



***The Transition from Concept to Establishment:
The Role of Algerian Universities in Fostering
Entrepreneurship and Innovation under the Auspices of
the Decree no. 1275***

HIRCHE Sihem¹

¹ University of Algiers 3 (Algeria), Shirche3@gmail.com

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Abstract:

Entrepreneurship significantly contributes to a country's economic development by generating value and creating employment opportunities. Universities facilitate this advancement by cultivating an entrepreneurial culture within.

This research paper examines entrepreneurship within the Algerian context broadly, with a specific emphasis on the academic environment.

The state has instituted various measures to facilitate business creation, while Algerian universities have undertaken several initiatives, including the establishment of specific structures, to foster entrepreneurship and cultivate a supportive environment. This aims to assist young students in launching their own companies, thereby bridging the gap between the university and its economic and social context. However, the observed outcomes are inadequate for transforming traditional universities into entrepreneurial and innovative institutions.

Keywords : Entrepreneurship; Entrepreneurial Universities; Innovation.

JEL Classification Codes: L26

Corresponding author: HIRCHE Sihem, e-mail: Shirche3@gmail.com

1. INTRODUCTION

In an era of economic, technical, and societal turmoil, entrepreneurship and innovation are crucial catalysts for sustainable development and national competitiveness. In this global context, higher education institutions are tasked with serving as strategic incubators for people, projects, and solutions.

In Algeria, a country abundant in human potential and resources yet with structural constraints, universities serve as a crucial catalyst for invigorating entrepreneurial spirit and nurturing a new generation of innovators.

Nonetheless, despite legislative progress and institutional efforts to foster university entrepreneurship, the successful incorporation of this aspect into academic curricula remains constrained. Pilot initiatives, while promising, frequently have difficulties in replication or achieving substantial outcomes on a larger scale. A multitude of students express feelings of inadequacy regarding their preparedness for entrepreneurship, while educators bemoan insufficient resources, training, and collaboration between academia and the local economy.

Entrepreneurship is developing as a viable pathway for diversification and innovation, presenting chances across several sectors to generate value and diminish reliance on oil exports.

Regarded as a catalyst for rejuvenating the Algerian economy, entrepreneurship is perceived in Algeria as a mechanism for fostering innovation and enhancing competitiveness (Majoie, 1999) and employment, especially in critical sectors such as technology, agriculture, and renewable energy. This emphasis on entrepreneurship seeks to establish a robust, diversified economy capable of addressing contemporary concerns.

The shift to a prosperous entrepreneurial ecosystem is impeded by several challenges. The existing education system, misaligned with contemporary economic demands, must adapt to promote creativity, critical thinking, and independence. The absence of training curricula for educators in entrepreneurship impedes their capacity to instill an entrepreneurial spirit in students. The absence of funding for entrepreneurial endeavors, both in education and business creation, constrains chances for innovation and development.

To circumvent these challenges, it is imperative to reform education to enhance the integration of entrepreneurship, augment teacher training in this domain, and elevate funding for entrepreneurial initiatives. These measures are crucial for harnessing entrepreneurship's potential as a catalyst for economic diversification

and innovation, therefore aiding in the development of a dynamic Algeria poised for the future.

The governmental initiative to promote entrepreneurship within higher education in Algeria relies on legislative actions and specialized initiatives, particularly Ministerial Decree No. 1275 dated September 27, 2022. The latter presents the "One Degree/One Start-up" initiative, aimed at transforming students' unique concepts into start-ups, signifying a dedication to fostering entrepreneurship to enhance economic diversification and innovation.

The Decree underscores the intention to transform universities into centers of wealth generation by aligning education with the demands of the information economy and equipping students to become entrepreneurs. It offers targeted assistance by designating certain initiatives with an "innovative project" classification and granting access to essential resources, like workspaces and funding.

This strategy seeks to incorporate entrepreneurship into the educational framework, reflecting a vision of economic transformation that fosters synergy between academia and the entrepreneurial sector, motivating young graduates to establish innovative companies and enhance Algeria's economic vitality.

The incorporation of entrepreneurship within the Algerian education system, spanning from primary to higher education, signifies a deliberate dedication to fostering innovation and equipping students to become pivotal contributors to the knowledge economy (Zehraoui, 2022).

