Promoting open innovation through engaging with startups: evidence from the US experience

ترقية الابتكار المفتوح من خلال التعامل مع المؤسسات الناشئة: عرض تجربة الولايات المتحدة

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ملخص

تهدف الدراسة إلى تسليط الضوء على الدور الذي يمكن أن تؤديه المؤسسات الناشئة في دعم وتعزيز الابتكار المفتوح، ومن أجل ذلك تم استخدام المنهج الوصفي من خلال مراجعة الأدبيات السابقة وعرض نماذج ناجحة من تجربة الولايات المتحدة، وقد تم الاستعانة بالمنهج الاستقرائي للتحليل والاستنتاج. تشير النتائج إلى أن الشراكات بين المؤسسات الناشئة والمؤسسات الكبرى لها دور مهم في دعم ديناميكية الابتكار المفتوح، توسيع فرص نجاح تطبيقه، تحقيق إيرادات ضخمة تتجاوز بكثير ما كان يمكن أن تحققه المؤسسة الأم أو الشركة المستحوذة بمفردها، وتسريع عمليات تحسين مستويات التوظيف العامة. علاوة على ذلك يعتمد تعزيز الابتكار المفتوح في المقام الأول على توفير مجموعة من العوامل التي تجعل العلاقة بين المؤسسات الناشئة والمؤسسات الكبرى ناجحة.

الكلمات المفاتيح: المؤسسات الناشئة؛ الشركات الكبيرة؛ الابتكار؛ الابتكار المفتوح؛ الشراكات.

التصنيف JEL: O31؛ M13

Abstract

This study aims to provide an insight on Startups and their significance in supporting and promoting open innovation. We use a descriptive approach in reviewing prior literature besides examples of successful cases from the US experience. Moreover, we adopt an inductive approach in analyzing and concluding. Our results indicate that large corporations-startups partnerships have a significant role in supporting open innovation dynamics, expanding its application opportunities, making revenues that go beyond what the parent and acquirer companies can achieve on their own, and accelerating the process of enhancing general employment levels. Furthermore, promoting open innovation is based on providing a set of factors that make the partnership successful.

Key words: startups; large corporations; innovation; open innovation; partnerships.
Jel Classification Codes: O31; M13

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Introduction

The term "Innovation" is one of the most changing and evolving concepts in the history of economic phenomena, especially if it is taken with its abstract meaning associated with sequential and interlinked injection of the knowledge resources that form its foundation building block. Since World War II, especially after the world came out of the random production phase and entered the environmental orientation phase, more and more attention has started to be paid to information, especially in decision-making processes, and then within the name of knowledge-raising to the adoption of knowledge as a production factor that creates advantage and supports the economic returns of countries. Under these changes, managers and owners in large corporations have sought to support and strengthen their innovative activities and behaviour for competitive objectives governed by production maximization strategies, but this situation did not last long, especially with the emergence of the knowledge economy and digital economy, which impact increased with the emergence of the dotcom bubble that turned the competition rules upside down after it came with new economic philosophies that changed the logic of business greatly to put the world on the threshold of its fourth industrial revolution. Startups are emerging as one of the most important outputs of this revolution as entities that can create value at high levels and deliver huge returns that exceed the ceilings of expectations, forcing large corporations to change their strategies and workings to counter threats posed by these companies. From this standpoint, Chesbrough (2003) tried to address this issue through his concept of open innovation, through which he was able to link the worlds of these two entities in a way that serves both parties and maintains their positive impact on economic growth.

This research paper comes within the endeavours to discuss ways and mechanisms of promoting Open innovation from focusing on the role played by partnerships between startups and large corporations within it, as well as highlighting its most important advantages and benefits, and trying to answer the following question:

What role do partnerships between large corporations and startups play in supporting and promoting open innovation pillars?

In the same line, we reviewed literature that discussed open innovation and engaging with startups topics summarized in the theoretical background, in addition to dealing with four models of these partnerships according to what was mentioned by Weiblen & Chesbrough (2015) classification derived from the American experience to bring understanding closer to reality.

I- Startups and Open Innovation

The transition to the knowledge era has changed many of the previous concepts that were on the market, particularly in terms of the quality of competitive advantages that companies must work to develop, thus innovation has become one of the necessary dimensions companies must acquire to be able to survive and compete in the market. Accordingly, startups are one of these companies that must develop an integrated strategy in which innovation and development are the base.

