There are different sources of open innovation. A classical one is knowledge spillovers, which arise when firms can capture knowledge or information “in the air,” as Marshall put it. Recently, there has been an upsurge in the so-called “open source” phenomenon whereby knowledge and information are distributed openly by their producers, in a context where the production and distribution of knowledge are governed by well-defined norms (e.g., Lerner and Tirole, 2002). An “old” form of open source is open science, which is again based on clear norms of production and diffusion of knowledge (Dasgupta and David, 1994). Open science, and particularly the proximity of firms to universities or other scientific institutions, have themselves been considered sources of knowledge spillovers (e.g., Alcacer and Chung, 2007).

(Gambardella, 2010, p. 85)

The concept of open innovation was introduced by UC Berkeley professor Henry Chesbrough, who has become famous worldwide due to his work *Open Innovation—The New Imperative for Creating and Profiting from Technology*, which was published in 2003. The scholar showed how, in the past century, highly innovative ideas were generated by firms that strongly invested in internal research and development and hired top professionals. These ideas were protected by an effective intellectual property (IP) strategy. Generally, a virtuous
In the old model of closed innovation, enterprises adhered to the following philosophy: Successful innovation requires control. In other words, companies must generate their own ideas, then develop, manufacture, market, distribute and service those ideas themselves. For most of the 20th century, that model worked well, as evidenced by the spectacular successes of central R&D organizations such as AT&T’s Bell Labs.

Today, though, the internally oriented, centralized approach to R&D is becoming obsolete in many industries. Useful knowledge is widely disseminated, and ideas must be used with alacrity. If not, they will be lost. Such factors create a new logic of open innovation, in which the role of R&D extends far beyond the boundaries of the enterprise. Specifically, companies must now harness outside ideas to advance their own businesses while leveraging their internal ideas outside their current operations.


Figure 1.1  Going beyond to the innovation circle of innovation was activated, since profit was reinvested in R&D (Chesbrough, 2003a) (figure 1.1).

Nevertheless, in the last years of the twentieth century, innovation management changed due to several reasons, in particular, (1) the number of knowledge workers increased together with their mobility and (2) venture capital became increasingly available. As a result, the closed innovation process in companies started to fall apart (Chesbrough, 2003a).

Some other reasons pointed out by Chesbrough (2003b) are as follows:

- Widespread circulation of useful knowledge
- Firms’ inadequate exploitation of available information
- Loss of ideas that are not immediately used
- An unsupportive business model, on which the importance of an idea or a technology depends
- Alteration of the innovation process by the presence of venture capital
- The need for firms to be active sellers and buyers of IP

Hence, an open innovation model was developed, according to which companies commercialize both external and internal ideas by implementing specific routes that lead to and from the market. In Chesbrough’s words (2003a, p. 37), “the boundary between a firm