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From Policy to Practice: Algeria's Support for Open Innovation as a Lever for Start-Up Development

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Abstract:

This article explores the extent to which open innovation can be considered a strategic lever for start-up development, by combining a theoretical reflection on its foundations with an analysis of the Algerian context. Using a qualitative approach, the study draws on recent public initiatives, particularly the national open innovation platform launched by the Ministry of Knowledge Economy and Start-ups.

The objective is to describe the institutional mechanisms supporting collaboration between start-ups and larger actors, while shedding light on the gradual emergence of a national open innovation ecosystem.

Keywords: Innovation; Open innovation; Co-innovation; Startup; Firms.

JEL Classification: O31, M13, L2.

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1. Introduction:

In an economic context marked by uncertainty, rapid technological change, and shifting consumer expectations, companies are increasingly compelled to rely on innovation to maintain competitiveness and ensure long-term growth. Innovation has become a key driver of value creation, enabling firms to enhance their products, services, and organizational processes in response to complex market and societal challenges.

According to the OECD, innovation refers to the implementation of a new or significantly improved product (good or service), process, marketing method, or organizational practice. It plays a vital role in strengthening competitive advantage, fostering sustainability, and enhancing adaptability in an ever-evolving business environment.

Since the early 21st century, firms have progressively moved away from traditional closed models of innovation toward more open and collaborative approaches. This shift has given rise to the open innovation paradigm, which emphasizes the strategic use of external knowledge and partnerships with a range of stakeholders—customers, universities, research institutions, and increasingly, start-ups.

In parallel, a new generation of firms—start-ups—has emerged as a key force in innovation ecosystems. These young, agile companies are driven by technological advances, a culture of experimentation, and the pursuit of scalable business models. Their capacity to offer disruptive solutions in highly uncertain environments has positioned them as valuable partners for both public and private actors.

Open innovation offers start-ups opportunities to access external expertise, reduce R&D costs, and accelerate the commercialization of their innovations. In return, established companies benefit from the agility, creativity, and novel approaches introduced by these entrepreneurial ventures. As such, open innovation is increasingly regarded as a strategic lever for the growth and development of start-ups.

However, while this model has been widely studied from a theoretical perspective, its practical implementation varies across national contexts. In Algeria, the innovation ecosystem is still emerging, yet recent public initiatives—particularly those launched by the Ministry of Knowledge Economy and Start-ups—signal a growing political and institutional commitment to supporting open innovation and integrating start-ups into collaborative innovation frameworks.

This article thus seeks to address the following research question:

To what extent can open innovation be considered a strategic lever for the development of start-ups, and how do recent public initiatives in Algeria reflect a willingness to structure an ecosystem conducive to its deployment?

From this perspective, this study aims to examine the role of open innovation as a strategic lever for start-up development by combining a theoretical reflection on co-innovation mechanisms with an analysis of the Algerian institutional framework. Specifically, it seeks to analyze how public initiatives—such as collaborative platforms, tax incentives, and support for technological entrepreneurship—reflect a political will to structure an ecosystem conducive to shared innovation. The objective is to understand how these initiatives

contribute to the valorization of emerging skills, the mobilization of applied research, and the integration of start-ups into high-impact collaborative dynamics.

2. From Closed to Open Innovation: What Really Changes:

Today, innovation plays a key role as a driving force behind technological progress. In the business world, it can take various forms: the launch of a new product, the improvement of production processes, or the adoption of novel strategies capable of reshaping competitive dynamics within an industry.

Traditionally, innovation was viewed as an internal process, relying solely on the company's own resources and expertise—a model known as "closed innovation." However, opening up to partnerships and external contributions has given rise to a new approach called "open innovation."

