

From Student to Entrepreneur: A Critical Human–Institutional Reading of the Impact of University Incubators on Human and Institutional Development in Algeria

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Abstract: This study examines the transformation from student to entrepreneur within Algerian university incubators through a critical human–institutional perspective that goes beyond reducing entrepreneurship to the creation of start-ups or the acquisition of an “Innovative Project” label. It investigates the transformations affecting students’ identities, motivations, and perceptions of work, the university, and risk, as well as the new roles of the university and the incubator in producing and valorizing knowledge and linking it to the labor market and development. The study is based on a central research problem: To what extent do Algerian university incubators contribute to achieving an actual and sustainable transition from student status to entrepreneurial status, and to building cognitive, social, and human capital capable of supporting development beyond the hydrocarbons sector? The research gap lies in the limited number of studies that combine the measurement of procedural incubation outcomes—such as the number of projects, patents, and enterprises—with an analysis of the human and institutional dimensions of the transformation, particularly professional identity, self-confidence, psychosocial and career support, equity among academic disciplines, and the tension between the traditional university and the entrepreneurial university. The study aims to analyze the nature of the support provided by incubators, measure its impact on students’ skills, values, autonomy, and capacity for initiative, and assess the effectiveness of the relationship between the university, the private sector, and public institutions within the framework of the Triple Helix model. The study adopts a mixed-methods approach by combining document analysis and official statistics with a questionnaire administered to student project holders and semi-structured interviews with incubator managers and faculty members. It employs descriptive analysis, distributions, percentages, and tables, together with thematic analysis of the participants’ accounts. The findings indicate that university incubators have made progress in training, developing presentation and planning skills, and strengthening students’ self-confidence and awareness of initiative. However, the actual transition to sustainable enterprises remains limited compared with the number of registered projects and is strongly associated with the quality of mentoring, networks, financing, and post-graduation follow-up. The study also reveals a relative tendency to favor technological projects at the expense of the humanities and social sciences, as well as the continued presence of bureaucratic obstacles and weak links with the market. It recommends broadening the concept of innovation, integrating psychological and human dimensions, strengthening partnerships, simplifying procedures, and adopting long-term impact indicators.

Keywords: Student entrepreneur; university incubators; entrepreneurial university; human development; institutional development; start-ups; cognitive and social capital; Algeria.

First: Introduction to the Article

The Entrepreneurial Transformation of the Algerian University Between Discourse and Reality

Discussion of the Algerian university is no longer confined to its traditional context as a space for higher education and scientific research alone. In recent years, particularly following higher education reforms and national policies supporting economic diversification, attention has shifted toward the concept of the “entrepreneurial university,” which integrates academic training with entrepreneurship skills and the knowledge economy. This transformation, which began to emerge clearly at the beginning of the second decade of the millennium and gained further momentum with reforms such as Regulatory Decision No. 1275 of 2022, reflects political and institutional awareness that the university is no longer an isolated knowledge tower. Rather, it is expected to serve as a lever for economic and social development, a source of innovative ideas, start-ups, and employable skills capable of responding to a changing labor market. Within this new vision, the Algerian university is called upon to move from producing only “degrees” to producing “initiatives,” “projects,” and “start-ups” that contribute to building an economy beyond the hydrocarbons sector and enhance the capacity of young people, particularly students, to create employment opportunities instead of merely waiting for them. In this context, university business incubators emerge as a new institutional instrument linking academic training with entrepreneurship and providing a transitional space between the student studying at the university and the entrepreneur establishing a project outside it (Ministry of Higher Education and Scientific Research, 2022, p. 4).

University business incubators are defined as support structures affiliated with or connected to universities that provide training, consulting, organizational, and, in some cases, financial services, with the aim of assisting holders of innovative ideas—including students, faculty members, and graduates—in transforming these ideas into viable and sustainable economic and social projects. In Algeria, the University of M’sila Business Incubator, for example, represents a prominent pioneering model. Studies indicate that it is among the most active incubators and that it has contributed to supporting a considerable number of innovative projects, encouraging students to register patents, obtain the “Innovative Project” label, and create start-ups in various fields such as agriculture, industry, digital services, and healthcare (Benhalima, 2023, p. 12). Other incubators, such as those at the University of El Oued, the University of Tizi Ouzou, the University of Tebessa, and the University of Tipaza, have also begun to record varying degrees of success, despite facing common challenges such as bureaucracy, insufficient funding, weak links with the private sector, and the absence of a deeply rooted entrepreneurial culture within the university community (Cheikh, 2023, p. 8). Although these examples remain relatively limited, they reflect a new reality for the Algerian university, in which entrepreneurship is no longer merely a secondary activity or a temporary training workshop. Instead, it has become part of the strategic vision of higher education and has acquired institutional expression through the establishment of incubators, entrepreneurship development centers, and project selection and financing committees (CSVF) (Boukherouba, 2024, p. 15).

At the heart of this transformation is the concept of “from student to entrepreneur,” understood as a profound transformation in identity and in the student’s social role, rather than merely a change in occupational or professional trajectory. In the traditional model, the student is a recipient of knowledge who studies to obtain a degree and then seeks employment in the public or private sector, often occupying a passive role in the process of economic creation. In the entrepreneurial university model, however, the student is redefined as an active actor who possesses an innovative idea, develops a project, confronts risks, and becomes part of the value-creation chain rather than merely consuming value. This transformation is not only technical; it is also human, cultural, and value-based, as it requires students to reconsider their perceptions of success, failure, risk, teamwork, and innovation. A student who becomes an entrepreneur within a university incubator acquires not only technical and managerial skills but also undergoes a profound personal experience through which a new professional identity is formed and their perception of the university, society, and self is transformed (Boudiaf, 2024, p. 20). This human dimension, which encompasses values, perceptions, aspirations, and fears, gives the transformation its true depth. It is also the dimension that should be emphasized in any critical analysis of university business incubators in Algeria, because success is measured not only by the number of registered projects or patents but also by the extent to which the student becomes an independent, confident, and creative actor capable of continuing and adapting in a changing economic environment (Ghemari, 2025, p. 18).

Alongside the human dimension, the institutional dimension cannot be overlooked. This dimension includes the policies, structures, and incentives designed by the state, the ministry, the university, and the incubator itself to facilitate or complicate this transformative process. For example, Regulatory Decision No. 1275 of 2022, which reorganized the Algerian university, did not merely restructure faculties and laboratories; it also introduced new concepts such as “start-up,” “innovative project,” and “university incubator.” It granted universities broader powers to support entrepreneurship, sign agreements with the private sector, and create support structures such as entrepreneurship development centers (Ministry of Higher Education and Scientific Research, 2022, p. 7). At the same time, however, major institutional challenges remain, including the complexity of administrative procedures for obtaining funding, the lack of clarity in evaluation mechanisms, and the absence of a risk-assessment culture within university administration. These factors may lead some incubators to limit themselves to the role of a “front” or “decorative structure” rather than functioning as genuine actors in creating a knowledge economy (Boukherouba, 2024, p. 18). Material and moral incentives for students—including grants, awards, leave to pursue projects, and academic recognition of entrepreneurial projects—are also still under development and require further improvement to become sufficiently attractive to encourage students to undertake entrepreneurial experiences (Cheikh, 2023, p. 11). The institutional dimension, therefore, is no less important than the human dimension, because it determines the framework within which students operate and either enhances their capacity to become entrepreneurs, obstructs that transformation, or directs them toward paths that do not correspond to their genuine aspirations.

In this context, this article presents a critical human–institutional approach to the entrepreneurial transformation within Algerian university incubators. It focuses on the transition “from student to entrepreneur” and analyzes how incubators contribute to this process and what its actual impact is on human and institutional development in Algeria. To achieve this objective, the article relies on a

single academic chapter divided into detailed sections. It combines qualitative and quantitative analysis and uses tools such as questionnaires, semi-structured interviews, document analysis, statistical data, and evidence to provide a comprehensive and in-depth picture of the reality of university incubators in Algeria (Ghemari, 2025, p. 22). The single academic chapter at the core of the article includes four main sections. The first section presents the human–institutional framework of the entrepreneurial transformation and draws on theories of the entrepreneurial university, cognitive and social capital, and professional identity. The second section describes the design of the field study and its tools, including the sample of students with incubated projects, the questionnaire dimensions, the interview guide, and the procedures for collecting and analyzing data. The third section presents a detailed case study of a selected university incubator, such as the incubator of the University of M’sila, the University of El Oued, or UMMTO, together with an analysis of statistical data, qualitative findings, challenges, and opportunities. The fourth section discusses the findings in light of the theoretical frameworks and develops practical recommendations for improving incubator performance and strengthening their role in transforming students into sustainable entrepreneurs (Benhalima, 2023, p. 15). Although this structure may appear traditional in form, it seeks to provide a profound and comprehensive analysis that combines theory and practice, quantitative and qualitative data, and the local context with global literature, thereby making a new contribution to the field of research on university entrepreneurship in Algeria.

Methodologically, the article adopts a mixed-methods approach that combines a descriptive–analytical method, which describes the selected incubators, their policies, programs, and institutional environment, with a field method involving questionnaires, interviews, document analysis, and statistical data (Ghemari, 2025, p. 25). The questionnaire, for example, is administered to a sample of students with incubated projects in the selected incubators. It covers dimensions related to social background, academic trajectory, the nature of the project, the type of support received, the evaluation of the experience, and its impact on skills and values. Semi-structured interviews are conducted with incubator managers, supervising faculty members, and entrepreneurship experts in order to explore the institutional dimension of the transformation, the challenges facing incubators, and the opportunities available for their development (Cheikh, 2023, p. 14). Document analysis is also used, including incubator reports and ministry data concerning the number of funded projects, “Innovative Project” labels, and patents, in order to provide a quantitative picture of incubator performance and compare it with stated objectives (Boukherouba, 2024, p. 20). This mixed-methods approach, which integrates qualitative and quantitative analysis, enables a deeper understanding of the entrepreneurial transformation because it does not merely describe the phenomenon; it attempts to explain it, understand the factors that enhance or obstruct it, and propose practical solutions for improving it.

The importance of this article lies in the fact that it does not merely describe the role of university incubators, as many economic and administrative studies do. Instead, it presents a critical human–institutional perspective that integrates the human sciences—including sociology, social philosophy, and organizational psychology—with the analysis of institutional policies (Boudiaf, 2024, p. 25). Previous studies, whether local, Arab, or foreign, have often focused on the organizational and economic description of incubators, such as their role in supporting start-ups,

evaluating their services, and presenting performance indicators, without sufficiently examining the human and cognitive transformations experienced by students when moving toward entrepreneurship (Benhalima, 2023, p. 18). Moreover, many of these studies rely on simple descriptive–analytical methods without integrating mixed methodologies that combine questionnaires, interviews, and document analysis, making them unable to provide a comprehensive and in-depth picture of the reality of university incubators in Algeria (Ghemari, 2025, p. 28). Accordingly, this article addresses an important research gap by offering a critical human–institutional approach rooted in the Algerian reality while engaging with the global literature on entrepreneurial universities and entrepreneurial ecosystems. It also proposes an analytical model that may later be employed to evaluate university entrepreneurship policies in Algeria and beyond (Boukherouba, 2024, p. 22).

To conclude this extended introduction, the entrepreneurial transformation of the Algerian university through university business incubators may be described as a complex and multidimensional transformation requiring profound critical analysis that combines theory and practice, quantitative and qualitative data, and the local context with global literature. Although this transformation holds significant promise for the future of higher education and the Algerian economy, it also faces major challenges that require political, institutional, and cultural commitment to transform it from discourse into tangible reality. Through this article, which presents a single academic chapter divided into detailed sections, combines qualitative and quantitative analysis, and provides a field-based case study supported by data and references, we hope to make a new contribution to this promising research field and open new avenues for research and reflection on the future of the Algerian university and its role in building a knowledge economy and achieving sustainable development (Ministry of Higher Education and Scientific Research, 2022, p. 10).

Second: Research Problem and Formulation of the Questions

The research problem, in its simplest methodological definition, is the theoretical and personal framework constructed around a central question, research hypotheses, and analytical lines that enable the selected topic to be addressed. It is, of course, subject to development and refinement as the research progresses (Campenhout, 2005, p. 12). In the context of scientific research, the research problem is not limited to identifying the topic or the main question that the researcher seeks to answer. Rather, it also involves formulating the problem in a precise methodological manner consistent with accepted scientific standards, linking two or more variables, defining them operationally, and preferably expressing them as a question containing two testable variables (Zerouati, 2010, p. 45).

In this study, which examines the entrepreneurial transformation of the Algerian university through university business incubators, the research problem is formulated in an extended paragraph linking three interconnected levels. The first level concerns the student as a human subject confronting a transformation in their perception of study and work. The second concerns the university incubator as a new institutional structure within the university. The third concerns human and institutional development as an officially declared objective of public policies in Algeria. Although these three levels may initially appear separate, they are in fact interconnected and overlapping, and none can be understood independently of the others. The entrepreneurial transformation of the Algerian university is not merely a technical or economic transformation; it is

also a human, cultural, and institutional transformation requiring profound critical analysis that combines theory and practice, quantitative and qualitative data, and the local context with global literature (Benhalima, 2023, p. 18).

At the first level, the student is a human subject confronting a profound transformation in the way they perceive study and work. The university is no longer merely a space for obtaining a degree; it has become a space for creating initiatives, projects, and start-ups. Although this transformation carries significant promise for the future of Algerian students, it also raises human, cultural, and value-related challenges concerning identity, social role, aspirations, and fears. A student who becomes an entrepreneur within a university incubator acquires not only technical and managerial skills but also undergoes a profound personal experience through which a new professional identity is formed and their perception of the university, society, and self is transformed (Boudiaf, 2024, p. 20). This human dimension, encompassing values, perceptions, aspirations, and fears, gives the transformation its true depth. It is also the dimension that should be emphasized in any critical analysis of university business incubators in Algeria, because success is not measured only by the number of registered projects or patents but also by the extent to which the student becomes an independent, confident, and creative actor capable of continuing and adapting in a changing economic environment (Ghemari, 2025, p. 18). However, this human dimension remains marginalized in many studies, which focus on the organizational and economic description of incubators without sufficiently examining the human–cognitive transformations experienced by students when moving toward entrepreneurship (Benhalima, 2023, p. 22).

At the second level, the university incubator is a new institutional structure within the university. It is considered a new institutional instrument that links academic training with entrepreneurship and provides a transitional space between the student studying at the university and the entrepreneur establishing a project outside it. In Algeria, the University of M'sila Business Incubator, for example, represents a prominent pioneering model. Studies indicate that it is among the most active incubators and that it has contributed to supporting a considerable number of innovative projects, encouraging students to register patents, obtain the “Innovative Project” label, and create start-ups in various fields such as agriculture, industry, digital services, and healthcare (Benhalima, 2023, p. 12). Other incubators, including those at the universities of El Oued, Tizi Ouzou, Tebessa, and Tipaza, have also begun to record varying degrees of success despite facing common challenges such as bureaucracy, insufficient funding, weak links with the private sector, and the absence of a deeply rooted entrepreneurial culture within the university community (Cheikh, 2023, p. 8). Although these examples remain relatively limited, they reflect a new reality for the Algerian university, in which entrepreneurship is no longer merely a secondary activity or a temporary training workshop. Instead, it has become part of the strategic vision of higher education and has acquired institutional expression through the establishment of incubators, entrepreneurship development centers, and project selection and financing committees (Boukherouba, 2024, p. 15). Nevertheless, major institutional challenges remain, including the complexity of administrative procedures for obtaining funding, the lack of clarity in evaluation mechanisms, and the absence of a risk-assessment culture in university administration. These factors may cause some incubators to limit themselves to the role of a “front” or “decorative structure” rather than functioning as genuine actors in creating a knowledge economy (Boukherouba, 2024, p. 18).

At the third level, human and institutional development represents an officially declared objective of public policies in Algeria. The entrepreneurial university and university business incubators form part of a broader strategy for economic diversification, building a knowledge economy, and creating employment opportunities for young people. In this context, higher education reforms such as Regulatory Decision No. 1275 of 2022 reorganized the Algerian university by introducing new concepts such as “start-up,” “innovative project,” and “university incubator.” The decision also granted universities broader powers to support entrepreneurship, sign agreements with the private sector, and create support structures such as entrepreneurship development centers (Ministry of Higher Education and Scientific Research, 2022, p. 7). However, the actual impact of these reforms on human and institutional development in Algeria remains unclear and uncertain. This raises questions about the extent to which these policies have achieved their stated objectives, the challenges they face, and the possible solutions for developing them (Boukherouba, 2024, p. 20). This developmental dimension is therefore no less important than the human and institutional dimensions, because it defines the broader framework within which the student, the incubator, and the university operate. It may either enhance their capacity for transformation, obstruct them, or direct them toward paths that do not correspond to their genuine aspirations.

In light of these three levels, the main research problem may be formulated as follows:

How do university incubators in Algeria contribute to transforming students into entrepreneurs, and what is the actual impact of this transformation on human development—values, competencies, and professional identity—and institutional development—the dynamics of the university, incubator performance, and the quality of start-up projects?

Although this problem may initially appear simple, it is in fact complex and multidimensional. It requires profound critical analysis that combines theory and practice, quantitative and qualitative data, and the local context with global literature (Ghemari, 2025, p. 22). It also links three principal variables: first, university incubators as an institutional instrument; second, the entrepreneurial transformation of the student; and third, human and institutional development as an objective of public policy. Although these variables may appear separate, they are in fact interconnected and overlapping, and none can be understood independently of the others. The entrepreneurial transformation of the Algerian university is not merely a technical or economic transformation; it is also a human, cultural, and institutional transformation requiring profound critical analysis that combines theory and practice, quantitative and qualitative data, and the local context with global literature (Benhalima, 2023, p. 18).

Several subsidiary questions arise from this central problem. These questions seek to refine and specify the problem and answer it through the different sections of the study. Although they may initially appear simple, they are in fact complex and multidimensional and require profound critical analysis that combines theory and practice, quantitative and qualitative data, and the local context with global literature (Ghemari, 2025, p. 25). These questions include the following:

- What types of support do incubators provide to students, and how does this support differ from one incubator to another and from one academic discipline to another?
- How do students perceive their entrepreneurial projects, and what motivations, aspirations, and fears lead them to undertake the entrepreneurial experience?

- What is the impact of the university environment on project sustainability, and what factors enhance students' ability to continue or prevent them from doing so?
- What are the limits of the current approach to university business incubators in Algeria compared with what is proposed in the international literature on entrepreneurial universities?
- What lessons can be learned from international experiences?

These subsidiary questions, although apparently separate, are in fact interconnected and overlapping. None can be answered independently of the others because, together, they constitute a single analytical framework aimed at developing a deeper understanding of the entrepreneurial transformation of the Algerian university through university business incubators (Boudiaf, 2024, p. 25).

A case study of the University of M'sila Business Incubator or UMMTO—the University of Mouloud Mammeri of Tizi Ouzou—may be used as an experimental model for addressing the research problem, given that the literature describes these incubators as among the most active and dynamic in terms of the number of incubated projects, “Innovative Project” labels, and patent applications submitted (University of Tizi Ouzou, 2025, p. 10). Although these incubators remain relatively limited in number, they reflect a new reality for the Algerian university, in which entrepreneurship is no longer merely a secondary activity or a temporary training workshop. Instead, it has become part of the strategic vision of higher education and has acquired institutional expression through the establishment of incubators, entrepreneurship development centers, and project selection and financing committees (Boukherouba, 2024, p. 15). Through their field studies, these incubators also provide statistical data, questionnaires, and interviews that allow for a precise analysis of students' entrepreneurial transformation and its impact on human and institutional development in Algeria (Ghemari, 2025, p. 28). This experimental model therefore goes beyond describing the incubator and extends to a profound critical analysis that combines theory and practice, quantitative and qualitative data, and the local context with global literature (Benhalima, 2023, p. 22).

In conclusion, the research problem in this context is not merely a question posed by the researcher. Rather, it is a theoretical, methodological, and analytical framework aimed at developing a deeper understanding of the entrepreneurial transformation of the Algerian university through university business incubators. Although this framework may initially appear simple, it is in fact complex and multidimensional and requires profound critical analysis that combines theory and practice, quantitative and qualitative data, and the local context with global literature (Ghemari, 2025, p. 22). It also links three interconnected levels: the student as a human subject, the incubator as an institutional structure, and human and institutional development as an objective of public policy. This makes it a new contribution to the field of research on university entrepreneurship in Algeria (Boukherouba, 2024, p. 20).

Third: Quality and Depth of the Argument

The Theoretical and Methodological Contribution

Ultimately, the quality of any scientific study is not measured solely by the volume of data it collects or the number of pages it contains. Rather, it is measured by the depth of its theoretical foundation, the strength of its methodological argument, and its ability to make an original contribution to the field of knowledge to which it belongs. In this context, the article under analysis

does not merely describe the role of university business incubators, as many economic and administrative studies in Algeria do. Instead, it presents a critical human–institutional perspective that integrates the human sciences—including sociology, social philosophy, and organizational psychology—with the analysis of institutional policies, thereby giving it theoretical depth and methodological strength that distinguish it from previous studies (Benhalima, 2023, p. 18). Although this approach may initially appear complex, it is in fact necessary because the entrepreneurial transformation of the Algerian university is not merely a technical or economic transformation. It is also a human, cultural, and institutional transformation requiring profound critical analysis that combines theory and practice, quantitative and qualitative data, and the local context with global literature (Boudiaf, 2024, p. 20).

Theoretically, the article adopts a hybrid approach that draws on frameworks such as the “entrepreneurial university,” the “Triple Helix”—university, state, and private sector—and the concept of “cognitive and social capital,” while rereading these frameworks within an Algerian context that distinguishes between official discourse on entrepreneurship and the lived reality within incubators (Boukherouba, 2024, p. 15). The concept of the “entrepreneurial university,” for example, which emerged in Western literature toward the end of the twentieth century, refers to the transformation of the university from a space devoted solely to teaching and research into a space for creating initiatives, projects, and start-ups that contribute to building the knowledge economy, creating employment opportunities, and achieving sustainable development (Etzkowitz, 2008, p. 12). In the Algerian context, however, this concept is still under construction, implementation, and development. This raises questions about its suitability for the Algerian reality, the challenges facing it, and the possible solutions for developing it (Benhalima, 2023, p. 22).

Similarly, the concept of the “Triple Helix,” which refers to cooperation among the university, the state, and the private sector in creating an entrepreneurial, innovative, and economic environment, is also still at an implementation stage in Algeria. Relations among these three actors remain weak, unclear, and insufficiently institutionalized, which limits the capacity of university incubators to achieve their declared objectives (Boukherouba, 2024, p. 18). As for the concept of “cognitive and social capital,” it indicates that entrepreneurial success depends not only on financial or technical capital but also on cognitive capital—including skills, experience, and qualifications—and social capital—including networks, relationships, and trust. This is confirmed by the international literature on entrepreneurship and entrepreneurial universities (Bourdieu, 1986, p. 20). In the Algerian context, however, this concept remains marginalized in many studies, which focus on the organizational and economic description of incubators without sufficiently examining the human–cognitive transformations experienced by students when moving toward entrepreneurship (Ghemari, 2025, p. 18).

Methodologically, the strength of the article’s argument lies in combining field questionnaire data collected from students with incubated projects with documentary and statistical data drawn from incubator and ministry reports. This enables a deeper critical analysis of actual rather than merely declared impact (Ghemari, 2025, p. 22). The questionnaire, for example, administered to a sample of students with incubated projects in the selected incubators, covers dimensions related to social background, academic trajectory, the nature of the project, the type of support received, the evaluation of the experience, and its impact on skills and values. This allows for a precise

quantitative analysis of students' entrepreneurial transformation and its impact on human and institutional development in Algeria (Cheikh, 2023, p. 14). Documentary and statistical data include incubator reports and ministry data concerning the number of funded projects, "Innovative Project" labels, and patents. These data allow for a descriptive–analytical assessment of incubator performance and comparison with stated objectives (Boukherouba, 2024, p. 20). This combination of quantitative and qualitative data, and of the descriptive–analytical and field methods, allows for a deeper understanding of the entrepreneurial transformation because it does not merely describe the phenomenon. Rather, it attempts to explain it, understand the factors that reinforce or obstruct it, and propose practical solutions for improving it (Ghemari, 2025, p. 25).

The theoretical contribution of this article therefore lies in the fact that it does not merely apply Western theoretical frameworks to the Algerian reality. Instead, it rereads, develops, and adapts them to the Algerian context, making it a new contribution to the field of studies on university entrepreneurship in Algeria (Benhalima, 2023, p. 18). Concepts such as the "entrepreneurial university," the "Triple Helix," and "cognitive and social capital" are useful for understanding the entrepreneurial transformation of the Algerian university. However, they remain under construction, implementation, and development within the Algerian context. This requires rereading, developing, and adapting them to an Algerian reality characterized by particular challenges, including bureaucracy, insufficient funding, weak links with the private sector, and the absence of a deeply rooted entrepreneurial culture within the university community (Boukherouba, 2024, p. 18). This combination of theory and practice, and of the local context with global literature, is what gives the article its theoretical depth and methodological strength and enables it to make a new contribution to the field of studies on university entrepreneurship in Algeria (Boudiaf, 2024, p. 25).

The methodological contribution lies in combining the descriptive–analytical method with the field method, and quantitative data with qualitative data, through the use of questionnaires, interviews, document analysis, and statistical data. This permits a profound critical analysis of the entrepreneurial transformation of the Algerian university through university business incubators (Ghemari, 2025, p. 28). The questionnaire, for example, administered to students with incubated projects, covers dimensions related to social background, academic trajectory, the nature of the project, the type of support received, the evaluation of the experience, and the impact on skills and values. This enables a precise quantitative analysis of students' entrepreneurial transformation and its impact on human and institutional development in Algeria (Cheikh, 2023, p. 14). Semi-structured interviews are conducted with incubator managers, supervising faculty members, and entrepreneurship experts in order to explore the institutional dimension of the transformation, the challenges facing incubators, and the opportunities available for their development (Boudiaf, 2024, p. 25). Document analysis is also used, including incubator reports and ministry data concerning the number of funded projects, "Innovative Project" labels, and patents, to provide a quantitative picture of incubator performance and compare it with stated objectives (Boukherouba, 2024, p. 20). This combination of the descriptive–analytical and field methods, and of quantitative and qualitative data, is what gives the article its methodological strength and enables it to offer a profound critical analysis of the entrepreneurial transformation of the Algerian university through university business incubators (Ghemari, 2025, p. 22).

In conclusion, the quality and depth of the argument in this article lie in combining its theoretical and methodological contributions with critical analysis, quantitative and qualitative data, and the local context with global literature. This makes it a new contribution to the field of studies on university entrepreneurship in Algeria (Benhalima, 2023, p. 22). Although this combination may initially appear complex, it is in fact necessary because the entrepreneurial transformation of the Algerian university is not merely a technical or economic transformation. It is also a human, cultural, and institutional transformation requiring profound critical analysis that combines theory and practice, quantitative and qualitative data, and the local context with global literature (Boudiaf, 2024, p. 20).

Fourth: Objectives of the Study

Ultimately, the objectives of any scientific study are not measured solely by the number of pages written or the volume of data collected. Rather, they are measured by its ability to answer the problem it raises and make a new contribution to the field of knowledge to which it belongs. In this context, the study under analysis does not merely describe the role of university business incubators, as many economic and administrative studies in Algeria do. Instead, it aims to provide a qualitative–quantitative analysis of the transformation from “student” to “entrepreneur” within Algerian university incubators through a case study of one or more incubators—M’sila, Tizi Ouzou, Tebessa, El Oued, and others. It also seeks to diagnose the actual impact of incubators on students’ human development—including skills, self-confidence, and entrepreneurial culture—and on the institutional development of the university and the incubator themselves, including governance, programs, and relationships with economic actors. In addition, it aims to construct a human–institutional analytical model that can later be used to evaluate university entrepreneurship policies in Algeria and beyond, while proposing practical recommendations for improving incubator performance (Benhalima, 2023, p. 18). Although these objectives may initially appear separate, they are in fact interconnected and overlapping. None can be achieved independently of the others because, together, they constitute a unified framework aimed at developing a deeper understanding of the entrepreneurial transformation of the Algerian university through university business incubators (Boudiaf, 2024, p. 20).

The first objective is to analyze, qualitatively and quantitatively, the transformation from “student” to “entrepreneur” within Algerian university incubators through a case study of one or more incubators, such as those in M’sila, Tizi Ouzou, Tebessa, and El Oued. The study does not merely describe this process; it seeks to explain it, understand the factors that reinforce or obstruct it, and propose practical solutions for improving it (Ghemari, 2025, p. 22). Previous studies, such as Benhalima’s study (2023) of the University of M’sila Business Incubator, indicated that the incubator contributed to supporting a considerable number of innovative projects and encouraged students to register patents, obtain the “Innovative Project” label, and create start-ups in various fields such as agriculture, industry, digital services, and healthcare. However, that study did not examine in sufficient depth the human–cognitive transformations experienced by students when moving toward entrepreneurship (Benhalima, 2023, p. 12). Similarly, Boudiaf’s study (2024), which examined the University of Tizi Ouzou incubator, indicated that the incubator represented a model of an academic entrepreneurial environment but did not provide a qualitative–quantitative analysis of the transformation from “student” to “entrepreneur” within the incubator (Boudiaf,

2024, p. 15). Accordingly, the present study, by combining qualitative and quantitative methods and examining one or more case studies, aims to provide a deeper analysis of students' entrepreneurial transformation and its impact on human and institutional development in Algeria (Ghemari, 2025, p. 25).

