المجلة الدولية للأداء الاقتصادي
International journal of economic performance
ISSN: 2661-7161 EISSN:2716-9073
Publications are Open Access in this journal

Study of Entrepreneurial Intention and Its Influencing Factors among Researchers - A Case Study of the University of Boumerdes

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Submitted:21/08/2023 Accepted:06/11/2023 Published:30/12/2023

Abstract:

The aim of this study is to identify the presence of entrepreneurial intention among Algerian researchers for creating academic spin-offs. We relied on a questionnaire administered to 88 researchers from the University of Boumerdes. The findings led to the conclusion that researchers show limited interest in starting a business. Furthermore, desirability and feasibility are the primary factors influencing this inclination. To facilitate the establishment of such enterprises, a comprehensive framework enveloping legislative, cultural, and financing elements is essential to improve the capacity of universities in forming spin-off companies.

Keywords: entrepreneurial intention; researchers; universities; business creation (Spin-Off); scientific research; commercialization (valorization).

JEL Classification Codes: M13; O3.

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Introduction:

According to modern economic theories, national development is associated with scientific and technological capacity. National competitiveness is expressed by the preeminent characteristics of products in the market, and all products are the result of scientific research and technological innovation. Accordingly, many universities have focused on the commercial exploitation of modern companies through scientific research activities, which not only greatly contribute to economic growth and development. Among the models of the commercialization of scientific research, the establishment of subsidiary enterprises by universities is considered an important mechanism to improve this efficiency.

Algeria possesses a notable number of universities, research centers, and training institutes, annually nurturing a myriad of graduates across diverse scientific and technical disciplines. However, it is evident that the process of research outcome valorization remains low and limited. There is a clear political orientation towards enhancing and supporting Start-up enterprises in Algeria, which explains the emphasis on promoting and fostering innovation. This is manifested through various initiatives aimed at encouraging innovation within academia, such as activating university-based business incubators and various scientific events and initiatives to promote entrepreneurship and innovation, similar to Resolution 1275 concerning startup certification.

General Problematic and Partial Problematics: The question posed amidst these various initiatives is: Is the Algerian researcher prepared to establish a private institution within the framework of valorizing their scientific research? And do they have the desire to do so? Do they possess the capabilities and qualifications for such an endeavor? Do they perceive their economic and social environment as supportive?

All of these inquiries are attempted to be framed within this article by focusing on the initial stage of institution creation, which is the pre-creation or entrepreneurial intent phase. Despite the fact that the topic of entrepreneurial orientation has been addressed by many researchers, it primarily concerned students at various levels,

particularly those in the year of graduation. Little attention has been paid to researchers as a significant group. This aspect has led us to genuinely seek to identify the factors influencing entrepreneurial orientation among researchers, and we selected the University of M'hamed Bougara, Boumerdes as the study community, focusing on the following problematic:

Is there a strong entrepreneurial orientation among university researchers? The case of M'hamed Bougara University, as an exemplar.

To address this problem, we will also attempt to identify the factors that may influence the formation of this entrepreneurial orientation through the exploration of the following questions:

- Does the entrepreneurial orientation of researchers at Boumerdes University vary according to their level of entrepreneurial desirability?
- Does the entrepreneurial orientation of researchers at Boumerdes University vary based on their perception of entrepreneurial feasibility?
- Does the entrepreneurial orientation of researchers at Boumerdes University vary based on their perception of entrepreneurial opportunities in their environment?

General Hypothesis and Specific Hypotheses: Our examination of various studies in this field and the exploration of different established theories have guided us to formulate the following hypotheses:

- **The first hypothesis:** The main hypothesis: Researchers at the University of Boumerdes have a strong entrepreneurial intention.
- **The second hypothesis:** Entrepreneurial intention among researchers at the University of Boumerdes depends on their perception of the desirability of starting a business.
- **The third hypothesis:** Entrepreneurial intention among researchers at the University of Boumerdes depends on their perception of the feasibility of starting a business.
- **The fourth hypothesis:** Entrepreneurial intention among researchers at the University of Boumerdes depends on their perception of opportunities in their environment.

Objectives and Importance of the Study: It is of paramount importance to determine whether researchers aspire to capitalize on their research through the creation of institutions known as academic spin-offs, or if they would prefer alternative approaches to valorize their research. All of this is aimed at investigating the effectiveness of the Algerian state's policy in promoting institutional creation within academia and enhancing research valorization more broadly.

The significance of our work lies in identifying means to promote entrepreneurship within a population not inherently predisposed to such practices: higher education researchers. While the connection between intention and action is neither immediate nor certain, it remains a crucial predictor for determining the potentiality of entrepreneurship and its prospects amidst the academic sphere. Indeed, this study aims to assess the interest researchers have in methods of valorizing the outcomes of their research, particularly through the creation of academic spin-off enterprises, and to define the factors influencing researchers' intention to establish a business.

Through this endeavor, our objective is to showcase the extent of readiness within the Algerian academia to embrace the emerging trajectory of economic policy, particularly in regard to the establishment of emerging institutions stemming from scientific research outcomes.

Drawing upon prior research findings and the current state of our nation, we will proffer solutions for fostering spin-offs to effectively commercialize the scientific research outcomes of universities, and thereby meeting the needs of the industry.

Methodology applied: Theoretically, the article draws upon social psychology theories, notably Ajzen's Theory of Planned Behavior (1991) and the Entrepreneurial Event Formation Model (Sokol and Shapero 1982). Empirically, we have opted to employ a questionnaire developed based on the conducted literature review and existing models, targeting a sample of researchers from the University of Boumerdes.

