

# Open Innovation Practices: A Literature Review of Case Studies

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**Abstract**—The purpose of this article is to provide relevant open innovation practices within the multidimensional framework of organizational innovation proposed by Crossan & Apaydin. For this aim, qualitative content analysis of case studies was performed using the software MAXQDA. In order to do so, case studies were derived from searching databases as Harvard Business for Educators, ISI Web of Knowledge, Proquest, Wiley Online Library and Ebsco Host. Furthermore, a web analysis was conducted and finally, a significant number of open innovation practices were identified within three main dimensions: Leadership, Managerial Levers and Business Process.

**Index Terms**—open innovation, practices, case studies, literature review

## I. INTRODUCTION

Innovation not only has been considered as a critical source of competitive advantage in an increasingly changing environment [1], but also, innovation capability is one of the most important determinants of organizational performance [2]. On this sense, the main studies about innovation have been addressed from two different approaches. The first one, or the traditional approach (closed innovation), points out that organizational sustainable growth relies on internal investments in R&D and the control and protection of the results derived from these investments [3]. However, a number of factors that characterize the current market dynamics have deteriorated the perspective before described. Among these factors it is important to mention the following: the labor mobility, the abundant venture capital, the availability of knowledge [4], the reduction of product life cycles [5], and the rising cost of technology development [6].

In the last decade, a more open approach (open innovation) has been developed and raised. The model of open innovation recognizes that not all good ideas come from inside the company and not all good ideas created within the company can be successfully marketed internally [3]. Therefore, an increasing number of

organizations have actively started involving customers, suppliers and other stakeholders in their innovation processes [7]. The open innovation model has been adjusted to the current market conditions since its adoption provides suitable benefits, such as faster time-to-market, less cost of innovation, better adaptation of products and services to customer needs, commercial utilization of knowledge or technologies that are not aligned with the actual business model of the company, and shared risk in products and services development [6] [7] [8].

Some studies have provided open innovation practices based on theoretical [9] [10] and practical [8] research. Moreover, some reports published on the web have identified open innovation practices using the case study methodology [11]. However, investigations, which identify these practices within a rigorous framework involving different dimensions of organizational innovation, are still required. Therefore, the purpose of this paper is to identify open innovation practices and organize them using the Multi-Dimensional Framework of Organizational Innovation proposed by Crossan & Apaydin [12]. These practices can be used by organizations that strategically decide to enhance their innovation processes through the integration of external knowledge or by means of the commercialization of their internal knowledge.

## II. LITERATURE REVIEW

In the last decade, open innovation model has attracted interest both, in academia and industry contexts because of its adjustment to the innovation management trend [13]. In this sense, this paradigm has been defined in the scientific literature as “The purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively. Open Innovation is a paradigm that assumes that 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” [14].

In other words, Open Innovation highlights the importance of using a wide range of knowledge sources

for a company's innovation and invention process (including customers, competitors, academics, companies in unrelated sectors)[15], as cooperating with external actors is essential to increase the innovation capability [5] [16]. In the same way, it assumes that internal ideas can be taken to the market through external channels, outside a firm's current business in order to generate additional value [17].

The open innovation model has been widely adopted in a variety of industries. In spite of the fact that initial evidence was only found in high-tech industries (e.g., computers, information technology and pharmaceuticals) [3], open innovation concepts were already being used in a wide range of industries [3]. Similarly, it was found that SMEs in the Netherlands employ a lot of open innovation practices and their adoption has had an incremental behavior since its appearance [8].

Regarding to the economic benefits generated by incorporating open innovation practices, significant evidence has been found. For example, Procter and Gamble announced that they were able to increase their product success rate by 50% and the efficiency of their R&D by 60% as a result of introducing the concept of open innovation in the organization [5].

