

Innovation is a core business necessity, thus companies that do not innovate die. Many academics and practitioners have emphasized the value of innovation as a fruitful way for firms to enhance their business performance and prosper (Collins & Porras, 1994; Christensen, 1997; De Geus, 1997; Cobbenhagen, 2000; Tidd et al., 2005; Porter, 1983; 1985; Kelly, 2004; Drucker, 2007; Hamel et al., 1989; Brown, 2003; Schumpeter, 1934; Johnson et al. 2005). In addition, an effective knowledge and innovation management strategy may become an important source of competitive advantage in various industries (Kay, 1993; Porter, 1983; 1985; Schumpeter, 1934; Johnson et al. 2005). Nevertheless, in today's turbulent world, where change and diversification are strategic constants, companies cannot afford to merely rely upon their central R&D departments for the development of new products or services. Hoping that what is cooking in the lab will turn up trumps is not a reasonable approach for a custodian of stockholder value in a 'hypercompetitive environment' (D'Aveni, 1994). Very often, successful innovation results from the planned and deliberate combination of ideas, people, and objects from inside and outside the organization that spark new technological revolutions, sought after service concepts and effective business models (Boutellier et al., 2000).

The book 'Open Innovation' by Henry Chesbrough (2003d), describes an innovation 'paradigm shift' (Kuhn, 1962) from a closed to an open model. The open model has taken on greater saliency in light of the recent debate about globalization, Information & Communication Technology (ICT) developments and the emergence of collaborative and cross-cultural groups such as the Open Source Software (OSS) movement (Maxwell, 2006). As Don Tapscott (2007: 20) pointed out "a new kind of business is emerging – one that opens its doors to the world, coinnovates with everyone, shares resources that were previously closed guarded, harness the power of mass collaboration, and behave not as a multinational but as something new: a truly global firm". As a matter of fact, according to Friedman (2005) and Chandler (1990) there are fewer economies of scale in R&D than there were a generation ago as a consequence of rising development costs and shorter product life cycles (Chesbrough, 2006; 2007).

A central tenet of the new paradigm is the recognition that today, competitive advantage often comes from *inbound* and *outbound* open innovation practices. The first, also called outside-in practice, is the process of absorbing and leveraging the discoveries of others – companies should not rely exclusively on their own R&D -; the latter, also described as inside-out practice, suggests that rather than relying entirely on internal paths to market, companies can look for external organizations with business models that are

better suited to commercialize a given technology. In short, open innovation highlights the potential for the R&D function to become outsourced (outside-in practices) – as the manufacturing function was 20 years earlier- and the opportunity to increase corporate revenues by identifying external paths for the commercialization of internal unutilized ideas (inside-out practices) – what has been described as ‘the cost of doing business’ in the old paradigm.

In these circumstances, a company must develop an efficient “architecture of the revenues”, a smarter process for managing innovation, “a process for playing poker rather than chess” (Chesbrough, 2004). The commercialization of knowledge assets is not a new phenomenon (Lamreaux & Sokoloff, 1998; Lichtenthaler, 2005). Another rich source of antecedents has been substantial prior work on the importance of external technology acquisition. Nelson and Winter (1982) modeled the firm’s decision to search for new technology outside its own organization. Cohen and Levinthal (1990) wrote about the importance of investing in internal research in order to be able to utilize external technology, ability they termed ‘absorptive capacity’. However, these practices were considered appropriate strategies only in some specific situations in the past because most industrial firms focused on their product business (March, 1991; Sanderson, 1998; Gallear & Ghobadian, 2004) and due to imperfections in the knowledge markets (Teece, 1981; Arora et al., 2001). In contrast, in today’s knowledge economy there has been a substantial increase in the external acquisition and external exploitation of knowledge assets by which companies attempt to complement and capitalize their knowledge bases (Kurokawa, 1997; Rivette & Kline, 2000). Illustrative examples can be taken from P&G’s latest ‘Connect & Develop’ program (Dodgson et al., 2006), Cisco System’s ‘Acquire & Develop’ business model (Chesbrough, 2006), Eli Lilly’s ‘Research without Walls’ plan (Taurel, 2003) and many others.