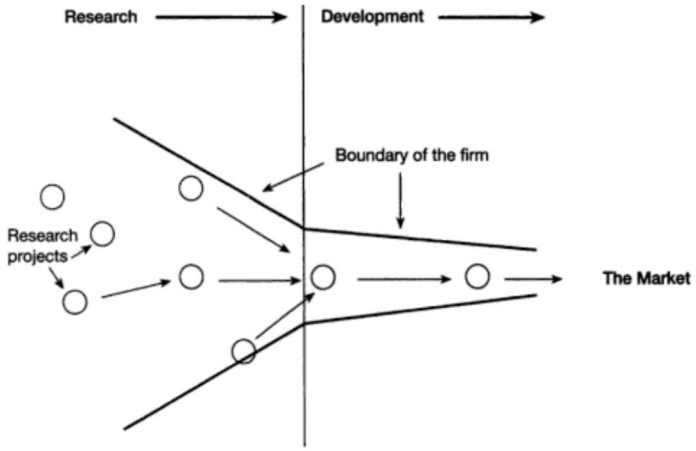
In the following sections, we will explore these two types of innovation and highlight the key differences between them.

2.1 Closed Innovation : A Strategy Focused on Internal Capabilities:

Closed innovation describes the approach whereby firms build and enhance their research and development (R&D) competencies within the boundaries of the organization. (Panagopoulos, 2016). The closed innovation model is founded on the erroneous assumption that a firm can secure a comparative advantage by managing all innovation activities internally, especially when it limits access to its intellectual property rights (Özaygen, 2017).

The following diagram illustrates the closed innovation process:

Figure (1): Closed innovation paradigm



Source: (Aouinaït, 2021, p. 02)

This diagram illustrates the closed innovation process, where research and development activities are strictly confined within the boundaries of the firm. Although numerous research projects exist, only those that can be developed internally are selected and pursued. The flow of ideas and technologies is unidirectional and does not cross organizational boundaries, reflecting a limited openness to external knowledge. Market access is achieved exclusively through innovations developed and controlled by the company itself, with no external collaboration. This model is therefore based on a logic of protection and self-reliance, in contrast to the open innovation paradigm.

Having examined the closed innovation model, it is now essential to explore the open innovation framework, which challenges its underlying assumptions

2.2 Conceptual Definition of Open Innovation

Open innovation is a concept that refers to a phenomenon in which a firm actively utilizes external ideas and technologies, while also allowing external stakeholders to access and exploit its unutilized knowledge and technological assets. (Chesbrough, 2014)

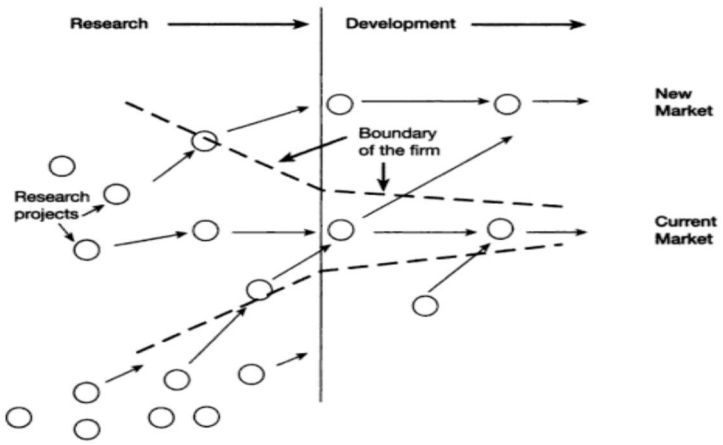
It is a systemic model based on the strategic and intentional management of knowledge flows between an organization and its external partners, with the aim of accelerating innovation and capturing new market opportunities. (Bigliardi, 2019).

It is also important to note that open innovation can be defined in various ways, depending on the perspective adopted. One such definition describes open innovation as a dynamic process that integrates both external and internal sources of knowledge to accelerate and improve the development of new products, services, and processes. It emphasizes the importance of knowledge sharing, collaboration, and the exchange of ideas and technologies across organizational boundaries in order to create value and enhance innovation performance. (Cammarano, 2019).