Despite the domination of global and international companies on the markets, especially those active in the technology and technical fields (which is illustrated by the recent -29/07/2020- interrogation carried out by the American Congress with the CEOs of the four biggest tech companies in the world; Apple, Google, Facebook, and Amazon), startups must find a protection policy that makes it active without being eliminated by these Blue Whales as soon as they appear. Among the solutions proposed is the establishment of cooperatives with

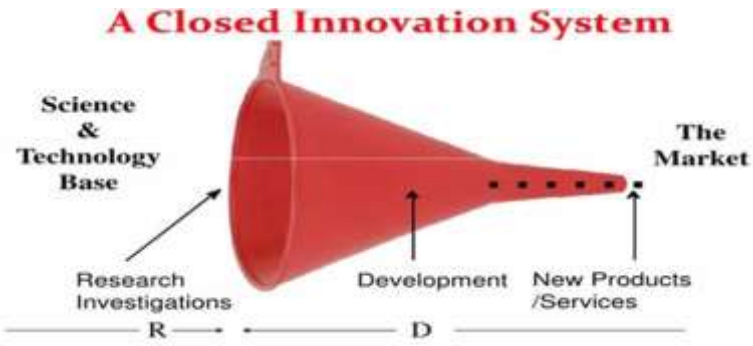
the economic actors in their environment, to benefit from the outcomes of mutual support and the protection of each other's the interests at one hand, as well as to benefit from what is outside and marketing what is inside at the other hand. This is what is referred to as "open innovation".

I-1- Defining Open Innovation

Chesbrough (2003), a professor in Haas School Business, and the first to suggest the concept of open innovation defined it as ''the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively", mapping the way to a new approach that addresses the concept of innovation in a very different manner. One of the most prominent matters that this thought has added to innovation as a process is the multiplicity of entrances and exits of knowledge flows to and from the company that practices it, which in turn achieves the maximum possible benefit from the outputs of generating and disseminating knowledge activities in it. This is why Lichtenthaler et al. (2011) explained it as a "systematically performing knowledge exploration, retention, and exploitation inside and outside an organization's boundaries throughout the innovation process" because being satisfied with the resources and competencies that exist within the companies is no longer sufficient to meet the needs of the rapidly growing and changing markets.

Starting from the concept and mechanism of closed innovation is a useful tool for understanding open innovation. Iqbal & Ul Hameed (2020) point out that a traditional approach based on ownership as well as control, also take a linear approach in which companies bring new ideas, develop new products/services according to the demand of customers and remaining within the boundaries of the firm, but they never look outside the boundaries of the firm for new idea generation. Figure 1 illustrates the logic of closed innovation.

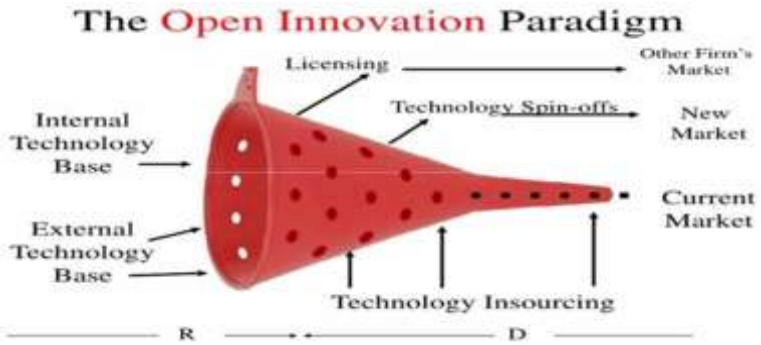
Figure n°1: Closed innovation Model



Source: (Iqbal & Ul Hameed, 2020)

In contrast to the close model of innovation, transfer of technology can be achieved with the help of missing knowledge from outside of the firm and the knowledge of the employees within the firm like the expertise of the employees within firm and it can approach the market with different ways, such as venturing, outsourcing, with the help of company own channels, joint ventures, etc (Chesbrough, 2012; Iqbal & Ul Hameed, 2020). Therefore, Open innovation is different from close innovation in which organizations generate their ideas and then build, develop, market, distribute, finance, and support with the help of their internal applications and external stakeholders. Figure 2 illustrates the open innovation paradigm.

Figure n°2: open innovation Model



Source: (Iqbal & Ul Hameed, 2020)

Thirteen applied models for open innovation were counted in the previous literature, which were classified based on the type of companies involved in each innovative collaborative project on the one hand, and the source of obtaining creative ideas. On the other hand, can be shown in three sections:

- OUTBOUND/ Outside-In type of open innovation involves opening up a company's innovation processes to many kinds of external inputs and contributions (Chesbrough & Bogers, 2014), it includes purchasing, licensing research and development contract, joint venture, co-development, venture capital, mergers and acquisitions, customer engagement, and external networks.
- INBOUND/ Inside-in type refers to the use within a firm of external sources of innovation, for instance, a firm may in-license a technology developed elsewhere, integrating that component into its technology solution rather than seeking to develop an equivalent in-house into its technology solution rather than seeking to develop an equivalent in-house (Brant & Lohse, 2014).
- The SO-CALLED combines the inbound and the outbound dimensions, rather than sharing existing resources and expertise, firms work together to develop new knowledge and solutions.

I-2- Actors interacting with startups in Open Innovation processes

"Collaborators who seek to achieve historical innovations should share their work and focus on finding solutions to smaller elements of a particular problem, each solution contributing to the larger goal". This was the massage of the WIPO conference on open innovation: collaborative projects and the future of knowledge that took place on January 22 and 23, 2014 at WIPO headquarters in Geneva (WIPO, 2014).