Overall, the integration of open innovation practices in companies as well as its economic benefits is evident. As can be expected, leaving behind the closed model to move forward the open model requires significant changes in the way innovation processes are managed in the companies [18]. Therefore, it is important to know the practices that have been successfully implemented in this model adoption.

Some researchers of open innovation model recognize that customer involvement is a relevant alternative to improve internal innovation process [18]. According to Van de Vrande et al companies can obtain benefits from the customer's ideas and innovations of its clients either by doing proactive market research, through the provision of tools to experiment with and/or develop products similar to the ones that are currently offered; or by means of the development and assessment of products based on customers' designs [8].

Another possibility to search and integrate external knowledge in any company's innovation processes is by means of external networking [14]. It includes formal collaborative projects (e.g. R&D alliances) and more general and informal networking activities. External networking allows companies to quickly fill up specific knowledge needs without having to spend large amounts of time and money to develop this knowledge on their own [8].

Moreover, companies can acquire intellectual property from other organizations through licensing patents, copyrights or trademarks in order to accelerate and consolidate their internal research engines [19]. Equally, projects that are not aligned with the actual business model and core competencies of the company can be licensed to others, providing bilateral benefits. The company that receives the license may use it and prove its value, and the company that licenses may obtain

additional funds and observe and learn from their experience [17]. Companies can also invest in start-ups or other organizations (e.g. spin-off) to keep an eye on potential opportunities for innovation [8].

Finally, universities are a source of knowledge that impacts the companies R&D processes [20]. This can be achieved through various channels, for instance: research partnerships, research services, academic entrepreneurship, human resource transfer, commercialization of intellectual property, scientific publications and informal interaction [21].

### III. RESEARCH DESIGN

This research was guided by a qualitative content analysis [22] of case studies, which were derived from databases and web analysis. Firstly, a search in Harvard Business for Educators using the term "Open Innovation" was performed, obtaining just 6 results. Additionally, the complementary research was conducted in the recognized databases as ISI Web of Knowledge, Proquest, Wiley Online Library and Ebsco Host, this time considering the documents published since 2003 (the year in which Open Innovation concept was coined by Chesbrough), which had the terms "Open Innovation" and "case study" or "case" in their titles. From this search 72 articles were obtained. These documents were filtered by assessing title and abstract in order to eliminate repeated ones and verify their relevance with the objective of the research (i.e., single or multiple case studies which describe organizational practices useful for the adoption of open innovation model), obtaining as a result 22 documents. Also, case studies of open innovation were searched on the web, obtaining 7 more documents. Finally, 35 documents, which include case studies for academic purposes, research articles applying single or multiple case study methodology and some reports based on companies cases published on the web were analyzed. For this purpose, the software MAXQDA was used to code the data within the three determinants of organizational innovation (Leadership, Management Facilitator, Business Processes) referred in the Multi-Dimensional Framework of Organizational Innovation proposed by Crossan & Apaydin [12].

### IV. RESULTS

This article structures an interesting set of open innovation practices identified in the analysis of relevant case studies published in high quality scientific databases (Table I within the Multi-Dimensional Framework of Organizational Innovation proposed by Crossan & Apaydin [12].

The multidimensional framework mentioned above consolidates the determinants of innovation into three dimensions: leadership, managerial levers, and business processes. The leadership dimension is related to leaders' characteristics and behaviors. The Managerial Levers dimension provides the necessary connection between leadership intentions and organizational results. Thus, there are five types of managerial levers: mission, goals

and strategy, structures and systems, resource allocation, organizational learning and knowledge management, and organizational culture. Finally, the business processes dimension refers to the way inputs are transformed into outputs. This process include: initiation and decision-making, portfolio management, project management, and commercialization [12].