I. Academic Spin-offs as a Modality for Valorizing Scientific Research Outcomes

Many countries have initiated legal frameworks for the process of research valorization over the years, aiming to facilitate the economic exploitation of these outcomes while safeguarding the rights and obligations of all stakeholders: the researcher, research institutions, and beneficiaries of the research. The United States of America stands out as a pioneering nation in addressing this subject, exemplified by the enactment of the Bayh-Dole Act in 1980. This legislation provides a framework for cooperation between the research community, industry, and state and local governments, emphasizing the importance of scientific research valorization in fostering economic growth and innovation. Consequently, it was later replicated in numerous countries, mirroring the example of the Innovation and Research Law (The Law on Innovation and Research of July 12, 1999) enacted in France in 1999.

1. The concept of scientific research valorization:

According to Duranton, research valorization consists of "valorizing, transferring, and mastering all activities and methods that allow for the creation of more added value from academic knowledge and skills; it makes research results, knowledge, and competencies usable or marketable" (Boukheddimi, 2020, p. 138). Therefore, valorization aims to showcase, whether commercially or not, the knowledge and skills of researchers, as well as the outcomes of their own scientific research (Battache, Becheker, & Bellahcene, 2021, p. 93), which will be materialized through patents, technology transfer, publications, know-how, licensing, and the creation of enterprises (academic spin-offs).

2. The intrinsic nature of spin-offs

The academic spin-off is a means of economically valorizing work originating from university research. The term "academic spin-off" originated in the United States in the late 1970s, referring to spontaneous and independent companies emerging from universities or university laboratories in California and Boston. Subsequently, from the 1980s onwards, the concept proliferated across Europe and to take root in other countries worldwide (Pilar Pérez-Hernández, 2021, p. 14).

3. Current Status of Research Valorization and Spin-off Creation in Algeria:

Recently, Algeria has shown an increasing interest in the valorization of scientific research, as part of the promotion of emerging institutions, which must inevitably be founded on enhancing innovation and scientific research.

- **The Legal Framework for Establishing Spin-offs:** Currently, there is no specific legal framework for establishing incubators and accelerators, despite Algeria's overall efforts in research valorization. In this context, we can mention the following possibilities:
- A government employee can be affiliated with a company (up to a maximum of 30% ownership) without being its manager.
- Furthermore, a teacher can pursue a profitable activity within their area of expertise (as per executive decree 11-397 dated December 4, 2011).
- However, a new law exists concerning workers in a general manner. This is the law no. 22-16 amending the law no. 90-11 of April 21, 1990, regarding labor relations, signed on July 20, 2022 (Official Gazette no. 49, 2022, pp. 10-11), which now grants workers the right to an unpaid leave for entrepreneurial activities once during their professional career.
- While this law seems motivating, it doesn't necessarily adapt well to the specific case of a researcher who requires more support in managing the overlapping phase between their role as a government employee and that of an entrepreneur.
- **Challenges and Obstacles in Establishing Spin-offs in Algeria**
  - Limited budget allocated to scientific research, not exceeding 0.53% of the GDP (in 2017), of which approximately 90% of this budget is allocated to salaries (World Bank, 2021). In fact, 57 billion Algerian Dinar (DZD) was spent between 2015 and 2021, averaging over 8 billion DZD per year, whereas global R&D expenses amounted to around 7 billion dollars, with about ten countries concentrating 80% of the expenditures (UNESCO, 2022).
  - Another notable observation arising from the level and averages of new high school graduates is the predominance of fields in the humanities and social sciences,

to the detriment of fields in science and technology which could potentially be sources of innovation and research patents for commercialization..

- Additionally, we can highlight the limited synergy between universities and businesses, where the government seeks to compensate through tax exemptions for economic enterprises that embrace open innovation strategies in collaboration with the research milieu.

II. Entrepreneurial Intention

Intention is often regarded as a strong predictor of activity.

1. Definition of Entrepreneurial Intention

The intention can be interpreted as an indicator of the level of effort that an individual is willing to exert to carry out the observed behavior. According to Bird (1988, 1989, 1992), intention is "a cognitive state that directs attention (and therefore experience and action) toward a specific goal, the new organization, and a way of achieving it." Therefore, intention frames the transition from a mere perception of entrepreneurship as a possible act to a mental representation of starting a business as a preferable (but not yet chosen) future. In the same vein, Ajzen posits that "intentions are indicators of the willingness to try; of the effort one is ready to exert to behave in a certain way" (Emin, 2003, pp. 85-93).

2. Widely Recognized Theories of Entrepreneurial Intention

Several approaches have followed one another in explaining entrepreneurial intention. However, two main theories are prominent in this context:

