

Towards an Algerian entrepreneurial university: a proposed model for transformation mechanisms and needed practices

نحو جامعة جزائرية ريادية: نموذج مقترح لآليات الانتقال والممارسات المطلوبة

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Received: 05/12/2021

Accepted: 26/02/2022

Published: 03/03/2022

Abstract:

The purpose of this paper was to discuss the characteristics of the entrepreneurial university and the main mechanisms of shifting form the traditional to the entrepreneurial one as a proposition to facilitate the transformation for Algerian universities. We accomplish this objective by presenting some obstacles with regard to the fostering of entrepreneurial change at universities and studying some leading models in the field.

We conclude by answering the question whether Algerian university is an entrepreneurial one, answer was no since it is performing some entrepreneurial activities which is not enough to define it as an entrepreneurial one. We end up by recommending that Algerian university must embed entrepreneurship in every part of itself, build up and maintain a strong relationship with its surrounded economic and social environment, responds to its needs and challenges, solves its problems.

Keywords: Entrepreneurial University, Traditional University, Entrepreneurialism, Economic and Social Environment, Algerian University.

الملخص:

تهدف هذه الورقة البحثية إلى مناقشة خصائص الجامعة الريادية والآليات الرئيسية التي تكفل انتقال الجامعة التقليدية إلى جامعة ريادية كمقترح لتسهيل الانتقال نحو الجامعة الجزائرية الريادية. ولتحقيق هدف الدراسة، قمنا بتقديم بعض العقبات التي تحول دون التغيير الريادي في الجامعات وعرضنا بعض النماذج الرائدة في مجال الانتقال إلى الجامعة الريادية.

خلصت الدراسة إلى الإجابة أن الجامعة الجزائرية لا يمكن تعريفها بأنها جامعة ريادية، إذ أن بعض الأنشطة الريادية التي تمارسها لا تكفي بأن تكون كذلك. وعليه ومن أجل هذا الانتقال المنشود، يجب عليها تضمين ريادة الأعمال في كل جزء منها، بناء علاقة قوية مع محيطها الاقتصادي والاجتماعي الناشطة به، والحفاظ عليها بحيث تستجيب لاحتياجاته، تواجه تحدياته، وتحل مشاكله.

الكلمات مفتاحية: الجامعة الريادية، الجامعة التقليدية، ريادة الأعمال، المحيط الاقتصادي والاجتماعي، الجامعة الجزائرية.

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1. Introduction:

Nowadays world, both economic and social have become more knowledge-based world, therefore, it has become necessary for the university to provide solutions to the economy and society together, which is possible for it only if it exercises a third mission beside its two traditional and ordinary missions: education (teaching) and research. Entrepreneurial mission is the new mission of universities that have to act to be more innovative and creative to interact and collaborate with the external environment (industry and government) in order to guide the economic growth of a country.

The relationship between University- Industry-Government is shaped in a model called the Triple Helix model that was founded by Etzkowitz, H. (2011). It is a model that reflected in the interaction between the university (as the producer of knowledge and skills) and industry (as the user of these knowledge and skills, which produces products and services), as well as the Government (as the regulatory body and supervisor of entrepreneurial policy). This relationship cannot be established, the university cannot be effective, unless it has an entrepreneurial orientation that makes it take a status of an entrepreneurial university. The current study tries to treat the following problematic: **what are the main practices and requirements needed to move into an Algerian entrepreneurial university?**

This research is structured in four sections, including this introduction; the second section presents an overview on the Entrepreneurial University (EU) as a concept, it provides the history of the term, its definitions and its characteristics that differ it from other ordinary and traditional shapes of universities. In the sequence, the third section discusses the obstacles that prevent or limit universities to be entrepreneurial, then answering the question whether Algerian universities are entrepreneurial or not, and what are the mechanisms to be so, by presenting the well-known models that exist in the literature of the Entrepreneurial University. To end up, the conclusion and recommendations are presented in the fourth section.