TABLE I. OPEN INNOVATION PRACTICES

Dimensions		Practices		Authors
Leadership	A chief officer who manages open innovation process.		[23]	
	The innovation manager is involved in the integration of external technologies or ideas.		[24] [11]	
	The innovation manager manages relationships with knowledge partners.		[25] [26]	
	The R&D managers perform the strategic plans of technology and innovation.		[11] [26]	
Managerial Levers	Mission, goals & strategy	Open innovation is aligned with the company's mission, objectives and strategy and has been incorporated into the narrative of strategic management elements.		[27] [28]
		Corporate and innovation strategy includes investment in internal R&D.		All case studies reviewed.
		The innovation strategy includes knowledge sharing with external actors.		[24] [29]
		Collaboration with stakeholders is essential for innovation strategy.		[30] [16] [31] [11] [32] [29]
		The innovation strategy is flexible with adaptive goals.		[33]
		Innovation objectives include the implementation of open innovation practices.		[29] [32] [25]
	Structures & systems	Dedicated team that manages open innovation within the organization.		[11] [31]
		Group, unit and individual within the company that manages specific aspects of open innovation.	Exploration and acquisition of external knowledge.	[31] [11] [29] [26] [25]
			Exploitation of technology externally.	[11] [29] [23] [28]

Dimensions		Practices		Authors
Managerial Levers	Structures & systems	Group, unit and individual within the company that manages specific aspects of open innovation.	Relationships and collaborations with other organizations	[33] [11] [25] [28]
			Open innovation's technological tools.	[11] [34] [35] [36]
		Flexible business units with flat hierarchies.		[33] [35]
		Open innovation activities centralized in R&D units.		[28] [11]
	Organizat. learning & knowledge management	Organization and/or participation in fairs, forums or other events where knowledge of different actors are integrated.		[37] [11] [29] [38] [26]
		Setting up a network of informal contacts.		[33] [39]
		Establishing knowledge networks.		[16] [11] [29] [38]

		Using technology tools to foster collaboration in innovation management (e.g. wiki, blogs, social networks, web applications).	[11] [36] [35] [25] [29] [34] [40] [32] [33] [23] [41]
		Creating communities of practice.	[11] [36] [27]
		Collaboration with universities.	[31] [28] [11] [33] [23]
		Collaboration with other companies.	[31] [30] [11] [25] [16]
	Resource allocation	Internal R&D investment.	All case studies reviewed.
		Funding of research projects at universities.	[26] [23] [28] [11]
		Funding ventures.	[11]
		Recruitment of open innovation staff.	[35] [36] [29]
		Monetary rewards for innovators.	[11] [42] [34] [33] [41]
	Organizat. culture	The open innovation principles are disseminated throughout the organization.	[11] [39]
		Promoting collaborative working.	[27] [11]
		Staff training on communities and networks issues.	[39] [23] [11]
		Linking staff from diverse backgrounds.	[11] [31]
		Establishment of multidisciplinary work teams.	[11] [35]
		Empathetic and entrepreneurial staff.	[11] [35]
		Encouraging staff participation in innovation processes.	[11] [35] [33] [41]
	Initiation & decision-making	Monetary incentives to foster idea generation.	[11] [42] [34] [36] [43]
		Non-monetary incentives to foster idea generation.	[37] [11] [34] [36]
		Standardization of idea management process.	[31] [35] [44]
		Decision-making related to the integration and development of external ideas and technologies involves different organizational units.	[35] [34] [38] [11]
		Extending the project portfolio through collaboration with others partners (suppliers, universities, competitors).	[23] [30]
	Portfolio management	Internal entrepreneurship.	[29] [11]

Dimensions		Practices	Authors
Business process	Portfolio management	External entrepreneurship.	[31] [45] [16] [23]
		Acquisition of intellectual property.	[11] [29]
	Project management	Standardization of processes related to the integration of external technologies in innovation projects.	[11]
		Development of internal procedures to establish and maintain collaborative research projects.	[32] [11]
		Standardization of processes related to the intellectual property management.	[31] [11] [16] [34]
		Development of metrics to evaluate open innovation projects.	[11]
	Commercial.	Exploring new and existing markets.	[38] [31] [11]
		Evaluation of potential products and/or services in collaboration with customers.	[31] [11]
Commercialization of intellectual property.		[31] [29] [23] [28]	