Open innovation can be seen as a comprehensive approach that combines the use of external and internal knowledge, promotes collaboration, and encourages the exchange of ideas and technologies beyond organizational boundaries. This process aims to accelerate innovation, improve performance, and create new market opportunitie.

The diagram below provides a visual representation of the open innovation model, emphasizing the exchange of ideas and technologies beyond organizational boundarie.

Figure (2): Open innovation paradigm



Source: (Aouinaït, 2021, p. 02)

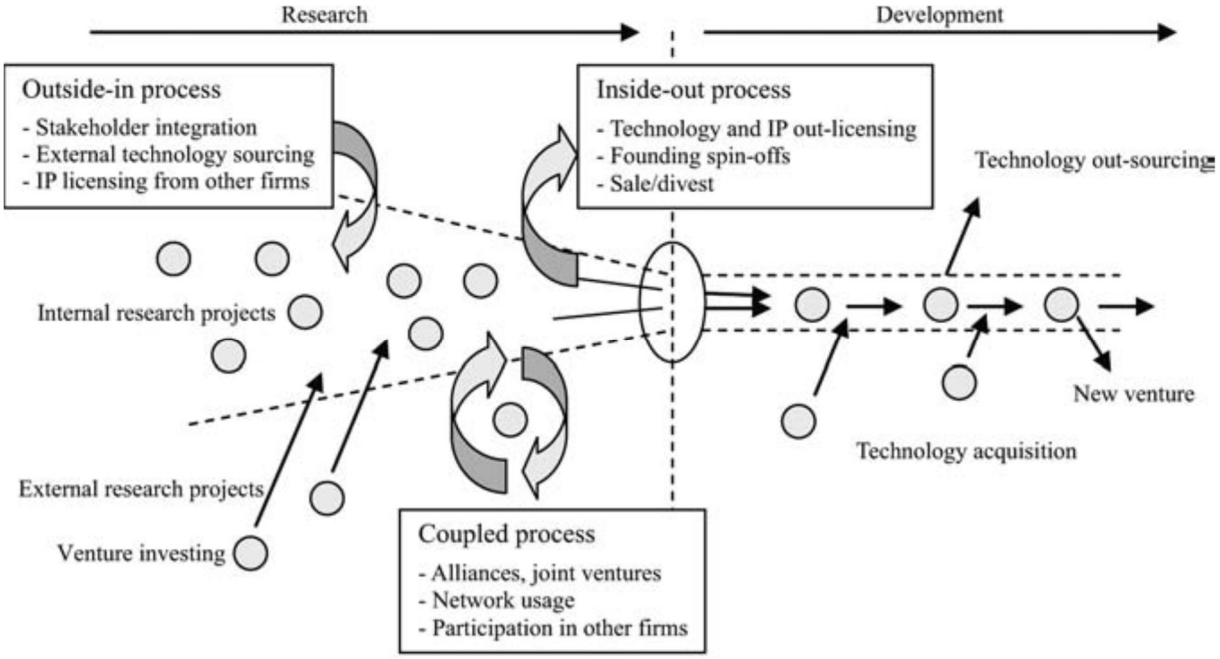
This diagram illustrates the open innovation process, where ideas and technologies flow both into and out of the firm. It highlights the integration of external knowledge and the possibility for unused internal projects to be exploited in new or alternative markets through external partners.

2.3 Open Innovation Models: Types, Flows, and Collaborative Approaches:

There are three types of open innovation processes: the outside-in process, the inside-out process, and the coupled process. (Inauen, 2011)

These can be illustrated in the following diagram**.**

Figure (3): Types of open innovation processes



Source: (Inauen, 2011, p. 502)

This classification is also highlighted in the literature, particularly in the distinction between the outside-in, inside-out, and coupled processes. (Ayerbe, 2020).

The outside-in process aims to enhance the company's knowledge base by integrating technologies sourced from various external partners such as suppliers, competitors, and research centers. This process operates through transactional mechanisms, such as acquisitions involving the transfer of ownership rights, as well as non-transactional mechanisms, including sourcing external knowledge without necessarily transferring ownership.

