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# The Role of Startups in Valorizing Academic Scientific Research Outcomes _The Algerian University_

**DIAF Oulia**
Ecofima Laboratory, University of August 20, 1955, Skikda (Algeria), o.diaf@univ-skikda.dz

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**Abstract:**
This study aims to highlight the role played by startups in valorizing the outcomes of scientific academic research through encouraging researchers to transform their research results into institutions. The Algerian university system had a radical strategic transformation, shifting from its traditional academic role of knowledge transmission to an entrepreneurial role that directly contributes to national economic development. The study concludes that there is a strong and close relationship between applied academic scientific research and startups.

**Keywords**: Applied scientific research – Startups – Research outputs

**JEL Classification**: M10 ،M13

## 1. Introduction:

Academic scientific research is considered one of the fundamental pillars of development and civilizational advancement in any country. Most innovations are results of scientific research, the development of ideas, and efforts to transform them into reality, as well as supporting and nurturing them.

Many innovations, discoveries, and inventions stem from the creative ideas of distinguished professors and students in universities and higher education institutions. Indeed, universities and research institutions lie at the core of the innovation process.

The university is the most important institution supporting scientific research and fostering a culture of knowledge. It ensures the provision of appropriate higher education that serves both current and future societal goals. With ongoing developments—especially the technological and digital revolution—higher education and research institutions must adapt to these changes and become sources of transformation, creativity, and innovation.

The continuous evolution of the business environment, which requires adaptation to achieve success in meeting market and customer demands, and the presentation of new ideas in the form of products and services, finds its ideal environment in startups. These entities represent fertile ground for materializing research outputs.

There is a strong and close relationship between applied academic research and startups at all stages of their lifecycle, from the launch phase to growth and acceleration, and eventually to exit scenarios.

Scientific research is the cornerstone of innovative startups, contributing to the development of unique products and services with high added value. The outputs of applied research in startups include innovative and practical solutions that transform knowledge into economic value, such as patents, software, prototypes, and marketable models. These outputs reduce risks by enabling data-driven decision-making and transforming ideas into economic projects.

In Algeria, the state’s strategy focuses on converting university research outputs into economic ventures. The country supports this sector through legal mechanisms and business incubators.

To assist researchers in implementing their ideas, Algerian public authorities—particularly in recent years—have established a special fund to support startups, in addition to creating a High Council for Innovation aimed at promoting innovative ideas and national research capabilities.

Based on this, the central research question of this study is: **How do startups contribute to the valorization of academic scientific research outcomes?**

The following sub-questions are derived:

- Is there a specific definition of startups within the university context?
- What is the new environment of startups?
- What are the outputs of applied scientific research, and what is their reality in Algerian universities?

**Research Hypotheses:**

- The new startup environment has encouraged linking them with research outputs.
- The establishment of startups within universities has strengthened the culture of innovation.
- Algerian universities have significantly contributed to the valorization of research outcomes.

**Significance of the Study:**

The importance of this study lies in its focus on implementing startup projects (university degree – startup – patent) as a foundation for fostering innovation and entrepreneurial culture within Algerian universities. It also aims to connect universities with their economic and social environment as entrepreneurial institutions, by applying research results through activating existing legal and regulatory frameworks in the field of startups.

**Objectives of the Study :**

- To present the concepts, objectives, characteristics, and new environment of startups.
- To clarify the mechanisms for applying scientific research within universities.
- To explore some outcomes of applied research in Algerian universities.
- To provide recommendations for activating applied research outputs within startups.

## 2. Section One: Startups in Algeria – Characteristics and New Environment

Startups are among the most prominent drivers of economic growth in many countries and have received increasing attention.

### 2.1 Conceptual Framework of Startups:

### 2.2 Definition of Startups

A startup is a newly established small project. The term consists of two parts: *"start,"* referring to the idea of launching, and *"up,"* referring to rapid growth (according to English usage).

According to the French dictionary *Larousse*, startups are defined as young, innovative companies operating in the technology sector.

**Paul Graham**defines a startup**,** in his essay on growth, as a company designed to grow rapidly. Being newly founded does not automatically make it a startup, nor is it necessary for it to operate in technology or be funded by venture capital. The essential factor is growth; everything else associated with startups follows from that.

