

Universities in Algeria and their Impact on Economic Diversification: Challenges and Strategies

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Abstract

Algeria, heavily dependent on hydrocarbons, faces increasing economic vulnerability, highlighting the need for strategic diversification. This research analyzes the role that Algerian universities can play in this process, particularly through education, innovation, and entrepreneurship. Based on the theory of endogenous growth (Romer, Lucas, Barro), the study emphasizes the importance of investment in education and R&D. The case of Mouloud Mammeri University, through its various support structures, is examined to assess the impact of the incubator and support systems on the entrepreneurial ecosystem. A quali-quantitative approach is adopted to identify the key drivers and obstacles to this contribution. The results show that universities can foster the emergence of innovative start-ups. University-business collaborations are essential to this dynamic. Strengthening tailored training programs and applied research is recommended. Thus, the university becomes a key actor in the country's economic resilience.

Keywords: Economic diversification. Algerian university. Ecosystem. Start-up.

Introduction

Algeria, like many resource-rich countries, is heavily dependent on the hydrocarbon sector, which accounts for a significant proportion of its GDP and export revenues. This dependence makes the economy vulnerable to fluctuations in oil and gas prices, limiting the country's resilience to global economic crises. Moreover, the transition to a more sustainable and competitive economy requires reducing this dependence by developing other growth sectors such as digital technologies, manufacturing, renewable energies and biotechnologies.

In this context, economic diversification becomes a strategic necessity to ensure stable growth, create new jobs and strengthen the country's competitiveness on the international stage. It is based on a number of levers, including innovation, entrepreneurship and the development of skills adapted to the demands of the labor market.

Algerian universities therefore have a central role to play in this process. They are privileged places for producing and disseminating knowledge, training human capital and stimulating innovation. Through scientific research, the creation of incubators, collaboration with companies and the promotion of entrepreneurship, they can foster the emergence of new industries and contribute to the development of

an ecosystem conducive to economic diversification. By adapting their programs to market needs and supporting start-ups and applied research, they can become major catalysts in Algeria's economic transformation.

The aim of this research is to show that Algerian universities can play an essential role in the transition to a knowledge and innovation economy, enabling the country to reduce its dependence on a single sector and fostering the emergence of innovative companies.

It is with this in mind that this research explores how the Algerian university can become a key player in this field. Beyond business creation, the university is a catalyst for the talent and skills essential to diversification. It trains qualified professionals in different fields (science, engineering, management, digital) and fosters interdisciplinarity, enabling the emergence of hybrid innovations such as the application of big data to finance or AI to healthcare.

In Algeria, many universities have incubators to support entrepreneurial projects and promote economic diversification. Finally, by collaborating with public institutions and companies, universities can directly influence diversification strategies through the creation of training programs tailored to market needs and the development of centers of excellence in research and development (R&D). So, by combining innovation, training and entrepreneurship, universities can play a central role in the process of economic diversification and resilience in the face of global market changes. In economic development, and what are the levers for an effective contribution to economic diversification?

Thanks to the academic research and start-ups it generates, the university can play an active role in the development of new industries such as artificial intelligence, biotechnology, renewable energies and fintech. This dynamic reduces economic vulnerability by diversifying opportunities and protecting economies from sectoral crises.

Through an empirical study of an Algerian university, we will examine:

- the strategies put in place to create a favorable ecosystem,
- determinants of success
- and the obstacles hindering the university's role as a key driver of economic diversification and the emergence of start-ups.

The study aims to demonstrate that the university is a key player in the transition to a knowledge-based economy, reducing dependence on a single sector and encouraging the emergence of new industries.

By adopting endogenous growth theory, we seek to highlight the fact that economic diversification relies heavily on the key role played by universities in human capital formation, research and innovation.

According to the endogenous growth theory developed by Romer (1986, 1990), Lucas (1988) and Barro (1990), growth is based on investment in knowledge and technical progress, which places universities at the heart of economic development.

An effective diversification strategy starts with:

- strengthening research and development (R&D),

- promoting collaboration between universities, companies and laboratories, to accelerate innovation and the creation of new industries.

Secondly, the creation of poles of excellence and university incubators, like the Chilean model studied by Sinnot et al (2010), can help transform innovations into startups and competitive businesses.

In addition, higher education needs to adapt to the needs of the labor market, integrating training targeted at growth sectors such as digital technologies and artificial intelligence. Another key strategy is to encourage lifelong learning to ensure that workers' skills keep pace with economic change.

At the same time, universities need to facilitate the transfer of technology to local companies in order to stimulate industrial production and reduce dependence on traditional sectors.

