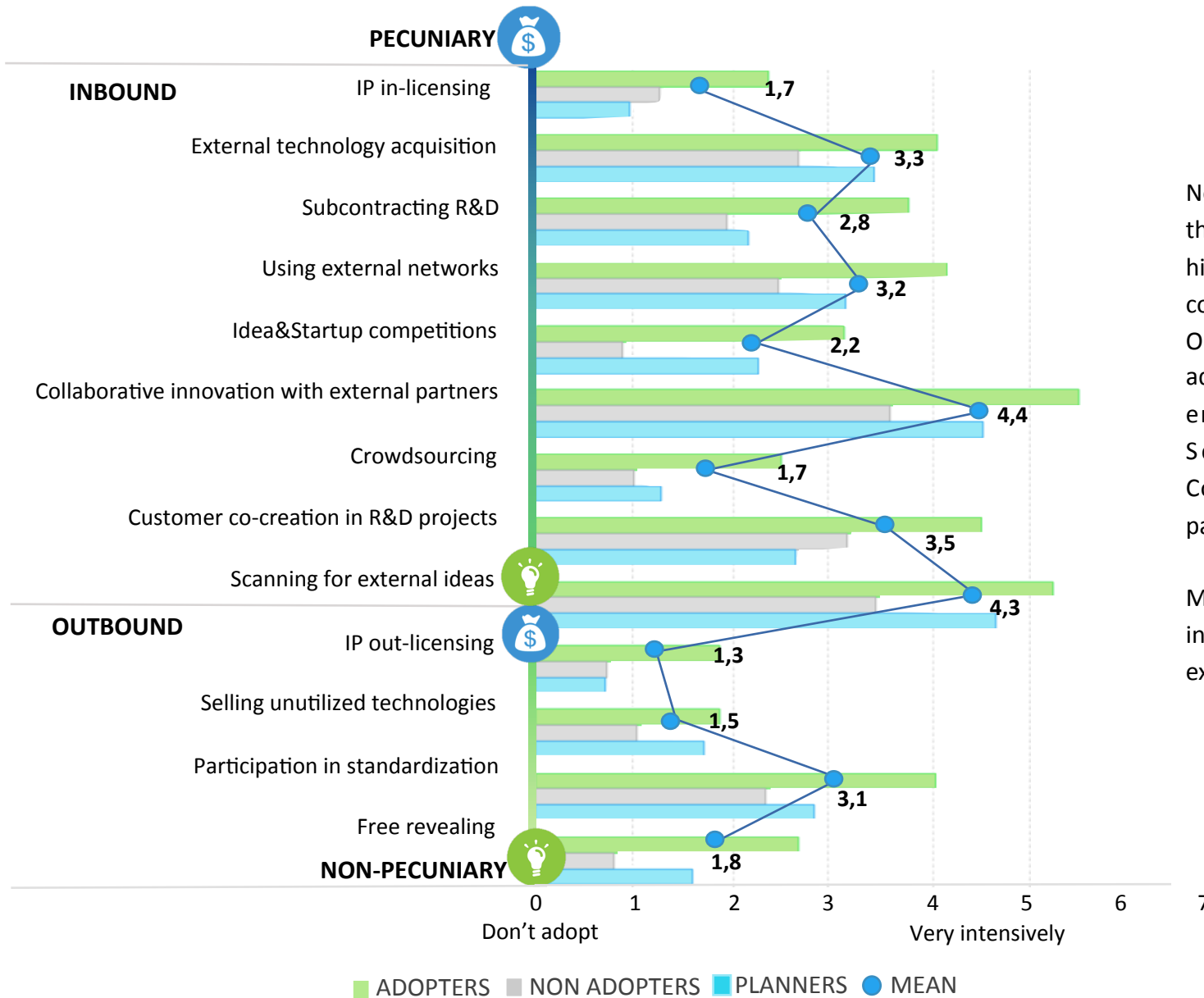


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INTENSITY OF ADOPTION OF OPEN INNOVATION ACTIVITIES



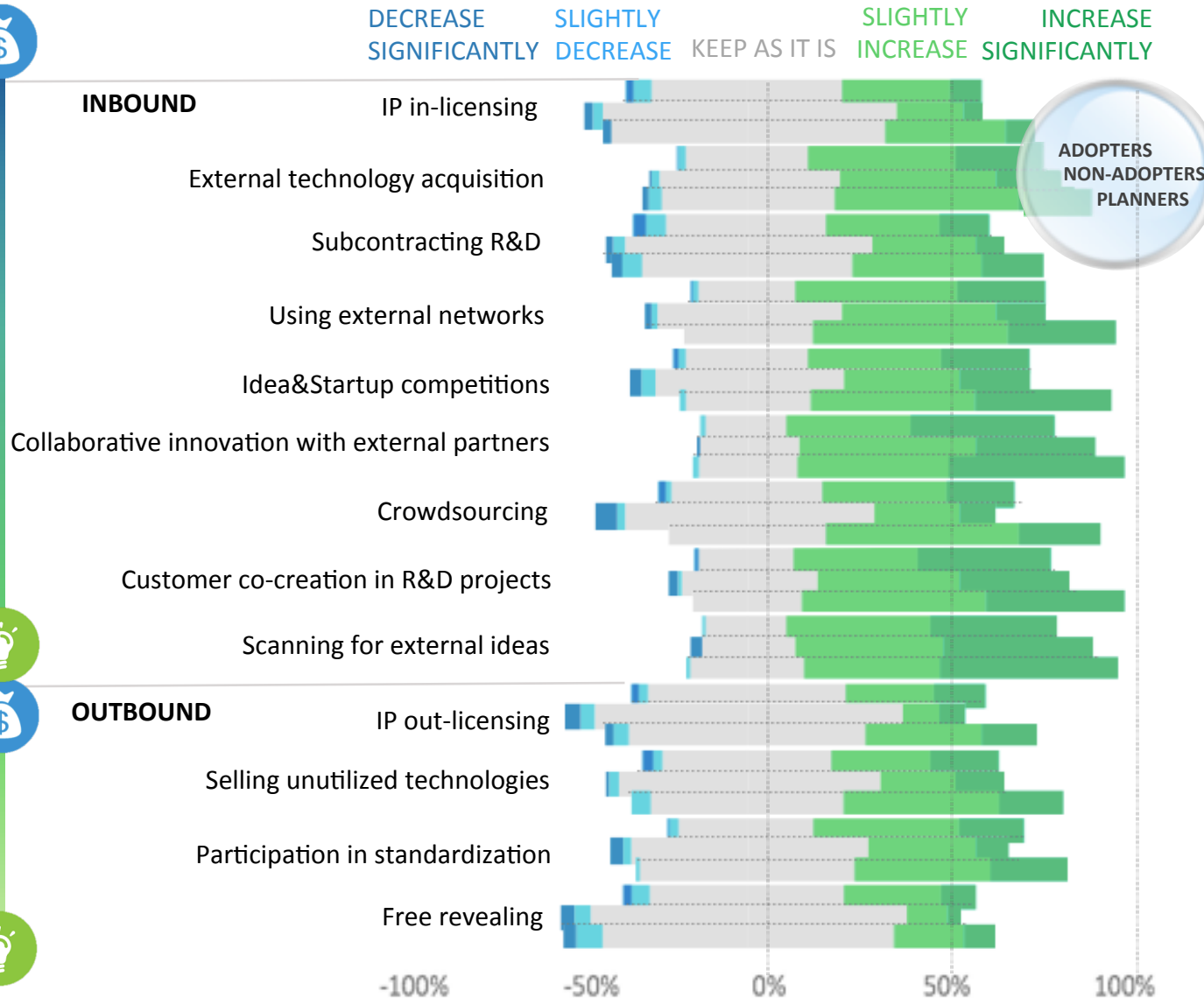
Not surprisingly, companies who identified themselves as OI adopters demonstrate higher intensity of adoption of OI activities compared to those who do not practice OI. On the other hand, many firms planning to adopt OI already have quite high level of engagement in some activities (e.g. Scanning for external ideas and Collaborative innovation with external partners).

Meanwhile, non adopters report quite high intensity of adoption of some activities, for example, external technology acquisition.



CHANGES IN ACTIVITIES

PECUNIARY



Which of the following activities should be used more often and which should be used less in your company?

Companies planning to adopt OI are more willing to increase the degree of activities engagement. On the other hand active OI adopters are less interested in activities usage increase, sometimes even comparing to those who do not consider themselves as OI practitioners (e.g. for Collaborative innovation with external partners).

Also, it can be noticed that for outbound activities, significant share of respondents (either adopters, non adopters or planners) do not see the need to increase the intensity of open innovation activities.