## V. CONCLUSIONS

Bearing in mind that open innovation implies a set of changes related to the organizational culture, the company structure, and the corporate and innovation strategy, and that it requires resources for its adoption and ongoing management, it is essential some important inputs like the promotion, commitment, support and clarity of top management. In the case studies considered to do this research, it was found that open innovation is led by establishing specific positions at management level. Regarding to open innovation strategies adopted by companies, there are two ways to do so in some cases. On the one hand, companies have implemented global strategies, which are aligned with the company's strategic management elements and objectives. On the other hand, companies have implemented partial strategies, which are aimed at specific factors of open innovation model (e.g. collaboration with external actors, acquisition and/or licensing of intellectual property).

Referring to the company organizational structure, the activities related to open innovation are managed, in most cases, within the R&D department. In addition, two structural ways to implement this model were identified: (1) establishment of dedicated teams and (2) designation of groups, units or individuals who favor the adoption of one or more essential elements of open innovation (e.g. knowledge exploration, knowledge exploitation, collaborations with companies and universities, management of open innovation technological tools).

Concerning to knowledge management systems that promote the diffusion, exchange and knowledge transfer within the company and between it and its environment, companies have adopted a number of mechanisms including: organization and/or participation in events that integrate knowledge from different actors, establishment of formal and informal knowledge networks, and use of technology tools and building communities of practice. In the reviewed case studies, it was found that most companies have begun to incorporate technological tools such as wikis, blogs, social networks, web applications, etc. to foster collaboration in innovation management. Those tools not only provide companies a contact channel with its stakeholders (e.g. employees, customers, competitors) but also, facilitate collaboration with them throughout the entire process of products or services development. Specifically, most of the companies have concentrated their efforts on increasing the participation of employees and community in the innovation management processes. Therefore, they have established collaborative platforms for solving challenges and finding ideas, and have been implemented mechanisms of monetary and non-monetary incentives (e.g. public recognition) to keep innovators motivated.

Additionally, it was found that companies actively collaborate with other organizations (universities, competitors, companies in unrelated sectors, suppliers, etc.) in order to satisfy a specific technological or knowledge need and/or to improve and expand the products and services portfolio. These collaborations provide a number of benefits (e.g. faster products or

services development and cost reduction), which allow companies to effectively react to market requirements, obtaining greater productivity, competitiveness and leadership. Specifically, knowledge transfer between universities and industry is done through the following channels: consulting, human resources transfer (from industry to university and vice versa), funding of research projects at universities and joint research agreements.

Besides, the companies that have adopted an open innovation approach keep investing in internal R&D. This is in line with the findings of [3], which indicate that innovation processes managed externally function as a complement to internal R&D.

Referring to the organizational culture, the literature reviewed has identified two syndromes that companies must overcome to facilitate the adoption of this emerging model. First, distrusting the quality, availability and capacity of the ideas of others and, second, the tendency to monopolize the use of their innovations only within their own business [17]. Therefore, the companies studied in the cases have implemented a number of practices such as promoting open innovation throughout the organization, staff training on issues related to communities and networks, hiring empathic and entrepreneur staff of different backgrounds and encouraging employee participation in innovation processes.

With respect to the business processes, the integration of ideas from external sources and the collaboration with other organizations in the innovation management are standardized process in some of the companies studied. This practice improves the performance of open innovation and allows the evaluation of this model through predefined metrics.

Finally, it is important to be aware of the fact that the paradigm of open innovation has also been extended to the public sector, encouraging the contribution of citizens in solving social problems [36].

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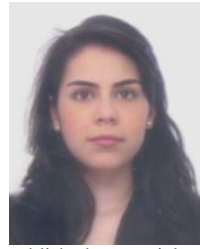


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