The inside-out process describes how a company brings its internal ideas to the market through two primary pathways. The first involves transactional activities, such as selling intellectual assets, which typically result in licensing agreements or spin-offs, both serving as potential revenue streams. The second pathway is knowledge disclosure, where the company voluntarily shares its knowledge without expecting direct monetary compensation in return.

The coupled process combines the principles of both the outside-in and inside-out approaches. It involves the intentional combination of inbound and outbound knowledge flows to collaboratively develop and/or commercialize innovations. This type of open innovation typically leads to co-development initiatives, joint projects, strategic alliances, consortia, and R&D collaborations.

Within this dynamic of open innovation, start-ups are emerging as key players, driving change through their agility, creativity, and ability to thrive within collaborative ecosystems.

3. Start-ups: Theoretical Foundations and Conceptual Framework:

3.1 Conceptual definition of Start-ups:

A start-up is a temporary organization that develops innovative products and/or services through the use of advanced technologies. However, this type of enterprise is also characterized by its operation within uncertain and high-risk environments (Cho, 2009).

It represents an entrepreneurial endeavor often marked by humble beginnings, providing a space for self-actualization and a platform to explore and implement unconventional, high-risk ideas. (Slavik, 2019).

Start-ups are ventures initiated around an innovative idea, often developed under conditions of high uncertainty. At the heart of the start-up concept is the implementation of novel initiatives—whether in the form of products or services—that provide customers with added value beyond what is offered by existing market solutions. (Vonoga, 2022).

All of these definitions converge in highlighting the innovative nature of start-ups and the uncertainty that characterizes these emerging enterprises. They emphasize their capacity for innovation, adaptability to environmental change, and ambitious growth potential.

From our perspective, a start-up can be defined as an emerging company operating in a highly technological environment, engaged in an innovative yet risky entrepreneurial venture. It seeks to identify a viable business model by offering products and services that meet potential market demand.

3.1.1 Distinctive Features of Start-ups in Relation to Conventional Business Models:

Start-ups—young and innovation-driven enterprises—stand apart from established firms due to a set of specific features, which are detailed in the following section (Cauvin, 2002).

tart-ups are characterized by strong growth potential, both in terms of revenue and capital, despite generating modest initial turnover and profits. This apparent contradiction is explained by their ability to scale sales rapidly, which results in high growth rates over short periods. Their core asset is often intangible, with intellectual property—such as patents, trademarks, know-how, brand image, and team expertise—constituting a significant part of their value.

Additionally, start-ups face considerable short-term financing needs. Beyond the usual working capital requirements, they must secure specific funding for research and development activities. These needs are often met through support from business angels and venture capital firms.

Structurally, start-ups adopt horizontal and flexible organizational models to maintain reactivity and adaptability. To attract and retain talent, they frequently offer performance-based incentives and equity participation through mechanisms such as stock options.

Unlike traditional firms, which must navigate complexity and gradual adaptation, start-ups are primarily challenged by uncertainty and the need for rapid strategic positioning.

3.1.2 Opportunities and Challenges Faced by Start-ups Embracing an Open Innovation Strategy:

Adopting an outside-in open innovation approach allows start-ups to access external resources, reduce R&D costs, benefit from technical and logistical support, and accelerate market entry through partnerships with established firms. This strategy also enhances their credibility with investors and the broader market. However, it comes with challenges such as limited financial resources for collaborative efforts, difficulties in building a solid reputation, and the complexity of aligning venture capital interests with those of corporate partners. On the other hand, an inside-out open innovation approach offers start-ups the opportunity to commercialize their technologies without bearing the full costs of development or market launch. It enables them to generate revenue through licensing agreements and access niche markets often overlooked by large companies. Nevertheless, this approach also carries risks, including potential misappropriation of their innovations, the challenge of convincing clients without strong references, and internal limitations due to constrained financial and human resources. (Usman, 2017).