NON-PECUNIARY

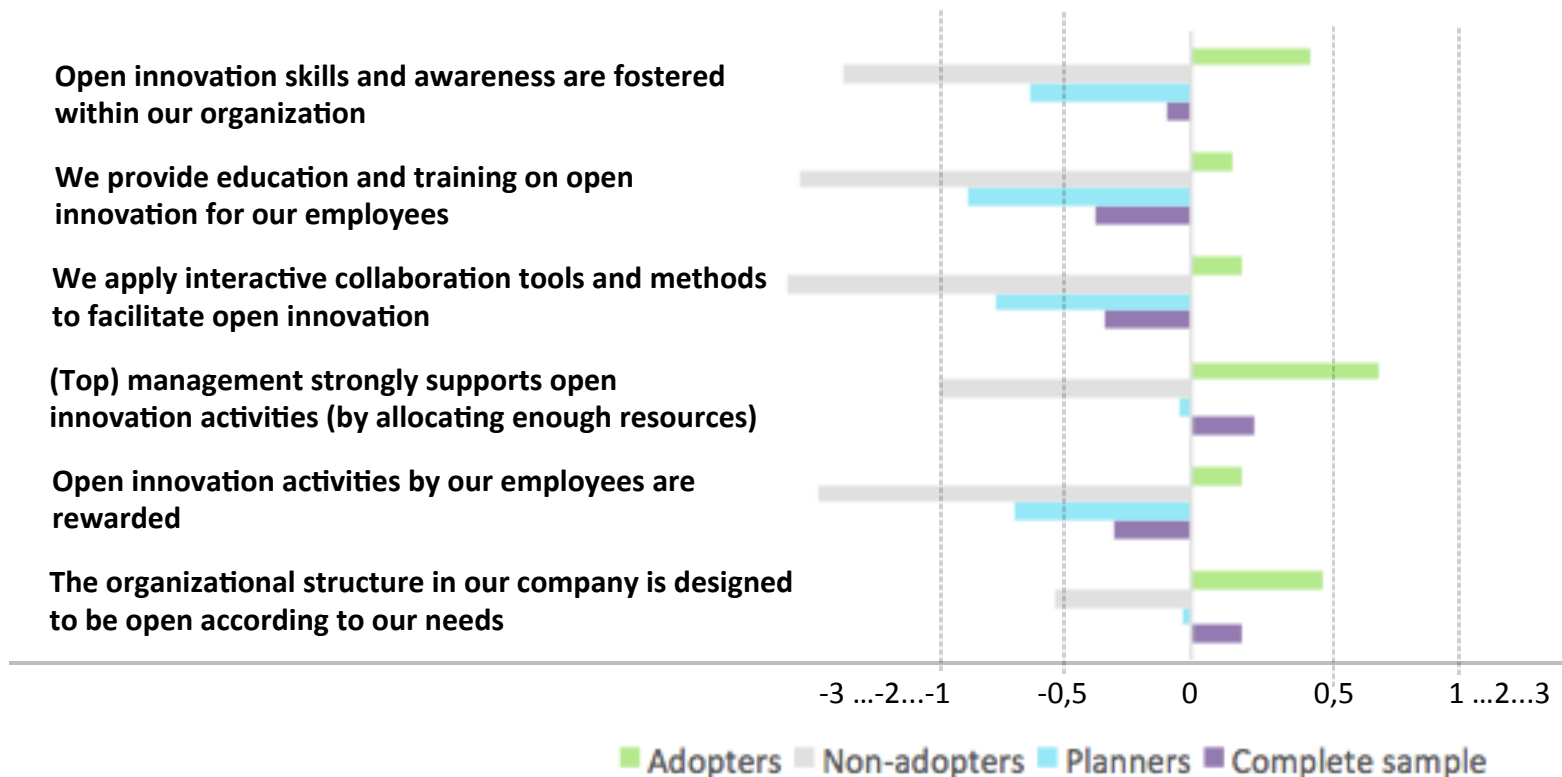




Open innovation organizational capabilities 1: “What we do to foster Open innovation”

Companies who adopt open innovation have significantly stronger capabilities in facilitating open innovation. For all capabilities mentioned on the graph, adopters have higher rate, then planners, and very much higher than non adopters.

Open innovation adopters have not only consciously view the necessity of special skills for open innovation, but also practical methodic skills in implementation of training, collaboration, rewarding system and support of management.





