The role of university support bodies in developing entrepreneurial competencies and establishing start-ups - A case study of the University of Eltarf

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Abstract:

The study aimed to highlight the reality of the contribution of university education as an important strategic mechanism in developing the entrepreneurial competencies of students at Eltarf University and accompanying them to establish emerging institution. a case study approach was used to achieve study objectives, through the interview we conducted with officials of the support centers affiliated with Eltarf University, a set of statistics were presented most notably: 06 students received the innovative project Label from the ministry of knowledge economy, startups and micro-enterprises, while the number of students registered in the house of Artificial intelligence reached 82 students, who are working on projects in the fields of food security, education, water security, in addition to medicine and health care, where the study reached a number of results, the most important of which is that Eltarf University strives to develop the entrepreneurial competencies of its students from During their support and accompanying their projects and preparing a graduation thesis to obtain a university degree- an emerging institution within the framework of implementing Resolution 1275.

the study recommended the necessity of financing the projects of students who obtained the Label badge to embody them realistically and develop their entrepreneurial competencies from theory to field competencies.

Keywords: Entrepreneurship; Entrepreneurial Competencies; University support bodies; Emerging Institution; Eltarf University.

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I- Introduction:

In light of the significant challenges and rapid changes that the global economy is currently facing, entrepreneurship has emerged as one of the most critical strategic orientations in recent times. It has gained a prominent position in the economies of most countries due to its effective role in achieving various strategic future development programs in general and in establishing startups in particular, from the inception of an idea to its realization and development. These startups are considered a strategic lever for supporting the economy, innovating products, and entering global markets.

Consequently, there is an evident and pressing need to focus on preparing and continually developing entrepreneurial competencies in accordance with the demands of the local and international business environment. This can be achieved by instilling an entrepreneurial culture among youth in general and university students in particular, and by equipping them with the appropriate skills, knowledge, abilities, and behaviors needed to establish startups and engage in entrepreneurial practices. Among the most notable mechanisms that can be emphasized in developing entrepreneurial competencies is university education, which is a crucial pillar in fostering an entrepreneurial spirit among students, providing necessary support to those with creative ideas, and creating an entrepreneurial environment.

In this context, Algeria, like other countries, has recognized the need to integrate into the new global economy. This has necessitated the dissemination of entrepreneurial awareness through the development of entrepreneurial competencies capable of stimulating the creation of startups. Algeria has focused on university education by establishing support and accompaniment bodies. For instance, in recent times, the efforts of the University of El Tarf have been prominent in developing the necessary entrepreneurial competencies for success, excellence, and the pursuit of betterment, as well as in establishing startups by soon-to-be graduates.

Based on the above, the problem of this study can be formulated in the following main question:

What is the current contribution of university support bodies at the University of El Tarf in developing entrepreneurial competencies and establishing start-ups?

To answer this question, the following sub-questions fall under this problem:

- What are the essential competencies for entrepreneurial work?
- How does university support bodies contribute to the development of entrepreneurial competencies?
- How does university education contribute to the establishment of startups?
- What mechanisms and methods are employed by University of Eltarf to develop the entrepreneurial competencies of its students, guide them, and support them in establishing startups?

This study proceeds from the following hypotheses:

- University of Eltarf seeks to implement a strategy of entrepreneurial university education by establishing bodies and centers to support students and develop their entrepreneurial competencies for the creation of startups.

- Despite the efforts made by University of Eltarf to develop entrepreneurial competencies and establish startups, students who have received the "Label" face a series of challenges that hinder the practical realization of their projects.

The significance of this study lies in its attempt to shed light on the actual contribution of university support bodies in training and developing the entrepreneurial competencies of students at Eltarf University, supporting them in realizing their projects, and establishing successful startups. It also aims to highlight the main challenges that hinder the progress of innovative thinkers, especially students who have received the "Innovative Project Label."

The objectives of this study are to:

- Identify the essential competencies that a successful entrepreneur must possess;
- Highlight the effective role of university support bodies in developing entrepreneurial competencies and establishing startups;
- Attempt to understand the current situation at University of Eltarf in terms of its efforts and pursuit of mechanisms and methods to develop students' entrepreneurial competencies and support them in creating startups.

To address the research problem, the study adopts a case study methodology by examining University of Eltarf, highlighting the role and contribution of university education as a crucial strategy for training and developing students' entrepreneurial competencies, and accompanying them in realizing their projects and establishing their startups.

To provide a comprehensive understanding of the subject, the study has been divided into two main sections as follows:

- Theoretical Framework of the Study: This section addresses entrepreneurial competencies, the nature and characteristics of start-ups, the role of university support bodies in developing entrepreneurial competencies, and the role of these competencies in the creation of innovative start-ups.
- The Contribution of university support bodies to the Development of Entrepreneurial Competencies and the Establishment of Start-ups at the University of Eltarf: This section discusses the various bodies and centers supporting students, as well as the development and training of entrepreneurial competencies, alongside their efforts within the framework of Ministerial Decision 1275 to support and assist students in establishing their start-ups.