Finally, government and private-sector support for educational investment is crucial to ensuring quality infrastructure and research funding. The example of Canada and Australia, analyzed by Lederman and Maloney (2006), perfectly illustrates how a high level of human capital from universities can foster successful diversification. By combining these strategies with a stable institutional environment, as highlighted by Acemoglu, Johnson and Robinson (2003), universities become engines of economic diversification, fostering more resilient and sustainable growth.

The question then becomes:

How can the Algerian university contribute effectively to economic diversification by promoting entrepreneurship, technological innovation and the creation of start-ups?

Furthermore, a review of empirical studies on the subject has enabled us to formulate the following hypotheses:

H1: Algerian universities play a central role in economic diversification by training qualified human capital and fostering innovation and entrepreneurship.

H2: The development of a favorable university ecosystem (incubators, laboratories, industrial collaborations, R&D) stimulates the creation of innovative start-ups and new industries.

H3: Economic diversification relies on an integrated strategy combining innovation, training and institutional support, in which universities play a catalytic role.

H4: Increased collaboration between universities, businesses and public institutions ensures that university training meets the needs of the labor market, facilitating the transition to a knowledge-based economy.

To address this issue, we have adopted an interpretivist epistemological paradigm that emphasizes a contextual and in-depth understanding of social phenomena, highlighting the diversity of perspectives and the social construction of reality.

The research methodology adopted is quali-quantitative, based essentially on semi-structured interviews with incubator and start-up managers, as well as an analysis of indicators relating to start-up creation and R&D funding.

To this end, our analysis will be structured along four main lines. The first will present a brief theoretical framework on economic diversification. The second will analyze the entrepreneurial ecosystem conducive to start-up development. The third part will be devoted to an empirical study of the case of

University of Mouloud MAMMERI in Algeria, and the role of university incubators and support structures in the development of start-ups. Finally, the last part will focus on the analysis of the research results.

1. A review of the literature

There are three main theoretical approaches to economic diversification. Academic literature analyzes economic diversification through three main theories. Modern portfolio theory, developed by Harry Markowitz (1952, 1959) and completed by Modigliani and Miller (1958), demonstrates that portfolio diversification reduces risk and improves returns. Endogenous growth theory, inspired by the work of Schumpeter (1942) and Solow (1956), emphasizes innovation and investment in human capital as drivers of growth, according to Romer (1986, 1990), Lucas (1988) and Barro (1990).

Several empirical studies, including those by Feenstra et al (1999), Berthélemy and Chauvin (2000) and Al-Marhubi (2000), confirm the link between diversification and growth. Gylfason (2005) built an econometric model demonstrating that investment in various sectors promotes diversification. Noland and Pack (2003), Lederman and Maloney (2007) highlight the importance of human capital, illustrated by the examples of Canada and Australia. Acemoglu, Johnson and Robinson (2003) show that strong institutions, as in Botswana, promote diversification. Harding and Javorcik (2007) highlight the positive impact of foreign direct investment on exports in Central Europe. In Africa, according to Ben Hammouda et al (2006, 2009) and UNECA (2007), diversification remains limited and influenced by factors such as governance, investment and macroeconomic stability. Economic diversification therefore relies on growth strategies based on innovation, public policy and human capital, confirming its essential role in reducing the vulnerability of economies to external shocks.

By adopting endogenous growth theory, we seek to highlight the fact that economic diversification relies heavily on the key role played by universities in human capital formation, research and innovation.

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An effective diversification strategy starts with strengthening research and development (R&D), by promoting collaboration between universities, companies and laboratories, to accelerate innovation and the creation of new industries.

Secondly, the establishment of poles of excellence and university incubators, along the lines of the Chilean model studied by Sinnot et al. (2010), can help transform innovations into startups and competitive businesses.

In addition, higher education needs to be adapted to the needs of the labor market, by integrating training targeted at growth sectors such as digital technologies and artificial intelligence. Another key strategy is to encourage lifelong learning, so that workers' skills keep pace with economic change.

At the same time, universities need to facilitate technology transfer to local companies to boost industrial production and reduce dependence on traditional sectors.

Finally, the support of the state and private players in educational investment is crucial to guaranteeing quality infrastructure and research funding. The example of Canada and Australia, analyzed by Lederman and Maloney (2006), perfectly illustrates how a high level of human capital from universities can foster successful diversification. By combining these strategies with a stable institutional environment, as highlighted by Acemoglu, Johnson and Robinson (2003), universities become engines of economic diversification, fostering more resilient and sustainable growth.

We see the entrepreneurial ecosystem approach as a systemic and strategic response to the challenges of growth, innovation and inclusive development. The contributions analyzed show that the performance of an ecosystem depends as much on the diversity of its players as on the quality of their interactions. While public resources and policies are necessary, they must be accompanied by coherent structuring, collective commitment and appropriate governance.