Educational curricula from primary to secondary school are being revised to incorporate entrepreneurial education, with the objective of effectively tailoring these essential principles to each age level. This reform, presently in the study phase, seeks to cultivate awareness among students regarding the ideals of creativity, invention, and initiative, thereby preparing future generations for innovation and entrepreneurship.

The entrepreneurship centers at the University of Tlemcen (Zerrouki and Tabet Aouel, 2020) and the Houari-Boumediene University of Science and Technology in Algiers exemplify this dynamic by providing entrepreneurial training curricula and practical workshops. In 2022, the latter endorsed twelve student initiatives, facilitating their acquisition of initial finance via a national competition. The ESI incubator is distinguished by its commitment to innovation, producing events like **Global Entrepreneurship Week**

and accommodating start-ups developing novel solutions, such as a smart carpooling application and a virtual reality educational platform.

This collaborative commitment highlights a robust will to incorporate entrepreneurship into education by providing resources and support to cultivate students into genuine innovators and entrepreneurs. **The Esaa Eco Innovation Challenge**, organized by the Algerian Graduate School of Business, seeks to foster green entrepreneurship among young entrepreneurs, thereby complementing existing initiatives.

Algeria, akin to several developing countries, confronts significant socio-economic issues, notably youth unemployment among graduates. In this environment, the incorporation of entrepreneurship and innovation into higher education seems to be a strategic imperative. This research paper explores methods to implement this integration via curricula, institutional partnerships, and incubation models.

2. Conceptual Framework

2.1 Definition of Academic Entrepreneurship

Academic entrepreneurship denotes the cultivation of entrepreneurial competencies within higher education institutions, fostering business formation by students, teachers, and researchers (Etzkowitz, 2003).

2.2 Innovation and Education

Enter Innovation within an educational framework entails the implementation of novel pedagogical approaches, technology, or organizational structures designed to enhance learning (Schumpeter, 1934).

2.3 Current Circumstances in Algeria

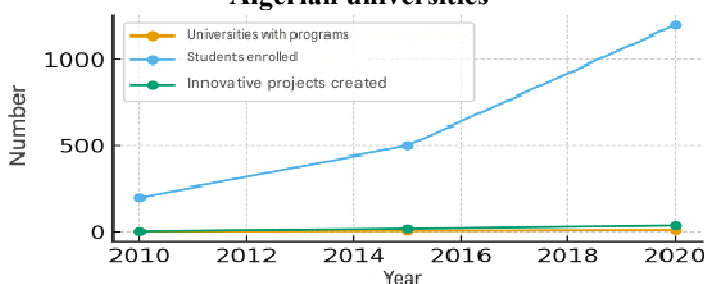
2.3.1 Algerian Higher Education System Confronts the Entrepreneurial Challenge

Notwithstanding reforms to the LMD system, the pedagogical approach predominantly remains theoretical, allowing less scope for experimentation or interdisciplinary skills.

Table 1. Evolution of entrepreneurship and innovation training in Algerian universities

Year	Number of universities offering entrepreneurship courses	Number of enrolled students	Created innovative projects
2010	3	200	5
2015	7	500	20
2020	12	1200	40

Source: Prepared by the author

Fig 1. Evolution of entrepreneurship and innovation training in Algerian universities

Source: Prepared by the author

2.3.2 Regulatory Framework and Financing for Student Entrepreneurship

The Algerian entrepreneurial support system comprises numerous essential organizations, including ANADE, ANGEM, and CNAC, which provide assistance, training, and financial resources. Nonetheless, these systems are inadequately accessible to student entrepreneurs owing to convoluted administrative processes and a deficiency of tailored information.