Provious studies:

- Labib Arafeh (2016) study: An article titled "An entrepreneurial key competencies model" aims to review the entrepreneurial culture and entrepreneurial competencies in Palestine, characterized by training supported by donors and non-governmental initiatives. This study also proposes a model of key entrepreneurial competencies based on soft computing (SKECM) that is based on three sets of ten key entrepreneurial competencies developed and used by Empretec. Although the initial results of the proposed SKECM model are promising, more testing is still needed before determining the adequacy of applying the soft computing modeling approach in the field of entrepreneurship.

– (Lopez (2021-Requal Ferreras Garcia, Jordi Sales Zaguirre and Enric Serradell studyAn : structural article titled "Developing entrepreneurial competencies in higher education: a model approach" aims to propose and select a structural model for the relationships between general and specific competencies and entrepreneurial competencies in order to evaluate dents at the Universidad learning Students, the study was conducted on a sample of 337 stu Oberta de Catalunya. A questionnaire was designed to collect information about students perceptions of their level of acquisition of the different groups of competencies. The to analyze the model. As for the multivariate partial least squares (PLS) method was used results, they confirm the existence of important relationships between the different groups of competencies. Specifically, the results show that general competencies affect specific competencies.
– Gunartin A, Heri Pratikto B, Agung WinarniC, Nurika Restuningdiah (2023) study: This is an article titled " THE ROLE OF ENTREPRENEURIAL COMPETENCIEST SUCCESSFUL KEY SMES A LITERATURE REVIEW", aims to describe the role of ugh literature review and ups thro-entrepreneurial competencies in the success of start empirical data analysis in order to deepen the understanding of entrepreneurial competence ups. As for the results, it indicated that -and identify its key role in the success of start ss and management skills, human relations, entrepreneurial competencies, including busine ups, -conceptual understanding, and attitude, are of great importance for the success of start and developing these competencies can increase the competitiveness and sustainability of up-start.

1. The theoretical framework of the study.

1.1. Entrepreneurial Competencies.

In the current context of entrepreneurship, entrepreneurial competencies have gained special significance in research, similar to general competencies. Multiple and varied definitions exist; however, according to Tittel and Terzidis (2020), literature and practices still exhibit significant ambiguity regarding what should be trained in academic entrepreneurship education and which competencies require development. Below are the most important definitions of entrepreneurial competencies as presented by researchers in the article titled "Developing Entrepreneurial Competencies in Higher Education: A Structural Model Approach." Mitchelmore and Rowley define entrepreneurial competencies as "a set of specific competencies relevant to the successful practices of entrepreneurship," while Bird (1995) defines them as "fundamental characteristics such as general and specific knowledge, motivations, traits, self-image, social roles, and skills that contribute to creating ventures for survival and/or growth." Man et al. (2002) considers entrepreneurial competencies to be a high-level attribute encompassing personal traits, skills, and knowledge, representing the overall capability of the entrepreneur to perform successfully (Ferreras-Garcia, Sales-Zaguirre, & Serradell-Lopez, 2021, p. 724).

Additionally, the article titled "The Role of Entrepreneurial Competencies: Successful, Key SMESA Literature Review" suggests that entrepreneurial competencies are a crucial factor for effective business skills, as they encompass a combination of attitudes, knowledge, and skills that contribute to maximizing business performance. Bolzani and Luppi (2021) define entrepreneurial competencies as "the essential competencies for developing entrepreneurial capabilities and behavioral skills, which are the foundation of

economic growth and social employability." Volkmann (2009) further notes that entrepreneurial competencies are "a very important element in developing capacities and behaviors, leading to enhanced economic growth and fostering individual development and employability in society" (Gunartin, Pratikto, Winarni, & Restuningdiah, 2023, p. 4).

One of the essential aspects of entrepreneurship is identifying the competencies required of an entrepreneur. In other words, defining entrepreneurial competencies is crucial as it enables organizations and higher education institutions to develop and improve their quality. Accordingly, Mitchelmore and Rowley (2010) proposed a list of competencies to establish a set of entrepreneurial competencies. Based on the work of researchers in this field, such as Smith and Morse (2005), Man et al. (2002), Chandler and Hanks (1994), and Baum and Locke (2004), they classified the main competencies into four groups: entrepreneurial competencies, business and management competencies, human relations competencies, and conceptual and relational competencies. In this context, other researchers have suggested different types of entrepreneurial competencies, including skills such as problem-solving, decision-making, teamwork, risk-taking, tolerance, emotional control, creativity, result-orientation, independence, negotiation, communication, perseverance, and initiative (Ferreras-Garcia, Sales-Zaguirre, & Serradell-Lopez, 2021, p. 725).

In a study conducted by Man et al. (2002), ten areas of entrepreneurial competencies were classified from a behavioral perspective as follows: opportunity, relationship, analysis, innovation, operational competencies, human competencies, strategic competencies, commitment, learning, and personal strength. The study demonstrated that these elements have a direct or indirect impact on performance (Gunartin, Pratikto, Winarni, & Restuningdiah, 2023, p. 725).