Thus, startups are entrepreneurial ventures that offer products or services creating added value, provide innovative solutions to problems using advanced technology, and operate in high-risk and uncertain environments.

### 2.3 Criteria Distinguishing Startups from Small Enterprises

One of the main criteria used to define startups is the quantitative criterion, which includes a set of technical and economic indicators such as:

- Employment and capital.
- Invested capital.
- Production volume.
- Sales value.
- Added value.

- Production capacity.
- Labor intensity (Mustafa, Ali, p133, 2020)

The following table illustrates the key differences between startups and micro-enterprises:

**Table (01): Criteria Differentiating Startups and Micro-enterprises**

| Startup | Micro-enterprise |
|---|---|
| Innovative new product | Known, non-innovative product/service |
| New market | Undefined or limited market |
| Scalable business model | Non-scalable business model |
| Large market size | Small market size |
| High-risk investment | Low-risk investment |
| Aims to become large | Aims to remain small and profitable |
| Venture capital funding | Small loans |

**Source:** Prepared by the researcher based on multiple references

## 2.4 Characteristics of Startups and Their Success Strategies:

### 2.4.1 Characteristics of Startups:

Startups refer to the idea of rapid growth. They are organizations with high potential that enables them to transition quickly from small ventures into large companies generating billions in revenue.

Startups represent a distinct type of enterprise, characterized by a set of features that differentiate them from other types of businesses. These characteristics include:

- **Young and newly established enterprises:** This type of organization faces two possible scenarios: either growth and transformation into successful companies, or failure and closure. They are also often confused with small enterprises, although the two differ significantly in classification (Hussaain; Mubasshir; p.29, 2023).
- **Gradual yet accelerating growth:** One of the defining features of startups is their ability to grow rapidly and generate revenues at a pace that far exceeds their operating costs. This means that, despite being small, they have strong potential to generate significant and promising profits. They possess a high capacity for expansion, market penetration, and the achievement of substantial revenues relative to their initial costs.
- **Innovation- and technology-driven enterprises:** This is one of the most important characteristics of startups. They rely on creativity, continuous innovation, and ongoing development, enabling them to create new products or improve existing ones with new features and services. Their dependence on modern technologies makes them attractive acquisition targets for large companies, which often prefer acquiring ready and innovative ventures rather than starting new projects from scratch (Hussaain; Mubasshir; p.29, 2023).
- **Operating in high-risk environment:** Startups function under conditions of high uncertainty due to their reliance on innovation in emerging or underdeveloped markets characterized by ambiguity and limited information. As a result, they often struggle to conduct market research because of the lack of reliable data.

- **Diverse market presence:** Initially, startups penetrated technology and innovation markets and excelled in digital sectors. Over time, they expanded into traditional industries such as agriculture, manufacturing, tourism, and education.
- **Additional characteristics include:**

o Team spirit.
o Focus on product/service.
o Relationship-building approach.
o Strong leadership.
o Mutual respect.
o Customer-centric orientation.
o Positive energy.
o Adaptability to the external environment.

The following table summarizes the key characteristics of startups in terms of organization, ownership, financing, and innovation strategy:

**Table (02): Characteristics of Startups**

| Dimensions | Characteristics |
|---|---|
| **Organization** | - Small-sized enterprise<br>- Newly established<br>- Homogeneous environment<br>- Informal organizational structure<br>- Centralized organization |
| **Ownership** | - Owner is the manager<br>- Intuitive decision-making<br>- Direct supervision |
| **Strategy & Innovation** | - Niche marketing strategy<br>- Preference for risk-taking over safe decisions<br>- Rapid innovation<br>- First-mover or second-mover advantage<br>- Lack of formal product research |
| **Financing** | - Funding from personal savings or relatives |

**Source:** Rahmat Nurcahyo et al., Characteristics of Startup Company and Its Strategy: Analysis of Indonesia Fashion Startup Companies, International Journal of Engineering & Technology, 2018, p.44

From the table above, it is clear that the characteristics of startups are mainly based on a homogeneous environment, centralized and informal organization, and ownership structures where the manager is typically the owner, exercising direct supervision.Startups adopt specialized marketing strategies, operate in environments characterized by uncertainty, and rely on funding through personal savings or support from relatives and friends.

