

Open innovation

Open innovation is an innovation process in which firms use external knowledge and external paths to market in order to advance and commercialize their technology. Open innovation has penetrated several pioneering industries, such as software, electronics, pharmaceuticals, biotechnology and telecommunication. Not only large corporations but also SMEs are adopting open innovation, strategically using their intellectual property as their main competitive advantage in the market. IP is intimately linked to open innovation, since the former is a critical element when it comes to R&D consortia, strategic collaborations between firms in the same sector, partnering with universities and public research organizations, and much more. Efficient management of intellectual property combined with business acumen can assist firms in developing effective open innovation strategies.

What is open innovation?

Open innovation has been defined as “a paradigm wherein firms can and should use external ideas, as well as internal ideas, and internal and external paths to market, as they look to advance their technology”. Open innovation is not only about sourcing external knowledge (“outside-in”). Companies also look for ways to generate additional revenue from in-house innovations (“inside-out”), especially when the technology has future potential but is not part of the firm’s core strategy. Companies also increasingly use venturing to find external partners for commercialising innovations that are not used internally (divestment, spin-out, spin-off).

How does open innovation affect innovation?

One of the most obvious benefits of open innovation is the much larger base of ideas and technologies from which to derive innovation and growth. Beyond that, companies also recognise open innovation as a strategic tool to explore new growth opportunities with less risk. Open technology sourcing offers companies more flexibility and responsiveness without necessarily implying huge costs. Companies not only increase the speed of exploitation and capture economic value through inward licensing or spinning out unused ideas; they also create a sense of urgency about internally available technologies (“use it or lose it”) among internal groups.

Overall, the main benefits of open innovation are (Docherty, 2006):

- the ability to leverage R&D developed outside
- extended reach and capability for new ideas and technologie
- the opportunity to refocus some internal resources on finding, screening and managing implementation
- improved payback on internal R&D through sales or licensing of otherwise unused intellectual property
- a greater sense of urgency for internal groups to act on ideas or technology
- the ability to conduct strategic experiments with less risk and fewer resources, in order to extend the core business and create new sources of growth
- over time, the opportunity to create a more innovative culture from the “outside in”, through continued exposure to and relationships with external innovators.

Open innovation also has disadvantages, especially since technology and innovation have often become the basis for companies’ competitive advantage. The academic literature on co-operation,

collaboration and alliances has discussed various disadvantages: the extra costs of managing co-operation with external partners, the lack of control, the adverse impact on flexibility, the (over)dependence on external parties and the potentially opportunistic behaviour of partners. The growth in the outsourcing of R&D and open innovation also make the management of innovation more complex, and may result in the loss of (some) technological competencies and greater dependency on external actors. In addition, the increased risk of leakage of proprietary knowledge and involuntary spillovers means that unique knowledge may be revealed to external partners that may later become competitors, or may make better use of the results of the venture or the know-how.

Overall, Gassmann et al. (2010) have discussed different implications of open innovation on innovation, including:

- the internationalization of research, technology and product development by firms
- an increased division of labor due to more outsourcing, more inter-firm alliances and industry-university research collaborations
- earlier integration of downstream uses and suppliers in the innovation process to customize future products and services
- greater commercialization potential of the newly created technology and IP in the future
- the generation of spillover of proprietary knowledge via either compensation (licensing) or without compensation (open source models).

Evidence on open innovation

The development of open innovation is recent. It started with a small group of practitioners innovating within the realm of high-technology industries (e.g. in information and communication technology, pharmaceuticals, biotechnology) and gradually spilled over to other industries (Chesbrough et al. , 2006).

Yet, differences across industries and firms are significant. Gassman and Enkel (2004) find that open innovation is mostly used by industries characterised by high product modularity and high speed, in which much explicit knowledge is required, highly complex interfaces are crucial and positive externalities are created (e.g. standard setting). Moreover, large firms are significantly more likely to collaborate on innovation than SMEs in the great majority of countries. Among innovative SMEs, the rate of collaboration is between 25% and 40% in half of countries surveyed, but it varies widely for large firms. More than 70% of large innovative firms collaborated on innovation in Denmark, Slovenia, Finland, Belgium, the United Kingdom and Austria, while less than one-third did so in China, Brazil and Mexico.

Figure 1. Innovative firms, % of total firms

How is IP related to open innovation?

The link between IP and open innovation is multidimensional, as it covers participation in R&D consortia, strategic collaborations between firms in the same sector, partnering with universities and public research organizations, and much more. Depending on the nature of collaboration, different jurisdictions have different laws pertaining to joint ownership of IP. For example, the 2003 CREATE Act of the United States contains specific requirements for disclosure and deals with joint ownership issues.