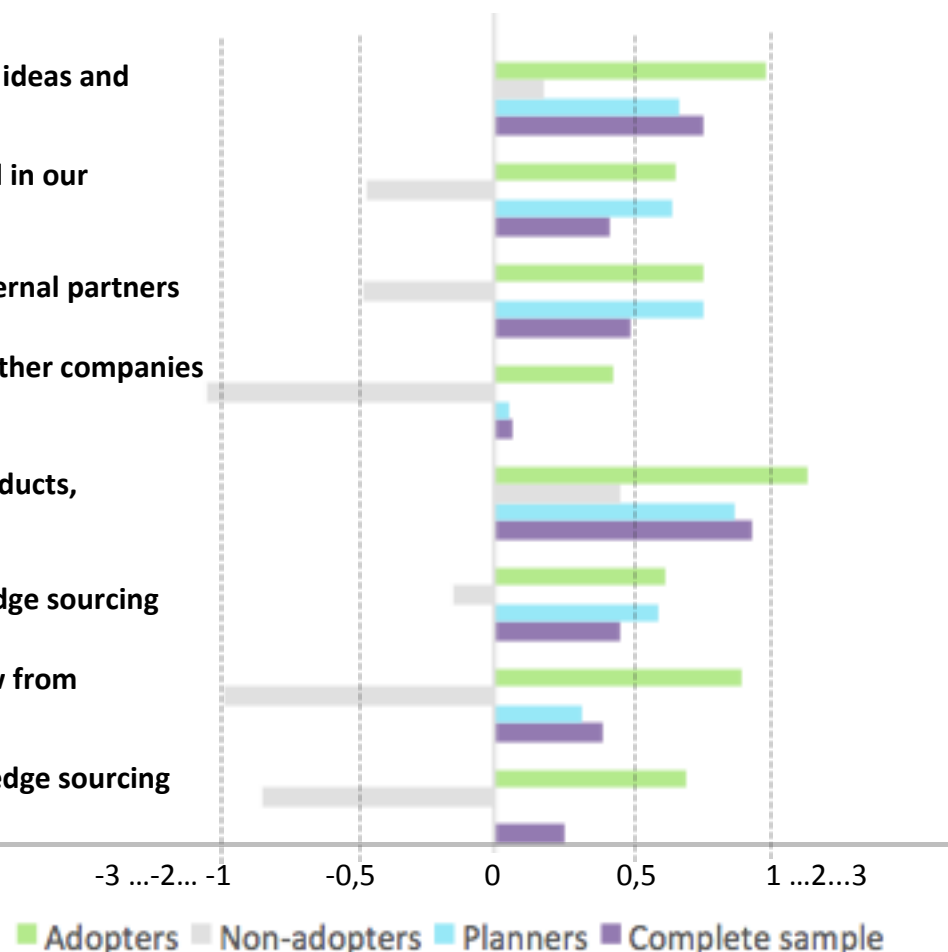
ORGANIZATIONAL CAPABILITIES

Open innovation organizational capabilities 2: How we function?

Companies adopting open innovation naturally have higher competences in organization of knowledge flows and integrate it inside the firm, organizing knowledge flow through the firms borders.

Additionally, adopters have lower barriers to open innovation, so called “not invented here” and “not sold here” syndrome. Hence, adopters and planners have similar level of capabilities in ideas dissemination, collaborating with external partners and attitude to failures in knowledge sourcing.

- Our employees have positive attitudes towards applying ideas and technologies from outside the company**
- New external ideas are easily accepted and disseminated in our organization**
- Our competitive advantage lies in collaborating with external partners**
- Our employees have positive attitudes towards having other companies receiving and using our knowledge and technologies**
- Externally obtained knowledge is integrated into our products, processes, and services**
- We accept the possibility of mistakes in external knowledge sourcing**
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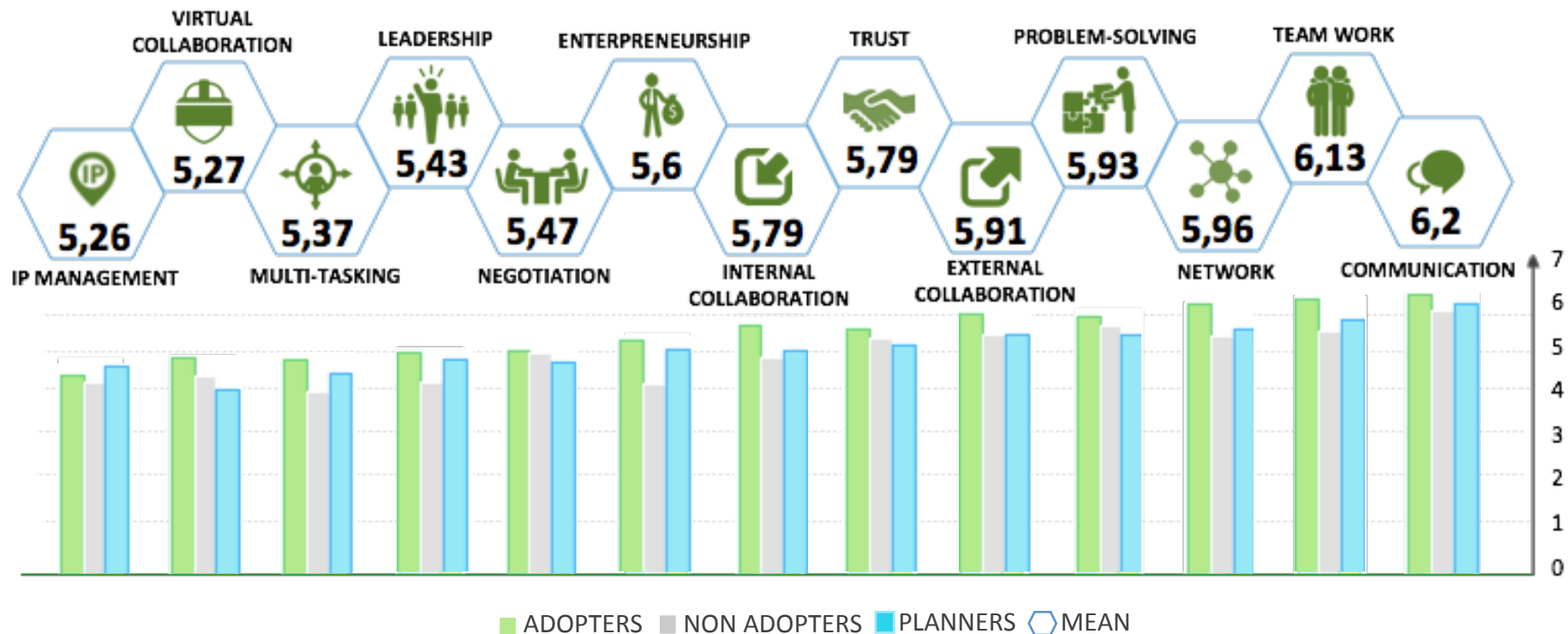