### 2.4.2 Strategies for Startup Success in the Context of Digital Transformation

The success of startups depends on continuous innovation, building a strong brand, focusing on excellent customer experience, leveraging data analysis, and developing digital technologies. It also involves benefiting from partnerships and collaboration, as well as maintaining flexibility and the ability to adapt to market changes.

Strategic planning and a clear vision are also considered essential factors for long-term success and sustainability.

- **Adoption of digital technologies:** Startups focus in their business models on offering new ideas or products, often relying on technology to solve existing problems or to create scalable business models (Hussain Mubasshir, p ,2023).
- **Continuous innovation:** Their business model is fundamentally based on innovative ideas, whether through providing technological solutions or using technology to address existing challenges.
- **Building a strong brand:** Startups face intense competition from dominant market players. A strong brand identity, a growing customer base, economies of scale, and bargaining power are key advantages (Khadawji& Labazp.109, 2023).
- **Collaboration and partnerships:** Startups rely on partnerships—formal or informal agreements—to maximize expertise, share knowledge, and accelerate innovation.
- **Focus on customer experience:** Customer experience is one of the most critical success factors. Startups must use modern communication channels and technologies to enhance customer satisfaction.
- **Leveraging data:** Startups need to collect and analyze data to understand business performance and make rational, optimal decisions. Data analytics provides valuable insights into customer behavior and market trends, helping improve marketing strategies and increase sales.
- **Digital transformation:** Startups must embrace digital transformation, as it not only improves internal operations but also enhances customer experience and strengthens customer trust.
- **Flexibility and adaptability:** In a fast-changing business environment, startups must remain flexible and capable of adapting to new conditions.

### 2.5 The Reality and Environment of Startups in Algeria

In recent years, startups have attracted the attention of many countries, whether developed or developing. With technological progress and rapid digital transformations, this type of enterprise has become increasingly prominent.

Algeria, like other countries, has focused on promoting and supporting this sector, particularly within its strategy aimed at economic diversification, digitalization, and reducing dependence on oil. Startups are also seen as a key driver for boosting local production, developing national industries, reducing imports, and achieving import substitution.

### 2.5.1 The Reality of Startups in Algeria

Algeria has adopted an economic diversification policy centered on enterprises, value creation, job generation, and innovation support. Interest in startups has increased significantly, especially following the decline in oil prices in 2012.

This growing interest was reflected in Law No. 17-02 of January 10, 2017, relating to the framework law for the development of small and medium-sized enterprises, which recognized startups as a sector to be promoted within innovative projects.

Starting in 2020, Algeria adopted a new economic model that prioritizes startups as a driver of development. Executive Decree No. 20-254 introduced the "Startup Label," as well as the concepts of "innovative project" and "business incubator," making investment in and support for startups a key priority for Algerian policymakers.

### 2.5.2 Procedures for Obtaining the "Startup Label"

According to the aforementioned executive decree, obtaining the "Startup Label" requires the applicant to follow these steps:https://www.startupranking.com/top/algeria

- Submitting an application through the national online startup platform, in accordance with Article 12.
- According to Article 13, the National Labeling Committee for startups, innovative projects, and incubators must respond within a maximum of thirty (30) days from the date of submission.
- In case of rejection, the committee must justify its decision and notify the applicant electronically. The applicant has the right to appeal, and a final response must be provided within thirty (30) days of the appeal request.
- Publishing decisions granting the "Startup Label" on the national startup website.
- The "Startup Label" is granted, according to Article 14, for a period of four (4) years, renewable once under the same conditions.

### 2.5.3 Startups in Algeria

Interest in startups in Algeria has increased following the decline in oil prices in 2014 and the country's shift toward an economic diversification policy based on enterprises, value creation, job generation, and innovation support. This interest was reflected in Law No. 17-02 of January 10, 2017, relating to the framework law for the development of small and medium-sized enterprises, which identified startups as a sector to be promoted within innovative projects.