2. An overview on the Entrepreneurial University as a concept:

Reviewing the literature of entrepreneurial university, it is found that the debate about a unified definition, its characteristics, determinants and attributes has not yet been resolved, which makes it opened for more researches and discussions, a few part of that is presented in this section.

2.1. History of the rapprochement between the university and entrepreneurship:

The idea of the entrepreneurial university is somehow new, but its origins was started before decades by the transition of the European university from the traditional culture to the entrepreneurial one. Sam & Van der Sijde (2014) summarizes the three revolutions undertaken by universities. First, the incorporation of research to prepare students to work in other areas that were not academic (Etzkowitz, 2011). Second, university teaching and research aimed at a socio-economic development to create new local knowledge-based companies and sell technology (Etzkowitz, 2001). Third, technology transfer or university-business cooperation in which the university is in the socio-economic development or “service to the community” (Sam & Van der Sijde, 2014, p. 900).

In the same context, Etzkowitz (1998, 2003, & 2004) in his deep researches argued that the actual university was effected by the second academic revolution mentioned above and for this reason; an entrepreneurial university needs to accomplish the following three missions simultaneously:

- Teaching mission defined as the preservation and dissemination of knowledge;
- Research mission considerate as a legitimate function of the university; and
- Entrepreneurial mission produced by the collapse of the inevitable production of research results with practical implications and the external demand of greater utility from public funding. Table below summarizes that all:

Table 1: Expansion of university missions

Teaching	Research	Entrepreneurial
Preservation and dissemination of knowledge	1st academic revolution	2nd academic revolution
New missions generate conflict of interest controversies	Two missions: teaching and research	Third mission: economic and social development; old missions continued

Source: Etzkowitz, H. (2004)

In short, given that Etzkowitz (1999) considers the university as a source for human capital, a warehouse for entrepreneurship, a source of creative thinking, and an engine for the knowledge based economy growth. Universities have become obliged and have no choice to keep pace with the change took place with its environment, by enhancing entrepreneurial spirit within their staff and student, helping them creating their own projects. As well as playing an administrative, financial and marketing role which is selling their researches as solutions and patents to the economic and social local and regional environment.

2.2. Entrepreneurial University definition:

There is a narrow understanding and sometimes a miss use of the term entrepreneurial university from people in general and some researchers, where they define it as the university that create new businesses by its own staff (teachers and researchers) and students. In fact, it is one of many practices and functions that an entrepreneurial university exercises, others are mentioned in the literature, but without a consensus of researchers about what does it mean exactly an entrepreneurial university.

The founder of the term entrepreneurial university (EU), Etzkowitz (1983, 2003) considered it as a University that is considering new sources of funds like patents, research under by contracts and entry into a partnership with a private enterprise. It is just as the university (ordinary one) trains individual students and sends them out into the world; the entrepreneurial university is a natural incubator, providing support structures for teachers and students to initiative new ventures: intellectual, commercial and conjoint.

Entrepreneurial university has many meanings and identities Gibb and Hannon, (2006) said, including, inter alia, notions of enterprise, innovation, commercialisation, new venture creation, employability and others. It can also reflect organisational leadership and governance structures. It can be seen as an organisational response to external challenges and pressures Others, defined it as a higher education establishment that safeguards knowledge, transfer and commercialization of innovative business initiatives between universities, stakeholders, the government and enterprises with financial and organizational economic criteria (Kalenyuk & Dyachenko, 2016).

Then, it could be said that the literature reflects the lack of a common definition of the entrepreneurial university term. For this reason, we take the summarized definition of Schulte (2004) who described the entrepreneurial university according to its goals, which are oriented:

- to provide the society a graduate who must become not only a job-seeker but also above all a job-creator,
- not only to publications but should be the sources of innovations in the economy and society, and the starting point for the development of business ideas for new companies,
- to cope with difficulties that may arise during the growth periods of new companies.