WHAT SKILLS AND KNOWLEDGE AN OPEN INNOVATION SPECIALIST HAVE?

The firms in our sample indicated the high importance of mentioned skills related to open innovation. The most important skills are communication, networking, team working and external collaboration.

Non adopters report lower level of importance of skills that open innovation specialist should have, then companies adopting or planning to adopt OI.

Adopters in many cases evaluated skills higher than planners.

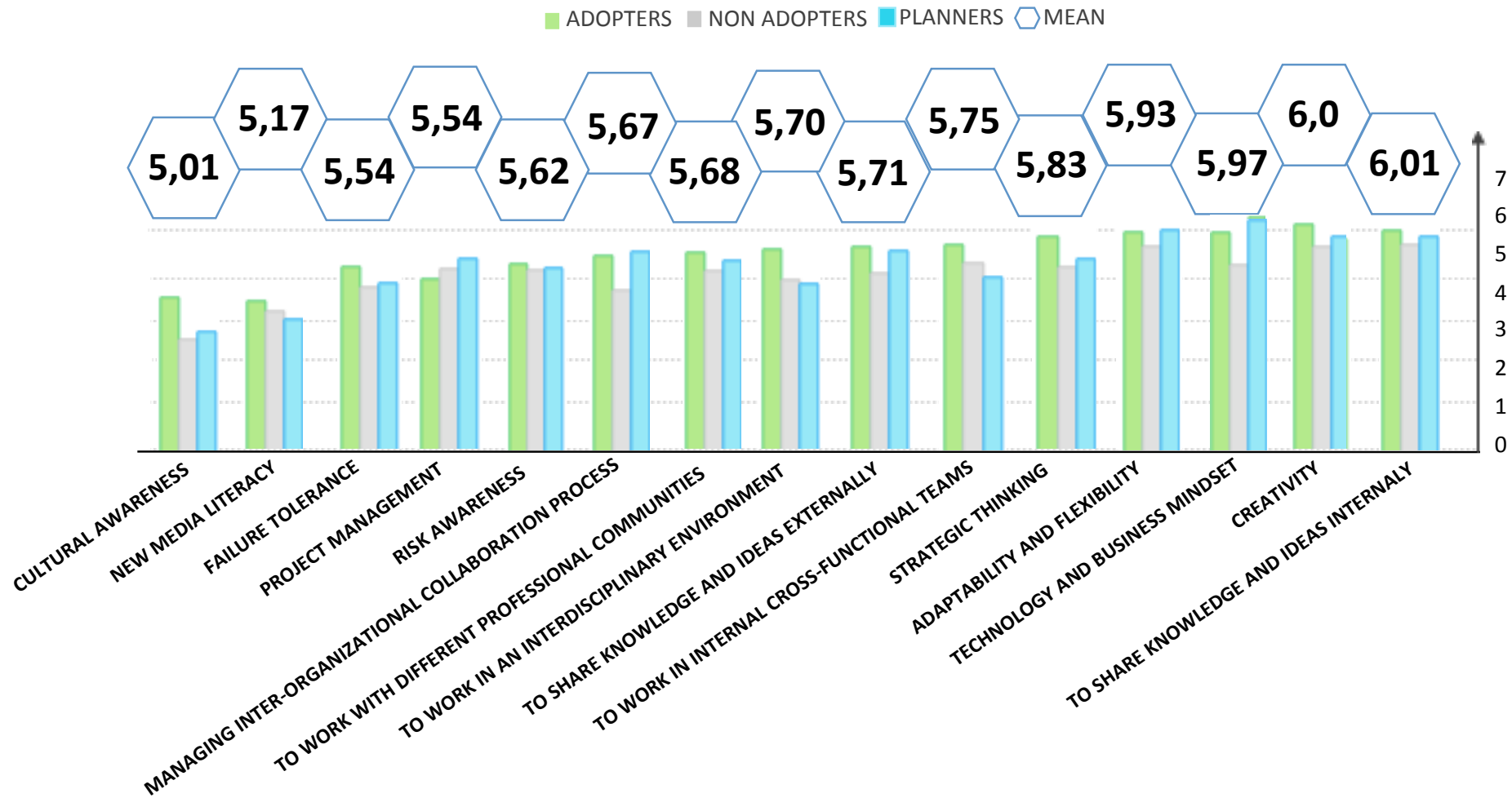




WHAT ABILITIES AND KNOWLEDGE AN OPEN INNOVATION SPECIALIST HAVE?