Starting in 2020, Algeria adopted a new economic model prioritizing startups as a driver of development. Executive Decree No. 20-254 of September 15, 2020 established the National Committee responsible for granting the "Startup Label," as well as recognizing innovative projects and business incubators. As a result, investment in and support for startups have become key priorities for economic policymakers.https://www.startupranking.com/top/algeria

**Table (03): Startups in Algeria**

| Trade Name | Field / Activity |
|---|---|
| **Siamois QCM** | A platform designed for medical students to prepare for exams with guidance from field experts; accessible via computer and mobile devices. |
| **SEKOIR** | A platform for buying and exchanging currencies in Algeria, providing secure and reliable transactions through verified sellers (activity later modified due to regulatory constraints). |
| **Batolis** | An e-commerce platform in Algeria and a major competitor to Jumia. |
| **Yassir** | A leading ride-hailing and delivery application in Algeria; recently expanded into delivery services and international markets such as Morocco, Tunisia, France, and Canada. |
| **Zawwali** | A promising e-commerce platform offering Visa payment options and delivery through international and local companies. |
| **Ubexpay** | A leading fintech startup in electronic payments in Algeria, offering money transfer services, Visa and MasterCard options, and virtual cards. |
| **Global Opportunities** | A platform providing job opportunities from international and local companies. |
| **Academiatouna** | An online learning platform offering courses by a group of instructors. |
| **Lafirist** | A magazine specializing in entrepreneurship and startup creation. |
| **Nbatou** | A platform providing accommodation and apartment rental services. |
| **dZdoc** | A platform offering information about medical specialists with online appointment booking. |
| **Yalidine** | A delivery company with branches across all regions of Algeria. |

**Source:** Prepared by the researcher based on the Startup Ranking websitehttps://www.startupranking.com/top/algeria:

From the above, it is evident that most—if not all—Algerian startups operate in the service sector. These companies strive to build a solid customer base while continuously developing their products and services. Despite clear differences in growth, profitability, size, funding, and workforce, most of these startups are still in their early stages of development.

### 2.6 The StartupsEnvironment in Algeria

New cities provide a favorable environment for startups due to their specific characteristics, particularly smart cities, where most projects rely on advanced technologies.Startups align well with such environments for several reasons, including the availability of advanced infrastructure, equipped workspaces, proximity to research centers and universities, and government support for innovative projects. Together, these factors create a fertile ecosystem for startup growth and development.

**Table (04): Key Factors Supporting the Startup Environment**

| Factor | Explanation |
|---|---|
| **Advanced infrastructureenvironment** | Modern communication networks, public facilities, and data centers enable efficient operations. |
| **Availability of Competencies** | New cities attract qualified young professionals, providing startups with a strong talent pool. |
| **Government support** | Includes funding programs, tax incentives, and technical assistance. |
| **Green technology** | Startups develop solutions in renewable energy, waste management, and sustainable agriculture. |
| **Tourism and entertainment** | Opportunities to create platforms promoting tourism and innovative services. |
| **Availability of office spaces** | Affordable, equipped workspaces reduce operational costs. |
| **Proximity to research centers and universities** | Enhances collaboration, knowledge exchange, and innovation. |
| **Dynamism and innovation** | A vibrant environment that fosters creativity and entrepreneurship. |
| **Networking and connectivity** | Rich social and cultural environment that facilitates collaboration. |
| **Smart services** | Development of applications in smart transport, traffic management, and telemedicine. |
| **E-commerce** | Growth of digital platforms and delivery services supporting the local economy. |

**Source:** Prepared by the researcher based on multiple references

New cities constitute an ideal environment for the growth and development of startups, as they provide advanced infrastructure, government support, and skilled human capital, enabling these enterprises to succeed across various sectors.

**2.6.1 Success Factors for Startups in New City Environments**

New cities offer a supportive ecosystem for startups due to several factors:

- **Advanced infrastructureenvironment:** Availability of modern communication networks, public services, and data centers facilitates efficient operations.
- **Availability of office space:** Equipped workspaces at competitive prices help reduce operational costs.
- **Proximity to research centers and universities:** Encourages collaboration, knowledge exchange, and innovation.
- **Government support:** Includes funding, tax exemptions, and technical assistance.
- **Availability of competencies:** Access to qualified young professionals enhances workforce development.
- **Dynamism and innovation:** A vibrant environment that encourages creativity and supports entrepreneurs.

- **Networking and collaboration:** A rich social and cultural environment fosters cooperation and idea exchange.

**Examples of startup roles in new cities include:**

- **Green technology:** Developing solutions for environmental challenges such as renewable energy, waste management, and sustainable agriculture.
- **Smart services:** Creating applications for smart transportation, traffic management, and telemedicine.
- **E-commerce:** Developing digital commerce platforms and fast delivery services.
- **Tourism and entertainment:** Building platforms that promote tourism and provide innovative leisure services.