Intellectual property rights facilitate knowledge exchange between firms (Pisano and Teece, 2007). They create “a platform for the transfer of knowledge assets” (Graham and Mowery, 2006). Patents are useful in licensing agreements between collaborating parties, because their filing requires a detailed explanation and codification of the underlying invention. They assist the licensing parties in structuring the collaboration and defining the parameters of individual contributions to the open innovation project. In addition, firms can use IP rights as a signal of innovative capabilities (Alexy et al., 2009). This positive signal can play a role in drawing attention from a potential partner for future collaborative innovation, thereby fostering open innovation. Yet several studies have shown that one of the biggest challenges of the open innovation process is effective and strategic management of IP (Enkel et al., 2009; Graham and Mowery, 2006; West, 2006).

Markets for technology (see [Markets for technology](#) [1]) play a critical role in open innovation as they allow companies to get access to external technologies. Markets for technology include various types of interaction and co-operation between firms, from licensing of well-defined intellectual property, to collaborative agreements that may aim at developing new technologies.

What policies relate to open innovation?

Insofar as open innovation is about “open” business models for innovation, countries’ framework conditions (i.e. product and labour markets, IP systems and competition policies, a strong public research base, etc.) are extremely important policy levers. At the same time, because open innovation involves going beyond firms’ and nations’ boundaries, it may create issues for government research and innovation policies. Most OECD countries’ S&T policies are predominantly national in scope, but it is becoming clear that policies designed for geographically circumscribed knowledge-based activities or for vertically integrated value chains of firms need to be reviewed. For example, policies to promote national networking and clusters may have to be adapted to take into account the globalisation of R&D and production networks.

Some of the policy areas of particular relevance in light of challenges raised by open innovation include:

- financing of networks instead of individual companies
- opening up access to the national public research and innovation infrastructure through cost sharing and reciprocity agreements but also joint development and public/private partnerships
- balancing stronger competition with co-operation
- investing in human resources in S&T, and encouraging cross-disciplinary, cross-functional, and entrepreneurial research and innovation
- stimulating markets for technology, including through the provision of adequate IP systems.

Source: OECD (2008), Open Innovation in Global Networks, OECD Publishing.
<http://dx.doi.org/10.1787/9789264047693-en> [2]

References

- Chesbrough, H., Vanhaverbeke W. and West, J. (Eds.) (2006a), Open Innovation: Researching a New Paradigm, Oxford University Press, Oxford.
- Chesbrough, H., (2006b), Open Business Models: How to Thrive in the New Innovation

Landscape, Harvard Business School Press, Boston, MA.

- Chesbrough, H., (2003a), Open Innovation: The New Imperative for Creating and Profiting from Technology, Harvard Business School Press, Boston, MA.
- Chesbrough, H., (2003b), "The logic of open innovation: Managing intellectual property", California Management Review, 45 (3).
- Graham, S. J. H. and Mowery, D. C. (2003), "Intellectual property protection in the U.S software industry", in Wesley M. Cohen and Stephen A. Merrill, eds., Patents in the Knowledge-Based Economy, National Academies Press, Washington D.C.
- Gassmann, O., Enkel, E. and Chesbrough, H.W. (2010), "The future of open innovation", R&D Management, 40 (3), pp. 213-221.
- Hagedoorn, J. and A. Ridder, 2012, "Open innovation, contracts, and intellectual property rights: An exploratory empirical study", UNU-MERIT Working Paper, available at <http://www.merit.unu.edu/publications/wppdf/2012/wp2012-025.pdf> [3].
- Henkel, J. (2006), "Selective revealing in open innovation processes: The case of embedded Linux", Research Policy, 35 (7), pp. 953-969.
- Laursen, K. and Salter, A.J. (2006a), "Open for innovation: The role of openness in explaining innovation performance among UK manufacturing firms", Strategic Management Journal, 27, pp. 131-150.
- Levin, R.C., Klevorick, A.K., Nelson, R. and Winter, S. (1987), "Appropriating the returns from industrial research and development", Brookings Papers on Economic Activity, 3, pp. 783-831.
- Manyika, J. M., Roberts, R.P., and Sprague, K. L. (2007), "Eight business technology trends to watch", The McKinsey Quarterly, December 2007.
- OECD (2011), Science, Technology and Industry Scoreboard, OECD, Paris.
- OECD (2008), Open Innovation in Global Networks, OECD, Paris. <http://dx.doi.org/10.1787/9789264047693-en> [2]
- Sandulli, F. and Chesbrough, H. (2009), "The two faces of open business models", Working Paper, available at <http://ssrn.com/abstract=1325682> [4].
- Teece, D. (1986), "Profiting from technological innovation: Implications for integration, collaboration, licensing and public policy", Research Policy, 15(6), pp. 285-305.
- Van de Vrande, V., de Jong, J.P.J., Vanhaverbeke, W. and de Rochemont, M. (2009), "Open innovation in SMEs: Trends, motives and management challenges", Technovation, 29, pp. 423-437.

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