Non-adopters indicated that cultural awareness is less important for open innovation specialist to possess than in the eyes of adopters.

The ability to share knowledge and ideas internally is indicated as the most important one for all three groups of respondents, followed by creativity and technology and business mindset.

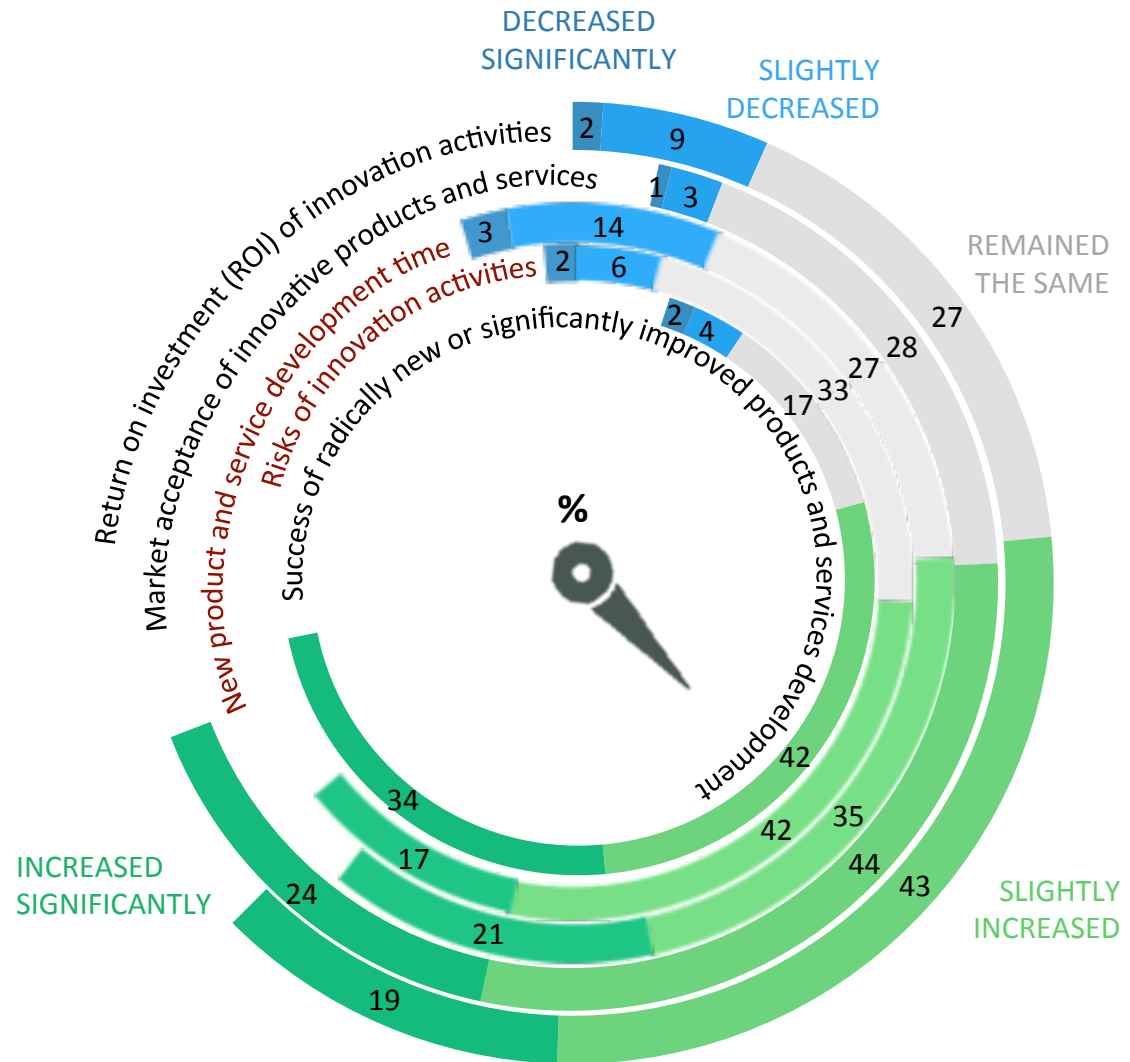




INNOVATION PERFORMANCE

“Majority of open innovation adopters observe increased ROI (62%), increased market acceptance of innovations (68%) and improved success of their radical innovations (76%) in the last 3 years”

“However, 59% also note increased risks and 56% - longer product development time”.