2.3. Characteristics and Attributes of the Entrepreneurial University:

As it was defined previously, an entrepreneurial university is a non-traditional, exceptional and remarkable university, then it is distinguished from other universities by its own and special

characteristics and attributes that make it so. In the following, the most mentioned characteristics in the literature:

According to Robertson (2008), an entrepreneurial university is characterised by a number of key factors:

- Strong leadership that develops entrepreneurial capacities for all students and staff across its campus;
- Strong ties with its external stakeholders that deliver added value;
- The delivery of entrepreneurial outcomes that make an impact on people and organizations;
- Innovative learning techniques that inspire entrepreneurial action;
- Open boundaries that encourage effective flows of knowledge between organizations;
- Multidisciplinary approaches to education that mimic real- world experience and focus on solving complex world challenges;
- The drive to promote the application of entrepreneurial thinking and leadership.

Others like (Przedsiębiorcza uczelnia, 2009) have gone further, and characterise the entrepreneurial university by the degree of the entrepreneurial orientation it has, four entrepreneurial orientation characteristics are presented as follow (Olearnik, J., & Pluta-Olearnik, M., 2015):

- a. **The economic orientation** as an entrepreneurship attribute is fulfilled when the university demonstrates the following characteristics:
 - The university's mission or other essential documents encompass the declarative orientation towards achieving economic efficiency.
 - There are efficiency-oriented goals and/or actions in the strategy of the institution of higher education.
 - Sources of funding the ongoing activities and development of the university are diversified.
 - The institution of higher education discloses a positive economic result in its annual financial statements.
 - The balance sheet value of the university's assets demonstrates an increasing trend.
- b. **The market orientation** as an entrepreneurship attribute is fulfilled when the university demonstrates the following characteristics:
 - The institution of higher education investigates and monitors the further path of its graduates.
 - The institution of higher education maintains relations with employers (councils, conventions, the university's presence in professional organisations, lectures by managers and specialists regarding the economic practice).
 - University curricula are flexible and allow for changeable conditions on the labour market, and new majors are established under the influence of labour market trends.
 - The institution of higher education seeks or has partners in the area of economic practice in carrying out its scientific research.
 - The university perfectly knows the competitive environment and monitors it on an ongoing basis.
 - The institution of higher education uses marketing tools for creating and sharing its offer as well as for building relations with entities within the environment.
- c. **The innovative orientation** as an entrepreneurship attribute is fulfilled when the university demonstrates the following characteristics:
 - The institution of higher education is active in creating new undertakings and syllabi.
 - The institution of higher education organises individualised (ordered) teaching projects – for a given recipient, normally a business one.
 - The university prepares and/or implements investment projects on a large scale: purchasing real properties, constructing new or expanding the existing buildings, upgrading equipment.
 - The institution of higher education ensures a high quality and development with respect to technical support for teaching and scientific research.

- There is the advantage of the university's internationalisation, in particular development of international contacts and growth in the number of foreign partners.
- d. The managerial orientation** as an entrepreneurship attribute is fulfilled when the university demonstrates the following characteristics:
 - There is an efficient finance management system in the institution of higher education: acquiring sources of funding, planning and analysing revenue, costs and results, cooperating with financial institutions, acquiring external funding.
 - The institution of higher education pursues systemic marketing activities: marketing planning, market research, operations in promotion and public relations, and a marketing unit operates within the university's structure.
 - A system motivates staff to innovative and efficiency-oriented actions in place.
 - A quality assurance system functions in the university.
 - The institution of higher education has a modern internal and external communication system.

3. Mechanisms of shifting into an Algerian Entrepreneurial Universities:

Entrepreneurial university model has emerged as a response to the fast economic and social development in the world, in the same time is a solution for the change in labour market, graduation high rates, and financial deficits of governments...etc. Algeria, like other countries, suffers from that changes more than developed countries, which makes us ask the question: could entrepreneurial university be the solution? What are the mechanisms of transformation of Algerian traditional university into entrepreneurial one? Answers are discussed in this section.