The role of universities, still under-exploited, appears to be a major lever for training, supporting and connecting tomorrow's entrepreneurs. Provided we foster proximity, cross-sector dynamics and a culture of cooperation, the entrepreneurial ecosystem can become a tool for profound regional transformation.

2. The entrepreneurial ecosystem: a systemic approach to growth, innovation and inclusion

The emergence of entrepreneurial ecosystems in a globalized and unstable economic environment, marked by technological, social and territorial challenges, represents a strategic response. This concept, still in its infancy in theoretical terms, proposes a systemic vision of entrepreneurship based on cooperation between multiple players: entrepreneurs, public institutions, financing structures, universities and local authorities.

Research is now focusing on exploring the conditions of emergence and performance of these complex systems, analyzing their capacity to foster innovation, SME growth, social inclusion and territorial development. This section reviews some of the academic work that has focused on the study of entrepreneurial ecosystems and the role of universities in entrepreneurial ecosystems.

2.1. The entrepreneurial ecosystem: between cooperation, inclusion and territorial roots

A number of studies have highlighted how well-structured entrepreneurial ecosystems can act as levers for inclusion, innovation and competitiveness.

Thus, an approach focused on inclusivity proposes considering the ecosystem as a strategic tool for integrating groups under-represented in entrepreneurship, such as women, young people, people with disabilities or NEETs. By connecting economic, social and political players, these ecosystems facilitate access to resources (financing, training, mentoring) and foster the transformation of entrepreneurial culture (Benabdellah, 2024). The author focuses on the change of scale, integrating inclusion as a criterion of ecosystem performance, while calling for more empirical research on the subject.

From a corporate standpoint, other research has shown that inter-entrepreneurial cooperation, dense social networks and local mentoring contribute to strengthening skills, innovation and competitiveness in territories. However, these dynamics are hampered by structural obstacles such as limited access to financing, administrative complexity and regional disparities (Oudmine, Boudad, & Oudmine, 2024). A systemic approach based on network theory and open innovation is therefore recommended.

On a more strategic level, the business ecosystem is perceived as a community of cooperation and competition, where the entrepreneur can no longer evolve alone. He must develop dynamic capabilities (Teece, 2007) enabling him to detect opportunities, adapt his resources and design flexible business models (Blondel & Gratacap, n.d.). This co-evolution between entrepreneur and environment is central in an uncertain economic world.

Finally, in the Moroccan context, some studies emphasize the link between the performance of industrial SMEs and the quality of the regional business environment. In studying the Fès Meknès region, it has been shown that material and immaterial resources (information, financing, training, entrepreneurial culture) are crucial in supporting business innovation and growth. However, the fragmentation of public policies, the lack of coordination between players and the weakness of the cooperative culture hinders the emergence of a dynamic entrepreneurial ecosystem (Mamouni & Skouri, 2023). Collective commitment and better territorial governance appear here to be indispensable conditions.

2.2. The role of universities in entrepreneurial ecosystems

In parallel with the above work, other research has focused on the structuring role of universities in entrepreneurial ecosystems, in relation to their educational, research and value-adding functions.

In the French context, a qualitative study looked at the place of universities in territorial ecosystems, particularly following legislative reforms (2007 LRU and 2013 ESR laws). Conducted in the Languedoc-Roussillon region, this survey based on 57 interviews reveals a lack of organized proximity between universities and other entrepreneurial players (incubators, local authorities, funders). Although perceived as breeding grounds for skills and projects, universities remain poorly involved, due to a lack of coordination, unclear governance and compartmentalized institutional logics (Bories-Azeau, Fort, Noguera, & Peyroux, 2019). The study concludes on the need to contractualize relationships via structured partnerships and to rethink the governance of territorial ecosystems.

Another empirical study analyzed the impact of university ecosystem components on students' entrepreneurial intention. Using Ajzen's (1991) theory of planned behavior and Toutain et al.'s (2014) model, the authors identified eight structuring dimensions: curricula, networks, learning spaces, teachers, entrepreneurial culture, extracurricular activities and coaching. Based on a questionnaire of 229 students, all these dimensions were found to have a positive influence on entrepreneurial intention (Retal & Bachiri, 2022). The authors recommend reinforcing active teaching methods, structuring support services, and conducting longitudinal studies to track the transition from intention to the act of creation.