Accordingly, it is clear that the process of establishing these cooperatives based on the innovation components depends primarily on the dynamic interaction and strategic coordination between the business models of the various participating companies - especially startups - which includes good interaction and the same orientation of the goals sought by the stakeholders (research and educational institutions, investors, financial institutions... etc.) that is defined as "open innovation system" where large organizations, startups, and students come together using technologies to create new sustainable business solutions.

- **Incubators**

Startup Incubators is the cradle were startups receive support and guidance in their early stages, it is a company, university, or other organization that provides resources to nurture young companies, helping them to survive and grow. And the main goal of most incubators today is to strengthen the local and commercialize new technologies. The literature on startups and Open Innovation emphasizes the analysis mainly on three typologies of the incubator, technology incubator, industrial incubator, and university incubator (Spender et al., 2017). Business incubators are an active element in open innovation processes because of their role in attracting and pooling knowledge resources, facilitating the process of engaging with startups, as a link between both startup and large corporation's worlds.

- **Large corporations**

Large corporations are the hub and core of open innovation along with startups, so the subject cannot be discussed without them as an effective and influential party in the phenomenon. Several corporations and bigger organizations run their accelerators and incubators to mentor fresh and talented startups. Various corporations also have their startup programs where they encourage qualifying startups with better tools. The examples are many, ANSYS Startup Program enables qualifying hardware startups to get their engineering simulation and virtual prototyping tools at a heavily discounted and affordable price. Other examples are presented in this article. Dahlander & Wallin (2020) rely on large corporation as a pillar to answer the question "Why Now Is the Time for Open Innovation?", They provide many examples that reinforce the attitude of those who call for open innovation by demonstrating the role of large corporation on this later and drop the topic directly on the current global COVID-19 crisis. For instance, the German multinational Siemens opened up its additive manufacturing network to anyone who needs help in medical device design. Scania and Karolinska University Hospital have partnered, as well, where Scania directed 20 highly skilled purchasing and logistics experts to locate, acquire, and deliver personal protective equipment to health care workers. Similarly, Ford, United Auto Workers, GE Healthcare, and 3M are working together to build ventilators in Michigan using F-150 seat fans, portable battery packs, and 3D printed parts... etc.

- **Higher education systems**

The university considers the creating environment for innovative ideas as it works to graduate students who are qualified for the labor market and are prepared for the various difficulties that may face them in the one hand. On the other hand, the role of the university's social partner has been assigned for it to be an effective party in the process of economic development. That is why the agreements included by universities with social partners are based on mutual benefits. Also, Universities are the primary source of innovative human resources, which is the source of knowledge circulating in open innovation processes, so they cannot be separated in any way from the phenomenon in general. Furthermore, startups guaranteed a marketing space for their ideas in various scientific coalitions within the university. As well as staying in constant contact with all the practical developments, that can create an opportunity, whether to develop a creative idea or obtain qualified employees from new graduates. Therefore, universities are also the meeting point for the parties involved in open innovation processes.

- **Venture capital firms**

Spender et al. (2017) emphasize that the literature on startups and Open Innovation highlighted the role of VC as a vehicle able to transfer experience and knowledge between new firms and establish contacts with third parties, and considering that venture capital companies bring together many owners of large corporations as investors, their intervention as an actor in the open innovation processes is not as a financing party as much as its role as a collector for large companies and their investors, and we can say that their role with startups is the same role that universities and business incubators play with large companies.

I-3- Startup Ecosystems and their impact on Open Innovation processes

According to the definition of open innovation, it is the process in which both internal and external knowledge combine to bring something new. Therefore, it is clear that external knowledge incorporation is positively correlated with open innovation (Pollok et al., 2019), but from the above discussion, a negative attitude toward external knowledge shows that it will not reach inside the boundaries of the firm and open innovation process will not complete. So, external knowledge incorporation is one of the main challenges of open innovation (Iqbal & Ul Hameed, 2020).

Mason & Brown (2013) defines the startups' ecosystem as a geographically limited holistic approach of the supportive environment of the independent actors and the pool of resources interacting with each other to fuel the emergence of high-growth entrepreneurial activities. Likewise, Tripathi et al. (2019) define it as a system operating in a particular geographical area involving actors reflecting stakeholders from contractors, investors and self-interested parties, and that cooperate with supporting organizations such as funding agencies, governments, and educational institutions to create institutions capable of developing an infrastructure that works as a network. As for Pandey (2018), his definition was of a social nature, he considers a startup ecosystem as a society of founding individuals with creative skills and ideas, young institutions in their early stages possessing special talents, incubators with mentoring and capitalist capabilities, as well as the media and first users, its main objective is to develop a self-sufficient network of talent and resources that seeks to solve issues affecting society as a whole.