Moreover, creating an environment conducive to entrepreneurship and developing competencies in this field to support business success requires a combination of attitudes, knowledge, and skills. Penchev and Salopaju (2011) proposed a dual model of entrepreneurial competencies, where the first aspect of the model focuses on the core entrepreneurial competencies required in the current environment: proactivity, risk-taking, opportunity recognition, communication, decision-making, creativity, and innovation. The other aspect of the model, which is more critical for managing an existing company, includes leadership, communication, specialization, and problem-solving.

Lackéus (2003) proposed a model of entrepreneurial competencies consisting of three pillars: knowledge, skills, and attitudes. The first pillar, knowledge, includes mental models, declarative knowledge, and self-insight. The second pillar, skills, includes subtopics such as marketing, opportunity, resources, dealing with others, learning, and strategy. The third pillar, attitudes, comprises entrepreneurial desire, self-efficacy, identity, proactivity, uncertainty/ambiguity tolerance, innovation, and perseverance (Arafeh, 2016, p. 3).

Entrepreneurial competencies can be divided into three categories: technical (technological) competencies, which are the skills and competencies that help an individual keep pace with technological advancements, including knowledge, expertise, and high technical ability in activities, as well as writing skills and the use of technological tools; managerial competencies, where the entrepreneur must be competent and capable of managing the financial and human resources of their enterprise, possessing the

administrative skills that qualify and assist them in decision-making and building a well-structured strategy to achieve set goals and ensure the success of the enterprise; and personal competencies, where the entrepreneur should possess a set of personal competencies and traits, which may be inherited from family or environment, that help them identify and choose their entrepreneurial direction, as well as assist them in establishing their enterprise, such as creativity, innovation, renewal, risk-taking, and future vision (Nasri & Ben Aissa, 2022, p. 426).

Table (01): Competencies and Skills Required for Entrepreneurship

Competency	Elements and Components
Entrepreneurial Skills	Vision setting, human relations, ability to manage work
Managerial Skills	Strategy formulation, leadership, people management, negotiation, organization, and coordination
Technical Skills	Teamwork, technology, organizational ability, management of technical operations

Source: (Ben Ahmed & Boudi, 2018, p. 519).

1.2 Concept of Start-ups.

Start-ups hold significant importance in achieving economic development and creating job opportunities. However, there is no unified definition of this term, and various definitions exist. According to the Cambridge English Dictionary, a start-up is defined as "a small business or a newly initiated commercial project that needs to generate revenue quickly." The term "start-up" is a compound of two concepts: the first is "START," meaning to begin, and the second is "UP," meaning to move, indicating rapid and strong growth and initiation (Ben Lakhdar, Chenibi, Mokhnach, & Berrik, 2020, p. 27). Paul Graham, in his article on growth, defines start-ups as entities that always strive to grow quickly, regardless of their field of work, method of funding, or type of plans. The essential requirement is growth (Kadri & Ben Chouat, 2021, p. 202).

The term "start-up" began to be used immediately after World War II, coinciding with the emergence of venture capital companies. Subsequently, the use of this term became widespread. The French dictionary *Larousse* defines it as "those young companies that build innovative solutions and operate in the field of modern technology" (Ben Lallam & Benane, 2022, p. 14). Thinker Eric Ries defines a start-up as a "human institution designed to create a new product or service under conditions of extreme uncertainty" (Ben Lakhdar, Chenibi, Mokhnach, & Berrik, 2020, p. 27)Entrepreneur Steve Blank defines a start-up as a "temporary organization seeking an economic model that allows for continuous, profitable, and measurable growth" (Maghrebi & Sadouki, 2022, p. 83).

From the aforementioned definitions, it can be concluded that start-ups are innovative, creative, and young companies that heavily rely on technology and strive for significant and rapid growth.

There is sometimes a common misconception that every newly established company is a start-up. Therefore, it is essential to identify the characteristics that distinguish start-ups. They have several features, including that they are newly formed organizations; they aim to achieve sustainable development and are young companies with the objective of

growth and development. They face two options: either to succeed or to exit the market. Additionally, start-ups have the opportunity for growth, as they strive for strong and rapid growth and aim to achieve profits at minimal costs. Furthermore, they are technology-oriented companies, which leads to quick profit generation compared to low costs (Ben Moussa, 2022, p. 116).

Start-ups go through a series of stages, facing various changes and critical conditions throughout their lifecycle before reaching the stage of growth and prosperity. These stages can be summarized as follows:

The first stage, known as the pre-launch phase, involves an individual or a group of individuals presenting innovative ideas. During this phase, the idea is studied to assess its feasibility in the real world, alongside market research and efforts to identify necessary resources and funding sources.

Next is the launch phase, where the product or service is introduced for the first time. Since the offering is unfamiliar, it can be challenging to find supporters and financiers for the idea. At this stage, the founder often relies on the so-called "triple F" funding (Friends, Family, and Fools).

Following this is the early take-off and growth phase, where the product reaches its peak and begins to spread and expand. However, this growth leads to an increase in competitors offering similar products or services, and obstacles start to emerge, resulting in a decline.

The fourth stage, the valley of death, involves continued decline despite ongoing funding. If growth rates remain low, the project may be abandoned if the situation is not addressed.

The fifth stage, known as climbing the slope, involves continuous improvements and modifications to the product, leading to the launch of the second generation of the product or service. This revives the project.