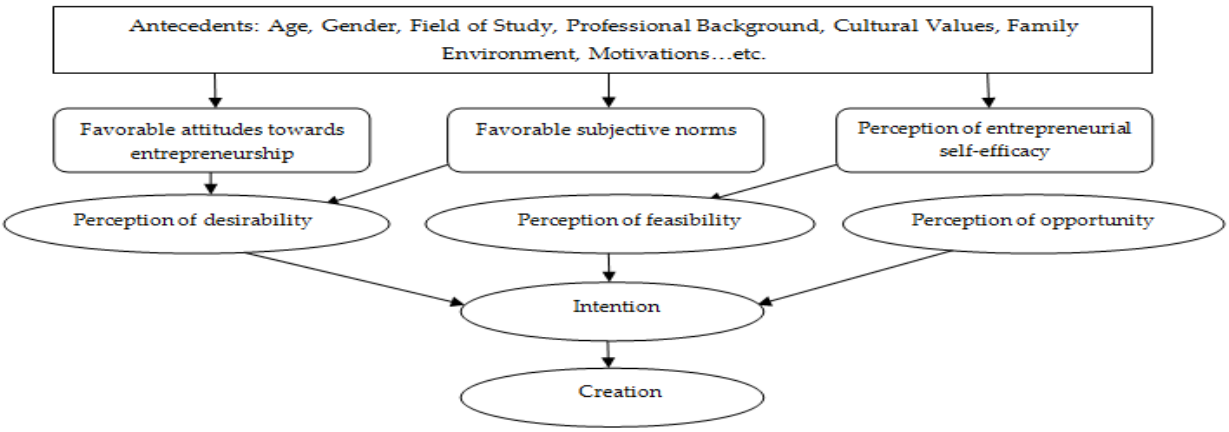
- **Shapero and Sokol's (1982) Entrepreneurial Event Theory:** It explains entrepreneurial intention through two primary variables - perceived desirability and perceived feasibility. This model highlights the significance of the social system and cultural values in perceiving the desirability and feasibility of entrepreneurship. In essence, the entrepreneurial event results from four categories of factors (Koubaa & Sahib Eddine, 2012, p. 4).
- **Ajzen's (1991) Theory of Planned Behavior:** It explains intention through three key variables - attitudes toward the behavior, subjective norms, and perceptions of

behavioral control. Our findings reveal that attitudes toward the behavior and perceptions of social norms contribute to the appeal of the behavior and can be related to the concept of desirability used by Shapero and Sokol (1982). As for the perception of targeted behavioral control, it can be aligned with the concepts of feasibility by Shapero and Sokol (1982). (Boisson, Chollet, & Emin, 2009, p. 30).

2.1 Constructing Our Model of Entrepreneurial Intent Among Higher Education Researchers in Algeria

Based on the various theories and models mentioned earlier, the intention to start a business is assumed to depend on three fundamental elements: the perceived appeal of entrepreneurship and the degree of incentive perceived in the social environment, which we will consolidate into a single variable referred to as "desirability to undertake"; the individual's confidence in their ability to successfully navigate the entrepreneurial process, reflecting our second variable, "feasibility to undertake"; and finally, we introduce the variable of perceived business opportunity, as in practice, the first two variables will only influence intention if the individual perceives a business opportunity worthy of pursuit by creating a new entity: a company.

Figure (1): Adapted Intention Model for Researchers



Source: Adapted by the author from (Branche, 2009, p. 05)

2.1.1 Perceptions of Desirability: Desirability reflects the degree of appeal an individual has towards starting a business. This element encompasses three dimensions:

- **Favorable Attitudes towards Entrepreneurship:** It represents the degree of favorable or unfavorable evaluation an individual has towards this creation. It refers to

the perception that the outcomes of entrepreneurial behavior will be personally desirable. Indeed, this attitude towards entrepreneurship primarily depends on personality traits.

- **Aptitudes:** This refers to the extent to which an individual is prepared to mobilize their resources (knowledge, skills and attitudes) to accomplish a task or deal with a complex or unfamiliar situation (De Miribel J., Sido X., 2019, p. 24).
- **Favorable Subjective Norms**: This refers to the perception that the outcomes of entrepreneurial behavior will be socially desirable. It relates to how an individual perceives their environment's approval of the behavior.

3.1.2 Perceptions of Feasibility: Feasibility refers to an individual's awareness of the extent to which they believe they can successfully carry out the creation of a business. In other words, it relates to the individual's perceptions of the challenges to overcome, the required skills, and the availability of resources to translate their intention into action. It is correlated with the perception of entrepreneurial self-efficacy which represents an individual's confidence, beliefs, and judgment about their abilities and motivations to successfully undertake the actions required for business creation (Verzat, 2012, p. 37).

3.1.3 Perceptions of Opportunity: Desirability to undertake and feasibility are necessary but not sufficient conditions for business creation. To take action, potential entrepreneurs must gather the relevant means and resources at the right time and in the right place (Chortani, 2011, p. 822). In this context, the support of public and semi-public structures through their administrative, fiscal, legislative, and regulatory actions, including the functioning of academic institutions, personnel management rules, and intellectual property rights regulations, can either facilitate or hinder the feasibility of starting a business.

3.1.4 Sociodemographic Dimension: we will also take into account the following elements for our empirical study: family and immediate environment, level of education and skills, academic fields of study, professional and entrepreneurial experiences, psychological profile, gender, experience, and age.

III. Methodological Framework of the Practical Study

This empirical study is based on the variables derived from the models presented in our theoretical section.

1. Choice of Research Methodology

We have chosen an analytical methodology to analyze the perceptions of researchers, focusing on the following elements:

- **Population and Study Sample:** Our population comprises researchers from the University of Boumerdes, excluding those from the Humanities and Social Sciences fields. We limited the category of "researchers" to include professors, doctoral candidates, and PhD holders from this university. To access this population, we referred to a list provided by the university administration containing approximately 500 professional email addresses of teachers and doctoral candidates from various faculties of the University of Boumerdes. From this list, we selected 200 email addresses that constitute our study population. The representativeness of our sample will be evaluated at two levels: representativeness in relation to the study population and representativeness in relation to the sampling frame. For the first level, we believe it has been achieved. According to (Krejcie & Morgan, 1970), for a known population size of 500 observations, a representative sample would be 217 observations (Bukhari, 2022). As for the second level, we will ensure the diversification of our sample in terms of the variety of scientific disciplines and the status of respondents, as detailed in the descriptive analysis of the sample.
- **Data Collection:** Subsequently, we employed various methods to administer the questionnaire to researchers from the University of Boumerdes. This included face-to-face interactions as well as sending the questionnaire via email and through social media platforms like Messenger, where we created a URL link to the questionnaire using Google Forms. In total, over 200 questionnaires were distributed or administered between October and December 2022. However, we selected and deemed 88 responses as usable for analysis to address our research problem, resulting in a response rate of 44%, which we find quite satisfactory.