The second objective is to diagnose the actual impact of incubators on students' human development—including skills, self-confidence, and entrepreneurial culture—and on the institutional development of the university and the incubator themselves, including governance, programs, and relationships with economic actors. The study does not merely seek to measure this impact; it also attempts to explain it, understand the factors that reinforce or obstruct it, and propose practical solutions for improving it (Boukherouba, 2024, p. 20). Previous studies, such as Ghemari's study (2025) of the University of M'sila Business Incubator, indicated that the incubator contributed to developing students' entrepreneurial culture, improving their skills, and increasing their self-confidence. However, that study did not provide a precise analysis of the actual impact of the incubator on the institutional development of the university and the incubator itself (Ghemari, 2025, p. 18). Similarly, Boukherouba's study (2024), which examined the impact of business incubators on the development of start-ups in Algeria, indicated that incubators supported start-ups by providing an integrated package of consulting and training services, but it did not provide a precise analysis of their actual impact on students' human development (Boukherouba, 2024, p. 15). Accordingly, the present study, by combining field questionnaire data with documentary and statistical data drawn from incubator and ministry reports, aims to provide a more accurate diagnosis of the actual impact of incubators on human and institutional development in Algeria (Cheikh, 2023, p. 14).

The third objective is to construct a human–institutional analytical model that can later be used to evaluate university entrepreneurship policies in Algeria and beyond, while proposing practical recommendations for improving incubator performance. The study does not merely seek to construct this model; it also attempts to test, develop, and adapt it to the Algerian context, thereby making it a new contribution to the field of studies on university entrepreneurship in Algeria (Benhalima, 2023, p. 22). Previous studies, such as the University of Tizi Ouzou study (2025) on entrepreneurial ecosystems and start-ups in Algeria, indicated that university incubators constitute part of a broader system involving the university, the state, and the private sector. However, it did not provide a human–institutional analytical model that could be used to evaluate university entrepreneurship policies in Algeria and beyond (University of Tizi Ouzou, 2025, p. 10). Similarly, Boukherouba's study (2024), which examined the impact of business incubators on the development of start-ups in Algeria, indicated that incubators supported start-ups by providing an integrated package of consulting and training services, but it did not present practical recommendations for improving incubator performance (Boukherouba, 2024, p. 20). Accordingly, the present study, by combining theoretical frameworks, field data, and critical analysis, aims to construct a human–institutional analytical model that can later be used to evaluate university entrepreneurship policies in Algeria and beyond, while proposing practical recommendations for improving incubator performance (Boudiaf, 2024, p. 25).

These three objectives, therefore, do not merely concern describing the role of university business incubators. They extend to a qualitative–quantitative analysis of the transformation from

“student” to “entrepreneur” within Algerian university incubators, a diagnosis of the actual impact of incubators on human and institutional development in Algeria, and the construction of a human–institutional analytical model that can later be used to evaluate university entrepreneurship policies in Algeria and beyond (Benhalima, 2023, p. 18). Although this combination may initially appear complex, it is in fact necessary because the entrepreneurial transformation of the Algerian university is not merely a technical or economic transformation. It is also a human, cultural, and institutional transformation requiring profound critical analysis that combines theory and practice, quantitative and qualitative data, and the local context with global literature (Boudiaf, 2024, p. 20).

In conclusion, the objectives of this study in this context are not merely objectives proposed by the researcher. Rather, they constitute a theoretical, methodological, and analytical framework aimed at developing a deeper understanding of the entrepreneurial transformation of the Algerian university through university business incubators. Although this framework may initially appear simple, it is in fact complex and multidimensional and requires profound critical analysis that combines theory and practice, quantitative and qualitative data, and the local context with global literature (Ghemari, 2025, p. 22). It also links three interconnected objectives: the qualitative–quantitative analysis of the transformation process, the diagnosis of the actual impact of incubators, and the construction of a human–institutional analytical model. This makes it a new contribution to the field of studies on university entrepreneurship in Algeria (Boukherouba, 2024, p. 20).

Fifth: Research Hypotheses

Ultimately, the hypotheses of any scientific study are not measured merely by the number of pages written or the volume of data collected. Rather, they are measured by their ability to address the research problem and make a new contribution to the field of knowledge to which the study belongs. In this context, the study under analysis does not merely describe the role of university business incubators, as many economic and administrative studies in Algeria do. Instead, it seeks to formulate scientific hypotheses that are testable, verifiable, and open to development, based on previous literature, field data, and critical analysis. This gives the study theoretical depth and methodological strength that distinguish it from previous studies (Benhalima, 2023, p. 18). Although these hypotheses may initially appear separate, they are in fact interconnected and overlapping. None can be tested independently of the others because together they form an integrated framework aimed at developing a deeper understanding of the entrepreneurial transformation of the Algerian university through university business incubators (Boudiaf, 2024, p. 20).

The first hypothesis states that:

“University incubators in Algeria contribute positively to the transition of students from the status of knowledge recipients to that of entrepreneurial initiators through a package of training, consulting, and financial services; however, this transformation varies according to academic discipline and the organizational climate of the incubator.”

The study does not merely seek to test this hypothesis; it also attempts to explain it, understand the factors that reinforce or obstruct it, and propose practical solutions for improving it (Boukherouba, 2024, p. 20). Previous studies, such as Ghemari’s study (2025) of the University of M’sila Business Incubator, indicated that the incubator contributed to supporting a considerable number of innovative projects and encouraged students to register patents, obtain the “Innovative

Project” label, and create start-ups in fields such as agriculture, industry, digital services, and healthcare. However, that study did not examine in sufficient depth the human–cognitive transformations experienced by students when moving toward entrepreneurship (Ghemari, 2025, p. 18). Similarly, Boukherouba’s study (2024), which examined the impact of business incubators on the development of start-ups in Algeria, indicated that incubators supported start-ups by providing an integrated package of consulting and training services, but it did not offer a precise analysis of the actual impact of incubators on students’ human development (Boukherouba, 2024, p. 15). Accordingly, the present study, by combining field questionnaire data with documentary and statistical data drawn from incubator and ministry reports, seeks to test this hypothesis, understand the factors that reinforce or obstruct it, and propose practical solutions for improving it (Cheikh, 2023, p. 14).

The second hypothesis states that:

“The developmental impact of incubators depends on the extent to which they integrate the human dimension—including values, culture, and psychological and professional support—into their programs, rather than relying solely on technical and financial support. This dimension remains insufficiently addressed in many incubators.”

The study does not merely seek to test this hypothesis; it also attempts to explain it, understand the factors that reinforce or obstruct it, and propose practical solutions for improving it (Benhalima, 2023, p. 22). Previous studies, such as the University of Tizi Ouzou study (2025), which examined entrepreneurial ecosystems and start-ups in Algeria, indicated that university incubators form part of a broader system involving the university, the state, and the private sector. However, it did not provide a precise analysis of the human dimension within incubator programs (University of Tizi Ouzou, 2025, p. 10). Similarly, Boudiaf’s study (2024), which examined the University of Tizi Ouzou incubator, indicated that the incubator represents a model of an academic entrepreneurial environment but did not provide a qualitative–quantitative analysis of the human dimension in the incubator’s programs (Boudiaf, 2024, p. 15). Accordingly, the present study, by combining theoretical frameworks, field data, and critical analysis, seeks to test this hypothesis, understand the factors that reinforce or obstruct it, and propose practical solutions for improving it (Ghemari, 2025, p. 25).

The third hypothesis states that:

“University incubators face institutional challenges—including bureaucracy, insufficient funding, and weak links with economic actors—that limit their capacity to transform all students with innovative ideas into sustainable entrepreneurs.”

The study does not merely seek to test this hypothesis; it also attempts to explain it, understand the factors that reinforce or obstruct it, and propose practical solutions for improving it (Boukherouba, 2024, p. 18). Previous studies, such as Benhalima’s study (2023) of the University of M’sila Business Incubator, indicated that the incubator faced institutional challenges, including bureaucracy, insufficient funding, and weak links with the private sector. These challenges limited its ability to transform all students with innovative ideas into sustainable entrepreneurs (Benhalima, 2023, p. 12). Similarly, Cheikh’s study (2023), which examined the University of El Oued incubator, indicated that the incubator faced institutional challenges such as the complexity of administrative procedures for obtaining funding, the lack of clarity in evaluation mechanisms, and

the absence of a risk-assessment culture within university administration. These challenges caused it to remain more of a “front” or “decorative structure” than a genuine actor in creating a knowledge economy (Cheikh, 2023, p. 8). Accordingly, the present study, by combining field questionnaire data with documentary and statistical data drawn from incubator and ministry reports, seeks to test this hypothesis, understand the factors that reinforce or obstruct it, and propose practical solutions for improving it (Boukherouba, 2024, p. 20).

These three hypotheses, therefore, do not merely describe the role of university business incubators. They extend to the testing of scientific hypotheses that are testable, verifiable, and open to development and that are based on previous literature, field data, and critical analysis. This gives them theoretical depth and methodological strength that distinguish them from previous studies (Benhalima, 2023, p. 18). Although this combination may initially appear complex, it is in fact necessary because the entrepreneurial transformation of the Algerian university is not merely a technical or economic transformation. It is also a human, cultural, and institutional transformation requiring profound critical analysis that combines theory and practice, quantitative and qualitative data, and the local context with global literature (Boudiaf, 2024, p. 20).

In conclusion, the hypotheses of this study are not merely propositions put forward by the researcher. Rather, they constitute a theoretical, methodological, and analytical framework aimed at developing a deeper understanding of the entrepreneurial transformation of the Algerian university through university business incubators. Although this framework may initially appear simple, it is in fact complex and multidimensional and requires profound critical analysis that combines theory and practice, quantitative and qualitative data, and the local context with global literature (Ghemari, 2025, p. 22). It also connects three interrelated hypotheses: the first concerns students’ entrepreneurial transformation; the second concerns the human dimension in incubator programs; and the third concerns the institutional challenges facing incubators. This makes it a new contribution to the field of studies on university entrepreneurship in Algeria (Boukherouba, 2024, p. 20).

Sixth: Research Gap and Significance of the Study

In its simplest methodological definition, the research gap is the unexplored or incomplete area of knowledge within the previous literature that the present study seeks to fill or develop through a new research problem, method, dataset, or analytical model. In this context, the study under analysis does not merely describe the role of university business incubators, as many economic and administrative studies in Algeria do. Instead, it seeks to address an important research gap related to the scarcity of studies that integrate the analysis of human development—including values, competencies, and perceptions—with the analysis of institutional development—including the transformation of the university into an entrepreneurial university and the redefinition of the roles of faculty members, administrators, and students—within a single model. There is also a scarcity of studies that employ mixed methods combining questionnaires, interviews, and document analysis. This gives the study theoretical depth and methodological strength that distinguish it from previous research (Benhalima, 2023, p. 18). Although this gap may initially appear simple, it is in fact complex and multidimensional and requires profound critical analysis that combines theory and practice, quantitative and qualitative data, and the local context with global literature (Boudiaf, 2024, p. 20).

A review of previous studies shows that most research on university incubators in Algeria focuses on organizational and economic descriptions, such as the role of the incubator in supporting start-ups, the evaluation of its services, and the presentation of performance indicators, without sufficiently examining the human–cognitive transformations experienced by students when moving toward entrepreneurship (Boukherouba, 2024, p. 15). Previous studies, such as Benhalima’s study (2023) of the University of M’sila Business Incubator, indicated that the incubator contributed to supporting a considerable number of innovative projects and encouraged students to register patents, obtain the “Innovative Project” label, and create start-ups in fields such as agriculture, industry, digital services, and healthcare. However, the study did not examine in sufficient depth the human–cognitive transformations experienced by students when moving toward entrepreneurship (Benhalima, 2023, p. 12). Similarly, Boukherouba’s study (2024), which examined the impact of business incubators on the development of start-ups in Algeria, indicated that incubators supported start-ups by providing an integrated package of consulting and training services but did not offer a precise analysis of the actual impact of incubators on students’ human development (Boukherouba, 2024, p. 15). Accordingly, the present study, by combining field questionnaire data with documentary and statistical data drawn from incubator and ministry reports, seeks to address this gap and provide a deeper analysis of the human–cognitive transformations experienced by students when moving toward entrepreneurship (Ghemari, 2025, p. 18).

The paragraph also points to the scarcity of studies that integrate the analysis of human development—including values, competencies, and perceptions—with institutional development—including the transformation of the university into an entrepreneurial university and the redefinition of the roles of faculty members, administrators, and students—within a single model. It further indicates that most studies rely on simple descriptive–analytical methods without integrating mixed methodologies that combine questionnaires, interviews, and document analysis (Cheikh, 2023, p. 14). Previous studies, such as Ghemari’s study (2025) of the University of M’sila Business Incubator, indicated that the incubator contributed to developing students’ entrepreneurial culture, improving their skills, and increasing their self-confidence. However, it did not provide a precise analysis of the actual impact of the incubator on the institutional development of the university and the incubator itself (Ghemari, 2025, p. 18). Similarly, Cheikh’s study (2023), which examined the University of El Oued incubator, indicated that the incubator supported student entrepreneurship but did not offer a precise analysis of its actual impact on human and institutional development in Algeria (Cheikh, 2023, p. 8). Accordingly, the present study, by combining theoretical frameworks, field data, and critical analysis, seeks to address this gap and present a human–institutional analytical model that can later be used to evaluate university entrepreneurship policies in Algeria and beyond (Boudiaf, 2024, p. 25).

The significance of the study therefore emerges from its attempt to address this gap through a critical human–institutional approach rooted in the Algerian reality while engaging with the global literature on entrepreneurial universities and entrepreneurial ecosystems (University of Tizi Ouzou, 2025, p. 10). The theoretical significance of the study lies in the fact that it does not merely apply Western theoretical frameworks to the Algerian reality. Instead, it rereads, develops, and adapts them to the Algerian context, thereby making a new contribution to the field of studies on university entrepreneurship in Algeria (Benhalima, 2023, p. 22). Concepts such as the “entrepreneurial

university,” the “Triple Helix,” and “cognitive and social capital” are useful for understanding the entrepreneurial transformation of the Algerian university. However, they remain under construction, implementation, and development within the Algerian context. This requires rereading, developing, and adapting them to an Algerian reality characterized by specific challenges, including bureaucracy, insufficient funding, weak links with the private sector, and the absence of a deeply rooted entrepreneurial culture within the university community (Boukherouba, 2024, p. 18). This combination of theory and practice, and of the local context with global literature, gives the study its theoretical significance and enables it to make a new contribution to the field of studies on university entrepreneurship in Algeria (Boudiaf, 2024, p. 20).

The methodological significance of the study lies in combining the descriptive–analytical method with the field method, quantitative and qualitative data, questionnaires, interviews, document analysis, and statistical data. This allows for a profound critical analysis of the entrepreneurial transformation of the Algerian university through university business incubators (Ghemari, 2025, p. 28). The questionnaire, for example, administered to a sample of students with incubated projects, covers dimensions related to social background, academic trajectory, the nature of the project, the type of support received, the evaluation of the experience, and the impact on skills and values. This allows for a precise quantitative analysis of students’ entrepreneurial transformation and its impact on human and institutional development in Algeria (Cheikh, 2023, p. 14). Semi-structured interviews are conducted with incubator managers, supervising faculty members, and entrepreneurship experts in order to explore the institutional dimension of the transformation, the challenges facing incubators, and the opportunities available for their development (Boudiaf, 2024, p. 25). Document analysis is also used, including incubator reports and ministry data concerning the number of funded projects, “Innovative Project” labels, and patents, to provide a quantitative picture of incubator performance and compare it with stated objectives (Boukherouba, 2024, p. 20). This combination of the descriptive–analytical and field methods, and of quantitative and qualitative data, gives the study methodological significance and enables it to provide a profound critical analysis of the entrepreneurial transformation of the Algerian university through university business incubators (Ghemari, 2025, p. 22).

The practical significance of the study lies in proposing practical recommendations for improving incubator performance and developing university entrepreneurship policies in Algeria, thereby making a new contribution to the field of studies on university entrepreneurship in Algeria (Benhalima, 2023, p. 18). Recommendations such as strengthening the integration of the humanities and social sciences into incubator programs, developing psychological and professional support for students, improving links between incubators and the private sector, and simplifying administrative and financial procedures to support project sustainability are not merely theoretical recommendations. They are practical recommendations that can be implemented, developed, and adapted to the Algerian context, making them a new contribution to the field of studies on university entrepreneurship in Algeria (Boudiaf, 2024, p. 25). This combination of theoretical, methodological, and practical significance gives the study its comprehensive importance and enables it to make a new contribution to the field of studies on university entrepreneurship in Algeria (Boukherouba, 2024, p. 20).

In conclusion, the research gap and the significance of the study in this context are not merely a gap identified by the researcher. Rather, they constitute a theoretical, methodological, and analytical framework aimed at developing a deeper understanding of the entrepreneurial transformation of the Algerian university through university business incubators. Although this framework may initially appear simple, it is in fact complex and multidimensional and requires profound critical analysis that combines theory and practice, quantitative and qualitative data, and the local context with global literature (Ghemari, 2025, p. 22). It also connects three interrelated levels: the theoretical gap, the methodological gap, and the practical gap. This makes it a new contribution to the field of studies on university entrepreneurship in Algeria (Boukherouba, 2024, p. 20).

Seventh: Research Method and Design

Ultimately, the method of any scientific study is not measured merely by the number of pages written or the volume of data collected. Rather, it is measured by its ability to answer the problem it raises and make a new contribution to the field of knowledge to which it belongs. In this context, the study under analysis does not merely describe the role of university business incubators, as many economic and administrative studies in Algeria do. Instead, it adopts a mixed-methods approach that combines the descriptive–analytical method, the field method, and the case-study method. This gives it theoretical depth and methodological strength that distinguish it from previous studies (Benhalima, 2023, p. 18). Although this method may initially appear complex, it is in fact necessary because the entrepreneurial transformation of the Algerian university is not merely a technical or economic transformation. It is also a human, cultural, and institutional transformation requiring profound critical analysis that combines theory and practice, quantitative and qualitative data, and the local context with global literature (Boudiaf, 2024, p. 20).

In the descriptive–analytical method, which is adopted to characterize the selected incubators, their policies, programs, and institutional environments on the basis of official reports, internal documents, and published scientific articles, the study does not merely describe these incubators. Rather, it attempts to analyze them, understand the factors that reinforce or obstruct them, and propose practical solutions for improving them (Boukherouba, 2024, p. 20). Previous studies, such as Benhalima’s study (2023) of the University of M’sila Business Incubator, indicated that the incubator contributed to supporting a considerable number of innovative projects and encouraged students to register patents, obtain the “Innovative Project” label, and create start-ups in various fields such as agriculture, industry, digital services, and healthcare. However, that study did not examine in sufficient depth the human–cognitive transformations experienced by students when moving toward entrepreneurship (Benhalima, 2023, p. 12). Similarly, Boukherouba’s study (2024), which examined the impact of business incubators on the development of start-ups in Algeria, indicated that incubators supported start-ups by providing an integrated package of consulting and training services but did not offer a precise analysis of the actual impact of incubators on students’ human development (Boukherouba, 2024, p. 15). Accordingly, the present study, by combining field questionnaire data with documentary and statistical data drawn from incubator and ministry reports, seeks to provide a more precise description of the selected incubators, their policies, programs, and institutional environments (Cheikh, 2023, p. 14).

The field method combines a questionnaire administered to students with incubated projects and semi-structured interviews conducted with incubator managers, supervising faculty members, and

entrepreneurship experts in order to analyze the human–cognitive dimensions of the entrepreneurial transformation. The study does not merely collect data; it also seeks to analyze and interpret it, understand the factors that reinforce or obstruct it, and propose practical solutions for improvement (Ghemari, 2025, p. 22). The questionnaire, for example, administered to a sample of students with incubated projects in the selected incubators, covers dimensions related to social background, academic trajectory, the nature of the project, the type of support received, the evaluation of the experience, and its impact on skills and values. This allows for a precise quantitative analysis of students’ entrepreneurial transformation and its impact on human and institutional development in Algeria (Cheikh, 2023, p. 14). Semi-structured interviews are conducted with incubator managers, supervising faculty members, and entrepreneurship experts in order to explore the institutional dimension of the transformation, the challenges facing incubators, and the opportunities available for their development (Boudiaf, 2024, p. 25). This combination of questionnaires and interviews, and of quantitative and qualitative data, gives the method its strength and enables it to provide a profound critical analysis of the entrepreneurial transformation of the Algerian university through university business incubators (Ghemari, 2025, p. 28).

In the case-study method, which is applied to one or two incubators—such as the University of M’sila Business Incubator, described as the first and one of the most active university incubators, or the UMMTO incubator, presented as a model of an academic entrepreneurial environment—the study uses available statistical data, including the number of projects, “Innovative Project” labels, patents, and training sessions. It does not merely describe these incubators; rather, it attempts to analyze them, understand the factors that reinforce or obstruct them, and propose practical solutions for improving them (University of Tizi Ouzou, 2025, p. 10). The University of M’sila Business Incubator, for example, is considered one of the most active incubators in Algeria. It has contributed to supporting a considerable number of innovative projects and encouraged students to register patents, obtain the “Innovative Project” label, and create start-ups in various fields such as agriculture, industry, digital services, and healthcare (Benhalima, 2023, p. 12). The UMMTO incubator in Tizi Ouzou is also regarded as a model of an academic entrepreneurial environment. It has contributed to supporting a considerable number of innovative projects and encouraged students to register patents, obtain the “Innovative Project” label, and create start-ups in various fields such as agriculture, industry, digital services, and healthcare (Boudiaf, 2024, p. 15). This combination of one or two case studies and available statistical data gives the method its strength and allows it to provide a profound critical analysis of the entrepreneurial transformation of the Algerian university through university business incubators (Ghemari, 2025, p. 22).

The study also clarifies the data-analysis procedures. Descriptive analysis—including percentages, frequencies, and means—is used to analyze the questionnaire results, while thematic analysis is used to examine the interview content in light of the adopted theoretical frameworks (Boukherouba, 2024, p. 20). Descriptive analysis, for example, includes calculating percentages, frequencies, means, and standard deviations. This makes it possible to present a precise quantitative picture of students’ entrepreneurial transformation and its impact on human and institutional development in Algeria (Cheikh, 2023, p. 14). Thematic analysis is used to examine the interview content by identifying the main themes, subthemes, and relationships among them. This makes it possible to provide a precise qualitative picture of students’ entrepreneurial transformation and its

impact on human and institutional development in Algeria (Boudiaf, 2024, p. 25). This combination of descriptive and thematic analysis, and of quantitative and qualitative data, gives the method its strength and enables it to provide a profound critical analysis of the entrepreneurial transformation of the Algerian university through university business incubators (Ghemari, 2025, p. 28).

In conclusion, the method and design of the study in this context are not merely methodological choices proposed by the researcher. Rather, they constitute a theoretical, methodological, and analytical framework aimed at developing a deeper understanding of the entrepreneurial transformation of the Algerian university through university business incubators. Although this framework may initially appear simple, it is in fact complex and multidimensional and requires profound critical analysis that combines theory and practice, quantitative and qualitative data, and the local context with global literature (Ghemari, 2025, p. 22). It also connects three interrelated methods: the descriptive–analytical method, the field method, and the case-study method. This makes it a new contribution to the field of studies on university entrepreneurship in Algeria (Boukherouba, 2024, p. 20).

Eighth: Study Models

The selection of field models in this study is not accidental. It is a deliberate methodological choice aimed at representing the diversity of the Algerian experience in the field of university business incubators and demonstrating that the entrepreneurial transformation of the university does not occur in the same way across all institutions and does not produce the same impact on students or the university environment. Accordingly, the University of M'sila Business Incubator, the University of El Oued Business Incubator, and the UMMTO incubator in Tizi Ouzou are selected as simultaneously representative and different cases. The first represents an early pioneering model at the national level; the second represents a university experience focused on supporting students, faculty members, and graduates; and the third represents an academic environment in the process of building its entrepreneurial ecosystem within a major university in eastern Algeria. This diversity is not merely formal. It makes it possible to test the same hypotheses in different institutional contexts and therefore gives the study broader and deeper explanatory capacity.

[Source: University of M'sila, <https://www.univ-msila.dz/site/%D8%AD%D8%A7%D8%B6%D9%86%D8%A9-%D8%A7%D9%84%D8%B9%D9%85%D8%A7%D9%84-%D8%A7%D9%84%D8%AC%D8%A7%D9%85%D8%B9%D9%8A%D8%A9-2/>]

The M'sila Incubator

The University of M'sila Business Incubator is presented as the clearest and most established model in the Algerian experience because it was the first university incubator to obtain the “Business Incubator” label at the national level, as reflected on university platforms and within the AUNEI university incubator network. Official data published by the University of M'sila indicate that the incubator has recorded significant development throughout its trajectory. The data report 72 innovative projects, 20 established start-ups, 14 labeled companies, and 294 patent applications. These indicators reflect the scale of activity and the accumulation of results within this university structure. Other data indicate that, since 2020, the university has submitted a total of 85 patent applications, including 44 patents in a single year. It has also obtained 32 “Innovative Project” labels and 12 “Start-up” labels, placing it among the leading Algerian universities in terms of

transforming scientific research into innovation outcomes that can be legally protected and valorized.

[Source: University of M'sila, <https://www.univ-msila.dz/site/%D8%AD%D8%A7%D8%B6%D9%86%D8%A9-%D8%A7%D9%84%D8%B9%D9%85%D8%A7%D9%84-%D8%A7%D9%84%D8%AC%D8%A7%D9%85%D8%B9%D9%8A%D8%A9-2/>]

This accumulation is important not only quantitatively but also methodologically. The existence of this level of indicators enables the researcher to examine the incubator not merely as an administrative office but as a complete institutional structure responsible for screening, training, mentoring, registration, follow-up, and partnerships with the National Institute of Industrial Property. In addition, the incubator has adopted clear incubation stages, beginning with pre-incubation, followed by specialized training, and continuing with follow-up until the idea is transformed into a start-up. This enables the researcher to analyze the transformation chain from idea to project and then from project to enterprise. M'sila is therefore not merely a case study; it is a reference case that helps construct indicators, formulate the questionnaire, identify interview themes, and test the relationship between incubator services and the outcomes of entrepreneurial transformation.

[Source: ASJP, <https://asjp.cerist.dz/en/downArticle/504/6/2/214476>]

The El Oued Incubator

The University of El Oued Business Incubator represents an important case because it clearly highlights the role played by university incubators in directing students, faculty members, and graduates toward entrepreneurship, particularly in the fields of patents, innovative projects, and the transition from ideas to practical application. A study published in the University of El Oued archive indicates that university incubators in Algeria, including the El Oued incubator, support start-ups through a package of consulting and training services during the early stages of establishment, which are the most vulnerable stages in terms of failure and withdrawal. This point is particularly important because the present study does not seek merely to measure the number of projects. It also seeks to understand how the incubator contributes to consolidating the idea within the university, transforming it into a sustainable project, and then linking it to financing, the market, and legal protection.

[Source: University of Skikda Digital Repository, <http://dspace.univ-skikda.dz:4000/items/48ff1276-5b10-428a-98dc-d4b511fd348a>]

The importance of the El Oued case is further enhanced by the fact that the incubator does not work only with students but also extends its activities to faculty members and graduates. This makes it a broader university–community space rather than merely a student facility. Such breadth enables the researcher to observe differences among the actors. An undergraduate or master's student may need support in self-confidence, idea formulation, and entrepreneurial language, whereas a faculty member or graduate may require greater institutional guidance and assistance in registering a patent or establishing a company. Accordingly, El Oued becomes a useful analytical case for understanding the interaction between human and institutional resources and between technical competence and organizational empowerment, which serves the human–institutional

dimension of the study. Its inclusion also strengthens the geographical and functional representation of Algerian incubators instead of limiting the analysis to a single model.

[Source: Maghnia University Digital Repository, <https://dspace.cu-maghnia.dz/items/cccdfba3-5c36-4346-bc7b-11a7ce315967/full>]

The UMMTO Incubator

The incubator of the University of Mouloud Mammeri of Tizi Ouzou (UMMTO) constitutes a third case of particular explanatory value because it demonstrates how a “laboratory” for entrepreneurial initiatives develops within a major university with significant academic and research standing and in a context characterized by the interaction of economic, social, and technological sciences. Recent literature describes this incubator as having been established in 2022 and as representing a space in which students’ innovative ideas are transformed into viable projects. It has also contributed to building an institutional ecosystem consisting of the Entrepreneurship Center, the Entrepreneurship Development Center, and the university incubator, in accordance with Ministerial Decision No. 1275. These features make UMMTO more than merely an incubator; it is an example of the integrated institutional framework toward which the Algerian university is moving in its entrepreneurial transformation.