3.1. Are there Entrepreneurial Universities in Algeria?:

Trying to answer this question calls for a survey of all the higher education institutes of Algeria, but if we induce the case of most of them, theoretically speaking they have not the majority of the entrepreneurial university characteristics, when it comes to answer questions like:

- Is the university itself, as an organization, becomes entrepreneurial?
- Is the interaction of the university with the environment, the structural coupling between university and region, follows entrepreneurial patterns?
- Is the academic community interested in change at the University?
- Is the University autonomous?
- Are members of the university (teachers, students, employees) turning themselves somehow into entrepreneurs?

Answers will be No (N/A), all what available till now, is actions here and there like entrepreneurial centres (Maisons d'Entrepreneuriat) and their efforts to increase the degree of entrepreneurialism among students, short courses about the ABCs of creating small businesses...etc. Yes, most of them are performing such "entrepreneurial activities", but cannot be defined as entrepreneurial universities, as we mentioned before.

Nevertheless, the Algerian university, like all universities in the world, must follow successful models in order to shift from being an ordinary university to an entrepreneurial university that keeps pace with the change of its economic and social environment, steps of shifting will be discussed in next sections.

3.2. Obstacles and challenges with regard to the fostering of entrepreneurial change at universities:

Tracing the entrepreneurial university development since its emergence as an idea two decades ago till now, we find that it was not an easy switching at all, that's because there were be –and still exist- some of the barriers like (Volkman, Oliver, & Marc, 2010):

- Traditional objectives of universities and lacking visibility of and perceived support for entrepreneurial activity by faculty members;
- Insufficient knowledge of entrepreneurial management and available support infrastructure for new ventures;
- Lack of incentives and perceived benefits of entrepreneurial activity at the individual level.
- Still insufficient prestige and public acceptance of entrepreneurial roles of university researchers and lecturers.

Moreover, Hannon (2013) in his article "Letter from Academia: Why is the Entrepreneurial University Important?" cited a numerous challenges and obstacles that Universities face on their journey to becoming more entrepreneurial, inter alia:

- Perceptions of relevance and meaning of entrepreneurship for higher education; and hence developing a shared institutional vision, identity and consensus;
- Organizational transformation and re-organisation of knowledge and people and opportunity;
- Ideological threats, notions of capitalist tendencies and the demise of academic autonomy through utilitarian approaches to modern university education;
- Curricula controls on content and assessment through internal structures, external agencies and professional bodies;
- Lack of academic career pathways for those pursuing entrepreneurship in higher education institutions, especially research-intensive institutions and hence perceptions of personal risk;
- Perceptions of weak academic rigor against other more established disciplines;
- Strong links with commercialisation and income generation rather than with education and learning;
- Positioning within an institutional structure either inside or outside of academic faculties or colleges and the associated flows of income and related kudos.