2. Questionnaire Formulation and Validation:

Constructing a questionnaire is "undoubtedly the most delicate phase of implementing a survey by sampling" (Castéran, 2017, p. 185). Our questionnaire was developed using 16 questions of various forms, including closed-ended single-choice and multiple-choice questions, in order to explore the intention of researchers to start a business in six axes about the socio-demographic dimension of researchers; entrepreneurial intention; desirability for entrepreneurship; feasibility of entrepreneurship; and perception of business opportunity.

- **Content Validity and Reliability**: the questionnaires underwent a series of revisions by many experts to arrive at the final version. Furthermore, according to (Perrien et al., 1984), reliability represents "the degree to which the research instruments consistently measure the studied construct" (Labair, Graa, & Azzine, 2017). The calculation of Cronbach's alpha coefficient, which measures the internal consistency of a multi-item scale based on the correlation among these items, yielded a value of 0.89. This value is higher than 0.6, confirming the reliability of our research instrument. It assures us that the participants in this study understood the meaning of the questions and that the formulated responses led to consistent interpretations.

Table 1: Reliability Statistics

	Cronbach's Alpha	Number of items
Axis of desirability	,793	17
Axis of feasibility	0.776	10
Axis of opportunity perception	0.861	15
All the axes	0.890	42

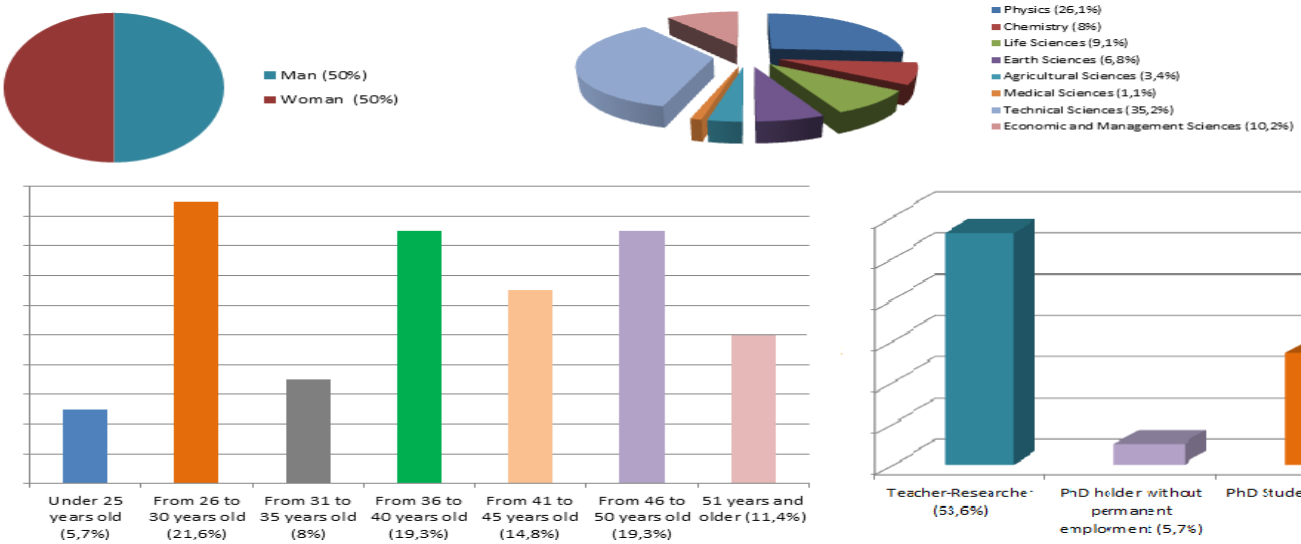
Source: Results obtained from the empirical data analysis using SPSS Version 25

3. Descriptive analysis of the sample and data collection

In this section, we present the results obtained during our empirical study:

3.1 Respondents' Profile: The following figure and table summarize the socio-demographic characteristics of our sample:

Figure (2): Sociodemographic Characteristics of the Sample



Source: Results obtained from the empirical data analysis using SPSS Version 25

- **Gender distribution analysis:** Our sample is evenly distributed between males and females, with 50% in each category.
- **Age Distribution Analysis:** As derived from the preceding table, our sample displays a certain degree of diversification, yet we can affirm that it is relatively youthful, with approximately 70% of respondents aged below 45. This suggests that our sample is more inclined towards contemplating entrepreneurial endeavors.
- **According to Research Domains:** Our sample showcases sufficient diversity to effectively represent our study population. Based on the results, a significant representation is observed in the fields of technological sciences (35.2%) and physical sciences (26.1%); followed by economic sciences, accounting for 10.2%. This diversification will enable us to later examine whether affiliation with a particular research field impacts the choice of research valorization, particularly in the context of spin-off creation.
- **Based on Professional Status:** Our sample is distinguished by a substantial proportion of teacher-researchers, accounting for 63%, followed by doctoral students at 30%, and finally, unemployed PhD holders comprising only 5.7%. This distribution is well-justified by the characteristics of our population: a university setting.

3.2 Entrepreneurial experience of the respondents: Taking into account that 68.2% of the participants hold a permanent position, of which over half (54.5%) are in the same sector as their scientific research, with an average of 12 years of experience. However, only 39.8% of the respondents confirm having knowledge in business management, and only 20.5% actually have experience in starting or managing a company.