4. Open innovation in Algeria:

Amid ongoing economic and technological transitions, Algeria is witnessing the gradual emergence of new innovation paradigms. Departing from the closed, R&D-centric models traditionally adopted by firms and institutions, open innovation is increasingly recognized as a viable alternative. Defined by inter-organizational collaboration and knowledge exchange, this model fosters synergies among firms, universities, start-ups, and public bodies, enhancing the collective capacity to generate value and address complex societal and market challenges. While still in its formative stages within the Algerian context, a growing number of initiatives reflect a national momentum toward more inclusive and collaborative approaches to innovation.

In order to explore the current state and practical dynamics of open innovation in Algeria, this study undertakes an empirical investigation based on data extracted from the open innovation platform launched by the Ministry. This platform serves as a digital interface that connects various stakeholders—start-ups, researchers, companies, and public institutions—around collaborative innovation projects and problem-solving challenges. By analyzing user interactions, project participation, and patterns of collaboration on this platform, the study aims to shed light on the mechanisms, opportunities, and constraints that shape open innovation practices in the Algerian context.

4.1 Adopted Methodological Approach:

This research adopts a qualitative approach based on a case study of a public open innovation platform initiated by the Algerian Ministry of Knowledge Economy, Start-ups, and Micro-enterprises. Designed as an intermediation mechanism, the platform aims to foster collaboration between established companies and start-ups by facilitating the co-construction of innovative solutions through challenge-based calls, the mobilization of emerging skills, and the connection of heterogeneous actors. The analysis is based on a corpus of secondary data collected from publicly accessible content available on the platform.

4.2 The Open Innovation Platform: A Strategic Mechanism for Collaborative Innovation in Algeria:

In response to the growing need for cross-sector collaboration and digital transformation, the Algerian Ministry of Knowledge Economy, Start-ups, and Micro-enterprises launched a national Open Innovation platform. This strategic initiative aims to foster structured cooperation between large firms and start-ups by creating a dedicated space for the exchange of challenges and innovative solutions.

Through this platform, established companies are encouraged to articulate specific technological or operational problems, while start-ups are invited to propose creative and customized responses. The platform operates on the principles of open and distributed innovation, leveraging the complementary strengths of both actors: the agility and inventiveness of start-ups on one hand, and the resources, market access, and experience of large enterprises on the other.

This collaborative model not only accelerates the resolution of complex issues but also supports the digital transformation of incumbent firms and the growth of emerging entrepreneurial ventures. Moreover, the platform emphasizes the value of collective intelligence, fostering co-creation processes through dynamic exchanges of knowledge and expertise.

By institutionalizing this ecosystem approach, the Ministry underscores its commitment to building an inclusive and adaptive innovation system. The Open Innovation platform thus represents a paradigm shift toward ecosystem-based innovation policies that can more effectively address contemporary technological, economic, and societal challenges.

4.2.1 Operational Logic of the Open Innovation Platform:

The Open Innovation platform serves as a structured intermediary that orchestrates collaboration between established firms and emerging startups. Its operational model is based on challenge-driven innovation, enabling a demand-supply dynamic between corporate needs and entrepreneurial creativity.

Corporations initiate the process by submitting real-world challenges that reflect strategic, technological, or operational problems. These challenges span diverse sectors—such as energy, health, environment, and digital technologies—and are designed to attract external perspectives capable of generating breakthrough solutions.

In response, startups join the platform to present innovative proposals, whether in the form of early-stage ideas, prototypes, or advanced technologies. The platform facilitates targeted interactions, allowing startups to gain insight into corporate expectations and refine their contributions accordingly.

What distinguishes this model is the platform's intelligent matching mechanism, which aligns startups' capabilities with specific corporate needs. This curated process increases the efficiency and relevance of connections, helping to accelerate innovation, reduce development risks, and promote high-impact partnerships.