Theodoraki, C. (2021), explores the development of an effective ecosystem strategy within the academic entrepreneurial ecosystem (EEA). The AEE is defined as a network of interconnected actors and institutions, associated with a university, aiming to foster entrepreneurship in a geographical community. Universities play a key role in linking education, support and business creation, while academic incubators act as intermediaries to create an environment conducive to innovation and connect businesses to their external environment.

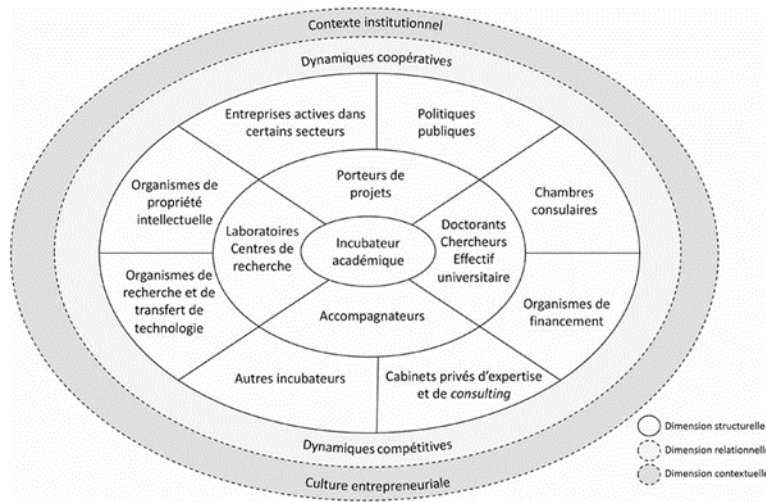
Through a qualitative study based on 40 semi-directive interviews with EEA players in France, the author analyzes the internal (specialization or diversification) and external (coopetition) configuration of academic incubators. The results show that the latter combine individual and collective strategies to develop an adapted ecosystemic strategy, influenced by environmental (e.g.: competition, new entrants) and organizational (e.g.: size, reputation) factors.

A five-stage protocol is proposed: strategic positioning, ecosystem analysis, collective strategic analysis, individual strategic analysis, and monitoring and control.

This dynamic, iterative protocol aims to optimize the effectiveness of the EAS by aligning incubator objectives with those of the ecosystem.

The study highlights the importance of coopetition (cooperation and competition) in maintaining a balance between value creation and competitive advantage. It offers managerial implications for public decision-makers and incubator managers, proposing a strategic decision-making tool for a sustainable entrepreneurial ecosystem. Finally, the study proposes a structure for the academic entrepreneurial ecosystem as illustrated in figure 1 below:

Figure 1: The structure of the academic entrepreneurial ecosystem



Source: Theodoraki, C. (2021)

According to Benessalah and Abdelmalek (2024), incubators, particularly those attached to universities, play a crucial role in the entrepreneurial ecosystem. They act as platforms for collaboration between start-ups, industries and public institutions. As innovation hubs, their effectiveness in supporting and mentoring start-ups with a sustainable focus is an important lever for local economic growth, giving them a competitive edge on a global scale (Kipper et al., 2014, cited in Benessalah & Abdelmalek, 2024).

This performance relies on the implementation of structured programs, combining suitable infrastructure, coworking spaces, mentoring and training services, as well as an environment conducive

to networking and technology transfer (Al-Mubarak et al., 2014, cited in Benessalah & Abdelmalek, 2024).

Moreover, university incubators facilitate the transfer of knowledge and technology from the university to the business world, thanks in particular to the involvement of students and teachers specializing in technological fields (Stal et al., 2016; Abetti & Rancourt, 2006, cited in Benessalah & Abdelmalek, 2024). They also help strengthen the viability of start-ups, particularly in sectors with high risk and uncertainty (McAdam et al., 2006, cited in Benessalah & Abdelmalek, 2024).

Finally, these incubators enhance start-ups legitimacy and ability to grow by optimizing available resources through networks and strategic alliances (Lasrado et al., 2015; Li & Wang, 2011, cited in Benessalah & Abdelmalek, 2024).

2.3. The role of university incubators in Algeria: an academic analysis

With regard to the Algerian context, it's worth noting that academic articles emphasize the growing role of university incubators in promoting entrepreneurship, fostering the creation of startups and the development of a knowledge-based economy. Ministerial Decree number 1275 of 2022 is a key institutional lever for encouraging entrepreneurial initiatives within universities. However, structural challenges, such as limited funding, bureaucratic obstacles and the need to strengthen coordination between players in the entrepreneurial ecosystem, persist and limit the effectiveness of these initiatives.