Table 2: Entrepreneurial Experience of the Respondents

Knowledge in business management			Experience in company creation/management		
	Frequency	Percentage		Frequency	Percentage
Yes	35	39,8	Yes	18	20,5
No	53	60,2	No	70	79,5

Source: Results obtained from the empirical data analysis using SPSS Version 25

These results demonstrate a certain weakness in terms of research collaborations between universities and the socio-economic sector.

3.3 Presence of Entrepreneurs in the Respondents' Circle: In order to determine the presence of entrepreneurs (self-employed professionals, freelancers, business leaders, business founders) within the researchers' circles, whom they aspire to emulate, a substantial portion (around 44.3%) responded with YES. The next step is to examine whether this will influence researchers' motivation for entrepreneurship.

Table 3: Presence of Entrepreneurs in the Respondents' Circles

	Frequency	Percentage
Yes	39	44,3
No	49	55,7
Total	**88**	**100,0**

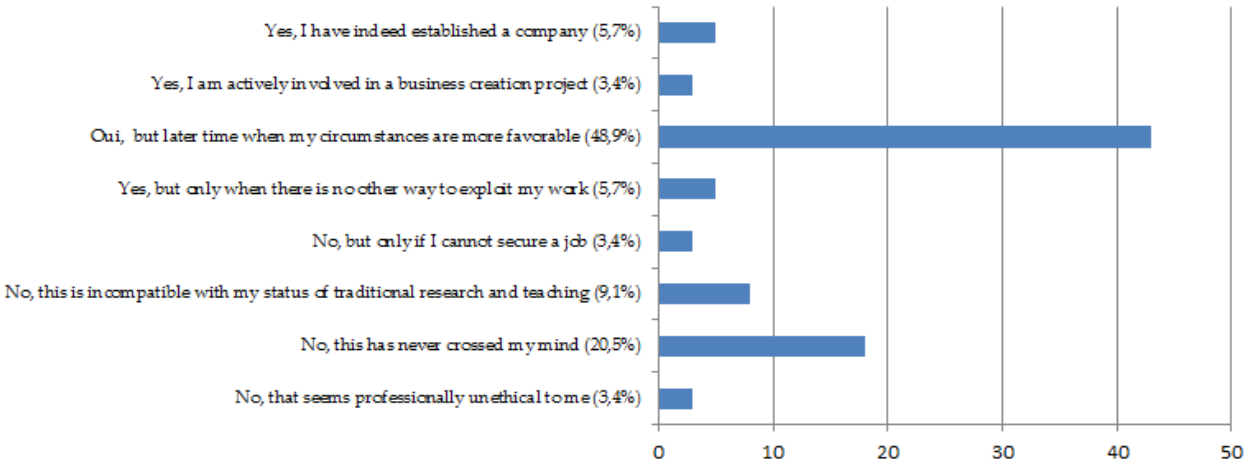
Source: Results obtained from the empirical data analysis using SPSS Version 25

3.4 Research Valorization: Before determining the presence of entrepreneurial intention among researchers, we inquired with the respondents about their decision-making if the outcomes of their research lead to commercial exploitation. According to the obtained responses, a quarter of the sample indicated that they would take no action (22 out of 88 observations). As for the remaining respondents (66 researchers), they provided multiple options, the most frequently mentioned ones are as follows: Proceed with filing a patent for the invention (mentioned 32 times); Establish a business to capitalize on their research findings (mentioned 29 times); Contact other companies to

leverage their research results (mentioned 27 times). And to a lesser degree: Contact research valorization mechanisms such as CATI. In this regard, we can conclude that the desire for research valorization within our sample is moderately high.

3.5 Measurement of Entrepreneurial Intention: To determine the intention to create a research-based venture (a spin-off), we provided respondents with eight choices: four for responding with "No" for various reasons, and four for responding with "Yes" for different reasons. The following table summarizes the various responses obtained:

Figure (3): Measurement of Entrepreneurial Intention among Researchers at the University of Boumerdes



Source: Results obtained from the empirical data analysis using SPSS Version 25

48.9% (almost half of the sample, 43 out of 88 observations) consider creating their spin-off, but at a later time when their circumstances are more favorable. This result should be approached with caution: it primarily reflects the desirability of creation rather than its feasibility.

3.6 Measurement of Desirability Perception: The measurement of the desirability to create a spin-off is based on favorable attitudes towards creation, including researchers' personality traits and professional aspirations (their abilities to take action to start a business), as well as subjective norms favoring entrepreneurship. The analysis of the selected responses yields a low average score of 1.37 (A score less than 1.5 indicates NO, a score above 1.5 indicates YES), indicating a low desirability for spin-off creation. The factors believed to potentially influence the desire to start a business are as follows:

Table 4: Descriptive Statistics of Desirability Perception to Create a Spin-Off

I would be willing to accept the disruption in my professional career that would result from starting a business.	1,77	,421	YES
The fear of failure does not prevent me from undertaking new activities.	1,44	,500	NO
The idea of taking risks does not prevent me from undertaking new activities.	1,39	,490	NO
In general, I prefer to change work habits rather than sticking to a routine.	1,25	,435	NO
I prefer to rely on my intuition when making a significant decision rather than relying on facts.	1,52	,502	YES
I prefer to take initiatives, lead, motivate, and influence others.	1,26	,442	NO
I prefer to be my own boss (to be autonomous and independent).	1,33	,473	NO
I would have preferred to create a company that brings my creativity to life.	1,33	,473	NO
I would have preferred to create a company that values and implements my expertise for the benefit of society.	1,28	,454	NO
I would have preferred to create a company to have compensation based on my commitment.	1,43	,498	NO
I would have preferred to establish a company to broaden my professional experience and/or pursue my research project.	1,25	,435	NO
Personality traits	**1.38**	**0.466**	**NO**
Subjective norms favorable to business creation	**1,50**	**,503**	**Neutral**

Source: Results obtained from the empirical data analysis using SPSS Version 25

- **For personality traits:** Based on the chosen responses, only two out of 11 items yielded an average score greater than 1.50. These are: acceptance of a career change involving a disruption to the professional career due to business creation, with an average of 1.77 and a high standard deviation of 0.421; the second item pertains to the preference for relying on intuition rather than facts, with a score of 1.52.