The ecosystem’s impact on startup working has been confirmed in many studies (Baron & Freiling, 2019; Joshi & Satyanarayana, 2014; Laužikas et al., 2015; Tripathi, Oivo, et al., 2019; Tripathi & Oivo, 2020), which can necessarily be projected on open innovation processes. Spender et al. (2017) lean towards the relational approach, and consider the term ecosystem close to being synonymous with the term startups’ network that has direct links to the open logic of open innovation processes. If we want to analyze the nature of the relationships that connect startups with their ecosystem, we find that they are divided into three types, which necessarily have different effects on open innovation processes:

- Financing effects associated with each source providing direct and indirect financing to startups, and this type of impact is the primary driver of knowledge circulating throughout open innovation processes, given that the most important goal pursued by startups is to maximize the tangible and intangible benefits obtained from this later;

- Cognitive effects derived mainly from the relationship that links the startup world with knowledge-generating and diffusing entities, above all universities and institutes, which, as mentioned above, are the primary source of the innovative human resource;
- Governance effects imposed by government agencies and entities regulating startup activities, which control the general framework in which the latter activates, and are considered one of the most important entrances to promoting open innovation, as we will discuss later.

II- Engaging with startups: Models and success factors

The business environment includes many variables that interact with each other according to a set of rules that are driven primarily by its goals. The outputs of this interaction are considered as determinants of its degree of maturity and efficiency, thus reflecting a specific philosophy and business logic that distinguishes this environment from its peers. Although new economic growth models that are mainly based on the knowledge resource as a production factor and target quality at the first level have become the goal of macroeconomic policies, the role of production in traditional quantitative models has not been entirely abolished, of which large corporations are the most important source. Therefore, the compatibility between the two models is considered an absolute necessity to achieve a sound economic process, and the engagement of large corporations with startups is one of its most prominent points of this entry.

II-1-Why do large corporations engage with startups?

Large corporate investment figures in startups are in an upward curve. For example, Microsoft Ventures, now known as M12, have invested in more than 50 startups until 2018. In the same context, Qualcomm Ventures has invested in these companies 100 million US dollars. Also Statistics show that the number of large corporate investments in startups has tripled to 965 between 2011 and 2016 (Peterson, 2019). Such figures lead us to raise many questions about the various motives that drive large corporations to engage with startups. The topic was discussed by Shan et al. (1994) in the context of not interpreting both the innovation output and the startup size for inter-entity cooperative agreements, and they found that the structure of the company and the endeavours to build an effective relational network are emerging as reasons for explaining the phenomenon better. From a completely different perspective, Enkel et al. (2019) believe that large companies through these partnerships try to achieve explorative and exploitative learning resulting from merging the integration of startups together with their own knowledge, while also seeking to enhance their absorptive and creative capacities, with access to distributed knowledge and transforming it into new opportunities. In the same context, Gawer & Cusumano (2014) focus on exploration instead of exploitation as a general endeavour for such partnerships, in the sense that startups are an additional source of knowledge to learn new innovations and to follow up on the generated knowledge that serves as complementary parts in the group of large corporation techniques. Within this framework, Prashantham & Kumar (2019) provide an example of IBM's Startup Garage, as the company seeks through this program to reach startups qualified to providing added value or new technologies capable of improving the experience of driving or the manufacturing process without acquiring or investing in it. Kupp et al. (2017) also emphasize that these partnerships enable large corporations to gain access to the competencies they lack

and to take advantage of the innovative capabilities of startups, their proximity to markets, and their executive power.

But we should not neglect the motives that make startups accept partnerships with large corporations, as they have ultimately the first and last decisions in that. Kohler (2016) notes that this collaboration enables startups to access various forms of support for their pilot project, creating the possibility that the corporate will be the first paying customer or distributor partner, and this may go beyond the partner's investment in or acquisition of the start-up. In other words, the capabilities that large companies possess such as the resources, scale, power, and routine needed to run a proven business model efficiently, are available to startups that lack them within the general framework of these partnerships, as Weiblen & Chesbrough (2015) point out, and which act as drivers and incentives for these latter.

II-2- Models of engaging with startups

Highlighting models of engaging with startups requires first understanding innovation models because they have direct links to this matter. Freeman & Engel's (2007) attempt was among the most important studies that removed ambiguities about the justifications for the open approach of startups and large corporations. The researchers present two models for innovation that explain the phenomenon, the first is called the corporate model, which is directly linked to the problem of agency that is concerned with the fact that what is good for the individual is not necessarily good for the company, and which is framed by formal contracts that define duties and rights of stakeholders with interest in it, and impose oversight on the extent of the latter's commitment to them. This framework has been addressed with entrepreneurial dimensions centred mainly on innovation. The researchers also consider that these models have internal frictions that hinder the transfer of innovations, slow resource allocation, and don't coordinate incentives in a way that makes all parties (corporate shareholders, senior managers, inventors) lose or win together, giving startups in the market advantage and making them more threatening. As for the entrepreneurial model, it is fully embodied in startup companies that are characterized by their high growth, although the researchers have confined it to those that are active in the technology sector, it focused on the open thinking imposed by these models to value their innovations and provide the appropriate environment that allows their support, which leads us to one way, based mainly on open innovation concepts. Many researchers then came with approaches that model this framework, and they care about the types of this partnerships. Table 1 includes the most important.