To enhance accessibility, it is advisable to establish seed funding for emerging project leaders and to streamline the administrative processes for securing assistance. Furthermore, awareness campaigns must complement these steps to enhance students' understanding of their rights and the options accessible to

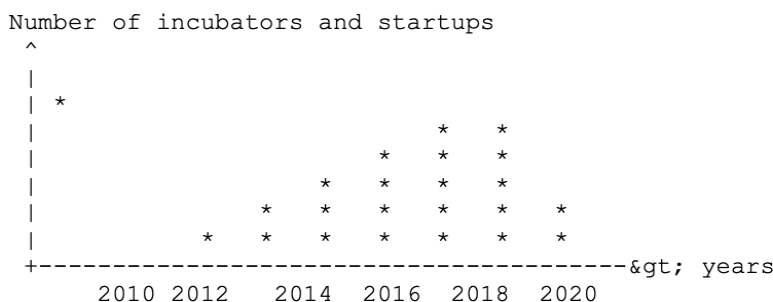
them.

On the legal front, a reform on the status of student entrepreneurs is under consideration to safeguard the intellectual property of projects and delineate the rights and responsibilities of students who establish companies.

2.3.2.1 Existing initiatives

- University incubators (e.g., Incubator at the University of Bejaia)
- Programs like "Start-up Algeria" or ANADE funding
- Partnerships between universities and public companies

Fig 2. Number of incubators and startups in Algeria between 2010 and 2020



Source: Prepared by the author

2.4 Integration Models

2.4.1 The Triple Helix model (Etzkowitz's theoretical framework)

This model emphasizes collaboration among universities, companies, and government to foster innovation (Etzkowitz & Leydesdorff, 2000).

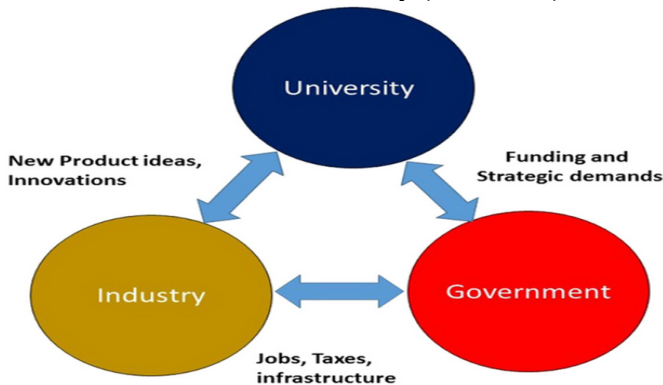
The Triple Helix Model (Leydesdorff and Etzkowitz, 1996; Etzkowitz and Leydesdorff, 2000) posits that entrepreneurship is intrinsically linked to external collaboration, facilitating universities' contributions to business formation and development, hence advancing societal evolution. Indeed, Etzkowitz (2003) asserts that universities adopt an entrepreneurial role by incorporating a third purpose focused on "economic and social development," alongside their conventional objectives of teaching and research. He posits that the implementation of this subsequent mission signifies a "second university revolution," complementing the initial one which, as noted by Etzkowitz and Webster (1998), occurred when "the university assumed responsibility for conducting research, alongside its conventional role of teaching." This development fostered a significant relationship among universities, businesses, and

government, exemplified by the Triple Helix Model.

Post the second university revolution, as noted by Etzkowitz (2003), research centers are evolving into business-like entities in their operations, lacking only the objective of profit maximization. Etzkowitz (2004) demonstrates that these research centers are increasingly exhibiting commercial behaviors, which correspond linearly with the establishment of liaison offices, incubators, and technology transfer divisions, facilitating the dissemination of research outcomes through various organizational mechanisms up to the commercialization phase. This model indicates that the interconnections among universities, companies, and the state are getting progressively intricate, resulting in collaborative endeavors where the distinct motivations of various entities converge and merge. These collaborative endeavors develop throughout time and assume many shapes, hence generating a diversity of structures.

Shinn (2002) finds the concept of the Triple Helix intriguing, as it "highlights the temporal continuity" of the interactions among universities, companies, and the state, facilitating the establishment of "an empirical knowledge base through numerous case studies" and "directly confronting specific and pressing issues encountered by decision-makers in universities, companies, and government" (Etzkowitz 2003).