- **For favorable subjective norms:** these are the social beliefs related to the perceived degree of encouragement for entrepreneurship in the researcher's social environment. This measurement yielded an average score of 1.50, indicating a somewhat moderate perception (or a neutral perception).

- **In regard to capabilities for establishing a spin-off:** the outcomes of this assessment similarly indicate an average perception, as elaborated in the following table:

Table 5: Descriptive Statistics for the Variable: Spin-Off Creation Skills

	Average	Standard deviation	Result
Opting for an unpaid leave/ time off	1,69	,464	YES
Dedicating a significant portion of your personal savings or contributions from family members and friends	1,51	,503	YES
Seeking financing from savings and financial institutions.	1,56	,500	YES
Joining an incubation	1,47	,502	NO
Seeking support and guidance structures (such as ANADE, formerly ANSEJ)	1,49	,503	NO
Aptitudes	**1.54**	**0.494**	YES

Source: Results obtained from the empirical data analysis using SPSS Version 25

The highest-scoring item is related to taking unpaid leave. On the other hand, the lowest-scoring item pertains to enrolling in an incubator. These results indicate that the respondents possess personality traits unfavorable to entrepreneurship, and their abilities to start a business are weak, which explains their low desirability for an entrepreneurial path. Indeed, it appears that the researchers at the University of Boumerdes place significant value on their perceived vocation as professionals and are not inclined to shift their focus towards the commercialization of their research.

3.7 Measurement of Entrepreneurial Feasibility Perception: Perceived feasibility is primarily influenced by internal conditions (skills). This entails researchers' perception of their self-efficacy in entrepreneurship. The obtained results are depicted in the following table:

Table 6: Descriptive Statistics of Perceived Feasibility to Create a Spin-off

	Average	Standard deviation	Result
Entrepreneurial Competencies: Successfully executing, either independently or as part of a team, a business venture creation project.	1,25	,435	NO
Identifying a potential business opportunity	1,40	,492	NO
Developing partnerships, cultivating one's network	1,42	,496	NO
Developing a strategic vision	1,23	,421	NO
Being able to identify potential clients or suppliers	1,38	,487	NO
Managerial competencies (planning, organizing, coordinating, controlling...)	1,23	,421	NO
Human resource management skills	1,45	,501	NO
Commercial and marketing skills (Adapting products to customer demand, Conducting market research, Engaging in negotiations, …)	1,42	,496	NO
Financial management skills and access to funding	1,48	,502	NO
Communication and partnership with various stakeholders	1,31	,464	NO
Feasibility	**1,2614**	**,40098**	**NO**

Source: Results obtained from the empirical data analysis using SPSS Version 25

The calculation of this measure resulted in a low average score of 1.261 for all self-efficacy items, which did not surpass the 1.5 mark. Specifically, scores were as follows: managerial skills and strategic vision development 1.23; entrepreneurial skills 1.25; communication and partnership with various stakeholders 1.31. On the other hand, the competencies with the highest scores are: financial management skills and access to funding: 1.48; human resource management skills 1.45. However, it is evident that the interviewed researchers have a negative perception of their abilities to create and lead their business projects.

3.8 Measurement of opportunity perception: The existence of an opportunity for creation could, therefore, be a discriminating factor in predicting the intention to create a spin-off. In line with previous findings, researchers' perception of the opportunities offered by their environment is predominantly negative, with an average score of 1.42 for most items.

Table 7: Descriptive statistics of business opportunity perception

	Average	Standard Deviation	result
In general, the business environment is rather favorable for the establishment of enterprises (legal, fiscal, administrative framework...).	1,61	,490	YES
The resources at your disposal and the opportunities in the environment seem favorable for the success of a business creation project.	1,56	,500	YES
Financial assistance and support are available.	1,68	,468	YES
Having access to support structures and guidance for business creation (e.g. ANADE, formerly ANSEJ, CNAC...).	1,50	,503	Neutral
Having access to specialized support structures for research valorization (e.g. INAPI, ANVREDET, university incubator...).	1,39	,490	NO
Having an efficient valorization or industrial relations service within my research institution (e.g. CATI).	1,51	,503	YES
Obtaining support from your research organization on industrial property rules and invention patents.	1,41	,494	NO
Obtaining from your research organization intellectual and/or industrial property exploitation contracts.	1,39	,490	NO
The possibility of identifying networks of expertise that can contribute to the successful execution of my projects...	1,31	,464	NO
Identifying and connecting businesses and partners relevant to my project.	1,23	,421	NO
Being encouraged by my laboratory to pursue the economic valorization of my research activities.	1,35	,480	NO
Being supported by my institution (being relieved of certain administrative, pedagogical, and/or scientific tasks; having access to equipment; receiving technical assistance and financial aid...)	1,40	,492	NO
Having access to training programs on business creation and management.	1,32	,468	NO
Having a salary guarantee during the start-up phase of the business until it achieves self-sufficiency.	1,39	,490	NO
Having an unpaid leave to focus on the business creation with the possibility of returning to my position in case of failure.	1,47	,502	NO
Perception of opportunity.	**1,4205**	**,49646**	**NO**