**3. Section Two: Scientific Research in Algerian Universities Between Theory and Application:**

Scientific research in higher education institutions represents a central pillar of university activity, alongside teaching. According to the National Quality Assurance Framework, research ranks second after education, highlighting its importance within Algerian universities. Therefore, universities cannot operate in isolation from the social and economic needs of their communities.

Scientific research is a fundamental requirement, as it is closely linked to all forms of economic and social development. The national framework requires higher education and research institutions to consider the research needs of society and external stakeholders. Consequently, universities have shifted from traditional research—focused on academic publications and R&D projects—to analyzing and engaging with their surrounding environment.

**Scientific Research and the Issue of Applied Research**

**3.1 The Nature of Research and Scientific Research:**

**3.1.1Definition of Research**

Research is a systematic and structured process aimed at discovering and interpreting facts. It is essentially a process that seeks to produce effective and continuously evolving knowledge (Glasunov, 2012, p. 8).

This process relies on a specific methodology and is generally divided into two main types:

- **Basic research**, which seeks to generate new knowledge and expand the existing body of knowledge.
- **Applied research**, which focuses on transforming acquired knowledge into practical solutions embodied in production methods, work processes, products, or services (Saoud, 2010, p. 306).

**3.1.2 Definition of Scientific Research**

A solid theoretical background contributes to rationalizing and guiding research efforts by providing researchers with the necessary concepts and frameworks. This enables them to critically engage with research outputs, thereby facilitating the research process and improving its effectiveness (Nasr Eddine Bouziane, p. 302).

Scientific research is an intellectual activity undertaken by a researcher to solve—or attempt to solve—a real problem, whether material or abstract. It may also involve

examining a specific topic in depth to contribute new knowledge or applying existing knowledge and established methods to explore the unknown.

Scientific research is also a learning process that involves defining and redefining problems, formulating hypotheses, proposing solutions, collecting and organizing data, analyzing and evaluating results, drawing conclusions, and carefully testing them. It represents a substantial addition to existing knowledge, aimed at refining and improving it in the pursuit of truth through observation, comparison, and experimentation.

In general, scientific research can be defined as a systematic effort aimed at answering one or more questions related to a specific topic, using well-established scientific methods.

**3.2 Importance of Scientific Research :**

Interest in scientific research is a global trend widely adopted by developed countries, while developing nations strive to strengthen research to address various challenges and promote economic and social development.

Scientific research is an objective tool used to uncover scientific truths and establish reliable knowledge across various fields.

- It contributes to enriching human intellect and expanding knowledge across multiple disciplines, while also helping to analyze, interpret, and predict natural phenomena through generalizations and laws.
- It provides solutions and insights that help address societal challenges in economic, health, educational, political, environmental, and social domains.
- It plays a crucial role in civilizational advancement, as most discoveries result from systematic inquiry, critical analysis, and the development of ideas. Many innovations and inventions originate from the creative efforts of university professors and outstanding students (Barbara Matiro and Anna Mwanji and Wurth Shleiti, 2002)

**3.3.1 The Nature of Applied Research**

Applied scientific research consists of a set of procedures and processes aimed at generating solutions to specific research problems. It follows systematic steps using statistical tools and data collection methods aligned with defined research objectives.

Applied research focuses on implementing its findings in real-world contexts. It is based on experimentation and hypothesis testing to ensure validity and applicability, ultimately providing scientific solutions to practical problems. In other words, it is researchresults that can be directly applied in reality (Nasr Eddine Bouziane, p. 302).

**3.3.2 Key Differences Between Theoretical and Applied Research**

Scholars distinguish between theoretical and applied research across several dimensions, summarized below:

**Table (04): Differences Between Theoretical and Applied Research**

| Theoretical Research | Applied Research |
|---|---|
| Seeks to expand and deepen existing scientific knowledge | Seeks to solve specific problems and identify practical solutions |
| Primarily focuses on theoretical contributions | Follows a scientific methodology with practical application |

| Theoretical Research | Applied Research |
|---|---|
| Aims at knowledge development and new discoveries | Focuses on technological development based on existing knowledge |
| Has potential applicability | Directly applicable to the studied problem |
| Expands understanding and knowledge | Focuses on problem-solving |

**Source:** Prepared by the researcher based on multiple references

These distinctions highlight that theoretical research primarily aims at knowledge generation, whereas applied research focuses on solving real-world problems.