[Source: University of Mouloud Mammeri of Tizi Ouzou, <https://www.ummto.dz/wp-content/uploads/2025/03/PROCEEDING-COLLOQUE-EE-et-Startups-Regards-Croises-sur-LEM.pdf>]

The significance of this case lies in the fact that it reveals the challenges accompanying rapid growth. The published analysis of UMMTO clearly mentions administrative difficulties, funding constraints, and an imbalance among disciplines in benefiting from the innovation ecosystem. This is important for the present study because it prevents the analysis from falling into a celebratory narrative of success alone. Instead, it allows for a critical analysis that balances achievements with obstacles. The existence of an entrepreneurial laboratory within a major university does not necessarily mean that all students benefit from it equally. Similarly, the existence of a support ecosystem does not automatically eliminate bureaucracy or improve economic partnerships. UMMTO therefore offers the study an opportunity to examine the gap between the official discourse on the entrepreneurial university and the practical reality within the institution.

[Source: Dergipark, <https://dergipark.org.tr/en/pub/ussmad/article/1823602>]

Methodological Value

These three models are used as initial cases that prepare the single academic chapter containing the detailed field study, because each case contributes a particular analytical perspective. M’sila provides the dimension of quantitative and institutional accumulation; El Oued provides the dimension of expanding the range of actors and support patterns; and UMMTO provides the dimension of systemic construction and the complex academic experience. This diversity enables the researcher to prepare more precise research tools: a questionnaire that takes disciplinary differences into account, interviews that distinguish among managers, students, and faculty members, and analytical tables comparing the indicators of each incubator. It also allows for the construction of visual materials, such as a comparative table showing the number of innovative projects, patents, start-ups, and types of services provided. Such materials enhance the quality of the analysis and make it more persuasive.

[Source: University of Mouloud Mammeri of Tizi Ouzou, <https://www.ummtto.dz/wp-content/uploads/2025/03/PROCEEDING-COLLOQUE-EE-et-Startups-Regards-Croises-sur-IEM.pdf>]

From a scientific perspective, presenting these cases in the introduction of the study serves a dual function. It prepares the reader for the applied chapter and simultaneously demonstrates that the study is based on documented real-world examples rather than general assumptions alone. These models also make it possible to integrate Arabic, French, and English sources into a unified analytical framework, in accordance with APA 7, which requires precise in-text citation and an alphabetically ordered reference list.

[Source: University of Mouloud Mammeri of Tizi Ouzou, <https://www.ummtto.dz/wp-content/uploads/2025/03/PROCEEDING-COLLOQUE-EE-et-Startups-Regards-Croises-sur-IEM.pdf>]

Ninth: Previous Studies on University Incubators and Support for Start-Ups Conceptual and Methodological Introduction

University incubators have become one of the most prominent institutional mechanisms adopted by modern universities to move beyond their traditional functions of teaching and knowledge production toward broader roles associated with innovation, economic and social development, and the development of entrepreneurial capacities among students and graduates. The university is no longer evaluated solely by the number of its students or the volume of its published scientific output. It is also increasingly evaluated by its ability to transform knowledge into solutions, products, and start-ups, and by its capacity to establish effective relationships with the economic and social environment. In this context, the university incubator represents an institutional intermediary between the scientific idea and the market because it provides a range of training, consulting, technical, and legal services and helps project holders move from the idea stage to experimentation, establishment, and growth.

The analysis of previous studies related to this topic requires more than merely listing research titles and findings. It requires organizing them into clear bodies of knowledge, identifying the nature of the methods used, the size of the samples, the data-collection instruments, and the types of indicators used to measure incubator effectiveness. It is also necessary to distinguish between studies that examine the incubator as an administrative structure providing support services and studies that view it as an element of the entrepreneurial and innovation ecosystem. In addition, the literature must be critically examined in terms of the extent to which it addresses the human, cultural, and value-related dimensions and its ability to explain students' relationship with the incubator—not only in terms of technical benefits but also in terms of the formation of professional identity, autonomy, capacity for initiative, and sense of social responsibility.

The literature under analysis can be divided into three main groups: Algerian studies that focus on university incubators and their role in supporting student projects and start-ups; Arab studies that address incubators and entrepreneurial universities in Maghreb and Middle Eastern contexts; and foreign literature concerned with the concepts of the entrepreneurial university, incubators and accelerators, and start-up ecosystems. This classification makes it possible to compare the nature of the problems raised in the Algerian and Arab environments on the one hand with the theoretical frameworks and applied models commonly discussed in foreign literature on the other.

First: Algerian Studies

Algerian studies indicate that the subject of university incubators has become clearly associated with the transformations affecting national policy toward start-ups and innovation. Since 2020, Algeria has adopted an economic orientation that assigns increasing importance to start-ups and business incubators. The higher education sector has also worked to integrate entrepreneurship into the university's functions, programs, and student-training mechanisms. Doumi and Houtia's study explains that university incubators have become support structures for attracting students and transforming their ideas into start-ups by providing training, mentoring, and various services and by linking the university to the economic environment (Doumi & Houtia, 2023, pp. 98–115). However, this finding remains relatively general because it focuses more on the incubator's declared function than on the actual outcomes of incubated projects, such as the survival rate, number of jobs created, turnover, number of patents, and proportion of projects transformed into legally established enterprises.

This observation reveals a recurring methodological problem in Algerian studies, namely the confusion between the existence of an incubator and its effectiveness. The existence of an incubator within a university does not necessarily mean that it is capable of producing sustainable start-ups. Effectiveness should not be measured by the existence of the structure or the number of activities alone but by the extent to which tangible outcomes are achieved. This can be measured through indicators such as the number of students benefiting from incubation programs; the number of accepted ideas compared with the number of applications; the number of projects reaching the prototype stage; the number of enterprises actually established; the proportion of projects surviving after three years; the amount of funding obtained; and the number of jobs created. These indicators should be presented in comparative tables across universities instead of relying on expressions such as "effective role" or "significant contribution," because such expressions are descriptive and do not allow for a precise evaluation of performance.

One important study in this field examined the Business Incubator of the University of M'sila as an applied model of university incubators in Algeria. The study concluded that the incubator plays a role in spreading the culture of entrepreneurship, encouraging students to adopt innovative ideas, and supporting project holders during the preparation, development, and establishment stages. It also indicated that the incubator achieved considerable results, particularly concerning the number of applications submitted for patents and the support provided to innovative ideas (*The Role of University Business Incubators in Supporting Innovative Projects and Creating Start-Ups*, n.d.). The importance of this study lies in its connection of the incubator with a practical process that begins with the idea and ends with an attempt to establish an enterprise. However, its evaluation requires greater precision in defining "considerable results," presenting their numerical value, and identifying the period during which those results were measured.

The number of ideas or applications submitted cannot be regarded as a final indicator of success. Students may submit many ideas without transforming them into marketable products or enterprises capable of survival. It is therefore necessary to distinguish between input indicators, such as the number of mentors, the budget, and equipment; process indicators, such as the number of training sessions, consultations, and meetings; output indicators, such as prototypes, established enterprises, and patents; and impact indicators, such as economic survival, job creation, graduate integration,

and contributions to solving local problems. This reveals that a substantial part of Algerian studies focuses on inputs and processes, whereas the measurement of outputs and impact remains limited.

Another study on strengthening the knowledge economy in Algeria offers a reading more closely connected to public policy. It links university incubators to innovation and the transformation of knowledge into economic value and refers to the implementation of Ministerial Decision No. 1275, dated September 27, 2022, which strengthened the orientation of the Algerian university toward supporting entrepreneurial and innovative projects. The study concludes that achieving the declared objectives continues to face economic, legislative, administrative, financial, and technological difficulties (Amrar & Fouka, 2023, pp. 782–798). The importance of this finding lies in the fact that it does not view the incubator as an isolated unit but as part of a broader institutional environment. Regardless of the human resources and equipment it possesses, an incubator cannot independently overcome funding difficulties, slow procedures, weak relationships with investors, and limited market opportunities.

This finding calls for a multilevel analysis. At the legislative level, a start-up requires clear and rapid procedures relating to registration, intellectual property, taxation, contracts, and dealings with the university. At the financial level, projects need seed funding, prototyping finance, and marketing finance rather than theoretical training alone. At the administrative level, the incubator requires relative autonomy and decision-making capacity rather than becoming an administrative unit subject to a lengthy chain of procedures. At the technological level, the success of innovative projects presupposes access to laboratories, digital platforms, testing services, and design facilities. Accordingly, the scientific question should not be: Does the university have an incubator? Rather, it should be: Does the incubator operate within an integrated ecosystem that allows knowledge to be transformed into a product and a sustainable enterprise?

A study examining the role of university incubators in directing students toward entrepreneurship used a questionnaire administered to a sample of 153 participants and included the incubators of the universities of M'sila, El Oued, and Ouargla. The results showed a strong positive relationship between the role of university incubators and students' entrepreneurial orientation. They also revealed a statistically significant effect of the incubator's dimensions on strengthening entrepreneurial orientation. At the same time, however, the study explained that incubators provide human resources and various services but do not contribute sufficiently to the material financing of projects, which limits their ability to perform the role expected of them (Fakir, 2025). This study represents an important contribution because it does not merely describe services but attempts to test the relationship between two variables through field data.

Nevertheless, the expression "strong positive relationship" should be treated cautiously unless the correlation coefficient, significance level, type of statistical test, and characteristics of the sample are reported. A statistical coefficient alone does not explain the causal nature of a relationship, and a nonprobability sample may limit the possibility of generalizing the findings. The study should also report the validity and reliability of the measurement instrument, such as the use of Cronbach's alpha, the number of questionnaire items, the response scale, the normality test, and the type of correlation coefficient used. If the data are ordinal or not normally distributed, Spearman's correlation coefficient may be more appropriate than Pearson's coefficient. It is also necessary to avoid claiming that the incubator "causes" entrepreneurial orientation on the basis of a

cross-sectional questionnaire. The more accurate formulation is that there is a correlation or statistically significant association within the limits of the study design.

A study of the Business Incubator of the University of Jijel highlights the importance of services directed toward students. It used a case-study design and a questionnaire distributed to a sample of 70 undergraduate and master's students. The study focused on financing, consulting, administration, and human-resource-development services and concluded that the incubator seeks to support creative and innovative students and help them move from the scientific sphere to the practical sphere (*The Role of University Business Incubators in Supporting and Guiding University Students*, 2024). This study makes it possible to introduce the educational and training dimension into the analysis of the incubator because the incubator's function does not consist merely of providing space or documents. It also involves developing students' competencies, such as preparing a business model, analyzing the market, managing risks, communicating, working in teams, and presenting a project to funders.

However, the sample size in this study imposes limits on generalization, particularly if the sample is restricted to students affiliated with the incubator or to a single university. Moreover, measuring the incubator's impact from the students' perspective may reflect satisfaction or perception rather than actual economic outcomes. It is therefore advisable to combine students' responses with interviews with incubator officials, analysis of project files, and follow-up of enterprises after graduation. This procedure is known as methodological triangulation because it enables comparison among quantitative, qualitative, and documentary data and reduces the risk of relying on a single source.

Algerian studies concerning the incubators of M'sila, Tebessa, Tipaza, El Oued, Ouargla, Jijel, and Guelma indicate a common feature: the incubator is considered an instrument for supporting students and encouraging them to establish start-ups. They also reveal another common feature, namely the recent development of the experience and the varying levels of readiness among universities. Some incubators may be more active in training and reception, whereas others suffer from insufficient funding, a shortage of experts, or limited partner networks. A study of the University of Guelma Business Incubator indicates that the incubator can serve as a link between the university and the economic sector through training sessions and technical and administrative support (*The Effectiveness of the Role of University Business Incubators*, 2024). However, this role needs to be measured through the number of effective partnerships, the number of cooperating economic institutions, and the number of projects that have obtained contracts, funding, or testing opportunities.

Second: The Explanatory Value of Algerian Studies

Algerian studies reveal a gradual transition from a general discourse on entrepreneurship toward examining the structures and mechanisms that embody it within the university. Most studies use the descriptive-analytical method or the case-study method and rely primarily on questionnaires for data collection. This approach is capable of providing a picture of the perceptions of students and incubator officials, but it remains limited in explaining the temporal trajectories of projects because questionnaires are often administered at a single point in time. Consequently, they cannot measure the development of a project from the idea to the prototype and then to the enterprise, nor can they determine whether entrepreneurial intentions have been transformed into actual behavior.

Furthermore, focusing on incubated students may produce selection bias because these students are likely to be more predisposed toward entrepreneurship than students who are not involved in incubators. Future studies should therefore establish two comparison groups: a group that benefits from incubator services and a group of students who do not, while controlling for academic discipline, gender, level of study, and previous experience. A quasi-experimental design could be used to measure differences in entrepreneurial intention, skills, and ability to establish projects. The value of this design would be enhanced by conducting two measurements: one before participation in the program and another after it, followed by a third measurement after graduation.

These observations confirm the need to broaden the concept of success. Success does not mean only establishing a start-up, because some students may acquire employable or self-employment skills without establishing a company. Some projects may also fail economically while producing learning, experience, and social and professional networks. Evaluation indicators should therefore combine economic, educational, and social dimensions, such as the development of skills, self-confidence, problem-solving capacity, network formation, employability, social innovation, and the ability to serve regional needs. This perspective makes it possible to move beyond the narrow economic tendency that reduces the value of the university to the number of enterprises established.

Another gap concerns the limited presence of the humanities and social sciences in the analysis of incubators. Entrepreneurship is not solely a matter of financing and technology. It is also related to social culture, perceptions of work, the status of public-sector employment, family attitudes toward risk, perceptions of failure, gender differences, and regional variations. A student may hesitate to establish a project not because an idea is lacking but because of family pressure, fear of failure, a lack of confidence in institutions, or difficulty reconciling study and work. Accordingly, the analysis of the incubator requires sociological and cultural approaches that examine the meanings students attach to entrepreneurship rather than assuming that training automatically leads to entrepreneurial behavior.

From a value-based perspective, it is necessary to examine the types of projects supported by the university. Do they focus solely on profit, or do they respond to local community needs? Do they offer solutions to environmental, health, educational, poverty, and unemployment problems? Do they allow students in the humanities to develop cultural, digital, and social projects? Integrating the humanities into incubator policies broadens the concept of innovation. Innovation is no longer limited to technological applications but also includes social, cultural, and educational innovation. Projects involving heritage, education, or social services may have significant community impact even if they are not highly technological in nature.

Third: Arab Studies

Arab studies on university incubators can be divided into three directions. The first focuses on the organizational structure and services provided by incubators, such as training, consulting, financing, and guidance. The second links incubators to the concept of the entrepreneurial university, that is, a university that integrates education, scientific research, community service, and economic innovation. The third addresses the start-up ecosystem and emphasizes that incubator success depends on the existence of a network involving universities, investors, government, research centers, and economic institutions.

Regional reports indicate the existence of hundreds of incubators in the Arab world, with a significant number located in universities and technology zones. Data concerning Maghreb countries also indicate the presence of incubators in Tunisia and Morocco, with variation in the number of incubated projects from one structure to another (World Bank, 2013). Despite the importance of these figures, they should be treated as estimates linked to the date and definition used in the report. The figures may differ depending on whether the term “incubator” refers to an active incubator, a registered structure, a temporary program, or a coworking space. Any comparative study should therefore define the unit of analysis precisely.

In the Arab context, incubators cannot be separated from broader problems related to weak early-stage financing, the limited number of angel investors, slow technology transfer, weak intellectual-property protection, and limited networking between universities and the private sector. A start-up requires successive services beginning with education and training, followed by idea validation, prototype development, financing, marketing, and expansion. If support ends at the stage of preparing a business plan, the incubator has performed only a limited part of its function. International experience confirms that launching a sustainable project requires both technical and nontechnical skills, such as team management, market understanding, negotiation, and relationship building (World Bank, n.d.).

Arab literature is useful for conceptual comparison, particularly when distinguishing between an incubator, an accelerator, an innovation center, and an entrepreneurial university. An incubator often focuses on projects at their early stages and provides a relatively longer period of support, whereas an accelerator seeks to intensify growth over a short period and may rely on intensive training programs, seed funding, and investor networks. The entrepreneurial university is a broader concept that encompasses the reorganization of education, scientific research, and relationships with industry and society. Therefore, reducing the entrepreneurial university to the establishment of a single incubator may narrow the concept and strip it of its organizational and cultural dimensions.

Arab comparisons are particularly important because countries in the region share a number of characteristics, including a high proportion of young people, graduate-employment challenges, the importance of the public sector, uneven regional development, and a traditionally weak relationship between universities and the labor market. However, comparison should not be merely descriptive. It should examine differences in legal, financial, and cultural systems. A model that succeeds in a country with an active investment market cannot be transferred automatically to a country lacking early-stage financing instruments. Similarly, a model based on strong partnerships between universities and companies may face difficulties in a context where this relationship remains limited.

Some literature emphasizes the need to integrate entrepreneurship education into all academic disciplines rather than confining it to economics and business faculties. The Organisation for Economic Co-operation and Development recommends that entrepreneurship education move beyond simply creating enterprises and focus on the entrepreneurial competencies students need in different fields, such as initiative, creativity, risk management, and the transformation of ideas into value (OECD, 2022). This recommendation is particularly relevant to Arab universities because students in the sciences, arts, and humanities may possess ideas that can be transformed into projects but may not always find clear institutional pathways for supporting them.

Fourth: Foreign Literature

Foreign literature provides broader theoretical frameworks for understanding university incubators, including the entrepreneurial-university perspective, Triple Helix theory, knowledge-spillover theory, the resource-based view, and social-capital theory. According to the Triple Helix model, innovation is generated through interaction among the university, government, and industry rather than through university activity alone. Within this model, the incubator serves as an intermediary linking academic knowledge to financing, market demand, and public policy.

The entrepreneurial-university perspective focuses on the institutional transformation that enables the university to produce, apply, commercialize, and employ knowledge in development. This does not mean transforming the university into a company. Rather, it means expanding its responsibilities and developing mechanisms for knowledge transfer, partnership, and innovation. OECD literature explains that an entrepreneurial university should support entrepreneurship education at different levels and across disciplines, use competency frameworks such as EntreComp, and assess the impact of educational programs rather than merely launching them (OECD, 2022).

The importance of this approach lies in the fact that it moves the analysis from the level of the individual incubator to the level of the university as a whole. An incubator may be successful in providing training but remain limited in impact if curricula do not foster critical thinking and creativity, if scientific research is disconnected from economic and social problems, and if academic promotion systems do not encourage cooperation with institutions. Researchers should therefore examine the relationship between the incubator, curricula, scientific research, technology-transfer centers, laboratories, and economic partners.

Recent systematic reviews provide evidence of the growing scholarly interest in university incubators. A systematic review of 52 studies published between 2014 and 2024 concluded that the literature focused on six main dimensions: entrepreneurial university ecosystems, organizational structures, capacity building, impact assessment, contextual factors, and sustainability (Ríos Yovera et al., 2025). This finding reveals that incubators are no longer studied merely as administrative services but as complex phenomena involving institutions, resources, skills, context, and long-term outcomes.

Other reviews have shown that research on university incubators has drawn on several theories, including institutional theory, knowledge-spillover theory, the resource-based view, and the Triple Helix model (A Scientometric Analysis of University Business Incubators and Accelerators, n.d.). This means that the incubator does not merely provide material resources; it also contributes to building relationships, networks, and knowledge that project holders may find difficult to access independently. The value of the incubator therefore becomes associated with the quality of its networks rather than merely with the number of offices or rooms it possesses.

Literature on incubators and accelerators indicates a shift from the traditional model focused on providing space and basic services toward models emphasizing open innovation, social capital, and external relationships (Hausberg & Korreck, 2020). Open innovation means that the start-up does not rely solely on internal knowledge but benefits from universities, companies, users, and experts. Social capital refers to the trust, networks, and relationships that facilitate access to information, finance, and opportunities.

OECD data provide an example of how the role of universities in entrepreneurship can be measured quantitatively. The OECD reported that academic start-ups represented an average of approximately 14% of all start-ups in a specific international sample and 15% among firms that had received venture-capital funding (OECD, 2019). This percentage should not be generalized to all countries because it is based on a sample of young firms located in OECD and BRICS countries and on firms seeking venture-capital financing. Nevertheless, it illustrates the importance of databases that make it possible to measure the relationship between public research and start-ups.

This highlights the importance of comparative indicators. Instead of relying solely on the number of incubators, researchers should measure the proportion of academic enterprises among all start-ups, the share of university-related financing, the number of patents transformed into products, enterprise survival rates, the number of partnerships, and the scale of economic and social returns. Differences among sectors should also be considered because biotechnology projects, for example, require different timeframes and types of financing from digital-service projects or cultural industries. Therefore, a single success indicator cannot be applied to all incubators.

Some foreign field studies provide statistical evidence of the relationship between incubators and entrepreneurial skills. A study conducted at a higher-education institution in Peru found significant correlations between incubators and several dimensions of entrepreneurship, including behavioral and affective dimensions, entrepreneurial intention, and institutional context. Spearman coefficients reached 0.512, 0.613, and 0.602, respectively (University Incubators and Youth Entrepreneurship, n.d.). These values do not prove causality, but they support the hypothesis that the incubator functions as an educational and institutional environment that helps develop intention and skills rather than serving merely as a physical space for receiving projects.

Fifth: Comparative Critical Analysis

A comparison of Algerian, Arab, and foreign studies reveals differences in the level of conceptual development and measurement methods. Algerian and Arab studies generally focus on the importance of incubators, the services they provide, and the obstacles they face, whereas foreign literature tends to develop explanatory models and measure long-term impact. This does not mean that Algerian literature lacks value. Rather, it indicates that the field is still in the process of being built, with concepts being established and basic data being generated.

One of the main strengths of Algerian studies is their proximity to the local reality, their use of multiple case studies, and their attention to the problems of students, administration, and financing. These studies make it possible to understand the specific characteristics of Algerian universities, differences among incubators, and difficulties associated with implementing new policies. However, their weakness lies in the limited use of temporal and spatial comparison, insufficient presentation of detailed data, and repetition of general findings, such as the claim that incubators “support projects” or “promote the entrepreneurial spirit” without explaining the level, nature, and outcomes of that support.

Arab studies are distinguished by their ability to place the Algerian experience within a broader regional context, but they also face the problem of varying definitions of incubators, start-ups, and entrepreneurial universities. Some studies confuse entrepreneurship centers, incubators, and accelerators, whereas rigorous research requires the organizational, temporal, and financial characteristics of each structure to be clearly defined. Many Arab comparisons also focus on

describing successful experiences without analyzing failures or projects that left the incubator and did not survive.

Foreign literature provides important theoretical and methodological tools, but it also has limitations. Some models emerged in university and economic environments that differ from the Algerian environment and cannot be transferred directly. In addition, the focus on high-technology enterprises and venture capital may reduce attention to small enterprises and social and cultural services, which may be more appropriate to local needs. Foreign literature should therefore be used as a framework for analysis and comparison rather than as a ready-made model to be copied.

A common gap appears across the three bodies of literature: the limited attention paid to students' human development. Researchers often focus on the start-up as an economic unit but do not sufficiently examine how the incubator changes the student's personality, skills, sense of autonomy, ability to work in teams, willingness to take risks, and perceptions of their professional future. This gap can be addressed by integrating quantitative questionnaires with in-depth interviews, observation, and analysis of the personal narratives of student project holders.

There is also limited attention to the cultural and value-based dimension. Entrepreneurship is sometimes presented as a universal economic behavior, whereas in reality it is shaped by family and social values, religion, and individuals' perceptions of work, success, and failure. In Algerian society, the family may influence students' decisions either by encouraging them or by expressing concerns about risk. Female students' participation in projects may also be affected by the nature of the field, time constraints, and support networks. Studies should therefore include social variables such as gender, socioeconomic status, place of residence, field of study, professional experience, and family attitudes toward self-employment.

Sixth: A Methodological Proposal for the Present Study

Based on the findings of previous studies, a more comprehensive study can be designed using a mixed-methods approach that combines quantitative and qualitative components. On the quantitative side, a questionnaire may be prepared for three categories of respondents: incubated students, non-incubated students, and incubator officials or mentors. The questionnaire could include dimensions related to the quality of training, consulting, financing, links with institutions, infrastructure, skills development, psychological and social support, entrepreneurial intention, and the actual outcomes of the project.

Responses may be measured using a five-point Likert scale, such as: strongly agree, agree, neutral, disagree, and strongly disagree. The validity of the instrument should be tested by presenting it to specialized reviewers, followed by a reliability test using Cronbach's alpha coefficient. The characteristics of the sample should also be reported in detail, including size, type, gender, academic discipline, and level of study, together with the sampling method. If possible, a stratified sample should be used to ensure the representation of different universities, regions, and disciplines.

On the qualitative side, semi-structured interviews may be conducted with incubator officials, students, and start-up founders. The interviews should address the stages of support, administrative difficulties, the nature of relationships with investors, the extent to which students benefit from training, the influence of family and the social environment, and the reasons for project success or

failure. Incubator documents may also be analyzed, including activity reports, project lists, competition records, partnership agreements, and financing data.

An evaluation-indicator matrix should be constructed with four levels. The first level is resources and includes the number of mentors, the budget, and equipment. The second level is activity and includes the number of training sessions, consultations, and meetings. The third level is outputs and includes the number of prototypes, patents, and enterprises established. The fourth level is impact and includes survival, job creation, economic returns, social innovation, and improved employability. This classification helps prevent confusion between activity and outcome.

At the level of statistical analysis, frequencies, percentages, means, and standard deviations can be used to describe the data. The *t* test or analysis of variance can be used to compare groups of students; Pearson's or Spearman's correlation coefficient can be used to test relationships; and multiple regression can be used to determine the effect of incubator dimensions on entrepreneurial intention or perceived success. If the study is longitudinal, tests of differences between pretest and posttest measurements can be used. Test values, significance levels, and confidence intervals should be reported, rather than relying solely on the statement that "the result is statistically significant."

Seventh: Research Gap

The first gap is that previous studies have focused more on describing services and structures and have not paid sufficient attention to measuring actual long-term impact. The second gap is the limited comparison of several universities using standardized indicators. The third concerns the weak integration of the value-based, cultural, and human dimensions into the analysis of incubators. The fourth is the scarcity of studies that combine student data, official documents, interviews, and follow-up of projects after graduation.

Accordingly, the present study may begin with a research problem centered on the ability of university incubators to move from a formal support function to a function of human, economic, and social development. The question should not be limited to whether the incubator provides training. It should also address the quality and continuity of training, its connection to project needs, and students' ability to apply what they have learned. The study should also examine whether the incubator provides equal opportunities for students from different disciplines, regions, and social groups.

A central research question may be formulated as follows:

To what extent do university incubators in Algeria contribute to building entrepreneurial competencies and transforming student ideas into sustainable start-ups, and what institutional, social, and cultural factors reinforce or obstruct this role?

This question may be broken down into inquiries concerning the nature of services, the level of financing, partnership networks, the impact of the incubator on skills, project-success indicators, and the extent to which the humanities and social sciences are integrated into incubation programs.

Concluding Synthesis

The analysis of previous studies demonstrates that university incubators represent an important mechanism for linking the university to the economy and society. However, they do not operate effectively in isolation from the legal, financial, organizational, and cultural environment. Algerian studies have highlighted the importance of incubators in attracting students and supporting projects, but they have also revealed limited funding, the recent development of the experience, and

weaknesses in technological and administrative infrastructure. Arab studies have added a comparative dimension and emphasized the importance of integrating entrepreneurship into curricula and building networks among universities, government, and the private sector. Foreign literature has provided theoretical and quantitative frameworks for understanding the entrepreneurial university, the start-up ecosystem, and impact measurement.

Accordingly, a rigorous scientific study should not simply repeat the general conclusion that incubators “support start-ups.” It should determine how this support is provided, to whom it is provided, with what resources, according to which indicators, and with what actual outcomes. It should also move from evaluating activity to evaluating impact and from focusing on economic dimensions to integrating human development, values, culture, and the humanities. The expected scientific contribution lies in constructing an analysis that combines statistical data, field testimonies, and institutional documents, thereby enabling the incubator to be understood as a space for training, innovation, and social integration rather than merely as an administrative office for establishing enterprises.

Tenth: Study Terminology: Theoretical and Operational Definitions

Introduction

The terminology of a study has central importance in scientific research because the quality of the results does not depend only on the choice of method and instrument. It is also related to the accuracy with which the concepts underlying the variables and indicators are defined. A term such as “student” may appear clear in general usage, but it becomes ambiguous in a field study if it is not specified whether it refers to all students, final-year students, students with innovative ideas, or students who are actually enrolled in incubator programs. The same applies to the terms “entrepreneur,” “university business incubator,” “human development,” “institutional development,” “start-up,” and “innovative project.”

Scientific definitions require a distinction among three interconnected levels. The first is the linguistic or general definition, which clarifies the initial meaning of the term. The second is the theoretical definition, which is derived from the scientific literature and relevant theories. The third is the operational definition, which specifies how the concept will be measured within the study through dimensions, indicators, questions, observations, and the documents used. The operational definition must not simply be a reformulation of the theoretical definition; rather, it should transform the latter into a variable that can be observed and measured.

This section is based on the assumption that a university incubator is not merely a physical space, that a student is not merely a service beneficiary, that an entrepreneur is not defined simply by possessing an idea, and that human development cannot be reduced to the number of training sessions attended. Institutional development also does not merely mean the existence of a new administrative structure. The subject is connected with the transformation of the university into an institution that is more open to innovation, the economy, and society, as well as with its ability to build students’ capacities and transform knowledge into public value. The Organisation for Economic Co-operation and Development has confirmed that the entrepreneurial university goes beyond teaching and research toward knowledge-transfer activities, interaction with society, innovation, and entrepreneurship programs (OECD, 2022).