Source: Results obtained from the empirical data analysis using SPSS Version 25

- For items that have obtained a high score, we consider: Financial assistance and support are available: 1.68; Business environment (legal, fiscal, administrative framework...etc): 1.61; The availability of resources favorable to the success of a business creation project: 1.56
- However, the lowest scores are attributed to: Identifying and connecting businesses and partners relevant to my project: 1.23; The possibility of identifying networks of

expertise to successfully execute my projects: 1.31; Having access to training programs on business creation and management: 1.32

4. Discussion of the results and verification of the hypotheses

Our analysis was conducted to identify the predictors of entrepreneurial intention among researchers and to examine the differences in entrepreneurial intention based on age, gender, status, and research field.

- **The first hypothesis:** The main hypothesis is that researchers at the University of Boumerdes have a strong entrepreneurial intention. Considering the formulation of this hypothesis, which contains only one variable, the entrepreneurial intention, we used univariate analysis based on measures of descriptive statistics, particularly the average, which yielded a score of 4.76, indicating the result "Yes, but later when conditions are suitable." This result leads us to conclude that researchers in our sample do not have a strong entrepreneurial intention in the near future, but rather an undecided decision, hanging in the future. This hesitation among researchers implies that they do not possess a strong entrepreneurial orientation, and thus, we will reject the main hypothesis of our study.

The statistical significance value of sig = 0.218, which is greater than the set significance level of 0.1, confirms our result, as shown in the table:

Table 8: One-Sample Test Results

	Test value = 4.5					
	t	ddl	Sig. (bilateral)	Average difference	95% Confidence Interval for the Difference	
					Inferior	Superior
Entrepreneurial intention	1,240	87	,218	,261	-,16	,68

Source: Results obtained from the empirical data analysis using SPSS Version 25

The weak entrepreneurial inclination among researchers at the University of Boumerdes can be attributed to various reasons, mainly related to the practical nature of their research work. For this group, it is clear that:

- Conflicts of values arise from the opposition between the academic world's logic and that of the business world.
- The research nature adheres to qualities of stability and reserve, which contradict the risk-taking and dynamic nature of entrepreneurship.

- The sacrifice required to leave one's job and start a business is becoming increasingly high: it reveals the issues of "go-between" (Emin, 2004, p. 7).
- A conflict of interest arises in the absence of promotion and career progression opportunities for those who choose to dedicate themselves to technology transfer, especially considering that once an invention or innovation is published (in the form of an article), it falls into the public domain and cannot be patented by INAPI. This may limit promotion opportunities for the researcher.

- **The second hypothesis:** Entrepreneurial intention among researchers at the University of Boumerdes depends on their perception of the desirability of business creation. This hypothesis contains two variables, which necessitates a bivariate analysis using the ANOVA test since it involves one qualitative and one quantitative variable. The calculations resulted in a Sig. value of 0.04, which is lower than 0.1, leading us to reject the null hypothesis (no relationship between the two variables) and confirm this hypothesis, implying that desirability has a significant effect on intention among researchers.

Table 9: ANOVA Test Results Between Desirability and Entrepreneurial Intention.

	Sum of squares	ddl	Mean square	F	Sig.
Intergroups	31,206	1	31,206	8,691	,004
Intragroups	308,783	86	3,590		
Total	339,989	87			

Source: Results obtained from the empirical data analysis using SPSS Version 25

- **The third hypothesis:** Entrepreneurial intention among researchers at the University of Boumerdes depends on their perception of the feasibility of business creation. Similar to the previous hypothesis, we used the ANOVA test, which yielded a Sig. value of 0.059, which is less than 0.1. This leads us to confirm this hypothesis, indicating that feasibility has a significant effect on entrepreneurial intention among researchers.

Table 10: ANOVA Test Results Between Feasibility and Entrepreneurial Intention.

	Sum of squares	ddl	Mean square	F	Sig.
Intergroups	21,942	2	10,971	2,932	,059
Intragroups	318,047	85	3,742		
Total	339,989	87			

Source: Results obtained from the empirical data analysis using SPSS Version 25

In fact, the low number of researchers interested in entrepreneurship is more explained by the fact that they are not drawn to entrepreneurship rather than feeling incapable of achieving it.

- The fourth hypothesis: Entrepreneurial intention among researchers at the University of Boumerdes depends on their perception of opportunities in their environment. We also used the ANOVA test, which yielded a Sig. value of 0.678, which is greater than 0.1. This leads us to reject this hypothesis, meaning that the perception of opportunities does not have a significant effect on entrepreneurial intention among researchers.

Table 11: ANOVA Test Results between Business Opportunity Perception and Entrepreneurial Intention.

	Sum of squares	ddl	Mean square	F	Sig.
Intergroups	,684	1	,684	,173	,678
Intragroups	339,305	86	3,945		
Total	339,989	87			

Source: Results obtained from the empirical data analysis using SPSS Version 25

These results show that personal characteristics, abilities, and self-efficacy perceptions have a greater influence on entrepreneurial intention. On the other hand, even favorable environmental factors do not create entrepreneurs unless there is pre-existing personal desire, especially among researchers.

- Significant differences in entrepreneurial intention based on gender: According to our results, there is a statistically significant difference in entrepreneurial intentions among researchers based on gender, with a sig value of 0.001 < 0.1, confirming that the gender of the researcher influences entrepreneurial intention.