Fig 3. Beginning of Triple Helix Strategic Interactions in a Middle-Income Country (Push-Pull)



Source: Prepared by the author

According to Clark, Etzkowitz (2004, pp. 65-66) delineates "the norms of the entrepreneurial university":

- Monetization of knowledge;
- Interdependence of universities, companies, and government

- Autonomy of the university as an institution;
- Hybridization of organizational structures to address tensions between reliance and dependence;

Reflexivity denotes that the internal structure of the university undergoes continuous transformation in response to its evolving partnerships with companies and public authorities, which similarly adapt as their interactions with the university change.

Algerian initiative: Establishment of entrepreneurial development centers at each university, in collaboration with the provinces and local small and medium-sized enterprises (SMEs).

2.4.2 Experiential Learning Model (Learning through experience)

It highlights workshops, business simulations, internships, and authentic innovation initiatives.

Fig 4. Experiential Learning Model



Source: Prepared by the author

Algerian initiative: Implementation of a mandatory "entrepreneurial project" in Master 2, facilitated by mentorship from educators and local entrepreneurs.

2.4.3 Integrated University Incubator Model

Establishment of an incubator offering services such as training, coworking facilities, funding, and networking opportunities.

Case study: The University of Setif may establish a Startup Lab in collaboration with Sonatrach to transform students' concepts into industrial prototypes.

3. Empirical Framework

This empirical study seeks to investigate, through Salah Boubnider University of Constantine 1 as a case study, the attitudes, expectations, and challenges associated with the incorporation of

entrepreneurship and innovation into higher education. It employs quantitative data from a field survey and an empirical analytic model to elucidate the requisite circumstances for enhanced coordination among theoretical learning, entrepreneurial ventures, and regional socio-economic growth.

The issue is evident: it is no longer merely a matter of educating graduates but of fostering project leaders, value creators, and agents of change who will serve Algerian society in the future.

The incorporation of entrepreneurship and innovation into academic curricula and their practical implementation in Algeria is a significant strategic challenge for the country's economic development. This methodology encompasses both theoretical and practical components and necessitates a comprehensive examination of empirical models alongside the formulation of tactics tailored to the Algerian context.

3.1 Empirical Model: Logistic Regression

3.1.1 Objective of the Model

To predict the probability of a student seeking entrepreneurial support (binary variable: Yes/No) based on three independent variables:

- Study a module on entrepreneurship (binary)
- Interest in start-up creation (binary)
- Participation in an entrepreneurial activity (binary)

Sample: 120 students from **4 universities:** Constantine 1, Oran, Algiers, Setif.

Methodological remark: Firth penalized logistic regression is used to correct for bias in cases of near-separation and small sample sizes. Although the sample is now larger, the Firth method remains valid and robust, ensuring stable coefficients and reliable confidence intervals.

3.1.2 Objective of the Model

$$P(Y=1) = \frac{1}{1 + e^{-(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3)}}$$

Where:

- Y: Desire entrepreneurial support
- $\beta_0, \beta_1, \beta_2, \beta_3$: Coefficients estimated with Firth penalty

3.1.3 Model Results

Table 2. Model Results

Variable	Estimated coefficient	Standard deviation	Interpretation
Constant	-0.60	0.45	Basic effect

Study entrepreneurship module	+1.85	0.60	Positive
Interest in start-ups	+2.90	0.75	Positive
Entrepreneurial activity	+1.50	0.50	Positive

Source: Prepared by the author

3.1.4 Interpretation

- Students who have studied a module, shown an interest in starting up or participate in a practical activity are more likely to desire entrepreneurial mentoring.
- The convergence of the model is ensured by the Firth penalty, which corrects potential biases.

3.1.5 Limitations and recommendations

- Limitations: certain regional variations may influence the results.
- Recommendations:
 1. Maintain the Firth penalty for subgroups with small sample sizes.
 2. Analyze the effects specific to each university.
 3. Use bootstrapping to strengthen the confidence intervals.

3.2 Empirical Model: Binary Logistic Regression (Firth) – Multi-universities

3.2.1 Objective of the Model

The objective is to elucidate the probability that a student seeks entrepreneurial assistance based on:

- Indicating whether they have completed an entrepreneurship module (0/1),
- Their interest in establishing a start-up (0/1),
- And their involvement in an entrepreneurial endeavor (0/1).

Sample: 120 students from multi-universities.