Ben Saad and Gourari (2024) analyze the role of university incubators in promoting a knowledge-based economy in Algeria. Their study, adopting a mixed methodological approach, assesses the impact of these structures on the success of startups, technology transfer and collaboration between academia and industry. The results underline that, thanks to their young population and high intellectual potential, university incubators help create a dynamic entrepreneurial ecosystem, fostering innovation and economic diversification. However, the authors identify major constraints, notably a lack of funding and coordination, which hinder the full development of these initiatives.

In a complementary vein, ghazal and benchbuat (2025) focus on the impact of university incubators on the entrepreneurial mindset of Algerian students. Their research, based on equation modeling and data collected from 450 students via spss software, reveals a high reliability score (cronbach's alpha= 0.956). The results show that ubis significantly reinforce entrepreneurial attitudes through training, mentoring and financial support. These elements are essential to overcome the initial obstacles faced by student entrepreneurs, while fostering the creation of an entrepreneurial ecosystem conducive to innovation.

Djekidel (2025) examines the transition of Algerian universities towards an entrepreneurial model, in relation to Ministerial Decree 1275. Using a quantitative approach based on a questionnaire administered to 1034 students at the University of Bouira, analyzed via spss, the study highlights moderate entrepreneurial readiness. The results indicate that institutional motivation, supported by universities, exerts a more significant influence on the success of startups than individual student intention, although the latter remains a key factor in strengthening entrepreneurial readiness.

Amghar (n.d.) Explores the specific role of the El Oued university incubator in supporting entrepreneurship among students, professors and graduates. Using a descriptive and theoretical approach,

the study analyzes data from interviews and incubator reports. The results reveal remarkable performance, particularly in patent registration and support for innovative projects, reinforcing the entrepreneurial spirit within the university community.

On his side, Laboudi (2024) analyzes support mechanisms for student entrepreneurs in Algeria, also based on Ministerial Decree no. 1275. Through a case study at the University of Oran 2 and a literature review, the author identifies 29 indicators of academic entrepreneurship, grouped into 8 dimensions, to assess the entrepreneurial development of universities. The results show that the creation of an entrepreneurial environment, integrating training programs, industrial partnerships, workshops, competitions and adequate funding, produces satisfactory results and encourages student involvement in entrepreneurship.

The study conducted by Yacine Madouche, Nahla gherras, and Thierry levy-tadjine (2024), analyzes the Algerian academic entrepreneurial ecosystem through an exploratory qualitative study, focusing on UMMTO incubator at the Mouloud Mammeri university in Tizi-Ouzou, created in 2022. This incubator acts as a space where students transform their innovative ideas into viable businesses. The aim is to understand how these structures can improve inter-organizational performance by examining the interactions between start-ups, universities, local economic players and public policies. The results of this research have led to the identification of success factors and obstacles, and a proposal for strategies to optimize the operation of university incubators.

Benessalah, n., & abdelmalek, s. (2024), explore the key performance indicators (kpis) of university incubators and propose an approach to assess their impact on the sustainable development of start-ups. The study highlights the importance of university-public-private sector collaborations for economic diversification (kouraiche, 2019). The results aim to optimize support mechanisms for student entrepreneurship.

2.4. Algeria's entrepreneurial ecosystem: a survey of incubators and other support structures in 113 university establishments

In the following, we present an overview of 2024 figures for the various innovation, research and entrepreneurship support structures located in 113 Algerian institutions. These structures play a key role in supporting project promoters, researchers and entrepreneurs, offering them support, technical resources and strategic guidance.

The figures illustrate the diversity and distribution of existing systems:

- 94 Incubators

They represent the most widespread structure. Their role is to support innovative projects from their inception phase, by providing an environment conducive to the development of entrepreneurial ideas.

- 102 Subsidiaries

Subsidiaries are the second most common way for research establishments to enhance the value of their research results through partnerships or external services.

- 84 CDE (Economic Development Units)

They act as a link between the establishments and the local economic fabric, facilitating networking and

the development of skills.

- 71 CATI (Technology and Innovation Support Centers)

These centers support technology transfer, particularly to SMEs, and promote innovation through access to technical services and platforms.

- 62 BLEU (University-Business Liaison Offices)

They act as an interface between the academic and socio-economic worlds, promoting collaboration and the co-construction of projects.

- 17 AI (Artificial Intelligence) Houses

These houses illustrate a strategic focus on cutting-edge technologies, and are hubs for the development of artificial intelligence projects. This review highlights the innovation support ecosystem, while underlining the need for strategic coordination between these structures to reinforce their overall impact.

3. The entrepreneurial ecosystem and support structures at Mouloud MAMMERI University

In a move towards a diversified, knowledge-based economy, the Université Mouloud Mammeri of Tizi-Ouzou (UMMTO) has, in recent years, set up a number of structures to support entrepreneurship and innovation.