Finally, the sixth and last stage is high growth, where the final development of the product occurs, and the start-up begins to experience continuous growth and development, marking the beginning of expansion and profitability (Ben Lallam & Benane, 2022, p. 16).

1.3 The Role of University Education in Developing Entrepreneurial Competencies

The university is a part of a system whose mission is to transfer knowledge to companies and society at large. It cannot ignore its responsibility in fostering a desire among students to research and explore entrepreneurship, ensuring they are ready to provide advice and guidance once they complete their studies, so they can pursue independent work.

University education is generally viewed as an educational approach aimed at enhancing self-esteem and self-confidence by nurturing individual talents and competencies. Simultaneously, it builds values and skills that help students expand their knowledge during their studies and in subsequent opportunities. The methods employed include personal, behavioral, and directional activities, as well as career planning.

At the institutional level, this involves the input related to teaching methods and curricula designed to enhance students' entrepreneurial capabilities. According to Minniti and Bygrave (2001), entrepreneurial knowledge and competencies can only be acquired through learning by doing and observation. This applies to entrepreneurial education, which

is a continuous process aimed at developing the knowledge and competencies necessary to establish a new enterprise. Entrepreneurial learning is cumulative, involving the accumulation of knowledge and skills as a result of prior experiences gained from entrepreneurial activities. The acquisition of entrepreneurial skills occurs through two important practices: learning by doing and the accumulation of knowledge (Hamli & Houhou, 2022, pp. 30-31).

Some researchers describe university education for entrepreneurship as "training for an uncertain future, providing students with the ability to create projects." Others have explained it as an educational process that helps students understand entrepreneurial attitudes and identify the best entrepreneurial behaviors based on personal and contextual factors, as well as the student's self-efficacy.

1.4. The Role of Entrepreneurial Competencies in Creating Innovative Start-ups.

Entrepreneurial (personal) competencies play a crucial role in establishing innovative start-ups. This is primarily due to the entrepreneur, who is the main actor in the start-up, and the significant role their entrepreneurial competencies play in fostering creativity and providing the right foundation. These practices include planning and setting aligned goals, where the entrepreneur controls the planning of activities related to the company's operations according to its established objectives. Additionally, motivating employees by involving them in the work and granting them authority over the activities they perform is essential. The entrepreneur also engages in decision-making and comprehensive management, relying less on mathematical competencies and more on intuitive abilities (Ben Ahmed & Boudi, 2018, p. 521).

Managerial competencies also contribute to the establishment of start-ups, where managerial competencies and applications help gather and mobilize internal forces to achieve the company's set goals. Delegating authority reveals the creative capacities of the delegate by generating a sense of efficacy, boosting morale, and increasing self-confidence. Creative companies typically share a set of principles, including prioritizing action and performance, as well as focusing on motivating employees and enhancing their capabilities for exceptional performance.

Thus, incentives are the cornerstone upon which creative organizations rely. It is not enough to merely set incentives; they must be linked to performance and creativity to achieve the desired objectives. The relationship between incentives and creativity is tied to the conditions and goals of their provision. If the relationship between incentives and performance related to creativity is strong, it will have a significant impact on creativity. Conversely, if the relationship is weak, its impact will be minimal or nonexistent. Effective communication among members of the organization also plays a vital role in the success of team work, enabling them to perform their tasks and solve problems creatively, thereby contributing to effective creative performance.

Among other competencies that contribute to the creation of innovative companies are technical competencies. The specific quality standards continually require greater technical capacities than the human and technical resources available to the start-up. These companies demonstrate wisdom in choosing technological sources, whether through internal research and development, cooperation contracts, alliances, or other methods. They exercise caution in relying on one of the less risky and more beneficial creative methods,

leading to effective performance that achieves the goals (Ben Ahmed & Boudi, 2018, p. 522).

2. Current Contribution of University Education to the Development of Entrepreneurial Competencies and the Establishment of Start-ups at Chadli Bendjedid University – El Tarf.

Chadli Bendjedid University – El Tarf, like other higher education institutions, has recognized the importance of entrepreneurship as a modern strategic approach to driving economic progress and improving local market conditions. The university has worked diligently to keep pace with these developments and has emphasized the need to train and develop students' entrepreneurial competencies so they can realize their ideas in the real world. As part of these efforts, the university has introduced entrepreneurship courses in some disciplines and offered specific lectures on entrepreneurship through the e-learning platform – Moodle.

Continuing the integration of entrepreneurship within the university, the Faculty of Economic, Commercial, and Management Sciences organized a competition on February 4, 2023, to enroll in the third doctoral cycle, opening a specialization in entrepreneurship in the Management Sciences Department. Chadli Bendjedid University continues its efforts to create innovation spaces and establish bodies and centers that support students, providing them with the training and development necessary to succeed in entrepreneurial activities and create leading start-ups. The most notable among these are:

2.1 Chadli Bendjedid University – El Tarf Incubator.

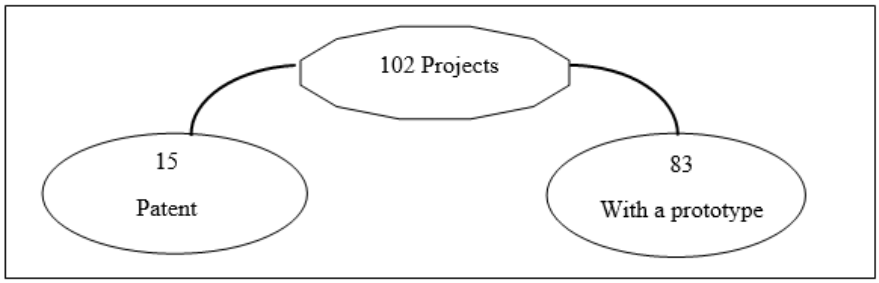
The Chadli Bendjedid University – El Tarf Incubator was established on May 16, 2022, and is one of the incubators affiliated with the Ministry of Higher Education and Scientific Research. It focuses on those capable of employing modern technological techniques, including university-qualified entrepreneurs, students, and researchers, to establish start-ups and innovative projects. These projects may include products, services, inventions, and more within sectors such as health, technology and artificial intelligence, industry, pharmaceuticals, telecommunications, energy and renewable energies, recycling and the environment, and commerce.

The incubator's slogan is "accompanying to realize ideas," and the incubation period starts from the project idea until its actual implementation. This is achieved through various mechanisms, such as providing training and consulting services to those with ideas to refine them for practical application, reaching economically viable projects by supporting innovation and creativity through accompaniment, expertise, equipment, and services, as well as signing partnership agreements with supporting entities. Additionally, project funding is offered through financial support from idea holders and economic and social partners to bring the project idea to life.

In implementing Decision 1275 for a university degree – start-up, the incubator held a training day on February 12, 2023, to present the work report of the National Committee for Innovation and University Business Incubators, as well as the innovative ideas summary of Chadli Bendjedid University – El Tarf, and to explain the mechanisms of Decision 1275.

To ensure proper training and supervision of students, the incubator organized a training session for supervising professors registered under Ministerial Decision 1275, whose projects were accepted by the evaluation committee, on March 20 and 21, 2023.

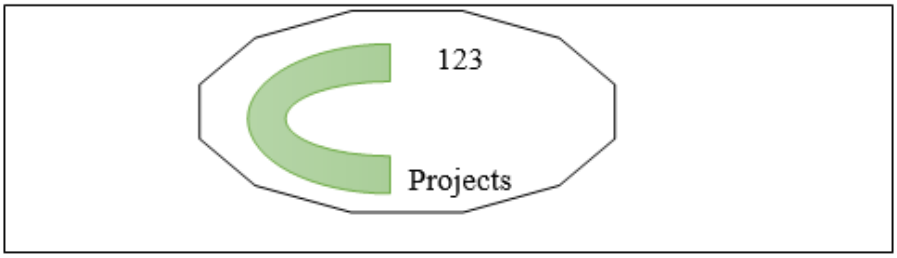
Figure (01): Innovative Projects Incubated for the Academic Year 2022/2023



Source: Head of the Chadli Bendjedid University – El Tarf Incubator

Based on the above figure, which represents the innovative projects incubated for the academic year 2022/2023, it is observed that the number of innovative projects incubated under Ministerial Decision 1275 reached 102 projects. Among these, 83 projects have a marketable prototype, and 15 are patents.

Figure (02): Innovative Projects Incubated for the Academic Year 2023/2024



Source: Head of the Chadli Bendjedid University – El Tarf Incubator.

Based on the above figure, which represents the innovative projects incubated for the academic year 2023/2024, we observe an increase in the number of incubated innovative projects compared to the previous academic year, reaching 123 projects. This growth is attributed to the development of entrepreneurial spirit, the spread of incubator culture, and the increasing role of the incubator among students.

Table (02): Number of Start-up Graduation Theses – Patents under Decision 1275

Year	Number of Graduation Theses on Startups – Patent
2022	83
2023	123
2024	42

Source: Head of the Chadli Bendjedid University – El Tarf Incubator.

Based on Table (02), which represents the number of start-up graduation theses – patents, we observe that the number of graduation theses under Decision 1275 for the year 2022 reached 83 projects. In contrast, 123 graduation theses were completed in 2023 across various disciplines within the faculties of Chadli Bendjedid University – El Tarf, including Natural and Life Sciences, Science and Technology, as well as Economic Sciences. For the year 2024, the number of graduation theses reached 42 across various disciplines such as

Law and Political Sciences, Economic Sciences and Management, Computer Science, Natural and Life Sciences, English, French, Science and Technology, Veterinary Sciences, and Material Sciences. Notably, the number of projects registered in the incubator for 2024 totaled 62.

In the context of discussing graduation theses under Ministerial Decision 1275 for obtaining a start-up degree or patent, these discussions have led to the filing of a patent and the submission of an application for the "Innovative Project" label on the *startup.Dz* platform. Additionally, the incubator registered 10 intellectual property protection requests from enrolled students.

The incubator continues its efforts to implement Ministerial Decision 1275, with six students having received the "Innovative Project" label from the Ministry of Knowledge Economy, Start-ups, and Microenterprises. Despite significant efforts, students who have obtained the "Innovative Project" label face several challenges in realizing their projects and establishing their companies, including complex procedures and difficulties in securing the necessary funding to launch their projects.