First: The Student

Theoretical Definition

The student is the principal actor in the university-incubator system. However, recent literature does not present the student merely as a consumer of training but as an actor who possesses an idea, skill, or form of knowledge that can be developed and transformed into a project. In the traditional university context, a student is defined as an individual enrolled in a higher-education institution with the aim of obtaining academic or professional training. However, this general definition is insufficient for the present study because not every university student enters the field of entrepreneurship, benefits from incubator services, or possesses a project or a serious intention to establish one.

Accordingly, the term “student” in this study refers to a student at an advanced stage of the university trajectory or a recent graduate who possesses a project idea, an initial project, or an innovation file and who has benefited from the services of a university incubator or applied to it for incubation. This definition differs from the definition of an ordinary student through its connection with three elements: belonging to the university or having graduated recently, possessing an idea or project capable of development, and entering into an institutional relationship with the incubator.

Some Algerian studies support this approach, as they have focused on final-year students and graduates wishing to establish start-ups rather than on the student population as a whole. A study examining the entrepreneur in the university environment also showed that personal and skill-related characteristics, social capital, and relationship networks play a role in building the student’s entrepreneurial personality (*The Entrepreneur in the University Environment*, 2024). This reveals that the student entrepreneur is not merely a degree holder but an actor shaped by a network of relationships, experiences, and motivations.

Nevertheless, restricting the study to students with projects should not be understood as excluding other students. From a methodological perspective, it may be useful to include a comparison group of non-incubated students in order to determine whether incubator services actually affect skills, self-confidence, and entrepreneurial intention. However, the basic unit of analysis in this study should be the student who has an actual relationship with the incubator, because analyzing the incubator’s impact on a student who has not benefited from its services creates ambiguity in interpreting the results.

Operational Definition

The student is operationally defined as:

Any student enrolled in the final years of university education, or a recent graduate within a period specified by the study, who possesses an innovative project idea or an initial project and who has benefited from the services of a university incubator or formally submitted an application to benefit from them.

This definition can be established through the following criteria:

- The respondent must be an enrolled student or a recent graduate according to the period specified in the study.
- The respondent must possess an idea, project, or prototype and not merely have a general interest in entrepreneurship.
- The respondent must have benefited from at least one incubator service, such as training, consulting, guidance, or registration in an incubation program.

- The respondent must belong to one of the target groups, such as final-year students, master's or doctoral students, or recent graduates.
- The respondent must agree to participate in the questionnaire or interview, with confidentiality of information guaranteed.

Through this definition, the concept of the student can be transformed into descriptive and operational variables, such as age, gender, university, academic discipline, level of study, professional experience, length of involvement in the incubator, number of training sessions attended, and project stage. Students can also be divided into analytical categories: a student who possesses only an idea, a student who has developed a prototype, a student who has established an enterprise, a student whose enterprise has begun operations, and a student whose project has been discontinued. This classification helps avoid placing all students in one category despite their different positions within the entrepreneurial process.

Measurement Indicators

The status of the incubated student can be measured through a set of questions such as:

- Does the student possess a specific project idea?
- Is the idea related to the student's academic discipline?
- Has the student prepared a preliminary market study?
- Does the student possess a prototype?
- Has the student received training in preparing a business model?
- Has the student obtained legal or financial consulting?
- Has the student participated in a competition, exhibition, or meeting with investors?
- Does the student plan to establish an enterprise within the next three years?
- Does the student believe that the incubator helped develop the project?

A distinction must be made between "desire" and "behavior." A student may state that they wish to establish an enterprise, but this does not mean that they have begun the establishment procedures. The questionnaire should therefore include questions measuring the actual stages of the project, such as submitting a legal file, obtaining financing, testing the product, or completing the first sale.

Second: The Entrepreneur

Theoretical Definition

The concept of the entrepreneur is associated with a group of interconnected concepts, including initiative, innovation, risk-taking, opportunity recognition, and resource mobilization. An entrepreneur is not necessarily the owner of a large enterprise. The term may also refer to an individual at an early stage who seeks to test an idea and transform it into a project. The literature defines entrepreneurship as the pursuit of opportunities beyond the resources currently controlled by the individual. This definition emphasizes initiative and the ability to exploit opportunities under conditions of uncertainty (OECD, 2008).

At the university level, an entrepreneur differs from a high-achieving student, a researcher, or a person who merely possesses an abstract idea. A student may achieve an important academic accomplishment without being an entrepreneur. A researcher may possess an invention without entering the process of economic valorization. An individual may have an attractive idea without testing market needs. A student becomes an entrepreneur when they move from the level of

conception to the level of action by identifying a problem, developing a solution, mobilizing resources, assuming responsibility for decisions, and interacting with users and partners.

This does not mean that entrepreneurs always succeed or that their projects necessarily survive. Failure is part of the entrepreneurial process and may serve as a source of learning and idea reconstruction. Therefore, the entrepreneur should not be defined solely according to the outcome of success, because this would exclude owners of early-stage start-ups. It is more accurate to define the entrepreneur according to the level of involvement in the process of creating value, whether economic, social, cultural, or technological.

This distinction is particularly important in the university environment because many entrepreneurship programs measure their outcomes solely by the number of enterprises established, whereas the literature confirms that entrepreneurship education involves developing individual attitudes, behaviors, and capacities, not merely creating enterprises (OECD, 2008). The Global Entrepreneurship Monitor report also indicates that, in the 2023–2024 data, the 18–24 age group recorded an early-stage entrepreneurial activity rate of 24% and an entrepreneurial-intention rate of 21%, while the rate of discontinuation of activity among the same group reached 15%. This demonstrates that entrepreneurial enthusiasm does not guarantee continuity (Global Entrepreneurship Monitor, 2024).

Operational Definition

The entrepreneur is operationally defined as:

A student or graduate who takes the initiative to develop an innovative idea, establish an economic, social, or technological project, or manage an early-stage start-up, and who assumes responsibility for mobilizing resources, making decisions, and interacting with the market or beneficiaries.

This definition includes four categories:

1. **Idea holder:** Possesses a conception of a project but has not developed a prototype.
2. **Start-up project holder:** Has moved toward testing the idea or preparing a prototype.
3. **Founder:** Has completed the establishment procedures or reached an advanced legal stage.
4. **Manager:** Has begun operations and manages resources, processes, marketing, and the team.

The study should distinguish between the “potential entrepreneur” and the “actual entrepreneur.” The former possesses intention and initial competence, whereas the latter has actually begun establishing or operating the project. This distinction makes it possible to test whether the incubator affects intention only or helps students move toward action.

Measurement Indicators

Student entrepreneurship can be measured through five dimensions:

- **Initiative:** The student’s ability to propose an idea and begin implementing it.
- **Innovation:** The presence of a new element in the product, service, or method of operation.
- **Risk-taking:** The student’s willingness to make decisions under conditions of limited information.
- **Proactiveness:** Searching for opportunities before they emerge and responding early to market needs.
- **Resource mobilization:** The ability to obtain financing, expertise, and partners.

The study may use a five-point Likert scale with statements such as: “I can identify a project opportunity before competitors,” “I can modify my idea in response to customer feedback,” or “I

accept testing a new idea despite the possibility of failure.” However, these statements do not measure actual behavior alone. It is therefore advisable to combine them with factual questions, such as the number of interviews the student has conducted with customers, the number of prototypes tested, the number of partners contacted, and the number of times the business model has been modified.

The study should also measure confidence in the ability to establish a project, commonly referred to as entrepreneurial self-efficacy. Questions may include: “I can prepare an initial financial plan,” “I can present my project before a committee,” and “I can manage a small team.” However, these indicators should be interpreted cautiously because they measure the student’s perception of their ability and not necessarily their objective ability.

Third: University Business Incubator

Theoretical Definition

A university business incubator is an institutional structure affiliated with or established within a university that receives ideas and projects and supports them during their early stages. Its services usually include providing space, training, consulting, connections with partners, assistance in preparing a business model, and directing the project toward financing, establishment, and marketing. Some literature defines an incubator as an organization that provides workspace, resources, and support to start-ups during their early stages in order to help them overcome the burdens they face (*The Legal System of Business Incubators in Algeria*, n.d.).

An incubator should not be defined merely as a physical location because its physical space does not explain its true value. An incubator may have offices, rooms, and equipment but lack a network of experts, investors, or economic institutions. Conversely, another incubator may have limited physical facilities but be strong in networking, guidance, and knowledge transfer. The broader definition therefore views the incubator as a system of resources, services, and relationships that helps a project reduce the risks associated with its initial stages.

A university incubator differs from an independent commercial incubator because of its connection with the university’s academic functions. It does not aim solely to generate profits but combines education, research, application, and community service. It may receive projects linked to research laboratories, ideas derived from graduation projects, or social and cultural initiatives. It may also contribute to technology transfer and patent development, provide training opportunities for students, and build relationships among faculty members, students, and institutions.

Entrepreneurial-university frameworks explain that a university does not become an entrepreneurial university merely by establishing an incubator. It also requires leadership, strategy, organizational capacities, student pathways, links with institutions, and mechanisms for measuring impact. The HEInnovate framework presents seven areas for evaluation, including leadership and governance, organizational capacity, entrepreneurial teaching and learning, pathways for entrepreneurs, university–business relationships, internationalization, and impact measurement (OECD, 2022). This framework confirms that the incubator should be understood within a comprehensive institutional policy.

Operational Definition

The university business incubator is operationally defined as:

A structure, unit, or program affiliated with a university that receives projects or innovative ideas from students and graduates and provides them with a package of training, consulting, guidance, networking, workspace, and facilitation services with the aim of developing the idea, prototype, or start-up while monitoring the project throughout the incubation stages.

This definition requires the existence of the following essential elements:

- An administrative or functional relationship between the incubator and the university.
- A program or service directed toward students or graduates.
- The reception of ideas or projects according to specified criteria.
- The provision of one or more support services.
- A defined period or stages of incubation.
- A mechanism for monitoring, evaluating, or graduating projects from the incubator.

Dimensions of the Incubator

Training Dimension

This concerns the courses and workshops provided by the incubator on business-model development, market research, digital marketing, financial management, intellectual property, and transferable skills. It is not sufficient to count the number of courses; their suitability for the project's stage must also be measured. A project that is still at the problem-discovery stage requires different training from an enterprise that has already begun marketing.

Consulting Dimension

This includes legal, financial, technical, and marketing consulting. It is measured through the number of consultations, the specialization of the experts, their regularity, and the student's ability to apply the recommendations. It is important to distinguish between general consulting and individual mentoring because the latter is more closely connected to the nature of the project.

Financing Dimension

This includes guidance toward sources of financing, assistance in preparing financing applications, links with investors, and, in some cases, the provision of seed funding. An Algerian study showed that incubator services can influence the development of student projects, whereas financing remains one of the areas requiring the greatest strengthening (*Effectiveness of University Entrepreneurship Programs*, 2025). It is important not to state that an incubator "finances" projects unless it provides direct funding because financial intermediation differs from actual financing.

Technological Dimension

This relates to laboratories, equipment, software, and design and testing services. It is particularly important for industrial, digital, and scientific projects. Some projects may require services that the incubator cannot provide within the university, making it necessary to establish a network with research centers, companies, and external laboratories.

Networking Dimension

This involves connecting students with experts, institutions, investors, government bodies, and potential customers. The value of this dimension is measured by the number of partnerships, the number of high-quality meetings, and the number of projects that have obtained testing opportunities, contracts, or financing through the incubator's network.

Follow-Up Dimension

Follow-up consists of monitoring project development after the completion of training or after leaving the incubator. This indicator is important because some projects may succeed during incubation and then stop afterward. A database should therefore be created to record the status of projects after six months, one year, and three years.

Incubator Measurement Indicators

A composite indicator of incubator effectiveness may be constructed on the basis of its dimensions as follows:

Incubator Effectiveness

$$= \frac{\text{Training} + \text{Consulting} + \text{Financing} + \text{Technology} + \text{Networking} + \text{Follow-up}}{6}$$

This formula should be used only if all dimensions are measured on the same scale and after testing reliability and validity. Different weights may also be assigned to the dimensions if the study shows that financing or follow-up is more important in explaining project success. However, the determination of weights should be based on statistical analysis or scientific expert judgment rather than personal estimation alone.

Fourth: Human Development

Theoretical Definition

Human development in the context of this study does not simply mean an increase in income. It refers to expanding human capabilities and choices and empowering individuals to learn, work, take initiative, and make decisions. When human development is studied within a university incubator, it is related to the transformation that takes place in the student's personality, skills, awareness, and ability to build a project or solve a problem.

Recent literature on entrepreneurship education confirms that outcomes should not be limited to the number of start-ups because entrepreneurship education develops individual attitudes, behaviors, and capabilities (OECD, 2008). The OECD also states that transferable skills include leadership, creativity, self-awareness, perseverance, proactiveness, risk-taking, and tolerance of uncertainty (OECD, 2022).

Accordingly, an incubator can be considered a space for human development when it helps students acquire new skills, develop self-confidence, form networks, improve decision-making, deal with failure, and work as part of a team. This process does not necessarily have to end with the establishment of an enterprise. Its effects may also appear in obtaining employment, launching a social project, participating in an initiative, or developing professional capacity.

Operational Definition

Human development is operationally defined as:

The totality of observable changes in students' knowledge, skills, attitudes, self-confidence, willingness to take initiative, and readiness to take risks resulting from their participation in university-incubator programs.

It is measured through the following dimensions:

- **Technical skills:** Preparing a business model, conducting market research, marketing, and financial planning.
- **Personal skills:** Communication, leadership, teamwork, and time management.

- **Self-efficacy:** Confidence in the ability to perform entrepreneurial tasks.
- **Entrepreneurial culture:** Understanding opportunities, risks, innovation, and self-employment.
- **Readiness to take risks:** Acceptance of experimentation and decision-making under conditions of uncertainty.
- **Resilience:** Modifying the idea when new information emerges.
- **Social and professional networks:** The ability to access experts, partners, and customers.
- **Autonomy:** The ability to take initiative without continuously waiting for guidance.

Measuring Human Development

Change can be measured through a pretest–posttest design. In the pretest, the student reports their level of skills and confidence before benefiting from incubator services and then responds again after completing the program. A paired-samples t test may be used if the statistical conditions are met, or the Wilcoxon test may be used if the data are not normally distributed. Differences in means should be interpreted together with the effect size because statistical significance alone does not show the practical importance of the change.

Self-assessment questions may also be used, such as: “I can deliver a convincing presentation about my project,” “I can identify the target customer,” and “I can modify the business model based on feedback.” However, self-assessment may be affected by exaggeration, modesty, or the desire to satisfy the researcher. It is therefore advisable to support it with trainers’ evaluations and analysis of products and documents.

Fifth: Institutional Development

Theoretical Definition

Institutional development refers to the transformations affecting the university’s structure, policies, culture, programs, and relationships in ways that make it more capable of supporting innovation and entrepreneurship. It is broader than the development of the incubator itself because an incubator may be active while the university does not integrate its results into curricula, scientific research, or strategic planning.

Institutional development includes improving structures, clarifying responsibilities, providing resources, enhancing communication, simplifying procedures, building partnerships, and motivating faculty members and students. The HEInnovate framework identifies institutional areas that include leadership and governance, organizational capacity, relationships with business, pathways for entrepreneurs, and impact measurement (OECD, 2022). This demonstrates that the entrepreneurial university is not merely a slogan but a system of policies, practices, and indicators.

Institutional development is also connected to the concept of the university’s “third mission,” that is, activities extending beyond teaching and research, including technology transfer, social engagement, continuing education, and innovation and entrepreneurship programs. The OECD has explained that the entrepreneurial university interacts with stakeholders to produce public value through mutual learning, openness, and exchange (OECD, 2022).

Operational Definition

Institutional development is operationally defined as:

The set of transformations affecting the university’s policies, structures, programs, resources, and relationships in ways that strengthen its ability to incubate innovative projects,

develop entrepreneurial competencies, and transform knowledge into economic or social value.

It is measured through the following indicators:

- The existence of a written university strategy to support entrepreneurship.
- The integration of entrepreneurship education into academic programs.
- The existence of a clear incubator structure with defined responsibilities.
- The availability of a budget and specialized human resources.
- The existence of a system for monitoring projects after incubation.
- The establishment of partnerships with economic institutions and financing bodies.
- Support for intellectual-property protection and technology transfer.
- The existence of mechanisms for motivating faculty members and students.
- The adoption of periodic impact-measurement indicators.
- The involvement of different faculties and disciplines, including the humanities.

The study can measure these indicators through an analysis of official documents, such as the strategic plan, incubator reports, establishment decisions, partnership agreements, and training programs. A questionnaire can also be administered to faculty officials, faculty members, and students to determine the extent to which the institutional policy is clear. It is necessary to combine what the documents state with what the actors perceive because the existence of a written policy does not necessarily mean that it is implemented.

Sixth: Start-Up

Theoretical Definition

A start-up is a project or enterprise at an early stage that seeks to develop a product, service, or business model capable of growth and that often operates under a high degree of uncertainty. A start-up is not defined solely by its small size because not every small enterprise is necessarily a start-up. A start-up is usually based on a new idea or a scalable model and seeks to test the market and develop an innovative solution.

In the university context, a start-up may emerge from a graduation project, scientific research, a student idea, a partnership between a student and a faculty member, or cooperation with an economic institution. However, transforming an idea into an enterprise requires legal procedures, financing, administrative skills, and a market. The study should therefore specify whether the term “start-up” refers to a formally registered enterprise, a project in the pre-establishment stage, or an idea undergoing incubation.

Operational Definition

A start-up is operationally defined as:

An early-stage innovative project arising from the idea of a student, graduate, or university team and existing in one of the following stages: idea, prototype, market testing, legal establishment, or initial operation.

Its stage is measured through:

- The existence of a written idea.
- Development of a prototype.
- Testing the product with users.
- Completing the first sale.

- Legal registration of the enterprise.
- Obtaining financing.
- Employing individuals.
- Generating regular income.
- Continuing operations after one or three years.

The “incubated enterprise” must be distinguished from the “successful enterprise” because incubation is a support stage and not a certificate of success. The number of applications or ideas should also not be considered a sufficient indicator of the success of incubator policy.

Seventh: Innovative Project

Theoretical Definition

An innovative project is a project that contains a new element or a clear improvement in a product, service, production method, business model, or social solution. Innovation does not have to be an unprecedented scientific invention; it may be a local improvement or a more efficient way of delivering an existing service. However, there must be identifiable added value, whether in the form of reduced costs, improved quality, solving a problem, or expanding access to a service.

Operational Definition

An innovative project is operationally defined as:

Any idea, activity, or prototype incubated by the university structure that includes a new or improved solution to a specific problem and can be transformed into an evaluable product, service, or business model.

The degree of innovation is measured through:

- The clarity of the problem addressed by the project.
- The difference between the solution and existing solutions.
- The level of added value.
- The possibility of protecting or registering the idea.
- Scalability.
- The suitability of the solution to community needs.
- The existence of preliminary evidence of user acceptance.

Researchers should not link innovation only to advanced technology because a social, cultural, or educational project may be innovative even if it uses simple tools. This definition allows the inclusion of humanities projects such as educational platforms, cultural services, heritage-related applications, and social initiatives.

Eighth: Questionnaire and Measurement Indicators

To transform the preceding definitions into a field instrument, a questionnaire consisting of six dimensions may be prepared. The first dimension measures student characteristics; the second measures training and consulting services; the third measures skills and self-efficacy; the fourth measures entrepreneurial behavior; the fifth measures the impact of the incubator on the project; and the sixth measures institutional development.

Sample Questionnaire Dimensions

Dimension	Examples of Indicators	Type of Data
Student characteristics	Age, gender, academic discipline, level of study, project stage	Nominal/ordinal

Incubator services	Training, consulting, networking, financing	Five-point Likert scale
Human development	Skills, confidence, initiative, resilience	Five-point Likert scale
Entrepreneurship	Innovation, risk-taking, proactiveness, resource mobilization	Five-point Likert scale
Institutional development	Strategy, resources, partnerships, follow-up	Five-point Likert scale
Project outcomes	Prototype, establishment, financing, sales, jobs	Frequency/quantitative

The validity of the questionnaire must be tested before its final administration. This begins by presenting it to a group of expert reviewers, followed by a pilot study on a small sample and then calculation of the reliability coefficient. If Cronbach's alpha is excessively high in an abnormal way, this may indicate repetition among the questions rather than the quality of the instrument. Factorial structure should also be examined if the sample size permits it.

Percentages or statistical coefficients must not be invented before data are collected. If the researcher wishes to state that 70% of students believe that the incubator improved their skills, that percentage must result from actual data, with the sample size and calculation method reported. The percentage may be expressed using the following formula:

$$\text{Percentage} = \frac{\text{Number of respondents with the characteristic}}{\text{Total number of respondents}} \times 100$$

The arithmetic mean of the items on a Likert scale is calculated by dividing the total scores by the number of responses, while clearly explaining how the categories are interpreted. A mean should not be converted into a categorical judgment without defining the interpretation limits in advance.

Ninth: Relationships Between Variables

An analytical model may be developed in which incubator services constitute the independent variable, human development constitutes a mediating or dependent variable, institutional development constitutes a contextual variable, and project success constitutes the outcome variable. This structure allows for testing hypotheses that are deeper than the hypothesis that "the incubator affects entrepreneurship."

Examples of hypotheses include:

- There is a statistically significant relationship between the quality of incubator services and students' human development.
- There is a relationship between human development and entrepreneurial intention.
- Institutional development affects the level of students' benefit from the incubator.
- Skills differ between incubated and non-incubated students.
- Project outcomes differ according to the incubation stage, academic discipline, and university.
- Networking, financing, and follow-up services play a greater role than theoretical training alone in developing the project.

It must be recognized that a statistical relationship does not always imply causality. If a researcher finds a relationship between benefiting from the incubator and self-confidence, it cannot be concluded that the incubator is the only cause. Other factors may intervene, such as the student's

personality, previous experience, family support, or level of education. It is therefore advisable to include control variables and use group comparisons or pretest–posttest measurements.

Tenth: Critical Remarks on Conceptual Construction

One of the problems in research on entrepreneurship lies in using terms as if they were synonymous. A project, enterprise, start-up, idea, initiative, incubator, and accelerator are not identical concepts. Confusing them leads to inaccurate findings, such as treating every idea as a start-up, considering every student with an idea to be an entrepreneur, or regarding every training activity as evidence of human development.

Some definitions also focus on the economic dimension and exclude the social dimension. This is inappropriate in university studies because projects may aim to solve social, cultural, or environmental problems rather than merely generate profit. Researchers should also avoid defining human development according to the number of training sessions alone because attending training does not equal acquiring a skill. The student's ability to use what they have learned in a practical situation must be measured.

Scientific precision also requires respecting temporal boundaries. If the study defines a recent graduate as someone who graduated within the past three years, this criterion must be applied to all respondents. If the study focuses on master's students, its findings should not be generalized to undergraduate or doctoral students without justification. The geographical scope of the study must also be specified because an incubator at a large university in an economically active city may differ from an incubator at a university located in a region with weaker links to the private sector.

Conclusion

It is clear that the operational definition is not a formal paragraph inserted at the beginning of a research study. Rather, it is the foundation that determines the study population, sample, instrument, indicators, and statistical analysis. In this study, the student is a holder of an incubated project or idea; the entrepreneur is the actor who moves from the idea to its implementation or manages the project; the university incubator is an institutional support system rather than merely a physical space; human development is the development of skills, confidence, attitudes, and behaviors; and institutional development is the transformation of the university and its policies and structures toward innovation and entrepreneurship.

Accordingly, the questionnaire, interviews, and document analysis should be constructed on the basis of these definitions, and each concept should be translated into observable dimensions and indicators. The interpretation of the findings should also be based on actual data, while avoiding the invention of figures or the generalization of findings from limited samples. Algerian, Arab, and foreign literature provides a suitable foundation for constructing this framework, provided that it is used critically and that a distinction is made between what it actually measures and what can reasonably be inferred from it.

Eleventh: The Academic Chapter

The Transformation from Student to Entrepreneur within Algerian University Incubators Chapter Introduction

The transformation from student to entrepreneur represents one of the most complex transformations within the Algerian university because it is not limited to acquiring a set of technical knowledge or attending courses on preparing a business plan. Rather, it involves a gradual change in the way of thinking, self-image, and relationship with knowledge, the university, the labor market, risk, and the professional future. Students often enter university as learners seeking to obtain a degree that qualifies them to integrate into the labor market. However, within the university incubator, they may find themselves facing a different path that requires them to become initiators, opportunity discoverers, developers of innovative solutions, negotiators with partners, resource managers, and individuals responsible for the consequences of their decisions.

This transformation does not mean that students abandon their academic identity or the value of the university degree. Rather, it means reconstructing the relationship between academic education and entrepreneurial practice. A graduation project may become a prototype, scientific-research findings may be transformed into a product, or a local social problem may become a project with social impact. In this context, the university incubator has become an intermediary institution that helps students move from the space of theoretical learning to the space of experimentation and application. However, it cannot achieve this transformation alone unless it operates within a university that adopts innovation and entrepreneurship as part of its institutional mission.

The importance of this subject has increased in Algeria following the issuance of Ministerial Decision No. 1275, dated September 27, 2022, which established the “Degree–Start-Up” or “Degree–Patent” pathway and opened the possibility of transforming certain graduation projects into innovative projects or start-ups. The decision linked university education with the incubator

and made the graduation project capable of serving as the starting point for an entrepreneurial pathway rather than remaining an academic document that ends with the student's defense (Ministry of Higher Education and Scientific Research, 2022). Some studies explain that the decision covers bachelor's, master's, and doctoral levels and links the role of incubators to supporting students in implementing and developing projects (Karadaniz, 2023).

This chapter is divided into two complementary sections. The first section addresses the human–institutional framework of the entrepreneurial transformation by analyzing motivations, perceptions, professional identity, and cognitive and social capital, followed by an examination of the new role of the university and the incubator and their relationship with the labor market. The second section addresses the practical process of transformation from an idea into a project through the stages of incubation, training, guidance, networking, financing, and indicators for measuring the transformation and its limitations.

Section One: The Human–Institutional Framework of the Entrepreneurial Transformation

First: The Concept of the Transformation from Student to Entrepreneur

Transformation as a Social and Professional Process

The transformation from student to entrepreneur should not be understood as an automatic transition or a legal moment that occurs merely upon registering an enterprise or obtaining an “Innovative Project” certificate. In its deeper meaning, transformation is a social and professional process through which the individual's relationship with the self, others, the institution, and the future changes. During this process, the student acquires a greater ability to identify opportunities, analyze problems, mobilize resources, tolerate uncertainty, and make decisions.

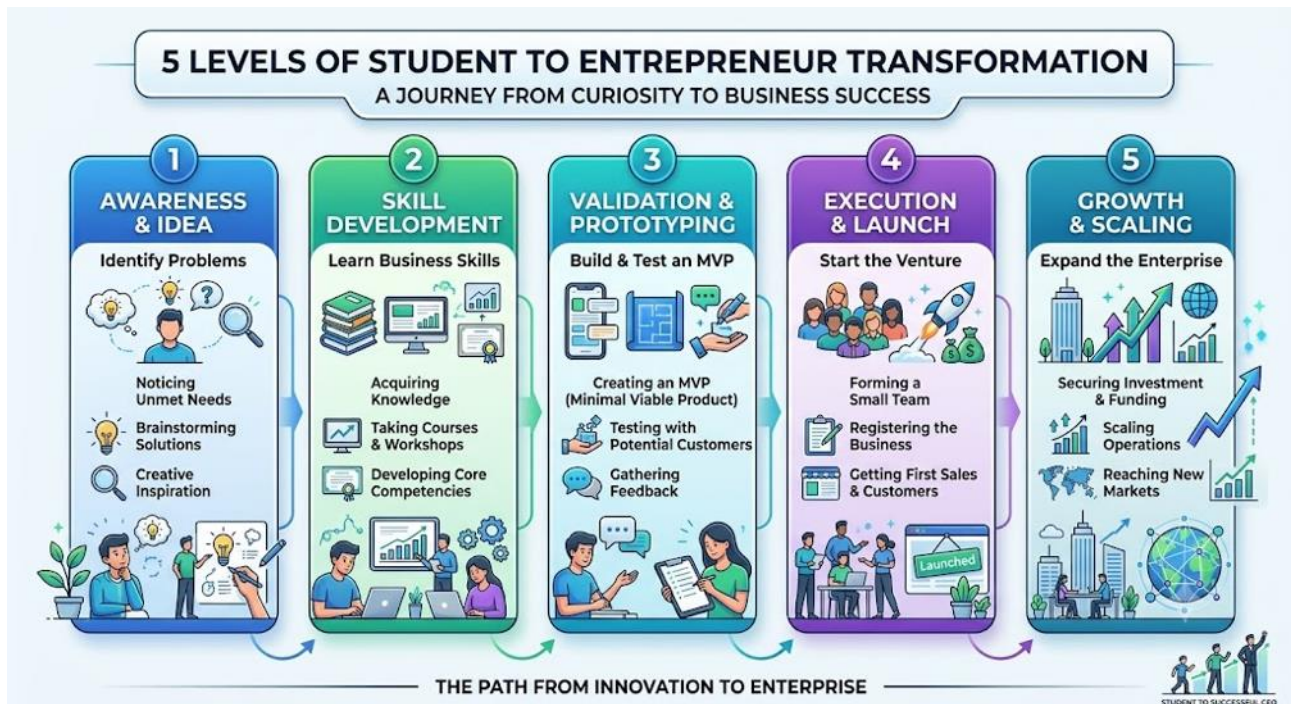
This transformation presupposes a shift from the position of recipient to that of actor. In the traditional educational model, students receive knowledge and are evaluated according to their ability to understand and reproduce it in examinations. Entrepreneurs, however, need to use knowledge in incomplete situations, make decisions under conditions of limited information, test hypotheses, deal with failure, and modify ideas. Therefore, the difference between the traditional student and the entrepreneurial student does not lie in possessing or not possessing knowledge, but in the way that knowledge is used and transformed into value.