Despite there is no uniform synthesis of these models among the researchers, the point that can be emphasized is that engagements between large corporations and startups are not motivated primarily by material objectives but rather by moral objectives. Startups are aimed not only at obtaining resources and funding from large corporations, but also at obtaining guidance, advice, skills, and expertise that they lack. Similarly, large corporations don't aim to obtain startup innovations as such as they seek to develop their knowledge and expand their consumer base. The most commonly used model of the classifications shown in table 1 remains that of Weiblen & Chesbrough (2015), who is the most comprehensive and consistent with what is actually embodied in the business world.

Table n°1: Models of engaging with startups

references	*Models of engaging with startups*
(Weiblen & Chesbrough, 2015)	• Corporate venture capital; • Corporate incubation (inside-out); • Outside-in startup programs; • Inside-out platform startup programs.
(Kohler, 2016)	• Corporate Hackathons; • Business Incubators; • Corporate Incubation; • Corporate Venturing; • Mergers and acquisitions.
(Spender et al., 2017)	• Corporate venture capital; • Internal incubators; • Strategic alliances; • joint ventures to collaborate with startups and new ventures or to create new spin-offs or spinouts.
(Minsky, 2019)	• corporate accelerators; • direct cooperation with startups; • investment in or acquisition of startups.

II-3- Success factors of "Startups-Large corporation" partnerships

Factually, engaging with startups is easy to say and difficult to apply, because it is an attempt to achieve compatibility between two entities that differ in many characteristics, and overcome the phenomenon in the general asymmetry of powers and resources. Therefore, the success of this type of partnership is linked to several factors that Kupp et al. (2017) resume it in the following points through analyzing success factors of hub:raum program launched in 2012 by Deutsche Telekom, which mainly aimed to connect both startup and large corporations worlds together:

- Setting transparent and aligned goals;
- Recruiting an independent team that views themselves as advocates for the startups;
- Securing a large and committed external network;
- Setting long-term objectives and measure accordingly;
- Securing top-management backing.

In fact, these factors are primarily internal dimensions, and open innovation in its logic doesn't work in a closed environment on itself, because these partnerships are affected by many parties that may have a relationship with large corporations or startups, and this is why the ecosystem also appears as a success factor. In this regard, Danak & Ramalingegowda (2018) point out that "The collaboration program needs to outline the external players with whom meaningful collaboration is feasible. This typically helps a corporate program in (a) building a stronger value proposition, and (b) optimizing the resources invested." On the other hand, Mocker et al. (2015) point to a neglected dimension in the total studies that discussed

the topic, the pre-contract stage of the partnership which they termed it by the program design phase, emphasizing that it involves many success factors, the most important of which are:

- Carefully consider the objectives to engage with startups;
- Select the program (s) that best deliver on these objectives;
- Secure board-level sponsorship.

Also, startups must play their part too. The KPMG Innovative Startups program provides five recommendations based on its research among startups and the interviews and experience of its startup team, summarized in the following points:

- The necessity of obtaining the largest possible number of basics and resources that pave the startup to the partnership contract;
- The need for the startup to understand the problem it seeks to solve through partnership, and to be serious about it;
- Carry out basic feasibility studies for this partnership and ensuring that it has a logical basis;
- The need to pivot or withdraw if the partnership fails or doesn't live up to expectations;
- Both sides abide by terms referred to in the partnership contract, and immunity from any leadership change.

Therefore, it can be argued that the success of partnerships between Startups and large corporations depends on the extent to which both parties adhere to rationality and compatibility standards between them, as well as on sound management based on measuring and diagnostic grounds.

III- Methodology

The study is based on a descriptive approach by reviewing previous literature on the subject of open innovation, as well as those that were interested in the topic of the engagement of large corporations with startups separately. Furthermore, we try to demonstrate a clear depiction of these partnerships and bring understanding closer to reality by addressing four successful models that reflect the American experience, and an example of each model was chosen in line with Weiblen & Chesbrough (2015) classification. The identifying information for these models was collected from their official websites and from the references that they used as case studies. An inductive method was used for analysis and conclusion.

Ⅳ-Results and Discussion

This study deals with the concept of open innovation as a new trend that adjusts those approaches addressed innovation in its classic and general views in light of the opening up and the big changes the global business environment is currently experiencing, particularly with the emergence of startups companies that have changed its features significantly. Furthermore, many elements and variables were added to the global entrepreneurial ecosystems as a result of the emergence of these companies, contributing to the change in the parameters of financial and governance systems, and even those charged with generating and diffusing knowledge.

Moreover, large corporations don't have this effect even though they sit on the largest amount of resources and assets compared to startups. However, they are forced to adapt to the disturbances these companies create. As a result, startups' success poses direct threats to the large corporations' market position which requires them to move rapidly pursuing fundamentally different strategies from those traditional quantitative methods that focus on enhancing competitive advantages through increasing production.

Therefore, a large gap with complementary dimensions is emerging between startups and large corporations. startups possess promising ideas, organizational agility, willingness to take the risk, and aspirations of rapid growth, but they lack resources considerably, and likewise, large corporations lack speed and agility even though they have resources, scale, power, and the routines needed to run a proven business model efficiently. Weiblen & Chesbrough (2015) assert that each part has what the other one lacks. Accordingly, open innovation appears as an important access for bridging this gap reflecting the convergence of forces between the two sides in a complementary way within the so-called framework partnerships and alliances.