However, a new paradigm must also explain evidence beyond its initial area of inquiry if it is to have external validity (Yin, 1988). In Chesbrough’s previous research (2003d; 2006; Chesbrough, Vanhaverbeke & West, 2006), the evidence adduced to support the open model of innovation is taken almost exclusively from the U.S. market. Even if it is stipulated that open innovation accurately characterizes innovation practices in U.S.-based corporations (and therefore possesses some prima facie internal validity), these organizations represent only a few of the many enterprises disseminated worldwide in advanced industrial economies. Furthermore, the stream of literature has always examined in depth the so-called ‘high-technology’ industries, such as computers,

information technology and pharmaceutical, leaving other industries and sectors almost unexplored (Chesbrough & Crowther, 2006). An isolated study conducted in Europe has found open innovation concepts relevant to explaining a significant transition in the role of scientists in the pharmaceutical industry, “from science-based knowledge creators to drug-oriented knowledge brokers” (Gassmann & Reepmeyer, 2005). Han van de Meer (2007) has more recently explored the managerial implications of embracing open innovation principles in some Dutch firms. Other really short interviews with some corporate managers have been collected on the European Open Innovation official website (www.openinnovation.eu). Nonetheless, this scattered empirical evidence is still fairly limited and it cannot offer an exhaustive analysis of the phenomenon in Europe. As Wim Vanhaverbeke (2007) has recently reported in his column ‘Time to speed up Open Innovation practices and research in Europe!’ on Openinnovation.eu:

“Everyone interested in open Innovation have been reading the innovation processes and OI-practices of Xerox, IBM, Intel, Procter & Gamble, Lucent, Merck, and other US-based companies. The same documentation doesn't exist for European companies; (...) it's about time to get these stories and insights at the surface”.

Thus, it remains an open question whether European firms have successfully incorporated concepts and practices in line with the new open innovation paradigm. This question of external validity motivated the research project. To explore whether open innovation practices were operating outside the U.S., it was sought to answer the following questions:

- **Q1:** *Are European companies across multiple industries utilizing concepts consistent with the Open Innovation paradigm?*
- **Q2:** *What are the primary concepts being successfully employed in Europe and what practices do these concepts embody?*

Another worth noting phenomenon examined in this research is the internationalization of R&D operations and the creation of global networks of innovations. Owing to the emergence of open models of innovation, R&D strategies and international location decisions have changed substantially in the direction of greater decentralization and cross-border knowledge interdependence (Zanatta & Queiroz, 2006). Traditionally, R&D has been among the least internationalized segments of the value chain (UNCTAD, 2005). In contrast, today's growth in decentralized R&D shows that innovation is a truly

global phenomenon and it emphasizes a significant shift from the classic 'home-centred' innovation approach to the integrated global network (Hakanson, 1990). Traditional center-for-global and local-for-local innovation models have been evolving into two more open transnational innovation processes described as 'locally leveraged' and 'globally linked' (Bartlett et al., 2003). Knowledge knows no boundaries: geographical dispersion of R&D sites is a formidable institution to tap knowledge clusters and absorb know-how (Boutellier et al., 2000). According to Cooke (2005) R&D networking has become systemic in various industries. Nowadays R&D is no longer a stand-alone activity by a single enterprise, but can rather be defined by a complex web of inter-firm agreements and alliances that link the complementary assets of one firm to another (Gassmann & Reepmeyer, 2005). In addition, "data from the U.S. indicate that companies spent more than US\$ 5 billion for R&D conducted outside their firms, including contracts to other companies, universities, and non-profit organizations" (Boutellier et al., 2000: 18). The emergence of 'collaborative R&D' (Pisano, 1990; Quinn, 2000; Fritsch & Lukas, 2001) has also changed the global nature of R&D Foreign Direct Investment (FDI) in terms of location and sectors of activity (Huggins et al., 2007). Asia Pacific, especially China and India, has been the most recent overwhelming destinations for most R&D FDI and fertile site for various new knowledge clusters based on the model of Silicon Valley (Posadas, 2005; Saxenian, 2005, Huggins et al., 2007).

Nonetheless, prior knowledge management literature does not specifically address how open innovation impacts R&D internationalization and the establishment of global network of innovation. More specifically, it still unclear whether there is a direct relationship between the adoption of open model of innovation and the execution of these transnational practices. Hence, in order to assess the strength of this relationship, it was sought to answer this question:

- **Q3:** *To what extent do European open models of innovation are determinants of R&D internationalization and the establishment of global integrated networks?*

At last, a descriptive case study on Royal Philips Electronics has been included, being the company an exceptional exemplar of European early adopters with a long and active commitment to open innovation and transnational R&D activities. Thus, the paper is structured as follows. Section 2 develops the conceptual background, elaborating on the nature of innovation and exploring the new open innovation paradigm. The frequent shift from the closed to the open model is justified (Section 2.3) and the strategic importance of

the business model as 'architecture of the revenues' is highlighted (Section 2.4). This chapter also analyze the increasing phenomena of R&D internationalization and the establishment of global integrated networks (Section 2.5). Section 3 presents and motivates the methodology undertaken to conduct the research. In chapter 4 broad findings are collected from a number of interviews exploring the adoption of open innovation in Europe. Section 4.4 integrate the broad findings with a descriptive case study on Royal Philips Electronics. Finally, chapter 5 concludes the paper by considering limitations of the current study and some implications for future research.