A study on entrepreneurship training in Algerian universities showed that specialized training is associated with the development of students' entrepreneurial knowledge, skills, and attitudes. At the same time, however, it pointed to a gap between knowledge and practice due to the recent development of entrepreneurship education within the Algerian university (*Entrepreneurialism and University Training*, 2026). The study was based on a sample of 49 students with innovative ideas and used questionnaires and interviews with incubator managers. This confirms that training may raise awareness but does not, by itself, guarantee the transition to entrepreneurial action.

Levels of Transformation

The transformation from student to entrepreneur can be analyzed through five gradual levels:

1. **Awareness level:** Recognizing that establishing a project is a possible career option.
2. **Intention level:** Forming a clear desire to establish a project within a specified period.
3. **Experimentation level:** Testing the problem and the solution and preparing a prototype.
4. **Establishment level:** Completing the legal procedures or obtaining recognition for the project.
5. **Operation level:** Starting activities and achieving the first transactions or results.



Not all students move from the first level to the fifth. Some may remain at the level of interest, while others may withdraw because of financing difficulties or fear of failure. Others may continue the process until the establishment of an enterprise. Therefore, the incubator should be evaluated by measuring the number of students at each stage rather than merely the number of students who attended training sessions.

Second: Theories of the Entrepreneurial University

The University: From an Educational Institution to a Development Actor

The concept of the entrepreneurial university emerged within the context of transformations that made knowledge and innovation essential elements of the modern economy. The university no longer performs only the functions of teaching and scientific research. It is also expected to contribute to economic and social development, facilitate technology transfer, encourage enterprise creation, and educate individuals capable of taking initiative.

The concept of the entrepreneurial university does not mean transforming the university into a commercial company or subjecting knowledge to the logic of direct profit. Rather, it means expanding the university's mission to include what is known as the "third mission," namely a set of activities related to community service, knowledge transfer, cooperation with institutions, innovation development, continuing education, and participation in solving public problems. The Organisation for Economic Co-operation and Development states that the entrepreneurial university is associated with leadership and governance, organizational capacities, entrepreneurial teaching and learning, support pathways for entrepreneurs, business relationships, internationalization, and impact measurement (OECD, 2022).

From this perspective, the existence of an incubator alone is insufficient to describe a university as entrepreneurial. An active incubator may exist within a university where curricula remain theoretical, faculty incentives are absent, links with the economic sector are weak, and there is no system for measuring project outcomes. A genuinely entrepreneurial university, however, works to

integrate entrepreneurship at several levels: curricula, research, administration, student services, and external relations.

The Triple Helix Model

The Triple Helix model provides an appropriate framework for analyzing the entrepreneurial university because it focuses on the interaction among the university, government, and industry. The university produces knowledge and competencies; the government establishes policies and provides the legal and financial framework; and industry and markets provide expertise, demand, resources, and opportunities for application. The entrepreneurial transformation cannot succeed if these actors operate separately.

The incubator performs an intermediary function within this model. It translates academic knowledge into a project, directs students toward government agencies, and connects them with experts, institutions, and investors. However, this mediation may be weak if the incubator is isolated from the economic environment. A study on the University of El Oued incubator indicated that incubators provide training, consulting, and support services but face challenges including weak coordination with the economic environment, difficulty attracting investment and partners, and the existence of certain bureaucratic procedures (*The Reality of Organizational Communication in the University Business Incubator*, 2026).

This indicates that the incubator should not be evaluated only from within, through the number of training sessions or files, but also through its external relationships. Indicators of incubator strength include the number of effective agreements, the number of participating experts, the number of field-training opportunities, the number of projects connected to customers or funders, and the proportion of projects that have obtained support from outside the university.

Third: The Transformation from the Perspective of Cognitive Capital University Knowledge as Convertible Resources

Cognitive capital represents the totality of knowledge, skills, experiences, and abilities acquired by an individual or produced by an institution. University students possess a body of knowledge that may be theoretical, technical, linguistic, or research-based. However, the value of this knowledge is not automatically realized in the market. A social-sciences student may possess the ability to analyze phenomena; a media student may possess content-production skills; and an engineering student may possess design abilities. Transforming these abilities into a project requires guidance, support, and experimentation.

The incubator plays a role in transforming cognitive capital into capital that can be invested. It helps students identify the problem that their knowledge can address, formulate added value, identify users, build a business model, and test the product. Entrepreneurship education is therefore not merely education in economic concepts; it is training in transforming knowledge into a solution.

The importance of this dimension appears in projects that originate from scientific research or graduation projects. Some Algerian incubators have recorded results related to patent registration and support for innovative projects. A case study of the University of El Oued incubator reported results in the registration of patents by students, faculty members, and graduates, in addition to supporting innovative projects (Redouane & Mighri, 2022, pp. 347–357).

However, transforming knowledge into a project raises ethical and scientific questions. Who owns the knowledge or invention? How are the rights of the student and faculty member protected?

Does an emphasis on commercial valorization weaken basic or critical research? The entrepreneurial university should be capable of combining knowledge with economic value and knowledge with cultural and social value because reducing scientific research to market considerations threatens the autonomy of the university.

Fourth: Social Capital and Its Role in the Transformation

Networks and Relationships

An entrepreneur does not succeed through individual knowledge alone. Rather, they need a network of relationships that enables access to information, experts, financing, and customers. Social capital consists of the trust, relationships, connections, and exchanges that help individuals achieve their objectives. A student may be intelligent and possess a good idea but be unable to implement it if they do not know who can help prepare the prototype, guide them toward financing, or connect them with an institution that needs their product.

The incubator provides students with an institutional network that was not available before incubation. Students meet faculty members, mentors, other students, experts, economic institutions, and support bodies. This network may be more important than the physical space itself because it provides guidance, legitimacy, and confidence. A study on the entrepreneur in the university environment explains that social capital and relationship networks contribute to building the student's entrepreneurial personality (*The Entrepreneur in the University Environment*, 2024).

However, social capital may be distributed unequally. Students with broad family or social connections may benefit more than others, while students from remote areas or low-resource families may face difficulties accessing partners and information. The incubator should therefore work to compensate for these inequalities by organizing open meetings, digital platforms, mentoring programs, communities of practice, and spaces for exchanging experiences.

Indicators for Measuring Social Capital

A student's social capital can be measured through:

- The number of experts with whom the student has communicated.
- The number of partnerships established through the incubator.
- The number of individual mentoring sessions.
- The number of customers or institutions with which the idea was tested.
- The level of trust in mentors.
- The student's ability to request assistance.
- The level of benefit obtained from the network of students and entrepreneurs.

It is not sufficient to ask the student, "Did relationships help you?" Practical examples should also be requested, such as: Did the student obtain training? Did someone provide financing? Did the student test the product with an institution? Was the student introduced to a technical partner? This procedure makes it possible to distinguish between symbolic relationships and relationships that produced tangible results.

Fifth: The Professional Identity of the Entrepreneurial Student

From Student Identity to Entrepreneurial Identity

Professional identity is the way an individual sees themselves within the world of work and the way others present them. The entrepreneurial student experiences a form of multiple identity: they are a student and researcher, but at the same time a project founder, idea holder, or team manager.

They may feel tension between the requirements of study and those of the project, between the logic of examinations and the logic of the market, and between waiting for academic guidance and the need to make independent decisions.

The identity of a student seeking a degree differs from that of an entrepreneurial student in several respects. A student seeking a degree focuses on success in courses, obtaining a high average, and completing the academic trajectory. An entrepreneurial student, however, needs to identify a problem, develop a solution, convince a user or funder, modify the idea, and tolerate the possibility of failure. These two identities should not necessarily be presented as contradictory. A student may be both a researcher and an entrepreneur and may use research skills to develop a project.

Ministerial Decision No. 1275 represents an institutional factor in reconstructing this identity because it gives the graduation project the possibility of being connected to a start-up or patent. A study on the emergence of Algerian incubators explains that the decision increased interest in innovative projects and created an entrepreneurial atmosphere within the university community. A study of student projects at the University of Béjaïa also identified seven dimensions of expectations and difficulties that should guide incubator services (Amghar, 2023, pp. 168–187).

Tension Between Academic and Entrepreneurial Identity

Students may feel that an entrepreneurial project diminishes the value of their academic path, particularly if they belong to theoretical or humanities disciplines that do not always receive recognition within innovation policies. Some students may believe that establishing an enterprise requires commercial skills that university education does not provide. Students may also fear that involvement in a project will affect their academic performance or delay graduation.

Addressing this tension requires redefining entrepreneurship within the university. Entrepreneurship is not merely selling and generating profit; it also involves initiative, creativity, responsibility, and problem-solving. A philosophy student may develop an educational or cultural consulting project; a literature student may create a reading or digital-publishing platform; and a sociology student may develop a service in social research, training, or mediation. These projects require an incubator that recognizes the diversity of innovation rather than favoring only technological projects.

Sixth: Students' Motivations Toward Entrepreneurship

Economic Motivations

Economic motivations include the desire to earn income, achieve financial independence, avoid unemployment, and create a job rather than wait for one. These motivations become more important in a context characterized by the difficulty of moving from university to the labor market. Published data on Algeria indicate that the youth unemployment rate among individuals aged 15–24 reached approximately 29.76% in 2024, according to an economic source based on international data (Macrotrends, 2024). This figure should be treated cautiously because of differences in the definition of unemployment, data sources, and age groups. Nevertheless, it shows that employment constitutes an important background for understanding the orientation toward entrepreneurship.

However, explaining entrepreneurship solely through unemployment remains incomplete. A student may establish a project because they have identified an opportunity, seek independence, wish to express their talent, or want to solve a social problem. Some students may also view public-

sector employment as the safest option while considering private enterprise risky. It is therefore necessary to distinguish between “necessity entrepreneurship” and “opportunity entrepreneurship.”

Psychological Motivations

Psychological motivations include the need for independence, the desire for achievement, self-confidence, the ability to tolerate uncertainty, and the desire to have an impact. Students need to feel that their ideas are valuable and that they are capable of implementing them. These motivations may weaken if students experience ridicule, early failure, or a lack of support.

The incubator plays an important role in building confidence, not through general praise but by providing realistic feedback and helping students observe their gradual progress. When students move from a vague idea to a clear description of a problem, then to a prototype, and finally to testing with users, they acquire a sense of competence. This can be measured through a pretest–posttest questionnaire, provided that the researcher does not rely on a single question about self-confidence.

Social and Value-Based Motivations

Entrepreneurship may be associated with the desire to serve society or solve local problems. In Algeria, projects may emerge from issues related to education, healthcare, the environment, agriculture, heritage, and digital services. This dimension demonstrates that the entrepreneur is not always an individual seeking profit but may also be a social actor who creates collective value.

Studies should measure the type of value that students seek to produce: economic, social, environmental, or cultural value. They should also examine whether students believe that project success is measured solely by profit or also by the number of beneficiaries and the project’s social impact. These questions contribute to constructing a more comprehensive conception of entrepreneurship.

Seventh: The Incubator as a Space for Reconstructing the Self

The incubator provides students not only with external resources but also changes their relationship with themselves. Within the incubator, students learn that an idea is not fixed property but a hypothesis that can be tested. They learn that criticism does not mean rejection of the person, that modifying a project does not mean failure, that the customer or user is a source of knowledge, and that teamwork may be more effective than individual effort.

This process requires a psychologically safe environment that allows experimentation. If the incubator punishes failure or favors ready-made projects, students may avoid risk and present merely formal ideas. If failure is treated as an opportunity for learning, however, the incubator helps develop resilience and adaptability. This dimension can be measured through questions concerning students’ attitudes toward redesigning projects, accepting feedback, and testing new hypotheses.

The incubator also reshapes students’ relationship with academic authority. In the traditional lecture, the professor is the source of knowledge. In the incubator, the mentor becomes a guide and thinking partner. This does not eliminate the professor’s role but changes its nature from transferring information to facilitating learning and experimentation. This requires developing faculty members’ skills in mentoring, design, and innovation because a professor specializing in a theoretical field does not automatically become a business-model consultant.

Eighth: The University’s Role in Supporting the Transformation Curricula

The incubator cannot succeed if entrepreneurship remains separate from the curriculum. Students need analytical, writing, communication, project-management, data-analysis, and field-research skills, which can be acquired within different disciplines. Entrepreneurship should be integrated into applied courses rather than limited to introductory lectures.

The OECD indicates that supporting the entrepreneurial university requires teaching entrepreneurship across disciplines and levels, providing pathways for project development, and linking learning to practice (OECD, 2022). Accordingly, some graduation projects can be transformed into experimental projects, market research can be integrated into applied courses, and multidisciplinary group projects can be developed.

Scientific Research

The incubator should be linked to laboratories and research centers so that student projects are not separated from scientific knowledge. Students can benefit from the databases, equipment, and expertise available in laboratories. Research findings may also serve as the basis for start-ups, while intellectual property and exploitation rights must be respected and clearly defined.

This relationship poses a particular challenge for the humanities and social sciences. Social, philosophical, or literary research may not produce a device or application, but it may produce educational tools, cultural platforms, consulting services, or community solutions. The concept of innovation should be broadened to include these areas; otherwise, the incubator will become biased toward technical disciplines.

Student Services

The university needs to provide integrated services including guidance, training, legal support, psychological support, time management, and direction toward financing. The entrepreneurial student may face dual pressure from study and the project and may need flexibility in scheduling or support for teamwork. The university should not assume that all students possess the same resources.

Ninth: Statistical Data on the Transformation in Algeria

Some data indicate that the entrepreneurial transformation has begun to acquire an institutional presence in Algerian universities, although it remains in a phase of expansion and experimentation. Data published in 2025 reported the existence of 124 active incubators within higher-education and scientific-research institutions, the involvement of approximately 60,000 students in graduation projects related to start-ups, micro-enterprises, or patents, the registration of 1,600 micro-enterprises, 130 start-ups, 1,175 approved innovative projects, and 2,800 patent applications (We Are Tech Africa, 2025).

These figures require critical analysis. The number of participating students is not equal to the number of start-ups; the number of applications submitted is not equal to the number of patents granted; and the number of approved projects is not equal to the number of enterprises that continue to operate. A sequence of indicators should therefore be constructed to clarify the transformation process:

Stage	Proposed Indicator
Interest	Number of students who attended awareness activities
Participation	Number of students registered in incubator programs
Idea	Number of accepted ideas

Development	Number of prototypes
Recognition	Number of projects receiving a label or certificate
Establishment	Number of legally registered enterprises
Operation	Number of enterprises that began activities
Sustainability	Proportion of enterprises continuing after one and three years

A study of the University of Bouira provided an example of the need to use percentages rather than absolute numbers. It reported that 83 students established 26 start-ups and 14 micro-enterprises during the 2022/2023 academic year. This represented 0.38% of the university's total student population and 2.40% of master's students. The study indicated that the overall proportion remained low and, according to its estimate, did not exceed 1% (Saoud et al., 2024). This reveals the difference between general institutional enthusiasm and the actual rate of transformation within the total student population.

Another study reported data concerning the registration of 151 defense projects under Decision No. 1275, with 264 students defending their projects as start-ups, in addition to six labeled projects, four patents, and 114 start-ups during the 2022/2023 academic year at the institution under study (*The Impact of Business Incubators*, 2025). Regardless of differences among institutions and contexts, these data demonstrate that researchers need to define the university, period, and unit of counting precisely.

Tenth: Proposed Questionnaire for Studying the Transformation

The transformation from student to entrepreneur can be measured using a questionnaire consisting of five dimensions. The first measures student characteristics, the second measures motivations, the third measures incubator services, the fourth measures changes in identity and skills, and the fifth measures the actual outcomes of the project.

Sample Questionnaire Statements

A five-point Likert scale is used:

1 = Strongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly agree.

Motivation Dimension

- I consider establishing a project to be a realistic career option for me.
- I want to achieve financial independence through a private project.
- I want to transform my university knowledge into a practical solution.
- I am prepared to take the risks associated with establishing a project.
- I believe that my project can provide a solution to a social or economic problem.

Professional Identity Dimension

- I define myself as a project owner or potential entrepreneur.
- I can speak about my project before experts or investors.
- I feel that the project is part of my professional future.
- I can combine the requirements of study with the requirements of the project.
- I regard failure as an opportunity for learning.

Incubator Impact Dimension

- The incubator helped me identify the problem addressed by my project.
- The incubator helped me identify the target group.
- The incubator helped me prepare the business model.

- The incubator provided me with experts or consultants.
- The incubator connected me with partners or institutions outside the university.
- The incubator helped me access sources of financing.
- The incubator followed the development of my project after training.

Actual Behavior Dimension

- I developed a prototype.
- I tested the idea with users or customers.
- I modified the project based on feedback.
- I submitted an application for intellectual-property protection.
- I completed or began the establishment procedures.
- I generated my first income or completed my first sale.

Statistical Analysis

Means and standard deviations can be calculated for each dimension. A *t* test can then be used to compare incubated and non-incubated students, or analysis of variance can be used to compare universities and disciplines. Spearman's correlation coefficient can be used to test the relationship between benefiting from the incubator and entrepreneurial identity, particularly if the data are ordinal or not normally distributed.

Multiple regression can also be used to test the effects of training, consulting, networking, and financing on entrepreneurial transformation while controlling for age, gender, academic discipline, and previous experience. The statistical model may be expressed as follows:

Entrepreneurial Transformation

$$= \beta_0 + \beta_1(\text{Training}) + \beta_2(\text{Consulting}) + \beta_3(\text{Networking}) + \beta_4(\text{Financing}) + \beta_5(\text{Control Variables}) + \varepsilon$$

Regression coefficients or significance levels must not be presented before data have actually been collected and analyzed. Reliability should also be tested using Cronbach's alpha, and the sample size, sampling method, and data-collection period should be reported.

Eleventh: Limitations of the Entrepreneurial Transformation

Limited Financing

Financing remains one of the most influential obstacles to the student's transition from an idea to an enterprise. The incubator may provide training and guidance but may not have the authority to provide financing or possess a sufficient investment network. As a result, many projects stop at the prototype stage. It is therefore necessary to distinguish between cognitive support and financial support and not to regard guidance as a substitute for resources.

Bureaucracy

Students may face complex procedures related to registration, taxation, intellectual property, opening bank accounts, and obtaining licenses. Lengthy procedures may lead to a loss of enthusiasm or the loss of a market opportunity. The incubator needs to perform an "administrative mediation" function, meaning that it should help students understand the procedures and connect them with the relevant bodies.

Weak Market Demand

A student may develop a good product but fail to find users or customers. The incubator should therefore not begin with the question, “How do we make the product?” but rather with the question, “What problem do people need to solve?” Market research, interviews, and experimentation help reduce this risk.

Differences Among Disciplines

Technical disciplines may receive greater incubation opportunities because it is easier to present a product prototype, whereas the humanities and social sciences may face difficulty demonstrating the economic value of their projects. Indicators should be developed that recognize social and cultural innovation rather than relying only on technical indicators.

Time Tension

Students need to complete their studies and defend their graduation projects while simultaneously developing their enterprises. If there is no organizational flexibility, the project may become an additional burden. The incubator should therefore coordinate with the faculty, supervisors, and defense committees.

Twelfth: Proposed Analytical Model

The analytical model for the chapter may be constructed as follows:

University and Incubator Inputs

Leadership, financing, human resources, curricula, laboratories, and partnerships.



Transformation Processes

Training, mentoring, idea testing, prototype development, networking, and guidance toward financing.



Human Transformations

Self-confidence, professional identity, initiative, risk-taking, resilience, and skills.



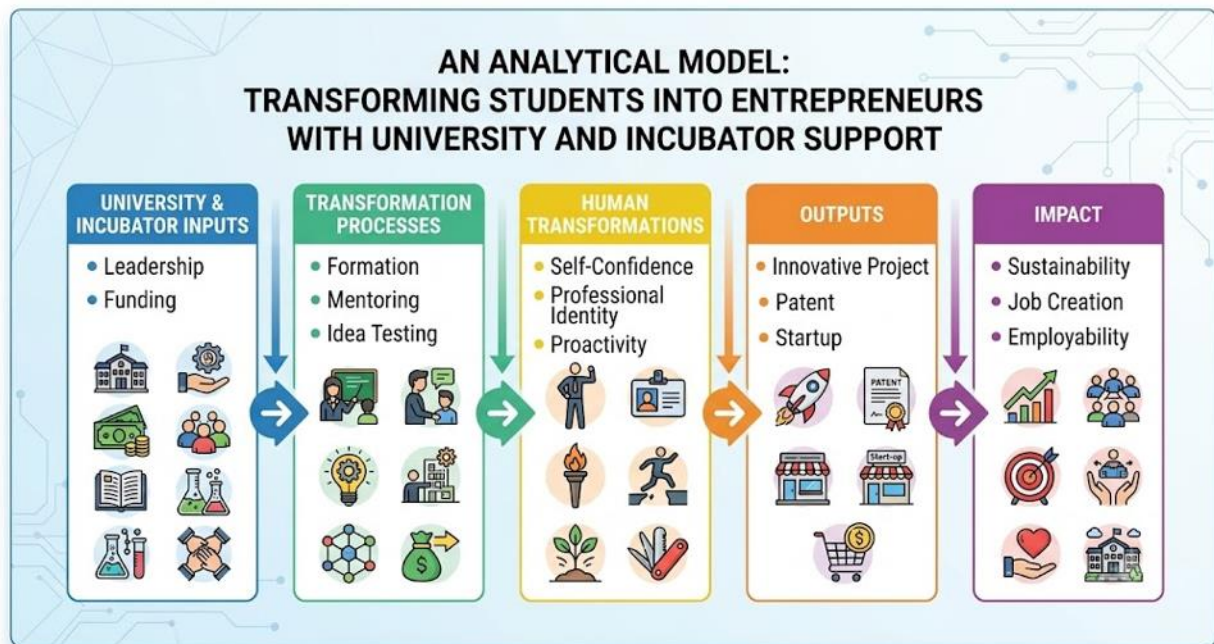
Outputs

Innovative project, patent, start-up, micro-enterprise, and first sale.



Impact

Sustainability, job creation, employability, resolution of social problems, and strengthened relations between the university and its environment.



This model makes it possible to connect the human dimension with the institutional dimension. The institution provides resources and programs, but the student is the one who interprets and uses them. Improved student skills also do not automatically lead to the establishment of an enterprise if the legal, financial, and market environment is unavailable. The transformation is therefore the product of interaction among the actor, the institution, and the context.

Conclusion of the Section

The transformation from student to entrepreneur within Algerian university incubators is a complex process combining changes in identity, skills acquisition, relationship formation, access to resources, and gradual movement from idea to action. This transformation cannot be reduced to Decision No. 1275 or to the establishment of incubators within universities, despite the importance of these initiatives in providing a legal and institutional framework.

A student does not become an entrepreneur merely by possessing an idea or attending a training session. Rather, the student becomes an entrepreneur when they begin to establish a new relationship with knowledge, the market, risk, and responsibility. The incubator plays an important role in this process, but it requires a supportive university, an institutional network, appropriate financing, applied curricula, and a monitoring system. Evaluation should also include the student's skills, identity, confidence, and networks in addition to the project's economic outcomes.

The available data indicate an expansion in the number of incubators, projects, and participating students in Algeria. They also reveal a gap between the size of initial participation and the proportion of enterprises that reach operation and sustainability. The scientific value of the study therefore lies in measuring the entire process rather than focusing only on the number of applications or training sessions. The study should also give greater importance to the humanities and social sciences and to projects with cultural and social value so that the entrepreneurial university does not become a narrow model that equates innovation solely with technology and profit.

The Practical Transformation Process within the University Incubator

First: The Idea-Discovery Stage

The process usually begins with observing a problem, need, or opportunity. The idea may arise from a graduation project, laboratory research, personal experience, or observation of a problem in the neighborhood, university, or institution. The novelty of the idea is not sufficient. The problem must be precisely identified, the group experiencing it must be known, existing solutions must be examined, and it must be determined whether users are willing to adopt the solution.

The incubator's role is to help students move from a general formulation such as "I want to create a useful application for students" to a precise formulation such as "Developing a platform that helps students access open academic resources, organize reading, and manage references." The more clearly the problem is defined, the more possible it becomes to test the solution.

Second: The Idea-Validation Stage

This stage requires conducting interviews with users, analyzing competitors, estimating costs, and testing the feasibility of implementing the solution. Students learn that the value of an idea is not determined by them alone but by the interaction of users with it. They may discover that the problem is not urgent, that the solution already exists, or that the target group is not willing to pay.

The incubator should rely on practical methodologies such as design thinking, the business model, and the minimum viable product. It should not limit itself to theoretical lectures because learning occurs through interaction with users.

Third: Prototype Development

A prototype is an initial representation of a product or service intended to test the idea before significant resources are invested. It may be a simplified application, design, diagram, trial version, or limited service. The prototype does not need to be complete; rather, it should allow feedback to be collected.

At this stage, students need technical and professional support, as well as workspaces, laboratories, and equipment. The importance of partnerships among the incubator, laboratories, faculties, and institutions becomes evident here. The success of this stage can be measured by the number of prototypes developed, the number of tests conducted, and the number of modifications introduced by the student.

Fourth: Establishment and Financing Stage

After the idea has been tested, the project moves to the stage of legal establishment and resource mobilization. Students need to prepare a financial plan, estimate costs, identify sources of financing, and understand legal obligations. Financing may be self-financing, public financing, investment financing, or support-program financing.

The incubator should be clear about the limits of its role. If it is not a funder, it should direct students toward financing sources rather than create unrealistic expectations. Students should also be trained to present their projects to funders because communication ability is part of entrepreneurial capital.

Fifth: Operation and Follow-Up Stage

The incubator's role does not end when the enterprise is established. The most difficult stage may begin after establishment, when students face the market, customers, competition, and administration. The project requires monitoring indicators such as sales, number of users, costs, financing, number of employees, and customer-retention rate.

It is useful to conduct follow-up after six months, one year, and three years. Such follow-up helps distinguish between an enterprise that was formally established and one that has actually begun operating. It also makes it possible to identify the reasons for discontinuation, which may include financing problems, weak demand, management difficulties, or disagreements among partners.

Section Two: Field Study Design and Instruments

Introduction

Analyzing the transformation from student to entrepreneur within Algerian university incubators requires a field design capable of combining the measurement of attitudes and skills on the one hand with an understanding of the experiences and meanings that students attach to their entrepreneurial pathways on the other. Therefore, this section proposes adopting a mixed-methods design that combines quantitative data extracted from the questionnaire, qualitative data resulting from semi-structured interviews, and documentary data obtained from incubator, ministry, and university reports.

The importance of this design derives from the nature of the study topic. The number of incubated students, types of projects, number of training sessions, rates of participation and financing, and other data are quantitative information that need to be presented in tables, percentages, and indicators. However, these figures alone cannot explain why a student decides to join an incubator, why a project is discontinued, how the student's sense of self changes, or how the student describes their relationship with mentors and the university. Therefore, integrating quantitative and qualitative data provides a broader and deeper understanding of the phenomenon and achieves a form of methodological triangulation among different data sources (Creswell & Plano Clark, 2018).

Guidelines for reporting mixed-methods research indicate the need to clarify the reason for combining the two methods, identify the type of design, and explain how quantitative and qualitative findings are integrated, rather than presenting each type of data in a separate section without an analytical connection between them (American Psychological Association, 2018). Accordingly, this section does not aim merely to describe the instruments. It also seeks to clarify the relationship among the research question, study population, sample, instrument, data-collection procedures, analysis, validity, reliability, and ethical considerations.

First: Objectives of the Field Study

The field study aims to achieve a set of interconnected objectives. The first objective is to describe the characteristics of students with incubated projects in terms of age, gender, academic discipline, level of study, university, and project stage. The second objective is to analyze the nature of the support provided by incubators, such as training, consulting, guidance, financing, networking, and the provision of workspaces.

The third objective is to measure the impact of the incubator on students' human development through indicators such as skills, self-efficacy, self-confidence, decision-making ability, readiness to take risks, teamwork, and dealing with failure. The fourth objective is to understand the transformation in professional identity, namely the student's transition from perceiving themselves as a recipient of knowledge to perceiving themselves as an initiator or project owner.

The fifth objective is to measure the practical outcomes of incubation, such as developing a prototype, obtaining an “Innovative Project” certificate, submitting a patent application, establishing an enterprise, obtaining financing, and completing the first sale. The sixth objective concerns understanding institutional difficulties, including bureaucracy, insufficient financing, limited partnerships, and weak follow-up after the end of incubation.