To address the funding issue, the incubator held a working session on July 10, 2024, to accompany the students who received the "Innovative Project" label in preparing their funding applications for the projects to be submitted to the National Start-up Fund (ASF). Additionally, on July 17, 2024, the incubator enabled these students to participate in a training session on securing funding from the National Start-up Financing Fund (ASF) at the Eastern Regional University Conference in Setif University.

Looking ahead, the Chadli Bendjedid University – El Tarf Incubator aims to nurture an entrepreneurial generation and develop young talents among the university's students, enhancing their entrepreneurial skills and accompanying them in realizing their innovative ideas. The incubator also seeks to fund and bring these projects to fruition, contributing to local and national economic development. Moreover, the incubator aspires to expand and realize international projects. A cooperation agreement was signed between the university's business incubator and the Student Hub at Jendouba University on June 21, 2024, within the framework of the partnership between the two universities. This agreement underscores the commitment to fostering exchange ties between the universities, opening new horizons for students in training, development, and innovation, and enabling them to achieve significant successes.

2.2 Artificial Intelligence Hub at Chadli Bendjedid University – El Tarf

The Artificial Intelligence Hub is a distinguished center for researchers, developers, and AI experts. They work on providing innovative solutions for applications that leverage modern AI technologies. These experts are also engaged in research and development across various fields. Additionally, the AI Hub organizes educational programs and training courses to develop competencies and conducts awareness campaigns about AI technologies.

The objectives of the AI Hub include:

- Supporting scientific research in AI by providing a conducive environment and encouraging innovation.
- Enhancing academic cooperation both nationally and internationally and highlighting the crucial role of the university in AI.

- Supporting students and researchers in developing innovative applications through educational programs and training courses, as well as advancing application development.

Table (03): Projects Undertaken by the Artificial Intelligence Hub Team at Chadli Bendjedid University – El Tarf

Projects	Food Security	Education	Water Security	Medicine and Healthcare
82 students	Smart irrigation systems designed to determine the optimal quantities of water for crops.	An integrated educational system designed to provide a comprehensive educational experience for students, tailored to their individual knowledge levels and needs, with the capability for direct interaction with teachers and peers.	Data analysis for early detection of pollution and improvement of water quality, seawater desalination plant in El Tarf province, Darouiche.	A wheelchair designed to assist individuals in moving easily and safely, equipped with a smart navigation system that helps the user move automatically between locations.

Source: Head of the Artificial Intelligence Hub at Chadli Bendjedid University

3. The Role of the Artificial Intelligence Hub in Enhancing the Work of University Business Incubators

The Artificial Intelligence Hub plays a significant role in every stage of the development of start-ups, beginning with the idea generation phase. It organizes technical workshops and intensive training sessions for start-up founders and their teams on how to use artificial intelligence in the development of their products and services. Additionally, the hub establishes research partnerships between start-up projects and AI researchers to develop new technologies. It also trains project leaders on using AI tools to generate innovative ideas by analyzing market trends, as well as conducting simulations and virtual modeling before creating physical prototypes by (Head of the Artificial Intelligence Hub at Chadli Bendjedid University).

4. Entrepreneurship Development Center at Chadli Bendjedid University – El Tarf

The Entrepreneurship Development Center serves as a link between the university and the entrepreneurial culture among university students. This center supports and encourages programs that promote entrepreneurship and the creation of businesses for university students.

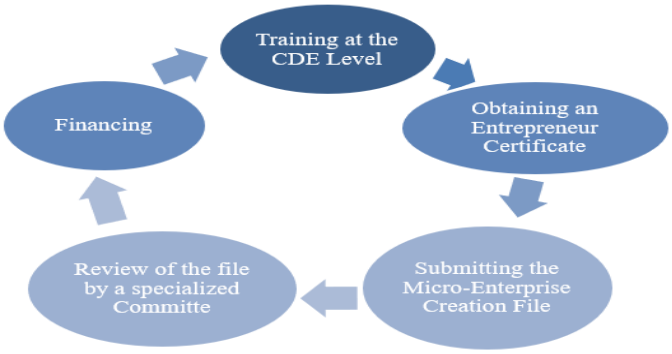
The primary goal of the Entrepreneurship Development Center is to foster an entrepreneurial spirit, instill and cultivate entrepreneurial values, and inspire innovative and creative ideas among students. It aims to train them in entrepreneurship and guide them on how to realize their ideas, distinguishing and highlighting projects that contribute to economic development and generate high added value.

The Entrepreneurship Development Center at Chadli Bendjedid University – El Tarf was inaugurated on February 23, 2024, in the presence of representatives from the Ministry of Higher Education and Scientific Research and the Ministry of Knowledge Economy, Start-ups, and Microenterprises.

While awaiting the launch of the national registration platform, the center conducted awareness campaigns for students with entrepreneurial projects to introduce them to the Entrepreneurship Development Center. It also organized an awareness day on business planning with the participation of specialized professors and representatives from NESDA. Additionally, in coordination with the university's business incubator, the center organized an awareness day on the concept of self-employment on May 7, 2024, through a remote teleconference with the Ministry of Microenterprises, Start-ups, and Knowledge Economy. This event was attended by various stakeholders in the entrepreneurial ecosystem, in accordance with the program outlined by the Ministry of Higher Education.