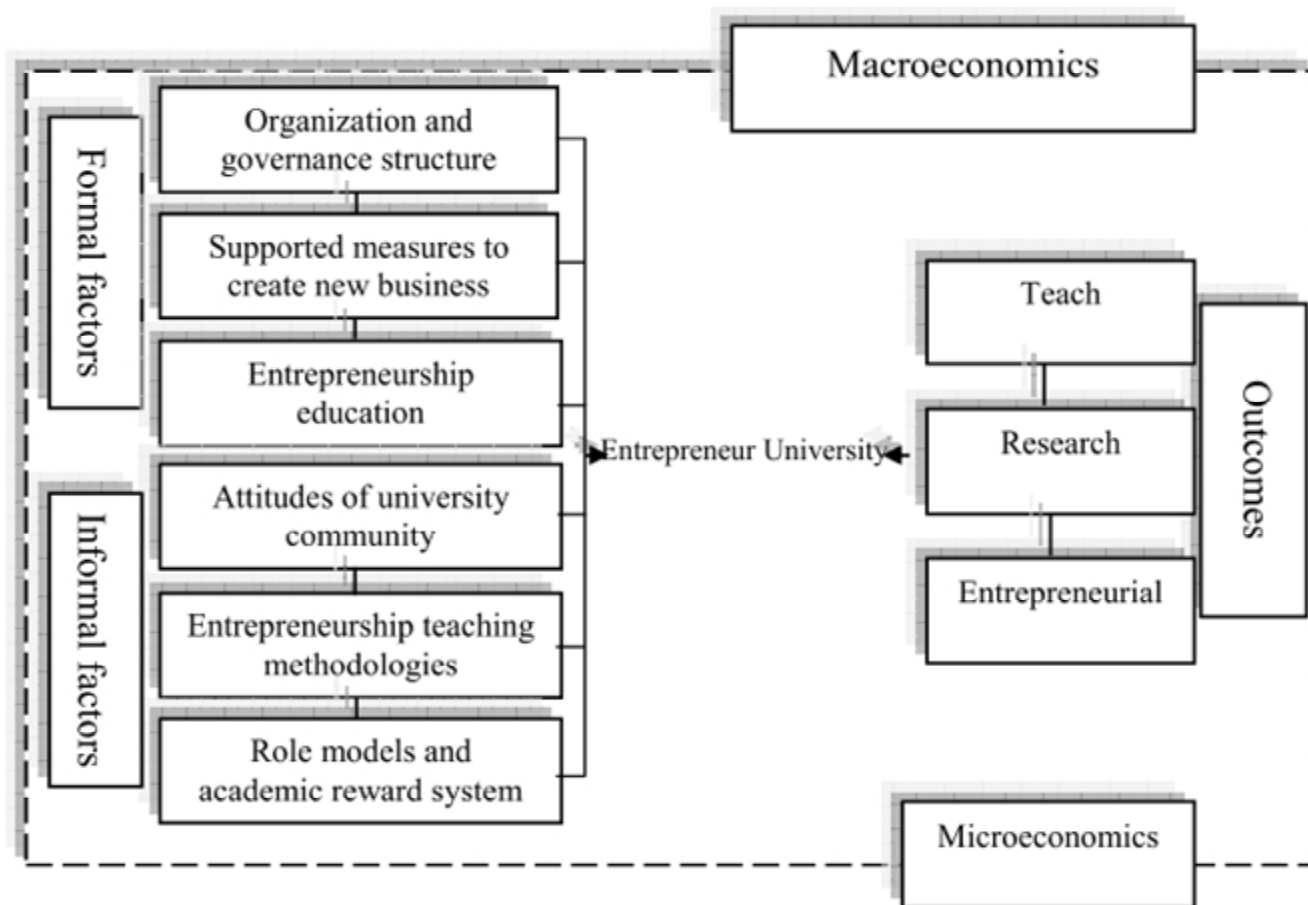
Furthermore, Gibb et al. (2012) argued that universities have to think strategically in order to face the multiple pressures they face, such as:

- Governments wanting more from less; wanting solutions now to current economic crises; wanting new sources of employment to counter losses in the public and corporate sectors; and seeking solutions to combating growing youth and graduate unemployment;
- Employers wanting more than knowledge and basic skills from the graduate recruits as they seek new ways to enhance innovation and competitiveness;
- Higher Education Institutions (HEIs) being perceived as engines of innovation and technological progress; hence, HEIs are seen as driving forces for economic growth;
- Parents wanting the best opportunities for their children as they strive to find meaningful opportunities in an uncertain future;
- Students wanting value for money and expecting a good job and salary to pay off their education debt; believing that university education offers them a route to better (and guaranteed) employment opportunities;
- The potential impacts and opportunities arising from the substantial growth in the provision and take-up of MOOCs (Massive Online Open Courses);
- The competitive threats and opportunities as a result of the growth in private sector providers and to a much lesser degree, corporate providers;
- Knowledge no longer being the unique domain of universities.