### 3.3.3 The Reality of Academic Scientific Research in Algerian Universities:

Scientific research in higher education institutions requires a clear and applicable scientific strategy, as well as supportive governance that recognizes its importance in societal and economic development. It also requires academically and administratively qualified leadership and creative researchers in their respective fields.

In addition to preparing human resources, universities are responsible for conducting scientific research. In modern higher education, research is considered one of the most essential functions of the university and a key driver of scientific, social, and economic progress. It is also a benchmark for measuring the advancement of nations.

Therefore, universities must actively engage in research across all disciplines to achieve comprehensive development. To enhance their national and global standing, they must effectively utilize their human resources and rationally exploit their research capabilities. However, Algerian universities face significant challenges in this regard.

Among the major obstacles affecting scientific research in Algerian universities are:

- Weak evaluation standards for scientific research
- Limited production of high-quality, peer-reviewed publications in indexed international journals
- Low international ranking of Algerian universities despite substantial state funding
- Insufficient budgets allocated to research
- Overreliance on theoretical studies due to lack of resources for experimental research
- Bureaucratic administrative and financial procedures that hinder research efficiency

## 4. Section Three: Academic Scientific Research in Algerian Universities

### 4.1. Startups as a Channel for Applying Scientific Research

#### 4.1.1 The Relationship Between Scientific Research and Startups

Scientific research is essential for startups, particularly in a rapidly evolving business environment that requires adaptation to market demands and customer needs, as well as the development of innovative products and services.

- There is a strong and close relationship between applied scientific research and startups across all stages of their lifecycle—from launch to growth, scaling, and exit.
- Startups rely on research outputs to generate innovation opportunities that form the foundation of their products and services.

- The relationship between scientific research and startups is complementary: research provides the foundation, while startups serve as a platform for implementing and materializing research outcomes.
- Startups enable the transformation of research results into marketable products and services, contributing to economic and social development.
- Scientific research provides the knowledge and technologies that drive innovation within startups.
- Collaboration may include the establishment of business incubators within universities and research institutions to leverage academic expertise and provide support for startups.
- Startups face challenges related to applying scientific knowledge and delivering innovative solutions.

### 4.1.2 The Contribution of Algerian Universities in the Valorization of Research Outcomes

The Algerian state has sought to integrate universities into its broader project aimed at transitioning toward a knowledge-based economy and achieving integration between universities and the economic sector, in order to promote economic and social development. This effort is intended to keep pace with the rapid advancements in new technologies driven by digital transformation in the global business environment.

Given that scientific research is one of the most important domains, the supervising ministry has emphasized its significance as a core university activity alongside education. Accordingly, substantial financial allocations have been dedicated to scientific research and technological development.

**Table (05): Budget Allocations to the Ministry of Higher Education and Scientific Research in Algeria (2020–2024)**

| Fiscal Year | Total Budget Allocation (DZD) | Allocation for Scientific Research and Technological Development |
|---|---|---|
| 2020 | 364,283,132,000 | – |
| 2021 | 370,596,356,000 | – |
| 2022 | 400,051,187,000 | – |
| 2023 | 523,693,133,000 | 11,350,466,000 |
| 2024 | 618,794,308,000 | 19,138,061,000 |

**Source:** Official Gazettes (2019–2024)

From the table above, it is evident that the total budget allocated to the Ministry of Higher Education and Scientific Research has increased significantly, with the 2024 budget (618,794,308,000 DZD) nearly double that of 2020.

Allocations for scientific research and technological development represent approximately 30% of the total budget in 2023 and 2024, reflecting the growing interest of the Algerian state in scientific research.

### 4.2 Frameworks of Scientific Research in Algerian Universities

#### 4.2.1 Network of Research Institutions

- Scientific research support programs
- Research platforms, including digital platforms (Innovation Platform, Infrastructure Platform, Research Platform), and the **ASJP** platform for publishing national scientific journals online
- Research centers
- Research funding mechanisms

The current research network includes:

**Table (06): Academic Scientific Research Network in Algeria**

| Research Laboratories | Research Centers | Research Units | Shared Facilities | Experimental Stations | Research Agencies |
|---|---|---|---|---|---|
| 1890 | 32 | 48 | 126 | 41 | 4 |

**Source**: mesrs .dz/index.php/recherche scientifique.an

The Algerian academic research system includes 1,890 research laboratories, 32 research centers, 48 research units, 41 experimental stations, 4 research agencies, and 126 shared facilities.