These schemes are designed to help students, graduates, teachers and researchers turn their ideas into reality through the creation of start-ups and micro-enterprises.

The university incubator, the Centre de Développement de l'Entrepreneuriat (CDE), CATI, BLEU, the subsidiary BCRD and the Fablab form an integrated ecosystem, built around training, prototyping, financing and development support.

This support network illustrates UMMTO's strategic commitment to strengthening the employability, innovation and socio-economic impact of its community.

The following analysis presents the roles, actions and results of each of these structures.

3.1 UMMTO startup and micro-business incubator

In June 2022, as part of its strategy to promote innovation and research, the University Mouloud Mammeri de Tizi-Ouzou (UMMTO) submitted an official request to its supervisory body for the creation of a university incubator. This initiative was approved in December 2022.

The UMMTO incubator was officially created in February 2023, with workspaces allocated, including a Startup Hall and a dedicated startup complex. These infrastructures were inaugurated in June 2023, providing a framework conducive to supporting innovative project leaders from the university community.

The Incubator of the University Mouloud Mammeri of Tizi-Ouzou (UMMTO) offers a comprehensive training program aimed at providing incubatees with the key skills needed for entrepreneurial success. The program includes modules in entrepreneurship, leadership, coaching, BMC, business plan, intellectual property, market research, design thinking, finance, accounting, and digital marketing.

Since its launch, it has trained 384 students and hosted 104 innovative projects in fields as varied as IT, healthcare and tourism. By 2025, 16 projects had been awarded the "Innovative Project" label by the Ministry of the Knowledge Economy, while 28 others are pending (UMMTO incubators, 2025).

In addition to providing administrative support, the incubator organized 85 workshops to strengthen the skills of student-entrepreneurs. These efforts reflect UMMTO's commitment to actively contribute to local development by promoting youth and innovation (Saïd Tisseguine, . 2025).

3.2 Entrepreneurship Development Center (CDE)

The mission of UMMTO's Entrepreneurship Development Center (CDE) is to promote an entrepreneurial culture among students and facilitate their integration into the workforce through the creation of micro-enterprises. Headed by a teacher, the CDE offers a range of activities including training courses, practical workshops, competitions and personalized support for project leaders.

It works with a number of funding and support organizations (ANAD, CNAC, incubators, etc.) to help students set up and finance their projects. With the aim of encouraging self-employment, strengthening the training labour market link and boosting. Within the university entrepreneurial ecosystem, the CDE has established itself as a strategic player in local development, having enabled many students to turn their business ideas into reality.

The CDE collaborates with organizations such as:

- ANVREDET
- Business and management schools
- University incubators

It takes part in meetings and symposia to exchange best practices, consolidate networks and develop strategic partnerships.

3.3 Technology and Innovation Support Center (CATI)

UMMTO's Technology and Innovation Support Center (CATI) plays a central role in promoting technological and entrepreneurial innovation within the university. It assists students, teachers and researchers with innovative projects, promoting research results, facilitating patent registration and supporting the creation of prototypes and start-ups.

By organizing workshops and seminars, and working closely with the university incubator, CATI helps projects to mature and forges links between the academic world and the socio- economic sector. It also develops partnerships with a range of external players to create an ecosystem conducive to innovation. Through its actions, CATI actively contributes to positioning UMMTO as a university committed to the knowledge economy.

3.4 The University Business Liaison Office (BLEU)

The BLEU at the University of Mouloud Mammeri de Tizi-Ouzou (UMMTO) is a strategic initiative designed to strengthen interaction between the academic and socio-economic worlds. Its main mission is to facilitate the professional integration of students and create a solid bridge between the training provided at the university and the needs of the job market. It coordinates a variety of initiatives, including the organization of information days, meetings with companies, business cafés and awareness-raising workshops, notably around Decree 1275, which promotes student entrepreneurship.

BLEU also acts as a facilitator for internships, partnerships, the promotion of innovative projects, and support for financing schemes for young people with ideas. Through these actions, it contributes to the

emergence of a dynamic university ecosystem, focused on innovation, employability and the valorization of university skills in the local and national economic fabric.

3.5 The Consulting Implementation and Development Office subsidiary (BCRD)

The BCRD/UMMTO subsidiary, is an economic structure attached to the Université Mouloud Mammeri de Tizi-Ouzou, whose aim is to enhance the value of the company's activities.

The university's in-house expertise through the provision of scientific, technical and consulting services. It helps to match the expertise of teaching and research staff with the needs of the local and national socio-economic market. In addition to strengthening cooperation between the university and public or private institutions, the subsidiary works to create a dynamic of innovation, self- financing and openness of the university to its environment.