It appears that men are more entrepreneurial (mean = 5.45) compared to women (mean = 4.07). These results are consistent with the reality of entrepreneurship in Algeria, where the proportion of female entrepreneurship is very low, accounting for less than 10%.

According to the result of sig = 0.420 > 0.1, it can be concluded that age does not have a statistically significant effect on entrepreneurial intention.

- **Significant differences based on experience**: To investigate the impact of the number of years spent in the university on entrepreneurial intention, we conducted the ANOVA test, yielding a sig value of 0.216 > 0.1. This indicates that there is no

statistically significant difference in entrepreneurial intention within our sample based on professional experience.

- **Familiarity with enterprises:** Although being involved in entrepreneurial activities is favorable for developing entrepreneurial awareness, the results show that entrepreneurial experience does not have a statistically significant effect (sig value is 0.175 > 0.1).
- **The professional status of researchers:** In this context, unemployed young PhD holders and doctoral students appear to be a population worth considering for creating a spin-off. Since the academic careers of these researchers are not yet guaranteed, they may be more inclined to venture into entrepreneurship compared to teaching researchers (civil servants). However, the sig value is 0.409 > 0.1, which denies the presence of a statistically significant effect of professional status on entrepreneurial intention.
- **The influence of family environment and social context:** The presence of an entrepreneurial role model to imitate could have a more significant impact on researchers. This result is statistically significant for our sample, confirmed by the sig value of 0.077, which is lower than 0.1.

In conclusion, researchers at the University of Boumerdes do not have a strong entrepreneurial intention, and their perceptions of feasibility and desirability are the explanatory variables for this intention. The researchers most inclined towards entrepreneurship are younger, male, in the early stages of their careers, and without permanent employment.

Certainly, our researchers express a desire to start a business and believe they have the capability, but they do not plan to do so in the near future. This conclusion prompts a reflection on the factors that influence the actual implementation of entrepreneurial ventures, despite the efforts made by the Algerian government to promote entrepreneurship in the university environment.

Conclusion:

In conclusion, we affirm that Algeria is striving to overcome economic dependency and achieve economic diversification. This is being pursued through a focus on promoting innovation, entrepreneurship, and particularly, emerging enterprises in recent years. This is because the creation of wealth in a society is a result of the dynamism and competitiveness of its industrial framework. Establishing businesses, in fact, plays a crucial role in a country's economic and social development.

However, every creation is preceded by an intention to create. In our study, we focused on the population of researchers to first determine if they possess this intention, and secondly, to identify the factors that may influence it. Our interest in this population arises from the fact that establishing businesses stemming from scientific research has become an economic priority, leading to specific support and incentive measures from the government, especially over the past three years, particularly since the establishment of the new Ministry of Startups and Knowledge Economy. In this context, our work aimed to assess whether researchers in the academic environment (University of Boumerdes as a case study) are convinced of this new direction and have become enthusiastic about venturing into entrepreneurship, reflecting a new inclination towards business creation. To achieve this, we conducted an empirical study involving 88 researchers, utilizing a questionnaire to gather various data. Subsequently, the collected data was analyzed using the SPSS (Statistical Package for the Social Sciences) software, version 25.

- **Empirical Study Results:** The outcomes of our empirical study pertain to our sample, which includes 88 researchers, with 50% being male and approximately 70% aged below 45, covering diverse research fields. Nearly, almost two-thirds of them are teacher-researchers. Our survey has led us to the following findings:

- **Researchers at the University of Boumerdes show a modest interest in translating their research outcomes into entrepreneurial initiatives**. Notably, their enthusiasm for embarking on business ventures seems restrained, as the decision to establish an

enterprise appears to hinge upon the availability of optimal conditions, which suggests they might not be eager to start a business in the near future.

- **Limited involvement in the economic sector:** fewer than half of our sample have knowledge about businesses, and only about 20% actually have experience in starting or managing a company.
- **Limited differentiation of entrepreneurial intentions based on sociodemographic characteristics:** It appears that gender is the only statistically significant variable affecting entrepreneurial intentions among researchers.
- **Positive Influence of Success Stories**.

- **Recommendations:** In Algeria, it is evident that the level of academic spin-off creation remains below its existing potential. The government is indeed making significant efforts to promote entrepreneurship and startups within the university environment. In this context, we propose the following recommendations to support the delicate role of the Algerian university and the various stakeholders involved in the process of research results valorization and academic spin-off creation. From the aforementioned analysis, it becomes apparent that desirability and feasibility are the main factors impeding entrepreneurial inclination among researchers. This situation calls for the suggestion of two strategies to enhance entrepreneurial orientation:

- The government should establish a more effective national innovation system that enables the continuous engagement of all relevant stakeholders in the valorization process (universities, research centers, intellectual property protection agencies, valorization agencies, and businesses).
- Encourage the economic sector to collaborate with academia and research centers.
- Moreover, it could prove beneficial to communicate more extensively about success stories involving researcher-entrepreneurs.
- Promote access to entrepreneurship training in order to promote an entrepreneurial culture.

- Exploring new ways of promoting and compensating for patent rights, ensuring that professional advancement aspirations do not conflict with the commercial exploitation of innovative ideas.
- University leaders should develop a growth strategy for their institutions that aligns with the national development strategy for the innovation system. They should strengthen and reinforce their connections with industry associations to promptly understand innovation requirements.

- Establishing a legislative framework appropriate for the unique transition from the status of teacher- researcher to that of an entrepreneur.
- Finally, it is essential to guide the Algerian university community towards embracing the concept of the entrepreneurial university.

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