Moreover, the center organized an entrepreneurship training course that took place from June 1 to June 13, 2024. The training days covered the following topics: the basics of entrepreneurship, describing the project idea, creativity and innovation, assessing business opportunities, strategic planning for the enterprise, determining the necessary project costs, identifying required capital and funding sources, calculating the break-even point and sensitivity analysis, operations and resource management, business plan review, and financial and accounting management. The training also included a day led by the NESDA training team and concluded with a final day on mentorship (Mentrat) presented by an active entrepreneur in the fishing industry.

Figure (03): Stages of Training at the Entrepreneurship Development Center of Chadli Bendjedid University – El Tarf



Source: Head of the Entrepreneurship Development Center of Chadli Bendjedid University – El Tarf.

From the above figure, we observe that the stages of training at the Entrepreneurship Development Center of Chadli Bendjedid University – El Tarf begin with training and conclude with obtaining an entrepreneur certificate. Since the center is newly established, it currently includes the first cohort, consisting of 20 students from various disciplines at Chadli Bendjedid University. This center is the first of its kind in El Tarf and the second at the national level. The next phase involves submitting the micro-enterprise creation file and having it reviewed by a specialized committee known as the Evaluation Network (the university, NESDA, the bank). After the files are reviewed and the accepted

projects are identified, the subsequent phase is financing, which enables students to implement their ideas practically.

5. The National Agency for Entrepreneurship Support and Development (NESDA)

The National Agency for Youth Employment Support was established, its basic law defined, and its name changed on November 22, 2020, corresponding to September 8, 1996, to become the National Agency for Entrepreneurship Support and Development (NESDA). NESDA is a governmental body with a special character, endowed with legal personality and financial independence. It operates under the supervision of the delegated minister responsible for small projects, who acts as an assistant to the Prime Minister. This agency provides support to project holders for the creation and expansion of small businesses producing goods and services.

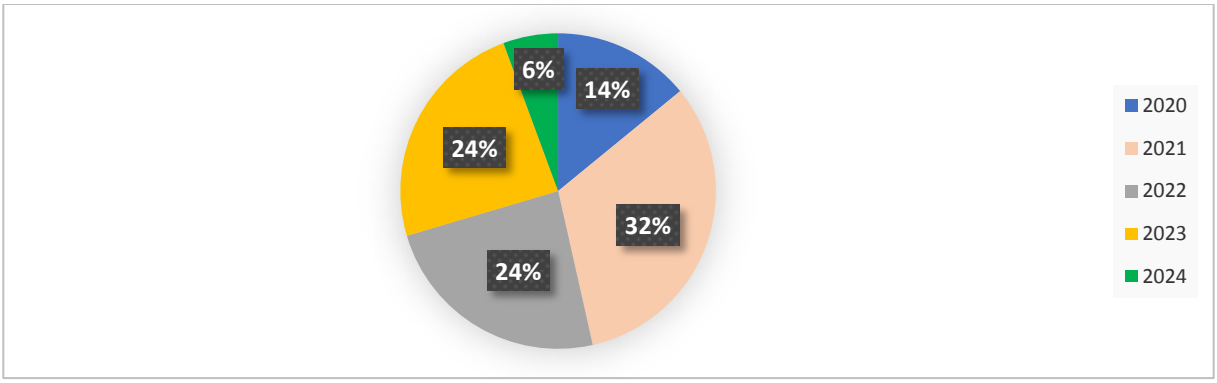
NESDA strives to develop and promote entrepreneurial spirit and culture, providing guidance, advice, and financial support to project holders, as well as supporting and accompanying young people with entrepreneurial ideas to realize their projects. Additionally, NESDA trains project holders according to the International Labor Office (ILO) method.

Between 2020 and 2024, NESDA El Tarf financed 975 entrepreneurs, both regular and university-based, with 904 regular entrepreneurs and 71 university entrepreneurs funded by the agency during the same period. The following figure illustrates this:

Figure (04): Total Number of Entrepreneurs Benefiting from NESDA Funding during the Period (2020 – 2024)

Source: The National Agency for Entrepreneurship Support and Development (NESDA) El Tarf.

Figure (05): Number of University Student Entrepreneurs Funded by the Agency during the Period (2020 – 2024)



Source: The National Agency for Entrepreneurship Support and Development (NESDA) El Tarf.

From the figure above, which represents the number of university student entrepreneurs funded by the National Agency for Entrepreneurship Support and

Development (NESDA) El Tarf between 2020 and 2024, we observe that the number of university entrepreneurs benefiting from the agency's funding reached 71. In 2020, the number was 10 university students funded, representing 14%. In 2021, this number increased to 23 university students funded, or 32%. In 2022, the number was 17 university students funded, representing 34%, and the same number of university entrepreneurs was recorded in 2023. However, in 2024, only 4 university students were funded by the agency, representing 6%. This decrease can be attributed to several factors, including the emergence of university business incubators, the growing role of these incubators, and the spread of entrepreneurial culture among university students.