Second: Methodological Design of the Study

Rationale for Adopting a Mixed-Methods Approach

A mixed-methods approach is suitable for this study because the entrepreneurial transformation includes a measurable dimension as well as an experiential and interpretive dimension. The questionnaire makes it possible to measure the prevalence of certain attitudes and skills and to evaluate services, whereas interviews make it possible to understand how these attitudes develop within students’ everyday experiences. For example, the questionnaire may show that a high proportion of students believe that the incubator helped them develop presentation skills, while interviews may reveal that this improvement was linked to a single training course or a specific competition, or that some students still lack confidence when dealing with investors.

An explanatory sequential design may be adopted. It begins with the collection of quantitative data through the questionnaire, after which the results are used to guide the qualitative interviews. If the data show, for example, that training received a high mean score while financing received a low mean score, the interviews can focus on understanding the reasons for weak financing, its consequences, and the strategies students use to overcome the problem. This design enables a transition from the question “What is happening?” to the questions “Why is it happening?” and “How do the actors experience it?”

Unit of Analysis

The primary unit of analysis is the student with an incubated project because the student is the actor who experiences the transformation from the academic position to the entrepreneurial position. However, the study also requires other units of analysis: the incubator as an institution, faculty members and mentors as professional actors, and documents as institutional sources.

A distinction must be made between the unit of analysis and the source of data. The student is the primary unit of analysis, but the student’s data may be collected through a questionnaire, interview, or project file. The incubator is an institutional unit studied through interviews with officials, documents, and activity reports. This distinction prevents confusion between the number of students and the number of projects because one project may involve more than one student.

Third: Study Population

Student Population

The student population consists of all students with incubated projects within the selected university incubators during the period specified for the study. This population includes final-year students, master’s and doctoral students, and recent graduates if they remain connected to the incubator or have benefited from its programs.

The inclusion and exclusion criteria should be clearly defined. A student is included if they have a project file within the incubator, have participated in an incubation program, have benefited from formal training or mentoring, or have obtained recognition or certification for their project. A

student who attended only one general activity without being a project holder should be excluded because including them may confuse the general beneficiary with the actual incubated student.

Population of Officials and Faculty Members

This population includes incubator officials, program managers, academic supervisors, and experts or trainers involved in the support process. The number of these individuals is not expected to be large. Therefore, purposive sampling may be adopted because the objective is to select people who possess direct knowledge of incubator management and project follow-up.

It is advisable to distribute the interviews among an administrative official, a supervising faculty member, and an expert or trainer so that the image of the incubator is not limited to a single point of view. An official may consider the services accessible, while a student may view access as difficult. A faculty member may believe that a project is mature, while the documents may reveal that it has not gone beyond the idea stage.

Documentary Population

The documentary population consists of incubator activity reports, university statistics, project lists, reports of the Ministry of Higher Education and Scientific Research, data from bodies supporting start-ups, incubator-establishment decisions, training programs, and partnership agreements. Documents should be treated as sources that require examination and not necessarily as neutral facts.

Fourth: Selection of Universities and Incubators

Criteria for Selecting Universities

Universities should be selected according to clear scientific criteria rather than solely according to ease of access. The following criteria may be adopted:

- The existence of an active university incubator during the study period.
- The availability of a considerable number of projects or incubated students.
- Geographic and regional diversity.
- Diversity in disciplines and projects.
- The availability of accessible data or reports.
- Differences in the level of experience among incubators, where possible.

Three or four universities may be selected to represent different patterns, such as a university with an early experience, a recently established university, a university with a technological orientation, and a university that includes projects in the humanities and social sciences. This makes explanatory comparison possible. However, the findings should not be generalized to all Algerian universities unless the sample is probabilistic and representative.

Proposed Sample Model

The sample may consist of 300 students with incubated projects distributed across four universities, with 75 students from each university. The number may be adjusted according to the actual population size. Interviews may include 12 to 16 officials and faculty members, in addition to 10 or 12 students representing different project stages.

However, this proposed number is not a field finding and must not be presented in the dissertation as an actual number before the study is implemented. The researcher must report the final number, response rate, number of questionnaires valid for analysis, and number of excluded questionnaires together with the reasons for exclusion.

An Algerian study on incubators provides a methodological example based on semi-structured interviews with holders of incubated projects. The population consisted of 52 projects and five start-ups, while nine valid interviews with project holders were analyzed (El Cheikh, 2023). This study demonstrates the possibility of using interviews within a small population, but it does not permit the statistical generalization of findings to all students.

Fifth: Sample Size and Sampling Method

Probability Sampling

If a sampling frame containing the names of all students with projects is available, random or stratified sampling may be used. Stratified sampling is appropriate when the population consists of different universities, disciplines, or levels of study. The sample may be distributed proportionally according to the following formula:

$$n_h = \frac{N_h}{N} \times n$$

Where:

- n_h represents the sample size in the stratum.
- N_h represents the population size in the stratum.
- N represents the total population size.
- n represents the total sample size.

If the population is small, it is preferable to conduct a census of all accessible students while recording the response rate. A census should not be confused with simply sending the questionnaire to everyone. A census requires following up with nonrespondents and documenting the final number.

Purposive Sampling

Purposive sampling is used in interviews because it targets individuals who possess relevant experience or knowledge. Students may be selected according to a diversity matrix that includes a student at the idea stage, a student who has developed a prototype, a student who has established an enterprise, a student whose project has stopped, a female project holder, a student from a humanities discipline, and a student from a technical discipline.

The purpose of this diversity is to analyze differences in experiences rather than produce statistical representation. The report should therefore state that the qualitative sample is purposive and diverse and that its findings interpret experiences rather than generalize them statistically.

Sixth: The Questionnaire

Function of the Questionnaire

The questionnaire is used to collect standardized data from a relatively large number of students, making it possible to calculate distributions, percentages, means, and comparisons. Each questionnaire item should be connected to a research question or a specific indicator. Questions should not be added merely because they appear useful, as excessive length may confuse respondents and weaken the quality of responses.

Questions should be written in clear and direct language, and compound questions that measure two things at the same time should be avoided. The question, “Does the incubator provide good training, financing, and consulting?” is imprecise because it combines three dimensions. Training

may be good while financing is weak. Each dimension should therefore be measured through a separate group of items.

First Dimension: Social Background

This dimension includes questions concerning:

- Age.
- Gender.
- Place of residence.
- Approximate socioeconomic status.
- Parents' education.
- Whether family members engage in self-employment.
- Family support for the project.
- Previous professional experience.
- Participation in associations or student clubs.

These data help analyze the impact of the social environment on entrepreneurial orientation. Sensitive questions should be asked carefully, and unnecessary identifying information should not be requested. Approximate income categories may be used instead of asking for an exact income amount, and respondents should be informed that answering is optional.

Second Dimension: Academic Trajectory

This dimension includes the university, faculty, discipline, level of study, year of enrollment, average or grade if necessary, and the number of graduation projects or practical experiences. It also measures the relationship between the project and the student's academic discipline.

The importance of this dimension lies in determining whether incubators serve diverse disciplines or are concentrated in engineering, economics, and computer science. It also allows the researcher to analyze whether students use their disciplinary knowledge within the project or whether the project is separate from their university trajectory.

Third Dimension: Nature of the Project

The questionnaire should include questions concerning:

- The general field of the project.
- The type of product or service.
- The target group.
- The problem addressed.
- The degree of innovation.
- The number of team members.
- The project stage.
- The existence of a prototype.
- The existence of users or customers.
- The existence of a patent file or an "Innovative Project" label.

The researcher should not request confidential technical details about the project because this may create intellectual-property risks. A general description is sufficient, together with an assurance of data confidentiality.

Fourth Dimension: Support Received

Support can be divided into separate dimensions:

Type of Support	Examples of Items
Training	Business model, market, marketing, financial management
Consulting	Legal, technical, financial, and marketing
Mentoring	Number of meetings, regularity of follow-up, mentor specialization
Financing	Guidance, financing application, grant, connection with an investor
Infrastructure	Space, laboratory, equipment, software
Networking	Experts, institutions, investors, customers
Follow-up	Periodic evaluation, reports, post-graduation support

A distinction must be made between the availability of a service and actual use of the service. Consulting may be available at the incubator while a student has not benefited from it. The questionnaire may therefore include two questions: Is the service available? Did you benefit from it? The perceived quality of the service should also be measured rather than its existence alone.

Fifth Dimension: Evaluation of the Experience

This dimension measures students' satisfaction and the extent to which they feel that the incubator understood their project, helped them modify the idea, provided a learning environment, connected them with partners, and respected their autonomy. A five-point Likert scale may be used:

1. Strongly disagree.
2. Disagree.
3. Neutral.
4. Agree.
5. Strongly agree.

Clear instructions should be provided, and respondents should be informed that there are no right or wrong answers. Items should also be ordered in a way that prevents response-pattern bias. Some reverse-worded items may be included cautiously because excessive use may confuse respondents.

Sixth Dimension: Impact on Skills and Values

This dimension includes human-development indicators such as:

- Confidence in presenting the project.
- Ability to analyze the problem.
- Negotiation skills.
- Time management.
- Teamwork.
- Decision-making.
- Risk-taking.
- Acceptance of criticism.
- Perseverance.
- Respect for social responsibility.
- Belief in the importance of innovation.
- Readiness to continue despite difficulties.

The impact should not be measured only through a general question such as "Did the incubator benefit you?" A group of items should be used to construct a composite indicator. The mean can be calculated for each dimension, followed by testing whether differences among students are statistically significant.

Seventh: Testing the Questionnaire

Validity

Validity testing begins with face and content validity by presenting the instrument to specialized faculty members in methodology, entrepreneurship, sociology, and organizational psychology. Reviewers should examine the clarity of the items, their connection to the concept, the absence of repetition, and the suitability of the language.

A pilot study should then be conducted with a small sample, such as 20 to 30 students, to test the understanding of the questions and the time required to complete the questionnaire. The pilot sample is not usually included in the final sample if substantial modifications are made to the instrument, or this should be clearly explained in the report.

Reliability

Cronbach's alpha coefficient may be used to measure the internal consistency of the dimensions. However, the alpha value is not the only evidence of instrument quality because it is affected by the number and similarity of items. The value should be reported for each dimension rather than only for the entire instrument because the dimensions may differ in nature.

Split-half reliability or test-retest reliability may also be used where appropriate. In all cases, the researcher should report the software used, the number of items, the sample size, and the method used to handle missing values.

Eighth: Semi-Structured Interviews

Rationale for Using Interviews

Semi-structured interviews make it possible to understand the experience from the perspective of the actors. They combine a standardized question guide with flexibility in asking follow-up questions. This instrument is appropriate for studying transformation because it reveals meanings that do not appear in numerical data, such as a student's fear of failure, the feeling that the university does not understand the nature of the project, or the experience of bureaucracy and financing.

A semi-structured interview does not mean that the researcher reads the questions mechanically. Rather, the guide is used as a map while allowing the respondent to provide examples and details. The researcher should avoid directing responses through questions containing prior judgments, such as: "Do you not think that the incubator failed to support you?" A better question would be: "How do you evaluate the incubator's support? Which aspects helped or hindered you?"

Interview Guide for Incubator Officials

The interview guide may include the following dimensions:

Dimension One: Introduction to the Incubator

- When was the incubator established?
- What are its main objectives?
- Which groups does it receive?
- What are the criteria for accepting projects?
- What are the stages of incubation?

Dimension Two: Services

- What types of training are provided?
- How do you select mentors?



- Are individual consultations available?
- How are students directed toward financing?
- What is the nature of the partnerships with institutions?

Dimension Three: Outcomes

- How many projects has the incubator received?
- How many prototypes have been developed?
- How many enterprises have been established?
- How many projects have continued?
- How do you follow up with projects after graduation?

Dimension Four: Difficulties

- What are the main administrative obstacles?
- What financing difficulties exist?
- Are there difficulties in attracting experts?
- How do you deal with humanitarian and social projects?
- What reforms are necessary?

Interview Guide for Faculty Members

Faculty interviews address the role of the academic supervisor, the relationship between the graduation project and the incubator, students' level of preparedness, pedagogical challenges, and the extent to which supervision of projects is recognized. Faculty members may be asked about the difference between supervising a traditional dissertation and supervising a start-up project, the skills students lack, and the conditions for cooperation between the faculty and the incubator.

Interview Guide for Students

Student interviews may address:

- How did the project idea begin?
- Why did you decide to enter the incubator?
- What did you expect before incubation?
- Which services did you actually benefit from?
- What was the most difficult stage you experienced?
- How did your view of yourself and your future change?
- Do you feel that you have become an entrepreneur?
- Did you experience a conflict between study and the project?
- What role did your family or friends play?
- Why did you continue or stop?
- What service did you need but did not receive?

Ninth: Collection of Documentary Data

Types of Documents

Documentary data include:

- Incubator activity reports.
- Lists of accepted projects.
- Number of participating students.
- Number of incubated projects.
- Number of established enterprises.

- Number of patents.
- Financing data.
- Partnership agreements.
- Training programs.
- Records of activities and exhibitions.
- Ministerial reports.
- Legal and regulatory texts.

In June 2024, the Ministry of Higher Education and Scientific Research announced the existence of 107 incubators, 91 technology and innovation support centers, 51 artificial-intelligence houses, and 33 fabrication laboratories, in addition to 11,800 registered innovative projects, 500 approved innovative projects, 5,000 projects registered on the Startup.dz platform, and 1,700 patent applications (Ministry of Higher Education and Scientific Research, 2024). These are important official figures, but they require clarification of the denominator, period, and unit of counting because a “registered project” does not necessarily mean an “operating enterprise.”

In 2025, it was also reported that the number of incubators had reached 124 and that 60,000 students were involved in entrepreneurship mechanisms, with 1,600 micro-enterprises, 130 start-ups, 1,175 approved innovative projects, and 2,800 patent applications recorded (Le Jour d’Algérie, 2025). These figures should be compared chronologically with the 2024 figures, while ensuring that the source and definitions have not changed.

Criticism of Documents

Documents should be examined according to four criteria:

- **Authenticity:** Was the document issued by an official or verifiable source?
- **Accuracy:** Does it state the date of the data and the method of collection?
- **Completeness:** Does it distinguish active from discontinued projects?
- **Comparability:** Does it use the same definition across universities and years?

Numbers from different sources must not be collected and compared directly if the sources do not use the same concepts. One source may use “project” to refer to a registered idea, while another may use it to mean a legally established enterprise. A glossary of statistical terms should therefore be created before analysis.

Tenth: Data-Collection Procedures

Preparatory Stage

The preparatory stage begins by obtaining official approvals from the university and incubators and identifying the individuals responsible for providing the researcher with student lists and documents. The research instruments are then reviewed and pilot-tested. An introductory letter should also be prepared explaining the purpose of the study and participants’ rights.

Questionnaire Distribution

The questionnaire may be distributed on paper, electronically, or through both methods. The number of questionnaires distributed, returned, valid, and excluded should be recorded. The response rate is calculated using the following formula:

$$\text{Response Rate} = \frac{\text{Number of completed valid questionnaires}}{\text{Total number of questionnaires distributed}} \times 100$$

Nonrespondents should be followed up with a reminder without applying pressure. If the response rate is low, this should be reported and its possible effect on response bias should be discussed.

Conducting Interviews

Interviews should be scheduled in advance at a convenient time for the respondent and conducted in a place that ensures privacy. After obtaining consent, interviews may be audio-recorded, or notes may be taken if the respondent refuses recording. The interview should then be transcribed verbatim or through an accurate semantic transcription, with the names of individuals and projects and sensitive information removed.

Eleventh: Quantitative Data Analysis

Descriptive Analysis

Quantitative analysis begins with frequencies and percentages because they clarify the characteristics of the sample. The distribution of students can be presented according to university, academic discipline, project stage, and gender. Means and standard deviations are then calculated for items related to support, skills, and identity.

A percentage should not be presented without stating the corresponding number. It is not sufficient for a researcher to say that 60% of students benefited from training. The more accurate statement is: “A total of 180 out of 300 students, representing 60%, reported that they benefited from training.” The researcher should also explain whether the percentage was calculated from the full sample or from valid responses after missing values were excluded.

Tables

Each table should have a clear title and number, and its source should be stated, or the following wording may be used: “Source: Prepared by the researcher based on field-study data.” The researcher should not repeat every number in the table in the text but should focus on the most important findings.

Example:

Table

1

Distribution of Students According to Project Stage

Project Stage	Frequency	Percentage
Initial idea		
Prototype		
Market testing		
Legally established enterprise		
Active enterprise		

The cells should not be filled before the data are collected. In the final version, the actual number and its source must be added.

Inferential Tests

If the researcher wishes to compare students according to university, analysis of variance may be used, provided that its assumptions are met. To compare two groups, such as incubated and non-incubated students, a *t* test or Mann–Whitney test may be used. To test the relationship between services and transformation, Pearson’s or Spearman’s correlation coefficient may be used.

The researcher should report the test value, degrees of freedom, significance level, and effect size rather than simply stating that “a significant relationship exists.” The word “effect” should not be used in a causal sense when the design is cross-sectional. The more accurate terms are “correlation” or “statistical relationship” unless the conditions for causal inference are met.

Twelfth: Qualitative Data Analysis

Thematic Analysis

Thematic analysis is suitable for interviews with students and officials because it makes it possible to identify recurring patterns in discourse. Braun and Clarke proposed six basic stages: becoming familiar with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report (Braun & Clarke, 2006, pp. 77–101).

These stages can be applied to the study as follows:

1. Read the interviews several times to understand the general context.
2. Identify statements related to the research question.
3. Assign a code to each statement, such as “weak financing” or “improved confidence.”
4. Group related codes into broader themes.
5. Review the themes to ensure their coherence.
6. Select meaningful excerpts while concealing participants’ names.

Possible Initial Codes

Possible codes may include:

- Fear of failure.
- Family support.
- Study pressure.
- Weak financing.
- Individual mentoring.
- Bureaucracy.
- Acquisition of presentation skills.
- Change in self-image.
- Weak market partnership.
- Preference for technical projects.
- Exclusion of the humanities.
- Importance of relationship networks.
- Discontinuation after the end of incubation.

These codes can then be grouped into major themes such as “Reconstructing professional identity,” “The incubator between support and constraints,” “The gap between knowledge and practice,” “Unequal opportunities for benefiting,” and “The incomplete transition to the market.”

Analytical Example

If a student says, “I learned how to present my project, but I could not find anyone to help me with financing,” the statement may be coded under “development of presentation skills” and “weak financial support.” It should not be reduced to a single theme because the experience may combine a positive and a negative effect. If this pattern is repeated among several students, it may be regarded as evidence that the incubator succeeds in training but does not complete the process toward financing.

The number of times a statement is repeated should not be used as conclusive quantitative evidence because the importance of a theme is not determined by frequency alone. A single respondent may provide a profound description of a rare or decisive experience. Qualitative analysis therefore combines frequency, depth, context, and contradictions.

Thirteenth: Integrating Quantitative and Qualitative Findings

The value of a mixed-methods design lies in integrating findings rather than merely collecting them. An “integration matrix” can be used to connect the statistical result with its qualitative interpretation:

Quantitative Result	Explanatory Qualitative Data	Integrated Conclusion
High mean for training	Students mention the benefit of preparing presentations	Training improves communication and presentation
Low mean for financing	Repeated discussion of difficulty accessing funders	A gap exists between training and financing
Differences among disciplines	Humanities students mention weak recognition of their projects	The incubator needs a broader definition of innovation
High entrepreneurial intention	Some students do not move beyond the idea stage	Intention does not equal actual behavior

This matrix helps prevent quantitative data from being interpreted separately from experience. If the figures indicate high satisfaction but interviews reveal fears and hesitation, one source should not be selected while the other is ignored. Instead, the reason for the difference should be analyzed. This may indicate that satisfaction relates to the quality of interaction within the incubator, whereas hesitation relates to market and financing conditions outside it.

Fourteenth: Validity and Reliability in the Study

Instrument Validity

The validity of the study is established through the consistency of the instruments with the research problem, objectives, and concepts. Each dimension should have a theoretical basis, and questionnaire questions should be linked to the operational definitions. It is also advisable to present a matrix linking variables, dimensions, indicators, and questions.

Qualitative Credibility

The credibility of interviews is strengthened through the use of a clear guide, recording the analytical procedures, and comparing students’ statements with those of officials and documents. Some preliminary findings may be presented to participants to verify that the researcher’s interpretation does not distort their experiences. The researcher should also maintain an analytical record explaining how the process moved from text to code and then from code to theme.

Triangulation

Triangulation can be achieved through:

- **Source triangulation:** Students, officials, and documents.
- **Instrument triangulation:** Questionnaire, interview, and document analysis.
- **Researcher triangulation:** When more than one researcher participates in coding.
- **Theoretical triangulation:** Entrepreneurial university, social capital, and professional identity.

Triangulation does not mean that sources must always agree. Disagreement itself may be an important finding that reveals a gap between official discourse and actual experience.

Fifteenth: Ethical Considerations

The researcher must obtain participants' consent before collecting data and explain the purpose of the study, the nature of their participation, and their right to withdraw. The name of the student or project and technical information must not be published without explicit consent. Confidentiality is particularly important for start-ups that may involve protectable ideas.

Contact information should be separated from questionnaire responses, files should be stored securely, and codes should be used instead of names, such as "Student 01" and "Official 03." When interview excerpts are reproduced, details that could identify the person or project must be removed.

The researcher should disclose their relationship with the institution if they are a student or employee there because this relationship may influence participants' responses. The researcher should also avoid making promises to respondents concerning results, financing, or support that the researcher does not have the authority to provide.

Sixteenth: Visual Materials

Visual materials can help present findings without replacing textual analysis. Appropriate materials include:

- A map showing the selected universities.
- A diagram illustrating the stages of the student's transition from idea to enterprise.
- A bar chart showing the distribution of projects by discipline.
- A pie chart showing the types of support received.
- A timeline showing the development of incubators and decisions.
- A conceptual model linking support to skills and outcomes.

Each figure should have a number, title, and source. If the figure was prepared by the researcher, the following wording may be used: "Source: Prepared by the researcher based on the study data." If it is reproduced from a report, it must be cited according to APA 7, while respecting usage rights and avoiding the reproduction of protected material without permission.

Conclusion of the Section

Designing a field study on Algerian university incubators requires combining statistical precision with explanatory depth. The questionnaire identifies the level of prevalence of services, attitudes, and skills; the interview explains experiences, motivations, and difficulties; and documents verify institutional figures and outcomes. No single instrument can provide a complete picture of the transformation from student to entrepreneur.

The sample should be constructed according to clear criteria, and the researcher should define the population and unit of analysis and distinguish among the student, the project, and the enterprise. The questionnaire should measure social background, academic trajectory, the nature of the project, support, and impact, with validity and reliability tested before final administration. Interviews should be semi-structured and directed toward students, officials, and faculty members, and they should be analyzed thematically through clearly stated steps.

The available official figures reveal the expansion of the incubator structure in Algeria. The Ministry of Higher Education reported the existence of 107 incubators, 11,800 registered innovative projects, and 1,700 patent applications in June 2024, while later data referred to 124 incubators, 60,000 students, 130 start-ups, and 1,600 micro-enterprises (Ministry of Higher Education and

Scientific Research, 2024; Le Jour d'Algérie, 2025). However, these figures require critical interpretation because registration or participation does not equal economic sustainability.

Accordingly, the scientific value of the study is not determined by the number of tables or questionnaires but by its ability to connect data with theoretical frameworks, explain differences and contradictions, and distinguish between intention and practice, incubation and establishment, and establishment and continuity. The findings should be auditable and open to re-examination, and the researcher should clearly state the limitations of the sample, response rate, and data sources.

Section Three: Case Study of the Business Incubator at the University of M'Sila

Introduction

The Business Incubator of Mohamed Boudiaf University of M'Sila has been selected as a case-study model because institutional data have been published concerning its establishment, structures, programs, and activity indicators. In addition, academic studies have examined its role in supporting innovative projects and creating start-ups. This case makes it possible to analyze the transformation from student to entrepreneur within a university institution that began building incubation mechanisms relatively early. It also allows for the study of the relationship between the incubator's official discourse, its announced numerical outcomes, and the experience that should be measured in the field through questionnaires and interviews.

The case study does not aim to consider the University of M'Sila representative of all Algerian universities. Rather, it seeks to analyze a specific experience within its institutional, historical, and organizational context. The possibility of benefiting from its findings in other universities remains linked to the degree of similarity among contexts, such as resources, number of students, technological infrastructure, partnerships, and the nature of academic disciplines. Accordingly, the case study offers an analytical or interpretive generalization, not a comprehensive statistical generalization.

The study begins with a central question: To what extent has the Business Incubator of the University of M'Sila contributed to moving students from the stage of possessing an idea or graduation project to the stage of establishing a start-up or developing a sustainable innovative project? This question leads to an analysis of the incubator's history and objectives, the services it provides, and its activity indicators, followed by an examination of students' evaluation of these services and their impact on students' skills, values, and perceptions of the university and work.

First: Reasons for Selecting the M'Sila Incubator

The first reason for this selection is that the University of M'Sila incubator was established within a clear institutional process. This process dates back to the initial approval of the idea of creating it during the Autumn University held on December 12 and 13, 2018, followed by its adoption under Ministerial Decision No. 182, dated May 27, 2019. The university states that the incubator was the first business incubator within a university at the national level when it was established, before the experience expanded to other universities (Mohamed Boudiaf University of M'Sila, 2024).

The second reason is the availability of published indicators concerning patent applications, graduated start-ups, projects obtaining the "Innovative Project" label, and the number of projects registered under Decision No. 1275. These data make it possible to conduct a chronological analysis

and compare inputs with outputs, while emphasizing that published figures do not replace the collection of independent field data.

The third reason concerns the diversity of disciplines and projects associated with the incubator. The published data include projects in science, technology, the humanities and social sciences, economics and management, mathematics and computer science, law and political science, and the Institute of Science and Technology of Physical and Sports Activities (Mohamed Boudiaf University of M'Sila, 2024). This diversity makes it possible to test whether the incubator serves the university as a whole or tends to favor technical and economic projects.

Second: The Establishment and Development of the Incubator

Establishment Stage

The idea of establishing the incubator began in late 2018, when it was discussed during the activities of the Autumn University as a project with economic and social dimensions. This history indicates that the incubator did not emerge as a temporary administrative response. Rather, it arose within a context of rethinking the relationship between the university and its surrounding environment and the university's ability to valorize knowledge and scientific research.

On May 27, 2019, Ministerial Joint Decision No. 182 was issued concerning the allocation of premises for the incubator on the first floor of the Central Library building. The university states that the initial area was 500 square meters. The infrastructure later expanded to two floors with a total area of approximately 1,000 square meters, including a coworking space, a fabrication laboratory, and a biology laboratory (Mohamed Boudiaf University of M'Sila, 2024). This infrastructure plays an important role in providing a place for work, testing, and interaction among students and experts.

On October 8, 2020, Ministerial Joint Decision No. 113 was issued concerning the establishment of joint research services in several universities, including the University of M'Sila. This framework strengthened the incubator's position within the university organization and linked it to business-management engineering and the maintenance of scientific equipment. The university noted that the incubator's function includes receiving innovative projects, evaluating their feasibility, providing training, consulting, and financing support, and following up on established enterprises (Mohamed Boudiaf University of M'Sila, 2024).

Obtaining the Incubator Label

The university reported that the M'Sila incubator obtained the label "University Business Incubator" in April 2021. This represents institutional recognition reflecting compliance with a set of organizational or functional requirements. However, obtaining the label should not be treated as definitive evidence of the incubator's effectiveness. Rather, it is an indicator of official recognition of its structure and function. Effectiveness remains connected to other indicators, such as continuity, financing, project success, and the proportion of enterprises that continue operating after graduation from the incubator.

Third: The Official Objectives of the Incubator

The incubator's official objectives include receiving and guiding students and graduates who hold innovative ideas and projects, supporting them during the development stages, providing training and mentoring programs, supporting the preparation of prototypes, and connecting projects with the economic environment and investors. The incubator is also associated with valorizing

scientific-research results and transforming them into projects capable of investment (Mohamed Boudiaf University of M'Sila, 2024).

These objectives are distributed across three levels. The first is educational and training-related and includes developing entrepreneurial knowledge and skills. The second is technical and administrative and includes prototype preparation and legal, technical, and financial consulting. The third is economic and institutional and includes enterprise creation and connecting enterprises with the market and financing. Each level should be measured separately because the incubator's success in training does not necessarily mean that it has succeeded in creating sustainable enterprises.

The incubator's objectives also reveal a social dimension, namely enabling students and graduates to create employment opportunities for themselves and others and directing the university toward serving local development. However, this function requires examining the actual impact on employment rather than focusing only on the number of registered projects. The most important indicators are the number of projects that began operating, the number of jobs created by them, and their continuation rate after a specified period.

Fourth: Services and Programs

Pre-Incubation Program

The pre-incubation program aims to introduce students and researchers to entrepreneurship, encourage them to discover problems and opportunities, and clarify the difference between an idea and a project. A study of the M'Sila incubator states that the incubator organized 27 meetings or scientific seminars during the pre-incubation stage between 2019 and June 2022 (Haboub, 2024, pp. 59–78).

The value of this stage lies in expanding the participation base. However, it may become a limited awareness activity if it is not followed by mechanisms for selection, guidance, and experimentation. The study should therefore measure the number of students who moved from attending a seminar to submitting an idea and then the number of ideas that were transformed into prototypes.

Incubation Program

The incubation program includes training in artificial intelligence, biology, digital marketing, communication, project-presentation techniques, management, business-model preparation, start-up financing mechanisms, and legal and administrative matters. A study on the incubator's activities reported that the annual duration of some training programs exceeded 85 hours (Haboub, 2024, pp. 59–78).