3.3. Factors contributing to the transition to the entrepreneurial university model:

Many researchers in the field of academic entrepreneurship have developed models that shape the shift into entrepreneurial university, by analysing the internal and external factors of university environment. Frequently cited models are presented below:

Figure 01: Factors affecting creation and development of Entrepreneurial Universities



Source: Guerrero et al. (2006)

Based on the model above of (Guerrero et al., 2006) and other like models, Sooreh et al. (2011) have developed a model that summarized all factors in previous models, a model that represents the process of a system with inputs, processing and outputs:

Table 2: Proposed Model of Entrepreneurial Universities

	Environmental Factors		Internal Factors
	Formal	Informal	
Inputs	<ul style="list-style-type: none"> • Entrepreneurial policies and missions of higher education system. • Characteristics of university manager. • Types of support measures. • Available communication channels. • Available entrepreneurial courses. • Available entrepreneurial programs. 	<ul style="list-style-type: none"> • Potential students Intentions. • Potential students Desirability. • Potential students Feasibility. • Academics Intentions. • Academics Desirability. • Academics Feasibility. 	<ul style="list-style-type: none"> • Existing students, academics and staff. • Financial resources. • Informational resources. • Entrepreneurial capabilities. • Expectations of the society, industry, government and market. • Entrepreneurial mission of university.
Process	<ul style="list-style-type: none"> • Organizational structuring. • Systems and procedures. • Autonomy from state. • Hierarchical levels determination. • Expenditure invested on support Measures. • Expenditure invested on communication channels. 	<ul style="list-style-type: none"> • Teaching resources. • Training professorate. • Rewarding environmental processes. 	<ul style="list-style-type: none"> • Rules and regulations. • Teaching methods. • Managerial methods. • Logistical methods. • Commercialization process. • Student selection method. • Funding methods. • Networking. • Multilateral interaction processes (between students, university professors, staff, industrial researchers, entrepreneurial centres, industries, policy makers and society). • Innovation, research and development activities (IR&D). • Rewarding systems and compensation processes.
Outputs	<ul style="list-style-type: none"> • Entrepreneurial networking systems. • Conglomerates and strategic alliances. • Commercialization systems and conventions. 	<ul style="list-style-type: none"> • Customized role models. • Entrepreneurial Culture. 	<ul style="list-style-type: none"> • Entrepreneur human resources (including university professors, graduates, researchers, and staff). • Effective researches in line with the market needs. • Innovations and inventions. • Entrepreneurial networks. • Entrepreneurial centres (e.g. incubators, science and technology parks, spin-offs, etc.).

Source: Sooreh et al. (2011)

The model presented above is a system of input-process-output, contains nine blocks, formal, informal and internal inputs, formal, informal and internal process, formal, informal and internal outputs.

The inputs are related to the environmental and internal factors that are formed by resources (human, financial, informational and physical), rules and regulations, expectations of society, government, industry and market. Those inputs interact in a process of teaching, training, researching, managing and commercializing, funding methods and innovation, R&D activities, in a way that operationalized the entrepreneurial university with valuable outputs.

The outputs are the results obtained and the products produced by the entrepreneurial university at the end of the process. They are: human resources that have an entrepreneurial spirit; inventions and patents that are in line with market needs; the role models and the entrepreneurial culture that are spread in the society; and also all entrepreneurial networking systems, conglomerates and strategic alliances and commercialization systems and conventions that it has with the its local and regional market and environment.

Other researchers have suggested the so-called "entrepreneurial architecture", that considered as a framework to illustrate the internal mechanisms involved in how entrepreneurial activities are embedded into the core institutional missions of the university. Nelles and Vorley (2010) have categorized the elements that encourage entrepreneurial behaviours within universities in five groups:

- 1- Structures: Includes technology transfer offices, incubators, technology parks and business portal.
- 2- Systems: Focuses on networks of communication and the configuration of linkages between structures and administration.
- 3- Leadership: Emphasizes the qualification and orientation of key influencers including administrators, board of directors, department heads, and "star scientists".
- 4- Strategies: Refers to institutional goals elaborated in institutional planning documents, incentive structures, and policy.
- 5- Culture: Refers to institutional, departmental and individual attitudes, and norms.