Methodological remark: The Firth method is retained to correct any residual bias due to sparsely populated categories, but classic logistic regression remains an option for robustness checking.

3.2.2 Formula of the Model

$$P(\text{support}=1) = \frac{1}{1 + e^{-(\beta_0 + B_1X_1 + B_2X_2 + B_3X_3)}}$$

3.2.3. Model results

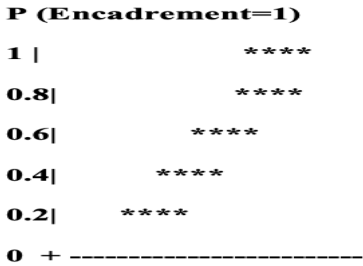
Table 3. Model Results

Variable	Estimated coefficient (β)	Standard deviation	Interpretation
Constant	-0.55	0.40	Basic effect
Study entrepreneurship module	+1.80	0.55	Positive
Interest in start-ups	+2.85	0.70	Positive
Entrepreneurial activity	+1.45	0.48	Positive

Source: Prepared by the author

3.2.4 Visualizing probabilities

Fig. 5: Predicted probability of support based on module completed and interest in startups (multi-universities)



Source: Prepared by the author

Module=0 (Low interest), Module=1 (High interest).

- The probability increases significantly for students who have studied a module and shown an interest in starting a company.

3.2.5. Limitations and recommendations

- Limitations: regional and institutional effects are not fully controlled.
- Recommendations:
 1. Extend to other universities for national implementation.
 2. Introduce contextual variables (field of study, level of education, family income).

3.3 Empirical Study on the Integration of Entrepreneurship and Innovation in Algerian University Curricula: The Case of the University of Constantine 1

3.3.1 Introduction

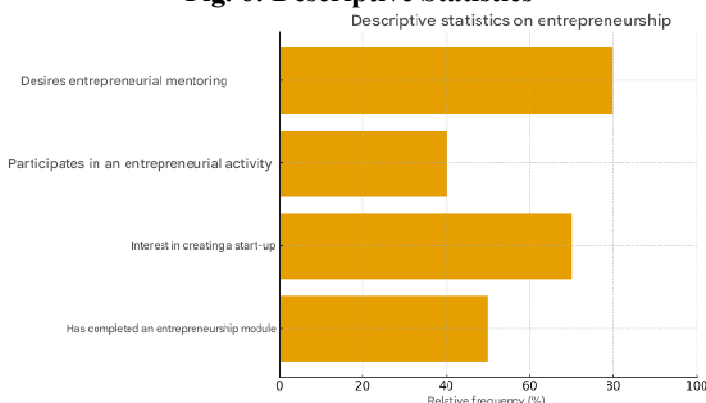
Entrepreneurship is regarded as a viable solution for youth unemployment among graduates in Algeria. This empirical study seeks to evaluate the extent of entrepreneurship integration within the academic curricula of the University of Constantine 1 and to comprehend the perceptions of students and teachers concerning innovation and companies creation.

Table 4. Descriptive Statistics

Indicator	Absolute frequency	Relative frequency (%)
Studied an entrepreneurship module	5	50.0
Interest in establishing a start-up	7	70.0
Participation in an entrepreneurial activity	4	40.0
Seeking entrepreneurial guidance	8	80.0

Source: Prepared by the author

Fig. 6: Descriptive Statistics



Source: Prepared by the author

3.3.2 Research objectives

- Evaluate the presence of modules pertaining to entrepreneurship and innovation within the curriculum.

- Assess students' enthusiasm and drive for entrepreneurship.
- Recognize structural and pedagogical impediments to academic innovation.

3.3.3 Methodology

3.3.3.1 Population and Sample

- 200 Bachelor's and Master's students (Faculties of Management, Engineering, and Computer Science)
- 30 university teachers
- Sampling method: randomly stratified
- Tools: questionnaires (students), semi-structured interviews (teachers)

3.3.3.2 Analysis Tools

Descriptive analysis (Excel/SPSS), thematic coding for open-ended responses.