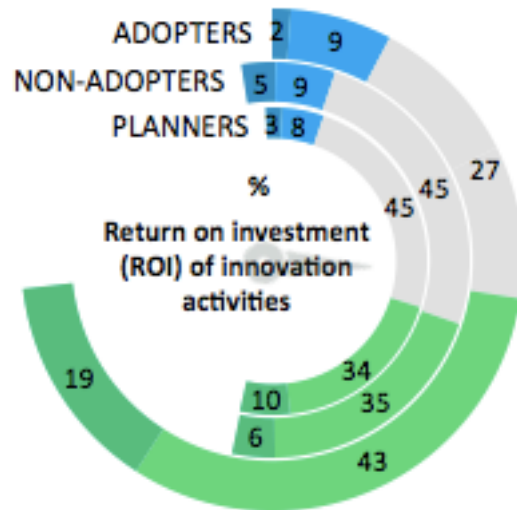




INNOVATION PERFORMANCE

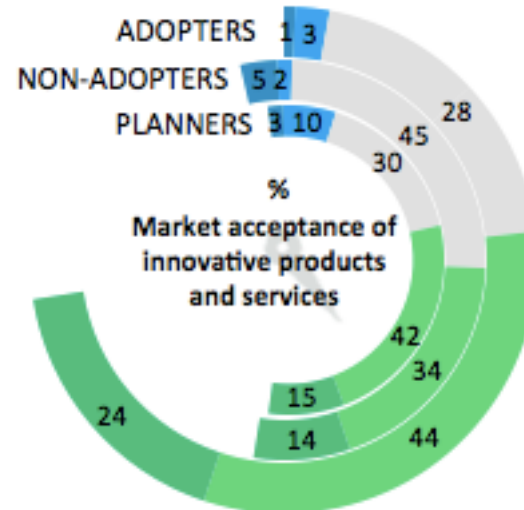
ROI

ROI has grown better among open innovation adopters (62%) or planners (44%) than among non-adopters (33%) in the last 3 years.



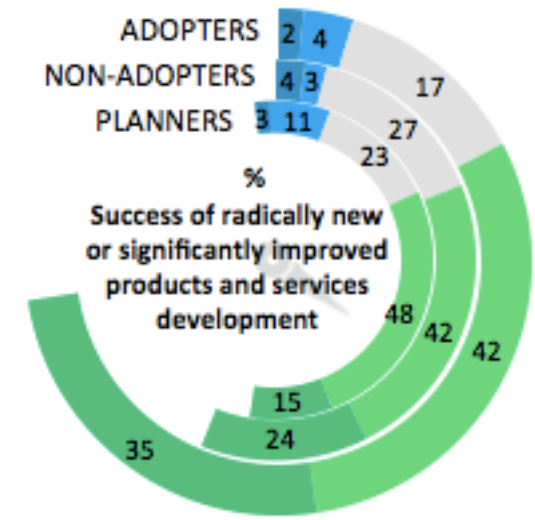
Market acceptance of innovation

Majority of open innovation adopters (68%) and planners (56%) observed increase in market acceptance of their innovations, while non-adopters are slightly lagging behind.



Innovation performance

Success of radically new or significantly improved products and services has increased in the last 3 years among adopters (76%), but also among non-adopters and planners (63% each).

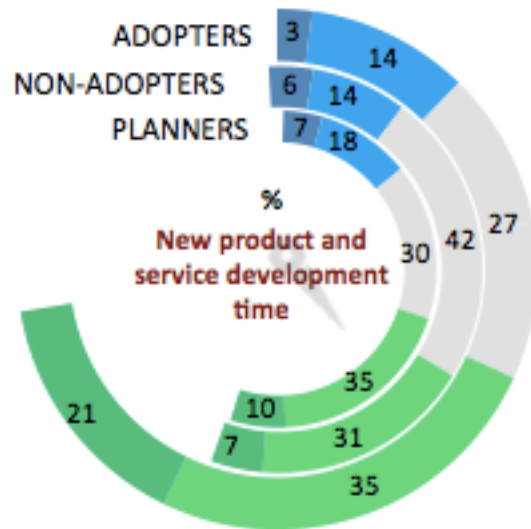




INNOVATION PERFORMANCE

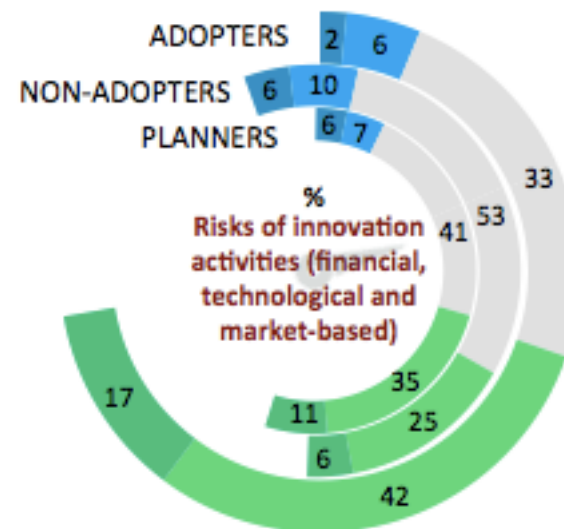
New product and service development time

For 56% of open innovation adopters the development time has increased. While among non-adopters it rather remained the same (40%) or even decreased (19%).