However, the number of hours is insufficient for judging the quality of training. The hours may be distributed across theoretical lectures that do not give students the opportunity to test their ideas or speak with customers. The study should therefore measure the quality of training, its suitability for the project stage, students' application of what they have learned, and the connection between the training and actual needs.

Training in Business-Model Preparation

In January 2023, the incubator organized a course on preparing a business plan and business model for students whose ideas had been accepted, with the aim of helping them register to obtain the "Innovative Project" label (Mohamed Boudiaf University of M'Sila, 2023). This type of training

forms a bridge between the idea and planning because it encourages students to identify the problem, target group, value proposition, channels, partners, and cost and revenue structures.

Preparing a business model should not be considered the end of the process because the document may be formally well prepared even though the project has not tested the market. The preparation of the model should therefore be followed by interviews with users, initial experiments, and repeated modifications.

Consulting and Mediation

Consulting includes legal, administrative, technical, and financial aspects. It helps students understand establishment procedures, protect intellectual property, search for financing, and build a team. The incubator also participates in connecting projects with economic institutions, investors, and government bodies.

However, the effectiveness of mediation depends on its continuity. If a student receives the name of an institution or a telephone number without genuine follow-up, the service remains symbolic. The questionnaire should therefore include questions about the number of actual consultations, their frequency, the extent to which recommendations were implemented, and the results produced by the mediation.

Fifth: Official Indicators of Incubator Activity

The University of M'Sila incubator publishes various indicators. However, some official pages present figures associated with different periods or methods of calculation. Each series should therefore be presented with its date, and the figures should not be automatically combined into one number. The following table presents data published on the incubator's page concerning patent applications, graduated start-ups, and projects obtaining the "Innovative Project" label:

Year	Patent Applications Filed with INAPI	Graduated Start-Ups	Projects Obtaining the "Innovative Project" Label
2019	2	0	0
2020	13	1	0
2021	29	4	28
2022	65	6	12
2023	93	3	12, including 7 under Decision No. 1275 and 5 outside it
Total	202	17	52

(Mohamed Boudiaf University of M'Sila, 2024).

The data show clear growth in patent applications, from two applications in 2019 to 93 in 2023. The announced total is 202 applications, but the same page indicates that only 10 applications were finally submitted. This is an important distinction between filing an application and obtaining a final patent. The researcher must therefore distinguish between a "filed patent application" and a "patent finally granted or issued." The increase in applications may reflect improved awareness of intellectual property or institutional support activity, but it does not by itself prove that innovation has been transformed into an enterprise or product.

The number of graduated start-ups reached 17 according to the published series. This figure requires additional information concerning the definition of "graduation": Does it mean the end of the incubation period, the establishment of the enterprise, the beginning of operations, or

continuation after graduation? Methodologically, the database should include the graduation date and the status of the enterprise after six months, one year, and three years.

The published data indicate that 52 projects obtained the “Innovative Project” label during the same period. However, the label represents recognition of the project and is not sufficient evidence of sales or sustainability. The researcher should therefore not equate the label with economic success but should study it as an institutional stage in the project’s trajectory.

Sixth: Projects under Decision No. 1275

The incubator presents relatively detailed data concerning projects and students registered under Decision No. 1275:

Faculty or Institute	Registered Projects	Registered Students	Projects Defended	Students Whose Projects Were Defended
Sciences	76	133	33	56
Technology	109	222	43	81
Humanities and Social Sciences	34	64	20	30
Economics, Commerce, and Management Sciences	30	50	20	28
Mathematics and Computer Science	27	55	20	45
GTU Institute	6	12	6	12
Science and Technology of Physical and Sports Activities	3	6	3	6
Law and Political Science	2	6	6	6
Total	287	548	151	264

(Mohamed Boudiaf University of M’Sila, 2024).

These data show that the Faculty of Technology accounts for the largest number of registered projects, representing approximately 37.98% of the total, while the sciences account for approximately 26.48%. The humanities and social sciences represent approximately 11.85%, while economics, commerce, and management sciences represent approximately 10.45%. This distribution indicates the presence of humanities and social-science disciplines but also reveals a relative dominance of scientific and technological projects.

The proportion of defended projects to registered projects appears to differ according to discipline. In the sciences, 33 out of 76 projects were defended, representing approximately 43.42%. In technology, 43 out of 109 projects were defended, representing approximately 39.45%. In the humanities and social sciences, 20 out of 34 projects were defended, representing approximately 58.82%. These percentages must be interpreted cautiously because the registered projects may belong to a period different from the defense period, and projects may be delayed for administrative or technical reasons.

The student data reveal that group projects are dominant in some disciplines. In technology, there are 222 students within 109 projects, with an average of approximately 2.04 students per

project. In mathematics and computer science, there are 55 students within 27 projects, also with an average of approximately 2.04 students per project. In the humanities and social sciences, there are 64 students within 34 projects, with an average of approximately 1.88 students per project. These indicators can be used to study teamwork and the distribution of roles within projects.

Seventh: Published Aggregate Indicators

The Arabic-language page of the incubator presents various aggregate figures, including 1,518 incubated students, 975 incubated projects, 645 projects under Decision No. 1275, 15 start-up labels, 73 innovative-project labels, and 14 registered patents (Mohamed Boudiaf University of M'Sila, 2024).

This presentation differs from the 2019–2023 series, which reports 202 patent applications, 17 graduated enterprises, and 52 labeled projects. The difference may result from different update dates, definitions of indicators, or scopes. The researcher should therefore not mix the figures but should specify the date on which the page was accessed and state that the published data differ according to the period or method of aggregation.

Scientifically, the following observation may be formulated: “The incubator’s official pages present aggregate indicators that are more recent than the published time series. However, differences in denominators and dates require the adoption of a unified database before final comparisons are conducted.” This wording is more accurate than stating that the incubator achieved one final number of projects and patents.

Eighth: Questionnaire Design for the Case Study

Questionnaire Population

The questionnaire may target all students with registered or incubated projects at the M'Sila incubator during the period specified for the study. If the population is large, a stratified sample may be selected according to faculties, while ensuring representation of the sciences, technology, humanities and social sciences, economics, and computer science.

To avoid sampling bias, the sample should not be restricted to students who are still active. Attempts should also be made to reach students who have stopped or have not established their projects. If this group is excluded, the incubator may appear more successful than it actually is.

Questionnaire Dimensions

The questionnaire consists of six dimensions:

1. **Personal and social data:** Age, gender, place of residence, and family support.
2. **Academic trajectory:** Faculty, discipline, level of study, and relationship between the project and the discipline.
3. **Nature of the project:** Field, problem, innovation, team size, and project stage.
4. **Support:** Training, consulting, financing, networking, infrastructure, and follow-up.
5. **Evaluation of the experience:** Satisfaction, accessibility, quality of mentoring, and fairness among disciplines.
6. **Impact:** Confidence, skills, values, professional identity, and perceptions of the university and work.

Sample Evaluation Items

Items may be measured on a scale from 1 to 5:

- The incubator helped me identify the problem addressed by the project.

- The training helped me prepare the business model.
- I received appropriate legal consulting.
- The incubator helped me protect or register the idea.
- The incubator enabled me to communicate with experts or institutions.
- The incubator helped me access sources of financing.
- I can now present my project with greater confidence.
- I have become more prepared to take risks.
- My view of the university as a partner in development has changed.
- I consider establishing a project to be a realistic career option.
- I can combine the requirements of study and the project.
- I feel that my project can serve the local community.

The results of these items must not be presented before the data are collected. The final version should state the sample size, mean, standard deviation, and number of valid responses.

Ninth: Model for Presenting Statistical Results

Questionnaire results may be presented in tables such as the following, with the cells left blank until the actual data are analyzed:

Table 2

Students' Evaluation of the Dimensions of Incubator Support

Dimension	Arithmetic Mean	Standard Deviation	Rank	Evaluation Level
Training				
Consulting				
Financing				
Networking				
Technological infrastructure				
Follow-up				

The interpretation of the table should focus on the ranking of the dimensions and the differences among them. If training receives the highest mean and financing the lowest, it may be stated that students value training more than financial support. However, weak financing cannot be inferred without a separate question concerning whether the incubator provides direct financing or merely offers guidance.

Table 3

Indicators of the Actual Transformation into Entrepreneurship

Indicator	Number	Percentage
Development of a prototype		
Product testing with users		
Obtaining the "Innovative Project" label		
Filing a patent application		
Registration of a start-up		
Obtaining financing		
Continuation of the project after graduation		

This table is more important than a question concerning intention because it measures behavior and outcomes. “Actual transformation” should be defined operationally. For example, it may refer to a student who registered an enterprise, obtained financing, or continued operating the project after graduation. It is not valid to regard every student who attended a course or presented an idea as an actual entrepreneur.

Tenth: Actual Transformation Rate

The actual transformation rate may be calculated through a composite indicator or through separate indicators. The initial indicator may be defined as follows:

$$\text{Actual Transformation Rate} = \frac{\text{Number of students who established or operated a project}}{\text{Total number of students in the study}} \times 100$$

However, it is preferable to present the results separately because a student may obtain financing without registering an enterprise or register an enterprise without beginning operations. The researcher should therefore present:

- The percentage of students who developed a prototype.
- The percentage of students who tested the product.
- The percentage of students who obtained a label.
- The percentage of students who filed a patent application.
- The percentage of students who registered an enterprise.
- The percentage of students who obtained financing.
- The percentage of students who continued after graduation.

Projects must be followed up after graduation because measuring them during incubation may provide an overly optimistic picture. An enterprise may be legally registered but inactive, or it may be active without having obtained a label. Students should therefore be asked about their current status, and documents should be reviewed where possible.

Eleventh: Evaluation of Services

Training

Students are expected to evaluate training according to the clarity of the content, the specialization of trainers, the suitability of the topics, and the availability of practical application. Sources concerning the M'Sila incubator indicate the existence of programs in business-model preparation, marketing, communication, financing, and legal matters (Mohamed Boudiaf University of M'Sila, 2024). However, the field study must test the extent to which students benefited from the programs rather than merely confirming their existence.

Legal Support

Legal support concerns the protection of the idea, selection of the legal form, registration, contracts, and intellectual property. Students should be asked whether the consultation was clear and continuous and whether they were able to apply it.

Access to Financing

This dimension includes guidance toward support programs, assistance in preparing applications, communication with investors, and obtaining direct or indirect financing. A distinction must be made between “receiving information about financing” and “obtaining actual financing.” The

incubator may be excellent at informing students about opportunities but may not have the capacity to guarantee approval.

Relationship Network

The network is measured by the number of meetings with institutions, experts, and investors and by the practical results of these meetings. If the network does not produce training, a partnership, a market test, or financing, the large number of meetings does not necessarily indicate strong networking.

Twelfth: Impact of the Experience on Human Development

The impact of the incubator experience can be analyzed at four levels:

Self-Confidence

Students' sense of their ability to present a project, speak before a committee, negotiate with partners, and make decisions may develop. Where possible, the difference between pretest and posttest assessments should be measured, or students may be asked about perceived change, supported by examples.

Responsibility and Autonomy

Students learn that a project requires commitment to deadlines, distribution of roles, customer follow-up, and responsibility for the consequences of decisions. This changes students' relationship with work because they move from waiting for instructions to taking initiative.

Change in Perceptions of the University

Students may initially view the university as a space for obtaining a degree only, then discover that it provides laboratories, experts, networks, certificates, and opportunities. The opposite may also occur if students encounter bureaucracy or weak communication. The researcher should therefore not assume that the experience is always positive.

Change in Perceptions of Work

Students may move from viewing work as a stable job to viewing it as value creation and risk management. However, this transformation should not be presented as an absolute alternative to employment because entrepreneurship may be an additional option rather than an obligation for every graduate.

Thirteenth: Interviews with Officials and Faculty Members

Tension Between the Traditional and Entrepreneurial University

Interviews often reveal tension between two forms of logic. The first is a traditional academic logic focused on the curriculum, course, examination, and graduation dissertation. The second is an entrepreneurial logic focused on experimentation, prototype, market, and financing. Some faculty members may believe that a start-up project should not be subject to the same standards as a traditional dissertation, while others may believe that linking graduation to a project increases the value of applied knowledge.

This tension should be analyzed without preconceived judgments. The problem does not lie in the existence of the traditional university but in the absence of coordination between educational logic and incubation logic. This can be addressed by defining academic standards for entrepreneurial projects, such as the quality of problem analysis, development methodology, empirical evidence, feasibility, and ethical considerations.

Tension Between Bureaucracy and Dynamism

Start-ups require speed in decision-making, experimentation, and modification, whereas universities operate according to administrative and legal procedures intended to ensure regulation and accountability. Students may feel that a simple request requires a long time or that using a laboratory requires multiple approvals. At the same time, the administration may view procedures as protecting the institution and its resources.

Bureaucracy should therefore not be presented as an absolute defect. A distinction should be made between necessary organization and unproductive complexity. Officials may be asked about the average time required to examine a file, the number of procedures, the existence of a one-stop office, a digital system, and a mechanism for tracking requests.

Tension Between Discourse and Outcomes

Official discourse may present a large number of projects and training sessions, while students evaluate support through tangible outcomes such as financing or access to customers. This demonstrates the importance of comparing official discourse with data, questionnaires, and interviews. If the incubator states that it provides financing while students report that it merely refers them to another body, the problem is not necessarily that one party is truthful and the other is not. Rather, the meaning of “financial support” may differ between them.

Fourteenth: Expected Thematic Analysis

The following main themes may emerge from the study interviews:

Theme One: The Incubator as a Space for Building Confidence

Students may describe how presenting before a committee, participating in workshops, and interacting with colleagues helped them overcome fear. This theme points to human development but requires verification of whether confidence was transformed into actual behavior.

Theme Two: Good Training and Limited Financing

Students may value business-model preparation and marketing while mentioning the difficulty of accessing financing. This theme reveals an incomplete chain of support.

Theme Three: Unequal Opportunities among Disciplines

Technical disciplines may believe that they have laboratories and equipment, whereas the humanities and social sciences may believe that their projects lack clear evaluation indicators. This raises questions concerning the fairness of resource distribution and the definition of innovation.

Theme Four: The Incubator between Mediation and the Market

Officials may state that they connect students with institutions, while students may report that meetings are few or unproductive. Documents and agreements should therefore be examined, together with the number of effective partnerships and the outcomes resulting from them.

Fifteenth: Evaluation of the M'Sila Case

The incubator may be evaluated according to an inputs–processes–outputs–impact model:

Level	Indicators in the M'Sila Case
Inputs	Premises, workspaces, Fablab, biology laboratory, administrative staff
Processes	Training, consulting, project evaluation, seminars, business cafés
Outputs	Labeled projects, patent applications, graduated enterprises
Impact	Active enterprises, financing, employment opportunities, continuation after graduation

The incubator appears to be strong in infrastructure, training, and institutional recognition, and it also demonstrates the ability to produce patent applications and labeled projects. However,

evaluating its economic and social impact requires data on enterprise continuity, financing, sales, and employment opportunities. The differences among the figures published on the incubator's pages also require the adoption of clear dates and documentary verification before conclusions are constructed.

Sixteenth: Limitations of the Case Study

The first limitation is that the published data may have been issued by the incubator itself, which requires comparison with independent sources or other official documents. The second limitation is the possibility of high response bias because the most satisfied students may be more willing to respond. The third limitation concerns the difficulty of tracking students after graduation, particularly if they change their telephone numbers or place of residence.

Moreover, a single case study does not allow a final judgment concerning all Algerian incubators. The study can be strengthened by introducing a limited comparison with the El Oued incubator or UMMTO, either through documentary data or a limited number of interviews. However, if the objective of the research is to study the M'Sila case, the analysis should remain focused and should not be transformed into a broad, unplanned comparison.

Conclusion of the Section

The case study of the Business Incubator of the University of M'Sila reveals a relatively advanced institutional experience in university incubation in terms of its early establishment, diversity of services, available infrastructure, and published indicators concerning patents, projects, and enterprises. The idea of the incubator began in 2018, its establishment was adopted in 2019, and its structures and programs subsequently developed. It now provides training, consulting, mentoring, modeling, and networking services (Mohamed Boudiaf University of M'Sila, 2024).

The published data indicate an increase in patent applications from two applications in 2019 to 93 in 2023, as well as the recording of 202 applications during the time series, 17 graduated start-ups, and 52 projects obtaining the "Innovative Project" label. However, these indicators alone are insufficient to establish sustainability because filing differs from granting, labeling differs from operation, and graduation differs from continuation.

The data related to Decision No. 1275 also show the presence of projects in the humanities and social sciences, despite the numerical dominance of the sciences and technology. This requires the questionnaire to examine the fairness of support distribution and the interviews to measure the extent to which the incubator recognizes cultural and social projects. The analysis should focus on the difference between participation and outcomes and between entrepreneurial intention and actual transformation.

Accordingly, the proposed case study should combine document analysis, a student questionnaire, interviews with officials and faculty members, and follow-up of a sample of projects after graduation. Final tables should not be completed and actual percentages should not be calculated until the data have been collected, because model figures must not be presented as field results.

Section Four: Discussion of the Findings in Light of the Theoretical Frameworks

Introduction

The discussion of findings is the stage at which research moves from describing data to interpreting them and linking them to the theoretical framework and previous studies. If the data

show that students value training, or that a large proportion of them have not moved to the stage of establishing an enterprise, these findings acquire scientific meaning only through comparison with the concepts of the entrepreneurial university, the Triple Helix model, the theory of cognitive and social capital, and approaches to professional identity and human development.

The importance of this section lies in testing the suitability of theoretical models for the Algerian context. A theoretical model may assume the existence of a relatively autonomous university, an active industrial sector, and a government that provides financing and facilities, whereas the Algerian case reveals start-ups that are still developing, relatively recent incubators, and an unstable relationship between the university and the market. Therefore, the analysis should not merely impose the theory on reality. Rather, it should explain what the theory accounts for, what it does not explain, and how it can be modified to suit the Algerian environment.

Published national data indicate an expansion of the university entrepreneurship infrastructure. Recent data reported the existence of 134 university incubators, 256 active start-ups within university campuses, and 3,249 patent applications linked to academic research, with a target of 1,500 approved innovative projects and 400 start-ups in 2026 (AlgeriaTech News, 2026). However, these indicators reflect the expansion of initial inputs and outputs and do not, by themselves, reveal the quality of the relationship among the university, industry, and government, the extent to which incubators include the humanities and social sciences, or the actual sustainability of projects.

First: Findings and the Algerian Model of the Entrepreneurial University

From the Educational University to the Entrepreneurial University

The entrepreneurial-university model assumes that the university transforms from an institution focused on teaching and research into an institution that combines the production, application, and transfer of knowledge, support for innovation, and service to society. This does not mean abandoning academic functions but reorganizing them in a relationship that is more open to the economic and social environment. The HEInnovate framework proposes eight areas for evaluating the entrepreneurial university, including leadership and governance, organizational capacity, digital transformation, entrepreneurial teaching and learning, preparing and supporting entrepreneurs, knowledge exchange and collaboration, internationalization, and impact measurement (OECD, 2022).

When this model is compared with the Algerian reality, it becomes apparent that universities have begun to build new structures, such as incubators, entrepreneurship-development centers, fabrication laboratories, and innovation centers. Ministerial Decision No. 1275 also made it possible to connect the graduation project with a start-up or a patent, thereby redefining the relationship between academic education and the economic project. An Algerian study confirms that the emergence of incubators and the implementation of Decision No. 1275 created a new entrepreneurial climate within the university and increased the number of projects submitted by students and idea holders (El Cheikh, 2023).

However, the transformation remains partial. The existence of an incubator does not mean that the entire university has become entrepreneurial. The incubator may be active in training and receiving projects while curricula remain theoretical, faculty-evaluation systems remain unrelated to knowledge transfer, and relations with the private sector remain limited. A distinction should

therefore be made between “a university that has an incubator” and “a university that has rebuilt its policies, structures, and culture around innovation and entrepreneurship.”

Achievements of the Model

The achievements of the Algerian model can be identified at four levels. First, there has been a transition from general discourse about encouraging entrepreneurship to the creation of official structures within universities. Second, legal pathways have been provided for students, such as obtaining a start-up certificate or patent as part of the graduation pathway. Third, the number of projects, applications, and training activities has increased. Fourth, specialized administrative and academic expertise has emerged within incubators.

In 2024, the Ministry of Higher Education and Scientific Research announced the existence of 107 incubators, 91 technology and innovation support centers, 51 artificial-intelligence houses, and 33 fabrication laboratories, in addition to 11,800 registered innovative projects, 500 approved innovative projects, and 1,700 patent applications (Ministry of Higher Education and Scientific Research, 2024). These figures represent important institutional expansion, but they require qualitative interpretation because the number of structures does not necessarily measure service quality or economic sustainability.

The case of the University of M'Sila illustrates this expansion. Incubator data include numbers of incubated projects, patent applications, projects obtaining the Innovative Project label, and graduated start-ups. The incubator also provides training programs in business models, marketing, communication, financing, and legal matters. This indicates that the incubator has moved beyond the function of a physical space toward a multidimensional training and consulting function (Mohamed Boudiaf University of M'Sila, 2024).

Difficulties of the Model

The Algerian model encounters difficulties when it moves from establishing structures to ensuring sustainability. A start-up needs early financing, a market, managerial expertise, a network of partners, and the ability to protect intellectual property. If support stops at preparing a business plan or obtaining a label, the project may remain at a symbolic stage without becoming a productive activity.

The gap between participation and outcomes appears in some national data. Published figures referred to 60,000 students involved in entrepreneurship mechanisms, compared with 130 start-ups, 1,600 micro-enterprises, and 1,175 approved innovative projects (Le Jour d'Algérie, 2025). An accurate conversion rate cannot be calculated from these figures without verifying that they refer to the same period and the same unit of counting. Nevertheless, the substantial difference among them demonstrates that initial participation does not automatically lead to the establishment or continuation of an enterprise.

Theoretically, this means that the Algerian university has made progress in “institutional capacity to launch initiatives,” but still needs to develop the stages of “conversion, scaling, and sustainability.” Evaluation should therefore focus on post-incubation indicators, such as the number of active enterprises after one and three years, the rate of obtaining financing, the number of jobs created, sales volume, and the proportion of projects that entered the market.

Second: Discussion of Findings in Light of the Triple Helix Model

The Triple Helix Concept

The Triple Helix model is based on interaction among the university, industry, and government as the principal actors in building a knowledge and innovation economy. The university produces knowledge and skills; industry provides markets, expertise, and resources; and the government provides the legal framework, policies, incentives, and financing. The model is not based on a linear relationship in which knowledge simply moves from the university to the market. Rather, it is based on continuous interaction in which institutional roles change and overlap (Etzkowitz & Leydesdorff, 2000).

The incubator functions as a hybrid organization located among these three spheres. It is affiliated with the university but interacts with the government, directs projects toward industry and investors, and may help transfer knowledge and intellectual property. Etzkowitz and Zhou confirm that incubators, technology-transfer offices, and business accelerators represent hybrid institutions that contribute to building a renewable innovation system (Etzkowitz & Zhou, 2017).

The University in the Algerian Triple Helix

Within the Algerian model, the university represents the primary source of knowledge, students, and projects. The incubator has also become a channel for transforming graduation projects and research into innovative projects. However, the university faces two challenges. The first is the weak integration of all disciplines into the entrepreneurial pathway. The second is the limited transfer of knowledge from the laboratory to the market.

When the incubator receives a technological project, it may be relatively easy to build and present a prototype. In the humanities and social sciences, however, the value may lie in a consulting service, cultural platform, educational solution, or social project. These outputs require different indicators. If the incubator lacks tools for evaluating such projects, students in these disciplines may feel that the university does not recognize the value of their knowledge.

Industry in the Algerian Triple Helix

The relationship between incubators and the industrial and commercial sectors remains one of the links most in need of development. An incubator may organize meetings or sign agreements, but the decisive question is: Have these relationships been transformed into training, market testing, contracts, financing, or partnerships? A distinction must be made between a formal partnership and an effective partnership because the existence of an agreement does not prove that it has produced results.

Indicators of a strong relationship with industry include the number of projects that tested their products at an institution, the number of contracts concluded, the number of companies that provided mentoring or financing, the number of students who obtained field training, and the number of projects that entered an existing value chain. The questionnaire may ask students to identify the practical outcome of each relationship rather than simply asking whether such relationships exist.

Government in the Algerian Triple Helix

The government has played a clear role in establishing the regulatory and financial framework through start-up policies, Decision No. 1275, innovation-support programs, and the creation of incubator networks. However, the government's role should not be limited to launching programs. It should also include simplifying procedures, ensuring transparency, evaluating impact, providing early-stage financing, and coordinating the roles of different bodies.

The problem appears when the incubator is responsible for supporting students but lacks the authority to provide financing or make administrative decisions. Algerian studies have indicated that incubators provide training and consulting but face financing weaknesses, difficulties in attracting investors, and challenges in coordinating with the economic environment (*The Reality of Organizational Communication in the University Business Incubator*, 2026). This means that the governmental component needs to move from regulation toward empowerment.

Third: Incubator Bias toward Technical Disciplines

Data on Disciplinary Bias

Data on projects registered under Decision No. 1275 at the University of M'Sila reveal a strong presence of science and technology. The Faculty of Technology registered 109 projects and the Faculty of Sciences registered 76 projects, compared with 34 projects in the humanities and social sciences and 30 projects in economics, commerce, and management sciences (Mohamed Boudiaf University of M'Sila, 2024). Technology and science projects together represent approximately 64.46% of the total projects registered in the published table.

This percentage does not necessarily mean that there is direct discrimination against the humanities. It may partly result from the nature of technical projects, the relative ease of transforming technological products into prototypes, or the existence of laboratories and equipment that assist these disciplines. Nevertheless, the finding deserves analysis because it may reflect an implicit conception that associates innovation with technology, patents, and tangible products.

International literature shows that research on academic entrepreneurship focuses more heavily on science, technology, and engineering, while research on the humanities, arts, and social sciences remains limited despite growing recognition of their social impact (*Academic Entrepreneurship in the Humanities and Social Sciences*, 2025). This means that the bias is not exclusively Algerian, although it may become more pronounced in contexts that measure success through patents and technological start-ups.

Causes of Bias

The bias toward technical disciplines can be explained by several factors. The first is the relative ease of presenting a physical or digital prototype. The second is the association of innovation in official discourse with technology and patents. The third is the availability of laboratories and equipment in technical faculties. The fourth is the presence of experts and mentors accustomed to formulating projects in the language of the market and the business model.

Humanities and social-science projects may produce intangible or long-term outcomes. An education project may be measured through improved learning, a heritage project through the number of users and the preservation of content, and a sociology project through a service in research, mediation, or training. If the incubator applies the same indicators to these projects as it applies to an engineering project, they may appear less innovative despite their social value.

Impact of Bias on Students

Bias affects students' perceptions of their roles. A literature, philosophy, or sociology student may believe that entrepreneurship is not their field and that the incubator is intended only for engineers and economists. This may lead to withdrawal from incubator programs or to the artificial reformulation of the project in technical language to satisfy the evaluation committee instead of developing its actual value.

Bias may also reduce the diversity of projects. Society needs solutions in education, culture, mental health, social integration, mediation, and public services, and these areas cannot be addressed by technology alone. The entrepreneurial-university approach confirms that the institution's impact should include skills, graduate entrepreneurship, and contributions to local and national development, not only the creation of companies and intellectual property (HEInnovate, 2026).

Fourth: Integrating the Humanities and Social Sciences

Broadening the Definition of Innovation

Integrating the humanities and social sciences requires redefining innovation to include social, cultural, educational, and organizational innovation. Innovation is not necessarily a device or application. It may be a new method of providing a service, a model for educating children, a platform for accessing heritage, a tool for measuring school violence, or a consulting service based on social analysis.

Project-evaluation forms should include criteria such as clarity of the social problem, depth of understanding of the target group, user participation, expected impact, scalability, financial sustainability, and ethical considerations. A patent or technological product should not be the only criterion.

Examples of Possible Projects

A sociology student could create a platform for collecting and analyzing data on school violence or a training service for schools on mediation and conflict resolution. A philosophy student could develop a program in digital ethics and artificial intelligence or a consulting service for institutions. A literature student could create a digital-publishing or reading-education platform or a content-translation service. A history and archaeology student could develop an educational application about local heritage or virtual tours of archaeological sites.

These projects require multidisciplinary teams. A project may combine a social-science student, a designer, a programmer, and a marketing expert. The incubator then becomes a space for producing shared knowledge rather than a place reserved for one discipline at a time.

Fifth: Cognitive and Social Capital in Interpreting the Findings

Cognitive Capital

Incubator findings show that students need more than disciplinary knowledge. They also need knowledge of the market, project management, intellectual property, financing, and communication. The incubator therefore plays a role in transforming academic knowledge into practical knowledge that can be applied.

However, this transformation does not occur to the same degree for all students. If training is general and directed toward a single model, an economics student may benefit more than a literature or social-science student. Multiple pathways should therefore be provided, including a technical pathway, a social pathway, a cultural pathway, and a services pathway.

Social Capital

The incubator helps build relationship networks, but it does not automatically distribute social capital equally. Some students may possess family and economic relationships that assist them, while others lack such networks. The incubator should therefore provide equitable institutional opportunities for mentoring and networking.