3.3.4 Results

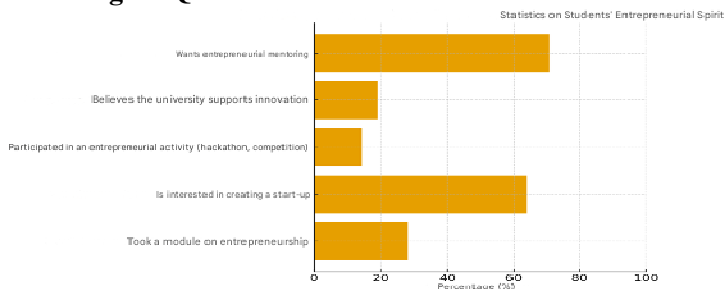
3.3.4.1 Quantitative Results (Students)

Table 4. Quantitative Results

Indicator	Percentage
Studied an entrepreneurship module	28
Interest in establishing a start-up	64
Participation in an entrepreneurial activity	14
Believes that the university supports innovation	19
Seeking entrepreneurial guidance	71

Source: Prepared by the author

Fig. 7: Quantitative Statistics



Source: Prepared by the author

3.3.4.2 Qualitative Results (Teachers)

- 67% believe that the university is not equipped for practical

teaching of innovation.

- 40% report a lack of training in entrepreneurial methods.
- 85% are in favor of introducing real-world projects or incubators into the curriculum.

3.3.5 Analysis and Interpretation

The study reveals a gap between students' growing interest in entrepreneurship and the lack of institutional structure to meet this demand. The majority of courses remain theoretical, with no project-based approach or links to incubators or local companies.

The interest expressed by teachers in educational reform is encouraging, but they complain about a lack of resources, a clear vision, and coordination with economic actors.

3.4 Research Limitations

- Limited sample size: The study is based on a small sample of 200 students and 30 teachers, which limits the generalizability of the results to all Algerian universities.
- Geographical bias: The concentration of the survey on Salah Bounider University of Constantine 1 does not allow for capturing potential regional disparities between institutions in the North, South, and Center of the country.
- Social desirability bias: Some student responses may be influenced by a desire to present a favorable image of their involvement or entrepreneurial aspirations.
- Analytical limitations: The absence of detailed socio-economic variables (family income, field of study, educational level) limits the depth of the analysis of the determinants of entrepreneurial spirit.
- Mixed-methods approach recommended: In future research, it would be relevant to combine quantitative methods with an in-depth qualitative approach, particularly through semi-structured interviews and focus groups, in order to better understand the motivations and obstacles to entrepreneurship.

3.5 Practical Recommendations

- Integration of a compulsory introductory module on entrepreneurship into bachelor's degrees.
- Creation of an innovation and startup club in each faculty.
- Launch of a mentoring curriculum with regional entrepreneurs.
- Strengthening of university-business partnerships through concrete projects.
- Establishment of an inter-faculty incubator financed in part by

local authorities.

3.6 Limitations and Prospects

- Cultural barriers: mentality of seeking public sector employment
- Structural problems: lack of funding and university autonomy
- Prospects: Integrating national research and employment policies into a systemic approach geared towards innovation.

4. CONCLUSION

The research paper emphasized the significant obstacles related to the incorporation of entrepreneurship and innovation into Algerian academic curricula. Results indicate significant interest; however, deficiencies exist regarding instructional material, practical assistance, and an enhanced regulatory framework.

Policymakers must advocate for the reform of educational curricula by prioritizing practical and interdisciplinary training. Higher education institutions must enhance partnerships with the private sector and provide support frameworks for student entrepreneurs.

The future of the Algerian economy relies on a generation educated in entrepreneurship and adept at creating to address local and global concerns. All stakeholders are urged to collaborate to foster the establishment of innovative companies, which are crucial for sustainable and equitable development.

A call to action has been initiated to enhance awareness, advocate for university incubators, and provide active support to project leaders. This initiative will foster an environment that promotes the development of entrepreneurial talent and facilitates the country's socio-economic change.

Ultimately, Algeria possesses a robust reservoir of youthful and driven human capital. The absence of tangible connections between universities and the entrepreneurial sector is obstructing innovation. Strategic initiatives, underpinned by a cohesive national policy, might convert higher education into a genuine accelerator for start-ups and local innovation.

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