Risks

As a matter of fact, the financial, technological and market based risks of innovation increased mainly for open innovation adopters (59%). For majority of non-adopters the risks remained the same or decreased (65%).



GENERAL OPEN INNOVATION MANAGER PROFILE



TRANSFORMATIONAL



Entrepreneurship
Leadership
Creativity

METHODIC



Multitasking
Problem Solving
Virtual Collaboration
Internal Collaboration

COLLABORATION



Communication
Networking
External Collaboration
Trust Skills

EXPLOITATIVE



IP Management
Negotiation
Project Management

EXPLORATIVE




Ability to share knowledge and ideas internally
Ability to share knowledge and ideas externally
Risk awareness
Failure tolerance
Technology and business mindset
Adaptability and flexibility

INTERDISCIPLINARY





Ability to work in cross-functional teams
Ability to work in interdisciplinary environment
Ability to work with different professional communities
New media literacy
Cultural awareness
Strategic thinking

GENERAL OPEN INNOVATION MANAGER PROFILE





The conceptual open innovation management profile was developed, relying on the structure of professional competences, i.e. distinct and transferrable set of skills and abilities. The OI manager profile includes 1) explorative open innovation skills (critical skills), 2) exploitative open innovation skills (combination skills), 3) transformational open innovation skills and 4) interdisciplinary open innovation skills, and additionally, the transferrable competences form collaborative and methodic skill and ability sets.

Critical explorative skills encompass ability to share knowledge and ideas internally and within an organization, as well as ability to share knowledge and ideas externally, risk awareness, failure tolerance, technology and business mind set and adaptability and flexibility, which results in a holistic explorative competence for open innovation.




The interdisciplinary skills, such as managing inter-organizational collaboration processes, ability to work in an interdisciplinary environment, ability to work in internal cross-functional teams, strategic thinking, new media literacy, cultural awareness and ability to work with different professional communities results in an eclectic open innovation management skills and abilities sets.

The following open innovation distinguished competences are of relatively lower complexity. Transformational open innovation skills and abilities encompasses entrepreneurial, leadership, and creativity skills. Exploitative open innovation competence employs development of IP management skills, negotiation skills and project management skills.



On top on the distinguished competences, open innovation competence requires transferrable skills, grouped along collaborative and meta – collaborative skills.

Collaborative open innovation skills encompass external collaboration skills, trust skills, communication skills, networking skills, and team-working skills. Meta collaborative open innovation skills encompass multi-tasking skills, problem-solving skills, virtual collaboration skills and internal collaboration skills.



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OI-Net objectives:

- Fill the gap in terms of structured Open Innovation in Higher Education
- Demonstrate the integration of the European Open Innovation Curricula
- Develop a European Community of Practice in Open Innovation Observatory/ Think-tank
- Implement support actions to Open Innovation in Higher Education
- Build sustainability and shape the future of Higher Education
- Implement dissemination and supporting tools from the very start and promote open approaches



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Austria	WIFI - Institute for Economic Promotion of the Austrian Federal Economic Chamber FHW Vienna University of Applied Science	Latvia	Riga International School of Economics and Business Administration
Belgium	University of Namur; MAC-Team aisbl; EFMD	Lithuania	Kaunas University of Technology
Bosnia and Herzegovina	University of East Sarajevo	Luxembourg	The Luxembourg Institute of Science and Technology
Bulgaria	New Bulgarian University	Macedonia	Cyril and Methodius University
Croatia	University of Zagreb	Malta	University of Malta
Cyprus	University of Cyprus; European Association of Erasmus Coordinators	Netherlands	Strategie en Organisatie; Fontys University of Applied Sciences
Czech Republic	University of Economics, Prague	Norway	Norwegian School of Economics; NTNU Social Research AS
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France	France Business School; Actif-Europe	Romania	Transilvania University of Brasov
Germany	iNOWISE; RWTH Aachen University	Serbia	University of Novi Sad
Greece	Athens University of Economics and Business-Research Center	Slovakia	Technical University of Košice
Hungary	IMCRC University of Miskolc; University of West Hungary	Slovenia	University of Ljubljana; University of Primorska
		Spain	IE Business School; EADA Business School
		Sweden	Linköping University
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