Conclusion

In conclusion, entrepreneurship has recently gained a prominent position in many developmental, technical, and creative sectors due to its role in driving economic growth, improving economic conditions in the local market, and contributing to the creation of successful enterprises. To ensure the long-term success of certain projects, it is necessary to intensify efforts to train and develop entrepreneurial skills capable of turning ideas into reality. Higher education is an essential mechanism in this regard. University of Eltarf has recognized the need to develop the entrepreneurial skills of students, and thus, has intensified its efforts to support and encourage the entrepreneurial spirit for the creation of startups. The university has established various entities and centers, including the university incubator, the Entrepreneurship Development Center, and the House of Artificial Intelligence. These entities aim to support, incubate, and accompany graduating students in realizing their ideas and establishing their businesses, overcoming various challenges such as procedural complications and funding issues. Recently, the University of Eltarf held a meeting with an ASF representative to explore financing options for students who have obtained the "Label Innovative Project" within the framework of continuous support and the removal of obstacles, aiming to create successful and pioneering startups.

Through hypothesis testing, the study will determine the validity of each hypothesis as follows:

- First Hypothesis: University of Eltarf is aiming to apply an entrepreneurial university education strategy by establishing entities and centers to support students and develop their entrepreneurial skills for the creation of startups. The study revealed that the efforts of the University of Eltarf are evident in this area, as demonstrated by the establishment of student support entities and centers, such as the university incubator, which plays a crucial role in incubating and accompanying students. The incubator aims to implement Ministerial Decree 1275, which mandates obtaining graduation theses focused on startups or patents, as well as the "Label Innovative Project." Additionally, the Entrepreneurship Development Center and the House of Artificial Intelligence further support this hypothesis.
- Second Hypothesis: Despite the efforts made by University of Eltarf to develop entrepreneurial skills and create startups, students who have obtained the "Label Innovative Project" face several challenges that hinder the practical implementation of their projects. The study confirmed that these students indeed encounter a range of challenges that impede their progress and the actual implementation of their

projects, particularly regarding procedural complexities and funding issues, including securing the necessary capital. However, the university is making continuous efforts to address these funding-related obstacles by coordinating with ASF to explore financing options, which supports the second hypothesis.

Based on the above, the study reached the following conclusions:

- Entrepreneurial skills are the overall ability of an entrepreneur to perform successfully; they consist of a set of competencies related to successful entrepreneurial practices.
- University support Bodies is a significant pillar in developing and nurturing entrepreneurial skills capable of creating startups.
- Entrepreneurial skills encompass various types, including problem-solving, decision-making, teamwork, risk-taking, tolerance, emotional control, creativity, result orientation, independence, negotiation, communication, perseverance, and initiative.
- The University of Eltarf is making dedicated efforts to develop its students' entrepreneurial skills by supporting their projects and preparing graduation theses for obtaining university degrees – Startup, in the framework of implementing Decree 1275.
- The University of Eltarf's efforts are ongoing and are steadily moving toward creating an entrepreneurial environment, fostering an entrepreneurial culture, and supporting students in bringing their projects to life.
- The support centers and entities for project-holding students at the University of El Tarf possess a competent, experienced, and specialized administrative team, enabling them to provide excellent training in entrepreneurial skills and accompany students in establishing their startups.
- The university incubator at Eltarf is a successful mechanism for supporting and incubating students in realizing their projects and creating successful and pioneering startups.
- Students who have obtained the "Label Innovative Project" face several challenges, primarily procedural complexities and funding issues, which hinder their ability to launch their projects and establish startups. In response to these difficulties, the University of Eltarf is making various efforts to solve them through meetings and training seminars to explore financing options.
- The House of Artificial Intelligence plays an important role at every stage of startup development, from idea generation onward.

Therefore, the study recommends the following:

- It is essential to fund the projects of students who have obtained the "Label Innovative Project" to realize them practically and develop their entrepreneurial skills from theoretical knowledge to practical competencies.
- Benefit from international expertise through cooperation with organizations that support entrepreneurship and international financing programs through cooperation with international organizations and international openness to university incubators.
- Encouraging the financing of entrepreneurial and innovation projects by establishing funding funds dedicated to supporting student innovation and entrepreneurial

projects, while providing grants and small loans to establish institutions and working to diversify funding sources by linking business incubators, the private sector, and state institutions.

- Enhancing entrepreneurial awareness by introducing students to the importance of entrepreneurship through organizing training courses and seminars, awareness campaigns, and examining local and international success stories.
- Integrating entrepreneurship values into student curricula and activities to build a university environment that encourages calculated risk-taking and creativity and promotes a culture of entrepreneurship in universities.
- Focus on artificial intelligence, blockchain technologies, the Internet of Things, and encouraging the use of digital technology and innovative solutions in developing entrepreneurial projects.
- Enhancing guidance and counselling for students interested in establishing start-ups, as well as providing comprehensive support platforms for student projects, in addition to designing specialised educational programmes in entrepreneurship within universities, including training courses, workshops, and applied projects that simulate the reality of establishing and managing start-ups.
- Strengthening strategic partnerships between universities and major companies to provide practical training and employment opportunities for graduates, which contributes to developing entrepreneurial competencies.

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