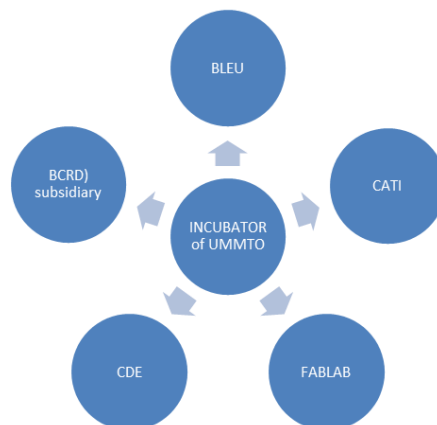
The BCRD subsidiary plays an important role in fulfilling the public service mission of higher education, while contributing to local development by exploiting **university resources and know-how**.

3.6 The fabrication laboratory (Fablab)

The Fablab is a key space for putting the knowledge acquired at UMMTO into practice, while promoting innovative ideas from individuals and companies. The purpose of this fabrication laboratory is to stimulate creativity, innovation and collaboration between students, teacher-researchers, entrepreneurs and other creative players in society. With this in mind, a range of technologies are available to users, including 3D printing, laser cutting and dedicated prototyping workshops.

In short, the University of Mouloud Mammeri of Tizi-Ouzou has developed a coherent, dynamic and interconnected ecosystem to promote entrepreneurship, innovation and knowledge transfer. This strategy positions UMMTO as a key player in the knowledge economy and local development, in line with national priorities for university valorization. Figure 2 shows the various innovation support structures at Mouloud MAMMERI University.

Figure 2: Support structures



Source: author

4. Analysis of research results

Within the framework of this empirical study, the analysis of results focuses on the two main structures active in promoting start-ups and university entrepreneurship within University Mouloud Mammeri of Tizi-Ouzou (UMMTO), namely the UMMTO Incubators and the Entrepreneurship Development Center (CDE-UMMTO).

The aim of this section is to highlight the concrete impact of these structures on entrepreneurial training, support for innovative projects and access to financing for young project leaders from the academic world. Using quantitative data, performance indicators and graphical representations, the analysis enables us to measure the effectiveness of the schemes in place, as well as their contribution to the development of a dynamic local entrepreneurial ecosystem.

The analysis is organized into two main sections:

- The significant activity of the UMMTO incubator, focused on training students, hosting innovative projects and their institutional recognition by the relevant authorities;
- The results of the Centre de Développement de l'Entrepreneuriat (CDE-UMMTO), notably in terms of training sessions, the number of project leaders supported and the number of projects receiving funding through the NESDA scheme.

4.1. Analysis of UMMTO incubator results

❖ In terms of training

- 384 students were trained, demonstrating a strong commitment to raising awareness and developing entrepreneurial skills among young university students.
- ❖ 104 innovative projects in fields as varied as IT, healthcare and tourism.
- ❖ 16 innovative projects hosted
- ❖ 28 innovative projects are currently being supported. These projects cover a wide range of sectors, including:
 - IT;
 - Health;
 - Tourism.

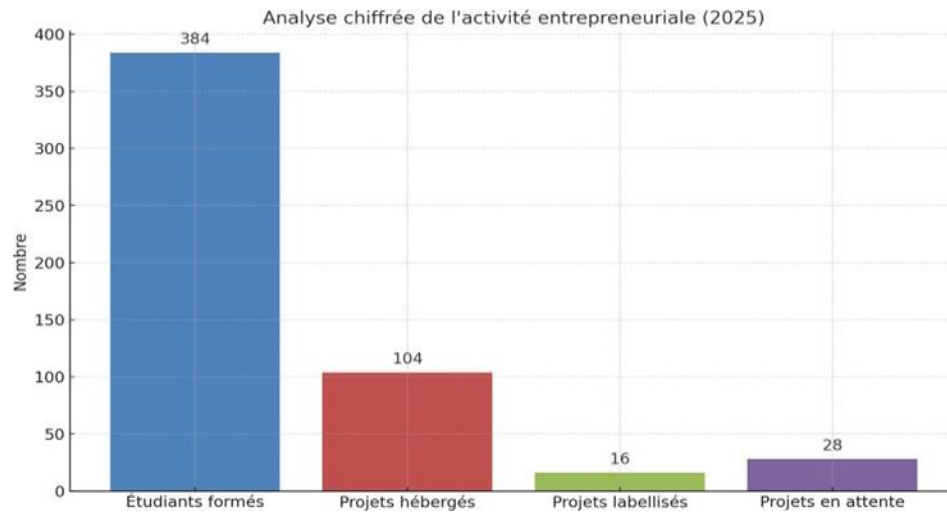
This shows the company's sectoral diversity and strong potential for creating economic and social value.