Ⅳ-1-Models from the American Experience

The United States of America has taken the lead in the field of open innovation, and this is comprehensible given that it is the source of this trend. It is worth mentioning here that the USA alone includes 65,821 startups, with nearly 85% of all global startups (*United States Startup ranking*, 2020), and that the value of the global startups economy in 2019 has reached $ 2.8 trillion. Mandel (2017), the Progressive Policy Institute's director, emphasizes that successful recent startups that have exited through acquisition by larger companies but still exist as separate entities and maintain their startup ethos, and cutting-edge units of larger companies that advertise themselves to potential employees as providing a "startup-like" environment, are considered as key components of the startup economy. In other words, partnerships between large corporations and startups are among the most important success factors for the startup ecosystem in the United States. For this, we find that the most successful models of engaging with startups are American models, and the resulting table addresses some of them in line with their type.

Table n°2: Open Innovation Models from The US Experience

	Model 01	***Model 02***	***Model 03***	***Model 04***
Name of program or partnership	Facebook's Instagram acquisition	Palo Alto Research Center (PARC)	Siemens Technology to Business (TTB)	SAP Startup Focus
Partnership parties/ Sector	• Facebook (acquiree)/ Communication Services ; • Instagram (Acquired)/ Communication Services.	• PARC/ Science & Technology ; • World startups and government agencies/ Science & Technology.	• Siemens TTB/ Energy, Equipment & Machinery; • startup companies, individual inventors, universities, and research labs.	• SAP/ ICT & Big Data. • Startups Companies.
Parent company	/	Xerox Holdings Corporation	Siemens Corporate Research	SAP Software Company
Date of incorporation or partnership contract	April 9, 2012	Founded on July 1, 1970, and incorporated as an independent subsidiary of Xerox in 2002.	1999	2012
Model Type	Corporate Venture Capital	Corporate Incubation (Inside-Out)	Outside-In Startup Programs	Inside-Out Platform Startup Programs
Partnership Financial value	1 billion Dollars	/		
A brief description of the partnership/ program	Facebook acquired the Instagram photo and video sharing app, opted to build and grow it independently from Facebook's main platform; Instagram remains a separate platform to this day (Reiff, 2020), and became a subsidiary of Facebook.	It is a wholly-owned subsidiary of Xerox Corporation and an integral part of Xerox's strategy for long-term research investment, its efforts are mainly focused on contracting and providing support to startups with innovative ideas in science and technology.	a subsidiary of Siemens Corporate Research located in Berkeley, California, identifies and develops disruptive technologies through partnerships with universities and independent entrepreneurs, converting those enterprises into viable Siemens businesses or independent start-up companies (Eastern Daylight Time, 2004).	The SAP Startup Focus program is a global program helping startups in the big data, predictive, and real-time analytics space develop new applications on SAP HANA and accelerate market traction. It offers Immediate access to the cutting edge HANA technology platform and what it includes as training and technical experts (*SAP Startup Focus*, 2020).

Motives of the partnership contract or the program creation	Rodriguez (2019) points out that many Facebook employees assert that the acquisition was made for purely competitive reasons, notably Twitter, which also offered to acquire Instagram 500 million dollars.	Create the Open Innovation center of the 21st century through breakthrough innovation, that requires the ability to translate science into market impact (PARC's mission) (*About PARC, a Xerox Company - Company Information*, 2020).	to give Siemens' individual businesses significantly more entrepreneurial freedom under the strong Siemens brand in order to sharpen their focus on their respective markets (*About Siemens*).	"We founded SAP Startup Focus with the intention of enabling entrepreneurs to easily join our innovation ecosystem and create value-driven offerings for a broad spectrum of industries," said Manju Bansal, vice president and global head of SAP Startup Focus (SAP News, 2017).
The main partnership/program gains	• By 2018, Facebook was worth an estimated $100 billion, and it collected $69.7 billion in advertising fees, where a hefty portion of this income came directly from Instagram (Simon, 2020); • Instagram generated in 2018 more than 1 billion monthly active users, and that figure has grown 60% in just three years (Putz, 2018); • The acquisition was a good strategic move to counter hard competitors like Twitter and Snapchat.	• Since its inception, PARC has created $1 trillion in new industries, $60 billion in startups and spin-offs (*About PARC, a Xerox Company - Company Information*, 2020). • Many software and hardware used by large companies, startups, and governments have been developed by PARC, such as Adobe and 3COM which was acquired by Hewlett-Packard by nearly $2.7 billion in 2011, and it does a brisk business in IP licensing (Kramer, 2011; Satell, 2015; Viki, 2017).	• It has invested 800 million euros in over 180 startups (*Open Innovation at Siemens*, 2016). • The center offers annually (Weiblen & Chesbrough, 2015, p. 75): - 1200 possible ideas; - Conducts a detailed evaluation of 80 projects; - launches an average of 16 startups. • As of September 30, 2019, Siemens held approximately 68,300 granted patents worldwide in its continuing operations, and about 45,100 R&D employees in fiscal 2019 on average (*Siemens Annuall Report 2019*, 2019).	• More than 260 solutions for more than 20 industries across a wide range of technologies have been validated by SAP and are now available for sale to its global customer base, since its inception (SAP News, 2017). • Actually, SAP HANA reached more than 32,400 customers (SAP News, 2020). • SAP delivered 12% growth in total revenue, as the highest growth rate since 2015, and Cloud revenue continued to be the major growth driver, growing 40% (non-IFRS) (*Letter from the Co-CEOs | SAP Integrated Report*, 2019).