#### 4.2.2 Scientific Research Programs

These include:

- National research programs
- International research programs
- Projects with socio-economic impact
- Institutional research projects

**Table (07): National Research Programs**

| Completed National Research Programs | Ongoing National Research Programs | Planned National Research Programs |
|---|---|---|
| 2731 | 203 | / |

**Source:** mesrs.dz/index.php/recherche_scientifique

By the end of 2025, approximately 2,731 national research programs had been completed, while 203 programs were still in progress. No new upcoming programs have yet been announced.

**Table (08): Major Aggregates**

| National Research Program Projects | Socio-Economic Impact Project | Thematic Research Project | Innovative Partnership Project with the Socio-Economic Sector |
|---|---|---|---|
| 335 | 421 | 133 | 80 |

| Mixed Research Team | Subsidiary Economic Enterprise | Small Enterprise | Start-up |
|---|---|---|---|
| 77 | 423 | 2466 | 256 |

| Manufacturing Laboratories | Business Incubators | Technological Platform | Entrepreneurship Development Center |
|---|---|---|---|
| 63 | 118 | 22 | 118 |

**Source:** mesrs.dz/index.php/recherche_scientifique

### 4.2.3 Research and Development

- Valorization of research programs
- Innovation
- Intellectual property
- Science portals

**Table (09): Patent Applications Filed (2011–2023)**

| Year | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of Applications | 132 | 156 | 174 | 189 | 209 | 227 | 261 | 291 | 303 | 347 | 420 | 691 | 1300 |

**Source:** Directorate General for Scientific Research and Technological Development

The table shows a continuous increase in patent applications, rising from 132 in 2011 to approximately 1,300 in 2023.

### 4.3 The Reality and Prospects of Scientific Research and Its Applications within Startups

Recent evaluations of national research programs—particularly in their economic and social dimensions—have shown that they did not sufficiently meet the needs of economic sectors.

This assessment prompted the state and the Ministry of Higher Education and Scientific Research to reconsider these programs using a new approach focused on aligning research topics with the actual needs of various sectors, with particular emphasis on strategic priorities such as food security.

In line with Algeria's development strategy for 2024–2029, the number of national projects has increased to 68, compared to 35 in the previous year. These projects address key areas such as food security, health security, and energy security.

These initiatives have provided practical solutions to economic and social challenges, demonstrating success in linking scientific research with economic application. They have placed universities at the heart of sustainable development strategies and reinforced the role of research as a tool for societal well-being.

## 5. Conclusion:

This study has examined scientific research, its development, and its relationship with startups. Algeria has established structural frameworks and allocated significant financial resources to promote academic research and facilitate its application through startups.

However, a key challenge remains: the weak link between universities and other development sectors. This is reflected in the perception within universities that enterprises lack confidence in academic research, while business leaders often believe that universities do not sufficiently engage in applied research addressing real-world problems.

Based on the above, the following conclusions can be drawn:

- Strengthening applied research capacities, developing skills, promoting knowledge exchange, and expanding university incubators
- Promoting a culture of innovation and transforming research outputs into practical solutions contributing to sustainable development
- Converting research outputs into implementable projects by supporting innovators, simplifying investment procedures, and facilitating access to incentives—especially for technology-driven projects
- Increasing training programs, supporting students in developing their ideas, and organizing national and international exhibitions to showcase research projects for funding or commercialization

**Recommendations**

Despite the efforts made by the Algerian state, several recommendations should be considered:

- Strengthening the political will to make scientific research and innovation key pillars of economic development
- Establishing an effective model for integration between universities, research laboratories, and economic institutions
- Raising awareness of innovation as a key driver of investment and competitiveness
- Encouraging researchers and academics to engage in entrepreneurship
- Expanding university incubators across all institutions
- Increasing private sector involvement, particularly in funding
- Promoting international partnerships with universities for academic, economic, and cultural exchange.

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