❖ Institutional recognition

- In 2025, 16 projects were awarded the "Projet Innovant" label, a national label issued by the French Ministry for the Knowledge Economy.
- A further 28 projects are awaiting certification, demonstrating an active pipeline of projects likely to be developed in the near future.

This means that these projects must meet criteria of innovation, feasibility and economic impact.

Graph 1: highlights the dynamics of training, innovation and institutional recognition within the structure.



Source: compiled by us using UMMTO incubator data (June 2025)

In what follows, we present data on the activities of the Entrepreneurship Development Center (CDE-UMMTO), in relation to training and support for the creation of micro- businesses in the university environment:

Table N° 1: Project owners who have obtained favorable financing agreements for their entrepreneurial initiatives.

Session no.	Periods	Number of graduates - project leaders trained.	Number of projects processed and validated by the Selection, Validation and Approval Committee Financing- (CSVF- NESDA / Tizi-Ouzou)
01	From 02/06 to 01/07/2024	10	22
02	From 21/08 to 11/09/2024	21	
03	From 06/10 to 24/10/2024	22	
04	From 03/12 to 26/12/2024	29	

05	From 19/01/ to 06/02/2025	34	
06	From 23/02 to 13/03/2025	26	
07	From 06/04/ to 24/04/2025	24	
TOTAL		166	22

Source: CDE-UMMTO (MAY 15, 2025)

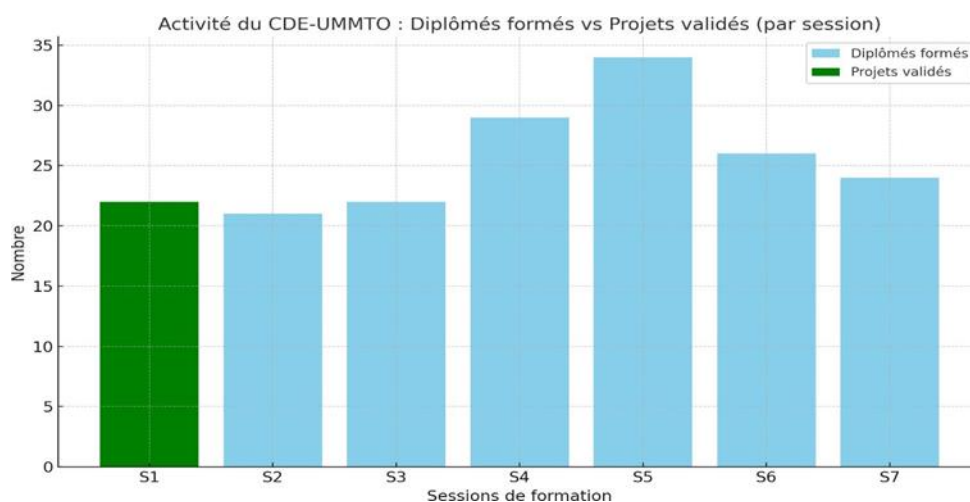
❖ Analysis of CDE results

- 166 graduates trained in entrepreneurship in 7 sessions.
- 22 projects selected and financed by CSVF/NESDA Tizi-Ouzou.
- Rate of projects financed :
> 13% of those trained obtained financing.

❖ Impact of the CDE program

- Strengthening the entrepreneurial spirit within UMMTO.
- Targeted support for the **creation of micro-enterprises**.
- Enhancing graduates' skills through **self-employment**.
- Direct contribution to **local socio-economic development**.

Graph N°2: Activated CDE UMMTO



Source: design based on CDE UMMTO data

To sum up, these results provide an overview of the university's efforts to promote entrepreneurship, and enable us to better appreciate the momentum behind the creation of micro-businesses and start-ups, as well as the promotion of student innovation.

Conclusion

This study demonstrated that Algerian universities, like UMMTO, can indeed play a central role in economic diversification (H1), by training qualified human capital and fostering innovative entrepreneurship. Empirical results have highlighted the concrete impact of structures such as the incubator and the CDE, confirming that a structured university ecosystem stimulates the creation of start-ups (H2). The coherent integration of innovation, training and institutional support was observed through the multiple support mechanisms present at UMMTO, thus validating the hypothesis (H3).

In addition, collaboration with local institutions and the economic fabric shows that the university is adapting its offering to market needs (H4). Despite certain structural obstacles, the prospects remain promising. To maximize their impact, universities need to strengthen coordination between players, R&D funding and the valorization of research. In this way, UMMTO is positioning itself as a strategic lever towards an economy based on knowledge and resilience.

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