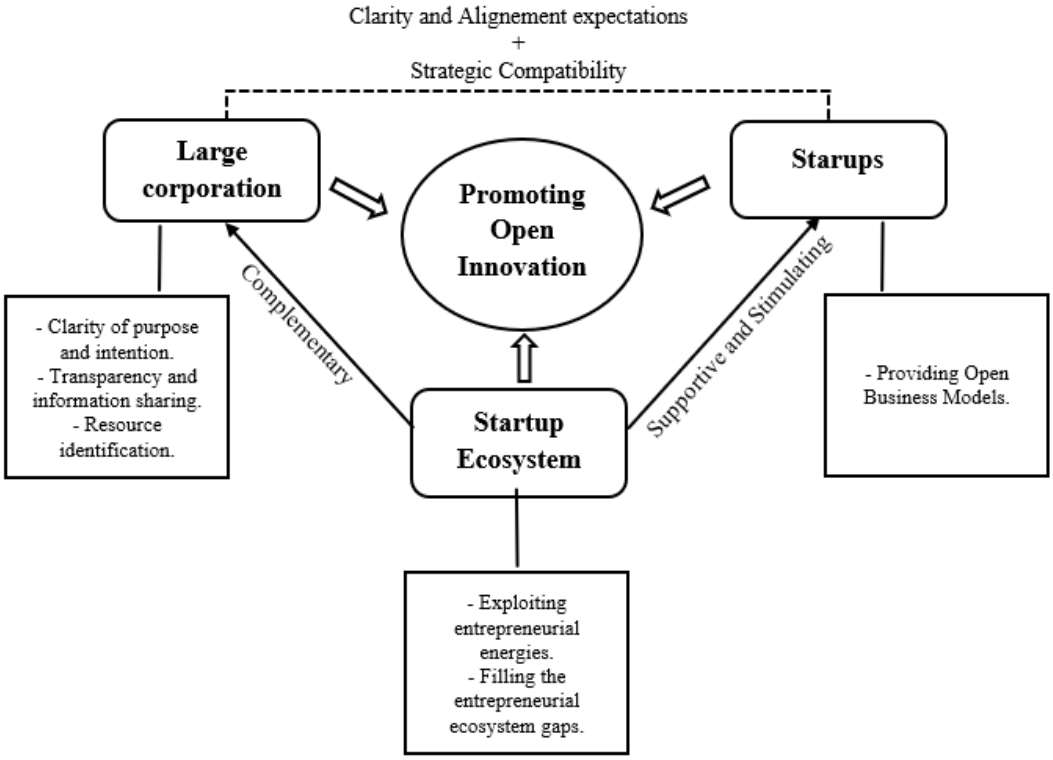
The models in the table 2 show the significant value created by partnerships between large corporations and startups, which make the latter massive engines of open innovation in the business world as Spender et al. (2017) point out. The new paradigms in engaging with startups don't differ in importance from the old ones, and the table 2 clarifies the new mechanisms that these partnerships pursue in order to achieve their goals and maximize their investments, and its importance can be restricted in the following points:

- Increasing the dynamism of open innovation and expanding its application opportunities. Since these partnerships and programs offer open business models that in turn create new open innovations;
- Supporting the general level of open innovation by increasing the levels of patents and intellectual property contracts in targeted sectors. In this regard, KCnext President Ryan Weber says: "Corporations working with entrepreneurs are extremely important to overall innovation. Many corporate leaders understand that innovation comes from inside and outside the walls of the corporation. That's why an open dialogue between the big companies and entrepreneurs is absolutely vital." (Grill, 2013);
- Making huge revenues that go far beyond what the parent and acquirer companies can achieve on their own and expanding their market share. Along these lines, Google products' vice president Rishi Chandra states about Google's Nest acquisition: "this brand merging is more than just a marketing tool, it's also an opportunity to acquire a wide segment of its consumers." (Statt & Bohn, 2019);
- Accelerating the process of supporting and enhancing general employment levels more than what startups can provide on their own.