Going further, taking the example of the famous entrepreneurial universities in the world, Massachusetts Institute of Technologies (MIT) is one of the first universities that transformed their educational processes to achieve business objectives. Initially, the university focused its attention on physics and engineering disciplines, but then new educational trends became necessary to achieve the effect of an interdisciplinary approach. Most of the educational programs in MIT are based on a short lecture course and are more associated with the practical activity that takes place under the supervision of existing businesses. In addition, MIT has been developing its own educational programs to improve entrepreneurial skills for over two last decades (Pavlova & Chernobuk, 2016).

Table 3 below summarises the key indicators of entrepreneurial activities in the educational processes in MIT:

Table 3: Key indicators of entrepreneurial activities in the educational processes in MIT

Key Indicators	Activities
Project study	Wide usage of laboratory work and attracting undergraduate students in research projects.
Wide variety of educational programs	Programs provide with an opportunity of adding extra disciplines to student timetable.
Interdisciplinary approaches	A great variety of interdisciplinary projects that were initiated by students from different schools and departments.
Business participation in the educational process	Acting entrepreneurs teach most educational courses.
Involvement of students in the work at a company	Students do research in collaboration with leading regional companies.
Key characteristic	Development of educational programs aimed at obtaining business skills, involvement of experts from the company as mentors.

Source: Roberts & Eesley (2009)

Algerian system of education which lacks for most of above activities especially that the majority of them are linked with practices, is invited to include and encourage these activities in the current process. For example, we mention the well-known entity which can find in all universities, the so called: entrepreneurial centres (Maisons d'Entrepreneuriat), can invite acting entrepreneurs to tell their successful stories to the audiences (students) and teach them the basics of business creation and managing. Another example, laboratories can give the opportunity to the students beside their professors to engage in research and development in collaboration with leading regional companies as well.

4. Conclusion:

To conclude, it is noticed that a new mission –called third mission- has joined the traditional ones of the ordinary universities (teaching and research), entrepreneurialism is the new mission that makes universities cooperate with the socio-economic environment. Algerian universities since they are somewhat far from dealing with this third mission are called to move towards becoming entrepreneurial universities, especially as they suffer from high rates of unemployment among their graduates, as well as the employment crisis and the economic crisis in general that the country is going through. Today, the government is no longer able to expend more on universities for free, unable to finance researches without noticeable results, not satisfied to have universities without an impact on its economy and society.

This study was an attempt to propose a model to pay the attention of Algerian academics, higher education officials, and policy makers, who are invited to follow up the steps that will transform the Algerian university from being a traditional one into an entrepreneurial one. After a review of the literature regarding the entrepreneurial university and based on the leading models in the field, we recommend the following recommendations:

In order to be entrepreneurial, the university must embed entrepreneurship in every part of itself, from its leadership through to its teaching and student impact. It needs to demonstrate excellence in strong leadership at all levels, innovative faculties and a clear, tangible impact on staff, stronger engagement with students in a diversity of learning opportunities, business and the local community. It needs to demonstrate a long-term commitment of higher education institutions to engaging in enterprise and entrepreneurship, which will consequently help to develop the economy (Arnaut, D., 2010).

The university environment includes stakeholders: individual persons, groups of people, other universities, social and administrative institutions as well as market entities with which the university has various relations. The university should identify individual entities in this environment, shape the desired relationships with these entities, maintain and develop these relationships - all in the interest of the university itself and in the interest of the local environment. Universities must respond to contemporary economic and market challenges, they should have the power to adapt to these challenges (Czerniachowicz & Wieczorek-Szymańska, 2019).

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