This can be measured through indicators such as the number of mentoring meetings, number of partners, number of customers contacted by the student, and the outcomes of these relationships. If the questionnaire shows that students value training but do not value networking, this may indicate that the incubator operates according to an internal logic more than it functions as a bridge to the surrounding environment.

Sixth: Discussion of the Incubator's Impact on Human Development

Self-Confidence

If the field findings show an increase in the mean level of self-confidence after benefiting from the incubator, this would be consistent with viewing the incubator as a space for experimentation and learning. A study involving a sample of 60 male and female students at the University of M'Sila incubator showed that the incubator contributes significantly to the development of entrepreneurial culture and that training programs and consulting services contribute significantly to its development (*The Role of University Business Incubators in Developing Entrepreneurial Culture*, 2024).

However, perceived confidence must be distinguished from actual ability. A student may feel more confident presenting a project but still be unable to prepare a financial plan or obtain a customer. Psychological indicators should therefore be combined with behavioral indicators.

Responsibility and Autonomy

The incubator helps students develop responsibility through meeting deadlines, distributing work, managing projects, and interacting with mentors. If interviews show that students have begun making independent decisions, this indicates that the incubator has affected professional identity and not merely knowledge.

However, responsibility may decline if students remain dependent on the mentor at every step. The supervisor's role should therefore gradually shift from providing solutions to asking questions and guiding students toward autonomy.

Values

Values that may develop include initiative, perseverance, acceptance of difference, respect for the customer, teamwork, commitment, and social responsibility. These values should not be treated as slogans but measured through situations, questions, and examples. For instance: Does the student modify the product if it becomes clear that it does not serve users? Does the student maintain transparency? Does the student protect the rights of team members?

Seventh: Discussion of Questionnaire Findings

The discussion of the questionnaire should compare means and percentages with the theoretical framework. If training obtains the highest mean, this is consistent with the educational function of the incubator, but it may also reveal that the incubator remains stronger in transferring knowledge than in supporting market access. If financing obtains the lowest mean, this agrees with Algerian literature stating that incubators provide support but do not always have direct financing.

If the results show differences among disciplines, these should not be explained solely by students' preferences. Resources, criteria, and opportunities should also be analyzed. The high number of technical projects may result from evaluation committees favoring prototypes or patents. The proportion of projects in each discipline should also be compared with the proportion of

students in the faculty because absolute numbers are insufficient. The representation rate of a discipline is calculated as follows:

$$\text{Disciplinary Representation Rate} = \frac{\text{Number of projects in the discipline}}{\text{Total number of projects}} \times 100$$

This should then be compared with the proportion of students in the discipline among the university's total student population. If the share of humanities projects is much lower than the humanities' share of the student population, this may indicate insufficient participation, limited access, or low project acceptance.

If the data show that the proportion of students who registered enterprises is small compared with the number of incubated students, the experience should not immediately be described as a failure. Some students may have benefited from skills and contacts without establishing an enterprise, or their projects may still be at an early stage. However, the low proportion requires an analysis of the factors preventing movement from idea to establishment, such as financing, time, fear of risk, and weak market demand.

Eighth: Discussion of Interview Findings

Interviews make it possible to reveal tensions that do not appear in numerical data. An official may describe the incubator as providing a stimulating environment, while a student may describe difficulty accessing a mentor. A faculty member may view Decision No. 1275 as providing an important opportunity, while a student may find the procedures unclear. This difference should not be interpreted as a contradiction to be eliminated but as a finding that reveals the different positions of actors within the institution.

One possible theme is that the incubator seeks to achieve entrepreneurial dynamism but operates within a university subject to administrative hierarchy and approvals. This may lead to delays in purchasing equipment, organizing events, or signing partnerships. At the same time, an official may view certain procedures as necessary to protect public funds and intellectual property. A distinction should therefore be made between obstructive bureaucracy and protective regulation.

Interviews may also reveal that some faculty members lack practical experience in establishing enterprises despite possessing academic expertise. This does not mean that they should be excluded. Rather, it indicates the need to build joint teams combining the faculty member, professional expert, entrepreneur, and student. Incubator literature confirms that mentoring and networks are mechanisms that expand students' social capital and facilitate their integration into the entrepreneurial system (*University Incubators and the Development of Entrepreneurial Skills*, 2025).

Ninth: Does the Incubator Succeed in Building the Entrepreneurial University?

It can be said that an incubator partially succeeds in building the entrepreneurial university when it:

- Receives students from multiple disciplines.
- Provides training connected to the project stage.
- Links the project with the laboratory and the market.
- Provides individual consulting.
- Maintains a project database.

- Follows up with enterprises after graduation.
- Adopts clear impact indicators.
- Encourages social and cultural projects.
- Involves students in program evaluation.
- Recognizes the efforts of faculty members and experts.

If its role is limited to organizing courses and receiving applications, it remains a limited support unit within a traditional university. The HEInnovate framework confirms that evaluating the entrepreneurial university should go beyond the creation of companies, intellectual property, and research income to include graduate entrepreneurship, skills development, teaching and learning outcomes, talent retention, and contributions to local and national development (HEInnovate, 2026).

Tenth: Proposed Evaluation Model

A matrix for evaluating the incubator can be constructed across four dimensions:

Dimension	Central Question	Measurement Indicators
Cognitive	Has knowledge been transformed into a project?	Prototypes, skills, patents
Human	Has the student's personality developed?	Confidence, autonomy, responsibility
Institutional	Has the university supported the project?	Governance, resources, curricula, follow-up
Environmental	Has the incubator interacted with its environment?	Partnerships, financing, market, jobs

This matrix should combine quantitative data, such as the number of projects and participation rates, with qualitative data, such as students' testimonies and analysis of officials' discourse. A composite indicator may be created, but it should remain an organizational tool rather than a substitute for interpretation.

Eleventh: Transforming the Incubator into a Cognitive–Human Space

Redesigning Admission Criteria

Evaluation committees should include experts from different disciplines and assess the social, cultural, and organizational value of the project rather than only its technical feasibility. Multiple admission pathways may also be created so that a cultural platform is not compared with an engineering application using the same criterion.

Multidisciplinary Teams

Forming joint teams helps combine technical and human knowledge. A health project may require a psychology or sociology student; an educational application may require a specialist in pedagogy; and a heritage project may need a programmer, designer, and historian. These teams give students the opportunity to learn from other disciplines.

Developing Impact Indicators

The incubator should measure changes in skills, the proportion of entrepreneurial graduates, user satisfaction, social impact, employability, project continuity, and not only the number of patents and companies. Pretest–posttest measurement of skills and longitudinal project follow-up may be adopted.

Supporting Professional Identity

Students need assistance in understanding that they can be researchers and entrepreneurs, social specialists and project owners, or writers and founders of cultural platforms. The incubator should present diverse success models rather than only technological ones.

Strengthening Social Capital

Mentoring programs led by former entrepreneurs can be created, experimentation days with institutions can be organized, digital communication platforms can be made available, and students can be connected to financing networks. The outcome of each activity should be evaluated rather than merely counting activities.

Twelfth: Practical Recommendations

The following recommendations may be proposed:

1. Create a unified national database distinguishing among an idea, project, prototype, registered enterprise, and active enterprise.
2. Follow up with incubated enterprises after six months, one year, and three years.
3. Adopt indicators specific to humanitarian, social, and cultural projects.
4. Involve the private sector in designing training and testing products.
5. Provide small-scale seed financing for prototypes and experiments.
6. Develop specialized training programs according to the project stage.
7. Train faculty members in mentoring, design, and innovation.
8. Establish multidisciplinary teams.
9. Simplify administrative procedures through a one-stop office and digital platform.
10. Involve students in evaluating incubator services.
11. Use pretest–posttest methods to measure the impact of training.
12. Publish annual reports containing results, successes, and failures.

Conclusion of the Section

Comparing the findings with the theoretical frameworks shows that the Algerian model has made clear progress in building incubation structures, introducing entrepreneurship into the university, providing legal pathways for projects, and expanding the number of incubators, projects, and patents. However, this progress remains stronger at the level of establishing infrastructure and mobilizing students than at the level of transforming projects into sustainable enterprises and connecting them with the market.

The entrepreneurial-university model explains this situation by distinguishing between the incubator as a separate unit and the university as an integrated institution. The Triple Helix model reveals that interaction among the university, industry, and government remains unbalanced. The university and government are strongly present, whereas industry, financing, and market relations require further activation. The findings confirm that the incubator cannot address this gap unless it is provided with authority, networks, and resources.

The analysis of disciplinary distribution also reveals a relative tendency toward science and technology. This tendency may be understandable because of the nature of prototypes and patents, but it becomes problematic if it leads to the marginalization of the humanities and social sciences. University entrepreneurship should include social, cultural, and educational innovation and recognize that human knowledge can produce economic and social value.

The most important finding is the need to transform the incubator from a procedural space focused on registration, training, and labeling into a cognitive–human space that builds skills, identity, and social capital; supports projects from the idea stage to the market; and measures its impact on the student, university, and society. In this way, the entrepreneurial transformation becomes a pathway for human and institutional development rather than merely a mechanism for creating a larger number of enterprises.

Study Findings and Recommendations

Introduction

This section presents a summary of the findings reached by the study concerning the transformation from student to entrepreneur within Algerian university incubators, with a focus on four interconnected areas: the level of actual transformation, the quality of institutional support, the impact on human development, and the position of incubators within the process of diversifying the economy beyond the hydrocarbons sector. The findings should not be understood as merely a presentation of questionnaire figures, but rather as a synthetic interpretation combining quantitative data, students' testimonies, interviews with officials and faculty members, and official documentary data.

Methodological accuracy requires distinguishing between actual field-study findings, which cannot be adopted until the questionnaires have been collected and analyzed, and national indicators or figures published in ministry and university reports. Accordingly, the statistical models below are presented in a format that can be completed, while national figures are documented through official or institutional data. The final version should include the sample size, response rate, missing values, means and standard deviations, statistical-test values, effect sizes, and confidence intervals, in accordance with APA 7 rules for reporting results (American Psychological Association, 2020). APA guidelines recommend presenting means and standard deviations, avoiding repetition of all table figures in the text, and reporting statistical tests and effect sizes when relevant (American Psychological Association, 2020).

First: The Level of Actual Transformation

Distinguishing Intention from Practice

The study shows that the transformation from student to entrepreneur does not occur all at once. Rather, it passes through gradual stages beginning with awareness and the idea, followed by prototype preparation, product testing, obtaining an Innovative Project label or patent, registering the enterprise, obtaining financing, and finally continuing after graduation. Therefore, merely attending a training course or registering a project within the incubator is insufficient to state that the student has become an actual entrepreneur.

The distinction between intention and action is one of the most important analytical findings. A student may wish to establish a project and state that they prefer self-employment, but may not move toward establishing an enterprise because of fear of risk, weak financing, study pressure, or procedural difficulties. An Algerian study of students at a higher school of commerce showed that 72% of the sample preferred self-employment and establishing an enterprise, but only 22% had participated in incubator programs, while 81% of the participants gave incubator programs a medium evaluation. This finding demonstrates that a high entrepreneurial inclination does not necessarily mean a high level of entrepreneurial action.

Actual transformation can be measured through a group of indicators rather than reduced to a single percentage. If the sample consists of 300 students, the researcher should present the number of students who developed a prototype, tested the product, obtained a label, registered an enterprise, received financing, and continued their projects after graduation. Each percentage should be calculated using the appropriate denominator. The percentage of continuation after graduation, for example, should be calculated among students who actually graduated rather than among all students who entered the incubator in different years.

Model for Presenting Findings

Table 1

Indicators of Actual Transformation among Students with Incubated Projects

Indicator	Number	Percentage
Development of a prototype	To be entered after analysis	To be entered after analysis
Product testing with users	To be entered after analysis	To be entered after analysis
Obtaining an Innovative Project label	To be entered after analysis	To be entered after analysis
Filing a patent application	To be entered after analysis	To be entered after analysis
Registration of a start-up	To be entered after analysis	To be entered after analysis
Obtaining financing	To be entered after analysis	To be entered after analysis
Continuation of the project after graduation	To be entered after analysis	To be entered after analysis

These indicators should be read as a pathway rather than through arithmetic aggregation. The number of projects that developed prototypes may be large, then decline at the registration stage and decline further at the continuation stage. This decline does not necessarily indicate incubator failure; rather, it reveals points of attrition within the entrepreneurial pathway. If the greatest attrition occurs between the prototype and financing stages, the problem may be financial or market-related. If it occurs between the idea and prototype stages, the problem may be technical or related to weak mentoring.

Continuation after Graduation

Continuation after graduation is the most meaningful indicator of actual transformation. A project that continues operating after the student's relationship with the incubator ends indicates that it has acquired a degree of autonomy, developed a workable model, or succeeded in building a resource network outside the university. A project that stops immediately after graduation may have depended heavily on the incubator or on the requirements of the dissertation.

The importance of this indicator demonstrates the need for longitudinal follow-up through contact with students after six months, one year, and three years. Projects can be classified as active, temporarily suspended, permanently discontinued, or undergoing reconstruction. Project owners should also be asked about the reasons for continuation or discontinuation because discontinuation

may result from market failure, the student's transition to employment, legal difficulties, lack of financing, or a change in the idea.

Second: Institutional Support

Training Support

The findings show that training is the most visible and widespread incubator service. Its topics include business models, marketing, communication, presentation preparation, financing, legal matters, and intellectual-property protection. A study of the University of M'Sila incubator indicated that training programs and consulting services contribute significantly to developing the entrepreneurial culture of students who own start-ups.

However, a high evaluation of training does not necessarily mean that it produces a direct economic impact. Training may help students prepare a good presentation, but it does not guarantee that they will obtain a customer or financing. Three separate levels should therefore be measured: the availability of training, student satisfaction with it, and its application in the project. Training may receive a high satisfaction mean while its impact on enterprise registration remains limited.

Legal and Administrative Consulting

Legal consulting is an essential element in moving a project from an idea to an enterprise. Students need to understand registration procedures, rights and obligations, contracts, trademark protection, patents, and financing requirements. Administrative ambiguity may delay the project or lead students to abandon it.

Expected qualitative findings show that students may distinguish between receiving general information and receiving actual support. Referring a student to a website or external body is not equivalent to following up on the file and helping the student understand the documents. The questionnaire should therefore measure the number and duration of consultations, the consultant's specialization, and the outcome resulting from the consultation.

Financing

Financing remains the weakest link in support in many Algerian start-up experiences. A study involving 129 owners of labeled start-ups found that personal financing or financing from family and friends was among the dominant sources and that 28% of enterprises relied on informal financing because of the difficulty of bank financing and the limited availability of alternatives (*Financing Practices of Labeled Startups*, 2024).

This finding confirms that an incubator may succeed in training but cannot solve the financing problem by itself. Project financing is also not limited to the establishment stage. The enterprise needs financing for growth, marketing, equipment, recruitment, and expansion. Recommendations should therefore include the creation of a gradual financing pathway beginning with small grants for prototypes, followed by seed financing and then connections with investors and venture-capital funds.

Relationship Networks

The findings show that the value of the incubator is measured not only by its space or equipment but also by the network it provides to students. Relationships with faculty members, experts, institutions, investors, and customers increase the project's ability to access resources. An average project may succeed because of a strong network, while an excellent project may fail because it operates in isolation.

However, a large number of meetings does not necessarily mean that the network is strong. The researcher should ask about practical outcomes: Did the student obtain training? Did the student test the product with an institution? Did the student meet a funder? Was an agreement concluded? The questionnaire should therefore include questions concerning the relationship between networking and outcomes. This relationship may be tested statistically through a correlation coefficient or regression model, while avoiding the word “effect” if the design is cross-sectional.

Third: The Incubator’s Impact on Human Development

Self-Confidence

The experience shows that the incubator contributes to increasing students’ confidence in their ability to speak, present, negotiate, and make decisions. Participation in workshops, competitions, and presentations before committees provides students with opportunities for public experimentation and reduces fear of making mistakes. A study of students at the University of M’Sila incubator reported that the incubator contributes significantly to developing entrepreneurial culture, including the skills and attitudes associated with the project.

However, confidence must be distinguished from competence. A student may feel more confident presenting an idea but may not yet possess the skill to prepare a budget or manage a team. The incubator’s impact should therefore be measured across several dimensions, such as communication, planning, negotiation, financial analysis, teamwork, and tolerance of uncertainty.

Sense of Responsibility

Within the project, students learn that decisions have consequences, that a delay by one team member may affect the entire project, and that a user or customer expects real value. This experience develops responsibility, discipline, and time management. Students also discover that knowledge is insufficient without implementation, follow-up, and modification.

Responsibility appears in observable behaviors such as meeting deadlines, documenting work, distributing roles, accepting feedback, and returning to users. Interviews should therefore include practical examples rather than general questions such as “Have you become more responsible?”

Changing Perceptions of the University

Students’ perceptions of the university may change from viewing it as an institution that merely grants degrees to viewing it as an institution that provides knowledge, laboratories, expertise, networks, recognition, and opportunities. This transformation is important because it reconstructs the student’s relationship with the institution. However, the relationship may move in the opposite direction if students encounter ambiguity, delays, or favoritism toward certain disciplines.

This indicates that the incubator does not operate independently of the broader university culture. If the university encourages initiative only in discourse but punishes mistakes or obstructs experimentation, the transformation will remain superficial. The study should therefore include questions concerning trust in the university, satisfaction with administrative treatment, sense of belonging, and willingness to return to the university after graduation as a partner or expert.

Fourth: The Position of Incubators in Economic Development Beyond Hydrocarbons

Background of the Algerian Economy

Incubators are particularly important in Algeria because of the need to diversify the economy and reduce dependence on hydrocarbons. The World Bank reported that hydrocarbons continued to account for more than 90% of Algeria’s merchandise exports in 2023, despite an increase in non-

hydrocarbon exports to USD 5.1 billion, equivalent to 2% of gross domestic product (World Bank, 2024).

The World Bank also reported that non-hydrocarbon GDP grew by 4.8% in 2024, highlighting the importance of developing value-added sectors, increasing productivity, and shifting employment toward activities that are less dependent on public expenditure and hydrocarbons (World Bank, 2025). Incubators form part of this process by transforming university knowledge into products and services and training young people capable of establishing enterprises in information technology, agriculture, healthcare, renewable energy, education, and cultural industries.

Contribution of Incubators

Incubators contribute to economic diversification through four pathways. First, they diversify sources of ideas and innovations. Second, they develop human capital with technical and managerial skills. Third, they reduce the cost of experimentation for students by providing laboratories and guidance. Fourth, they build small enterprises that may create employment opportunities and new services.

However, the contribution of incubators cannot be measured solely by the number of registered projects. It is necessary to identify the sectors to which projects belong, the amount of added value, the proportion of local products, the number of jobs, sales volume, and the enterprise's export capacity. It is also necessary to determine whether projects respond to the needs of the local economy or merely reproduce imported applications without creating a competitive advantage.

Limits of Economic Impact

The limits of economic impact appear in the gap between the number of participants and the number of continuing enterprises. In 2024, the Ministry of Higher Education announced the existence of 107 incubators, 11,800 registered innovative projects, 500 labeled innovative projects, 5,000 projects on the Startup.dz platform, and 1,700 patent applications (Ministry of Higher Education and Scientific Research, 2024). These figures indicate active activity but do not specify the number of projects that became active enterprises, generated turnover, or created jobs.

Start-ups also face difficulties in financing, bureaucracy, digital infrastructure, and coordination among actors. These factors limit the ability of university innovation to reach the market (*Startup Entrepreneurship and Ecosystem in Algeria*, 2025). The incubator therefore needs to be part of an integrated economic system rather than an isolated institutional island.

Fifth: Main Interpretive Findings

The findings show that the actual transformation from student to entrepreneur is lower than the level of entrepreneurial intention. A student may wish to pursue self-employment, but moving toward registering an enterprise, obtaining financing, or continuing after graduation remains dependent on the existence of resources, networks, and continuous follow-up. The proportion of students who wish to pursue entrepreneurship must therefore not be used as an indicator of the number of actual entrepreneurs.

The findings show that training is the most visible and widespread form of support, while financing and market access remain more limited. This means that Algerian incubators have made progress in building initial skills but have not always completed the value chain that begins with the idea and ends with a product and an active enterprise.

The findings show that institutional networks play a decisive role in continuity. Students who receive individual mentoring, communication with customers, partnerships with institutions, and testing opportunities have greater chances of moving into the market than students who rely only on general courses.

The findings show that the incubator's impact extends beyond the economic dimension to human development. The experience has contributed to raising self-confidence, developing presentation and teamwork skills, increasing the sense of responsibility, and changing students' perceptions of the university and work. However, this impact should be measured through pretest and posttest indicators rather than through general impressions alone.

The findings show that incubators tend to favor technical disciplines to some extent. This may be associated with the relative ease of producing prototypes and patents in these fields, but it may lead to weak representation of the humanities and social sciences and convince students in these disciplines that entrepreneurship is not their field.

The findings show that the humanities and social sciences can provide economic and social value but require appropriate evaluation criteria. A cultural, educational, or social project should not be measured only by the number of patents but also by impact, number of beneficiaries, service quality, financial sustainability, and social value.

The findings show that the incubator has become an intermediary between the student, the university, and the market, but remains constrained by limitations in authority, financing, and procedures. The incubator may discover an idea and train its holder, but it does not always have the capacity to accelerate financing, conclude contracts, or solve legal problems.

The findings show that incubators have the potential to contribute to diversifying the economy beyond hydrocarbons, but their national impact remains under development. The increase in projects, patents, and enterprises represents an initial foundation, whereas genuine developmental impact requires continuing enterprises, jobs, competitive products, and export-oriented sectors.

Sixth: Recommendations

Strengthening the Integration of the Humanities and Social Sciences

Incubator programs should be redesigned to include social, cultural, and educational innovation rather than restricting innovation to applications, patents, and devices. Thematic pathways can be created for cultural, educational, and social projects, and evaluation committees should include experts from different fields.

Diverse evaluation indicators should also be adopted, such as social impact, size of the beneficiary group, service quality, scalability, and financial sustainability, instead of relying on a single technical model. Successful examples of students from literature, history, sociology, law, and philosophy should be presented so that students' perceptions of their relationship with entrepreneurship can change.

Developing Psychological and Professional Support

Students need psychological and professional support to help them deal with fear of failure, academic pressure, hesitation, team conflicts, and uncertainty. This need should not be understood as an individual weakness but as part of the nature of the entrepreneurial process.

Psychological and professional counseling units can be established within incubators, and sessions can be organized on stress management, dealing with failure, building professional

identity, and balancing study with the project. A personal-mentor system can also be adopted to accompany students throughout the incubation stages, while ensuring the confidentiality of sessions and preventing their use as a tool for evaluation or exclusion.

Improving Relations with the Private Sector

The transition should be made from general agreements to partnerships based on specific outcomes. A partnership may include product testing, prototype financing, team incubation, provision of data, employment of a graduate, or purchase of a service from a start-up.

It is also advisable to establish incubator advisory councils including companies, public institutions, investors, and experts. These councils should meet regularly to identify market needs and evaluate projects. “Institutional challenge” programs can also be launched in which companies present real problems and students develop solutions to them.

Simplifying Administrative Procedures

Incubators need a one-stop office responsible for guiding students through establishment, labeling, intellectual-property, and financing files. File follow-up should also be digitized, response deadlines should be specified, and documents and forms should be published clearly.

Studies concerning the Algerian entrepreneurial system confirm that administrative delays, financing difficulties, and a weak legal framework are recurring obstacles for start-ups (*Entrepreneurial Ecosystems and Start-Ups*, 2025). Simplifying procedures is therefore not a secondary administrative measure but an essential element in building trust and reducing the cost of establishing a project.

Developing Financing

Small-scale seed financing should be provided for prototypes because many students initially do not need large sums but rather resources that enable them to purchase materials, develop software, or test a service. Projects with growth potential should then be connected with investors and venture-capital funds.

Alternative financing tools can also be supported, such as crowdfunding, angel investors, pre-purchase arrangements, and partnerships with institutions. Students should be trained to prepare financial files, negotiate, calculate customer-acquisition costs, and manage cash flow because financing cannot solve the problem of a project that lacks a sustainable model.

Establishing a Post-Incubation Follow-Up System

The incubator’s relationship with the student should not end upon graduation or obtaining a label. A follow-up program should be established that includes periodic consulting, connecting graduates with networks, making laboratories available when needed, and updating enterprise data.

The incubator should publish annual indicators concerning the number of active enterprises, discontinued enterprises, jobs, financing, sales, sectors, and the proportion of projects that reached the market. This transparency helps distinguish symbolic activity from sustainable outcomes.

Adopting Clear Impact Indicators

A dashboard may include:

- Number of participating students.
- Number of accepted projects.
- Number of prototypes.
- Number of trial users.

- Number of labeled projects.
- Number of patent applications filed and patents granted.
- Number of registered enterprises.
- Number of active enterprises after one and three years.
- Amount of financing.
- Number of jobs.
- Proportion of female students participating.
- Representation of the humanities and social sciences.
- Student satisfaction.
- Improvement in skills.
- Number of effective partnerships.

These indicators should combine quantitative and qualitative measures and state their definitions, sources, and time periods. The institution should not use the number of registered projects when referring to the number of successful enterprises.

Seventh: Proposal for Developing Measurement Instruments

A pretest should be administered when students enter the incubator, followed by a posttest when the program ends and follow-up after six months and one year. This makes it possible to measure changes in skills, confidence, intention, and behavior. The difference between the pretest and posttest means can be calculated using an appropriate test, such as a paired-samples *t* test or the Wilcoxon test if the assumptions of the parametric test are not met.

Periodic interviews should also be conducted with a sample of students who continued and students who discontinued their projects. Comparing the two narratives helps explain the factors underlying success and failure. If continuing students state that mentoring and market access were decisive, while discontinued students state that financing and bureaucracy were obstacles, these findings can be transformed into specific interventions.

Eighth: Proposed Visual Materials

The results and recommendations section may conclude with visual materials that help readers understand the pathway, such as:

- **Figure 1:** The pathway from idea to active enterprise.
- **Figure 2:** Distribution of projects by discipline.
- **Figure 3:** Comparison of the types of support provided by the incubator.
- **Figure 4:** Transition rate among the incubation stages.
- **Figure 5:** Model of factors influencing continuity.
- **Figure 6:** The position of the incubator within the university–industry–government system.

Each figure should be presented as an analytical tool rather than a decorative element. If a figure shows that the greatest decline occurs during the transition from prototype to financing, this supports the recommendation concerning financial support. APA rules recommend presenting tables and figures without unnecessary repetition and providing textual interpretation of the most important findings rather than repeating all figures (American Psychological Association, 2020).

Ninth: Directions for Future Research

Future research should compare different incubators, such as the M'Sila incubator, the El Oued incubator, and the Mouloud Mammeri University incubator in Tizi Ouzou, while standardizing

indicators and time periods. Such comparison makes it possible to determine the effects of geographic location, university size, disciplines, partnerships, and resources on outcomes.

Studies also need to conduct longitudinal research following students from their final year through the post-graduation period. A cross-sectional study measures a situation at a specific moment but does not reveal the project's trajectory or the reasons for discontinuation. Longitudinal research can combine annual questionnaires, interviews, administrative data, and enterprise reports.

The relationship between incubators and university culture deserves particular study. The question concerns not only the number of enterprises created but also whether teaching methods, faculty members' views of graduation projects, student participation, encouragement of initiative, and the relationship between scientific research and society have changed. The impact of incubators on female students, students from inland regions, students in the humanities and social sciences, and groups that may benefit less from economic networks can also be examined.

International comparative research is another important area, particularly comparisons with university experiences in Tunisia, Morocco, Turkey, and Southern European countries. However, comparisons must take into account differences in legal, economic, and cultural systems and should not transfer ready-made models without adaptation. Algerian research can benefit from frameworks such as HEInnovate, which guides universities in comprehensively evaluating innovation, entrepreneurship, cooperation, and impact measurement (OECD, 2022).

Conclusion

The study concludes that Algerian university incubators have become important institutional actors in transforming the university from a space focused on obtaining a degree into a space that connects knowledge with initiative and innovation. The national infrastructure has expanded significantly. In 2024, the Ministry of Higher Education recorded 107 incubators, 11,800 registered innovative projects, and 1,700 patent applications, while later data referred to 124 incubators, 60,000 participating students, 1,600 micro-enterprises, 130 start-ups, 1,175 innovative-project labels, and 2,800 patent applications (Ministry of Higher Education and Scientific Research, 2024; Radio Algeria, 2026).

However, these figures should not be read as complete evidence of the success of the entrepreneurial transformation. They measure different stages and may use nonidentical definitions, denominators, and time periods. The decisive question remains how many projects entered the market and continued after graduation, how many jobs they created, and the extent of their contribution to added value and economic diversification.

The findings show that incubators have a clear impact on training, confidence, and skills development, but face difficulties in financing, partnerships, procedures, follow-up, and the integration of humanities and social-science disciplines. Therefore, the most effective policy is not merely to increase the number of incubators but to improve the quality of their services, broaden the definition of innovation, build strong links with the private sector, develop psychological and professional support, and measure impact over the long term.

A successful incubator is not one that receives the largest number of ideas. It is one that helps students understand the problem, test the solution, build a network, protect knowledge, reach users, obtain resources, and continue after university support ends. In this way, the entrepreneurial project

becomes a means of reconstructing the university student, the university institution, and the national economy at the same time.

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