4.2.2 Sectoral Scope and Strategic Relevance of the Open Innovation Platform:

The Open Innovation platform addresses a broad spectrum of economic sectors, with the aim of maximizing the transformative potential of innovation and responding to the complex challenges of the future. Its cross-sectoral orientation reinforces its role as a national lever for technological and societal progress.

In the industrial sector, innovation is oriented toward digital transformation, robotics, predictive maintenance, and the optimization of production systems. In agriculture, the platform supports precision farming, intelligent irrigation systems, and sustainable yield improvement.

In the field of education, emphasis is placed on digital learning, personalized learning pathways, and the integration of technological tools for skills development. Healthcare applications include AI-assisted diagnostics, telemedicine, and the improvement of patient care and data management.

In the energy sector, the platform fosters innovation in renewable energies, energy storage, efficiency optimization, and carbon footprint reduction. Transport-related projects explore smart mobility, logistics solutions, autonomous vehicles, and the reduction of environmental impact.

The financial sector benefits from the integration of fintech innovations, risk management tools, blockchain technologies, and secure payment systems. In commerce and retail, innovation focuses on customer experience, digital purchasing journeys, inventory management, and service personalization.

Tourism-oriented challenges include smart travel solutions, flow management, and sustainability in tourism services. In telecommunications, innovation supports 5G deployment, network optimization, IoT applications, and cybersecurity.

Finally, sectors such as cybersecurity and agri-food are supported through the development of advanced protection systems, threat prevention, supply chain traceability, and innovations in food production and preservation.

This broad sectoral reach highlights the platform’s ambition to act as an inclusive and dynamic catalyst for innovation across all pillars of the national economy.

4.3 Fiscal Incentives for Innovation in Algeria: Analysis of the Interministerial Decree of May 9, 2023 on the Deductibility of R&D and Open Innovation Expenditures:

The Interministerial Decree is grounded in Article 171 of the Direct Tax Code, as well as in key legislative frameworks governing scientific research (Law 15-21) and the knowledge-based economy. It represents a notable advancement in Algeria’s innovation policy by formally recognizing open innovation as an activity eligible for fiscal incentives. The decree extends tax-deductible expenses beyond traditional R&D to include projects carried out in collaboration with certified start-ups or incubators, under formal contracts of at least six months. These contracts must specify project objectives, deliverables, responsibilities, financial terms, intellectual property arrangements, and termination clauses.

This inclusion is designed to promote strategic partnerships and foster collaborative technology development between established firms and emerging innovators. Endorsed jointly by the Ministries of Finance, Higher Education and Scientific Research, and the

Knowledge Economy, the decree reflects a cross-sectoral commitment to building an open and connected innovation ecosystem. More than a tax tool, it signals a political will to position open innovation as a foundational pillar of a more resilient, competitive, and knowledge-driven Algerian economy.

5. Conclusion:

As start-ups increasingly position themselves as central actors in innovation ecosystems, the adoption of the open innovation model emerges as a strategic lever to accelerate their growth, enhance their competitiveness, and facilitate their integration into collaborative networks. This paradigm, based on knowledge sharing and co-creation, offers young enterprises expanded access to resources, expertise, and market opportunities.

In the Algerian context, although the innovation ecosystem is still under construction, recent public initiatives—such as the launch of open innovation platforms, support mechanisms for start-ups, and the evolving regulatory framework—reflect a growing political will to structure an environment conducive to shared innovation. These efforts indicate an increasing awareness of the challenges related to the knowledge economy and the need to mobilize both public and private actors around collaborative innovation dynamics.

However, beyond these intentions, several challenges remain: the sustainable structuring of support mechanisms, the coordination among stakeholders, and the capacity of start-ups to fully capitalize on these opportunities in a context still constrained by financial, institutional, and cultural barriers.

This study thus highlights not only the theoretical relevance of open innovation for start-ups, but also the need for stronger support systems and ongoing evaluation of public policies. A deeper understanding of local dynamics, along with further empirical research on the trajectories of start-ups engaged in open innovation practices, could enrich both future academic inquiry and strategic action.

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