Ⅳ-2- Roadmap to promote Open Innovation through engaging with startups

Drawing a roadmap to promote open innovation starts from the accurate knowledge of the latter's mechanisms and approaches to influence it. Practicing open innovation necessarily requires transferring knowledge from one place to another, or from one side to another. Thus, process parties' behavior appears like a substantial entry point for promoting open innovation. Therefore, and to achieve this goal, policies and efforts must be directed at both the macro and micro levels toward the removal of constraints that prevent the successful completion of this process. Figure 1 shows this:

Figure n°3: Promoting the Open Innovation Process and its dimensions



Looking closely at the figure 1, we find that promoting open innovation is mainly based on three dimensions:

- **Large Corporation:** large corporation is the strongest party in this process since it has the final word in proceeding the partnership or not. This often makes its behaviour predominantly opportunistic. Andersson & Sandberg (2017) emphasize that the purpose, intent, transparency, and sharing of the large corporation's information that needs to be clarified when engaging with startups so that the latter be aware of what they seek. Achieving understanding and trust and reducing risks allows relationship success. The authors also point out that large corporations must identify resources they are involving with and can provide to startups, and set appropriate key performance indicators to deal with them, besides possessing a practical process that is clearly defined with a plain timeline and milestones, directly related to its key performance indicators. Prashantham & Yip (2017) add, that large corporation must actively participate in the innovation process of startups in order to be harmonized and easily used and interact with local units to overcome the extreme uncertainty that characterizes new and promising markets, which often have a significant impact on their relationship with startups that it wants to engage with.
- **Startups:** in fact, Open innovation for startups is an opportunity, not a threat, because basically, they don't have many options to support their growth and expansion. Few are those startups that achieve success based on closed innovation concepts due to the fact that they face widespread competition that sometimes reaches globalism, and we can take here for instance Facebook or Google that have achieved great growth and expansion based on their innovations, but at the end, they could not escape practicing open innovation, because they have to maintain their position in the market. That is why we find that the openness of startup

business models is itself a way of promoting open innovation and supporting these companies is necessarily an assistance for open innovation.

- **Startup ecosystem:** from the standpoint of idiomatic significance, the word ecosystem reflects a set of elements, not a single element, and this is why we find that this dimension reflects in fact many parties, including the former two dimensions which are governed by a permanent reference to a third dimension that has the strongest effect in this dimension represented in policymakers. Scientific research outputs are usually directed more to these parties than any other party. The promotion of open innovation, therefore, requires the creation of a suitable platform and an enabling and supportive ecosystem that helps to make successful partnerships between large corporations and startups. In this regard, (Prashantham & Yip, 2017) suggest it is necessary for policymakers to fill gaps related to the immaturity of the entrepreneurial ecosystem, since startups in developing economies often lack legitimacy or access to the resources needed to engage with large corporation. On the other hand, policymakers must also mobilize the necessary resources to exploit entrepreneurial energies in promising markets which have a direct link to the entrepreneurial instinct of entrepreneurs in these markets and their interest in entrepreneurship, which makes them a valuable resource. We amplify here that laws and policies supporting startups must be adapted to open innovation rules, and must not be restricted to, or be incompatible with, their business models.

To sum up, we can imply that promoting open innovation is based primarily on providing a set of factors that make the relationship between startups and large corporation successful, and that also requires clarity and alignment of partnership expectations of the parties, as well as strategic compatibility.

In the Algerian context, the phenomenon of open innovation is totally absent from the current entrepreneurial landscape, which is the result of a series of points that we resume as follows:

- Open innovation as a concept has not yet been recognized by Algerian policymakers, even by the Algerian academics and entrepreneurs, except for some papers that deal with the topic and which are predominantly theoretical;
- The startups ecosystem in Algeria is immature and lacks an infrastructure that provides the basic startup survival elements;
- Large corporations in Algeria are very different from those of the United States, and we do not mean the scale and level of profits, but rather the almost non-innovative nature that makes them in disarray from the large corporation world as a result of the inadequacy and non-integration factor, and hence they are unable to incubate startups;

Accordingly, Algerian policymakers must devise a development strategy that takes into account the three levels and focuses on the following points:

- The concept and logic of open innovation should be understood by policymakers and instilled as a culture among startup entrepreneurs and large corporation owners and managers;
- Focusing in policies supportive of startups on strengthening the financial, governance, and cognitive aspects of their ecosystem;

- Allowing innovative multinational companies to invest in Algerian start-ups, to link this latter's world with the large corporations' world, and to achieve the absent element of compatibility and integration.

Conclusion

Open innovation is one of the most important areas of research that combines startup economy outputs with large corporation economy outputs, and that government policy-makers should take into account and work in every possible way and means to promote and develop this trend. Results show that engaging with startups benefits both sides and achieves the famous "winner-winner" rule. The study also found, through the proposed roadmap for promoting open innovation, that this goal would be achieved only if the ecosystem provides the necessary support and motivation to startups, and acts as a complementary structure for large corporations, and didn't neglect the need for transparency, compatibility, and strategic alignment between the two parties as a prerequisite. Although the implications of this paper's results are important for owners and managers of large corporations and startups, and even government policymakers, they are limited by some points that are mainly based on secondary models and data and are confined to the American context. For this reason, our study recommends future researches to focus on the following matters:

- Availability of case studies based on interviews with owners and managers of large corporations and startups to study the phenomenon better;
- Careful consideration of the topic from a sound perspective in dealing with startup concept;
- Also, focus on the impact of public policies on open innovation processes;
- the subject of promoting open innovation in Algeria should be detailed from the perspective of the roadmap proposed in our paper on its three levels.

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