Genetics And Biodiversity Journal
Journal homepage: https://journals.univ-tlemcen.dz/GABJ/index.php/GABJ
ISSN: 2588-185X

Short Communication

Place of intellectual property in the academic ecosystem, impact and perspectives

Mounia ARAB[1] Nihel KLOUCHE-KHELIL[1]

[1]*Laboratory of Applied Microbiology in Food, Biomedical and Environment, Department of Biology, Faculty of Nature Sciences and Life, University of Tlemcen.*
[2]*Faculty of Biological Sciences, University of Sciences and Technology Houari Boumediene. Algiers. Algeria*
[3]*Laboratory of Experimental Surgery, Dental Surgery Department, Medical Faculty, Aboubekr Belkaïd University of Tlemcen, Tlemcen, Algeria.*

***Corresponding author:** ARAB M, Department of Biology, Faculty of Nature Sciences and Life, University of Tlemcen. Algeria .**Email** : mounia.arab@gmail.com , marab1@hsthb.dz
Article history: Received: February 14th 2022; Revised: April 5th 2022**;** Accepted: May 5th 2022

Abstract
Within the university, the researcher expresses important and original ideas, and undertakes research that leads to innovative results, as he invents new and different ways of doing things. All of these activities have an intellectual property component that is owned, in whole or in part, and can be protected. This report highlights the context for the development of intellectual property in the Algerian University; as it illustrates ways to enhance the results of scientific research, increase technology transfer and forge close links between academia and business.
Keywords: Innovation, intellectual property, university, patent, start-up

الملخص
داخل الجامعة، يعبر الباحث عن أفكار مهمة وأصلية، ويقوم بأبحاث تؤدي إلى نتائج مبتكرة، مثل اختراع طرق جديدة ومختلفة للقيام بالأشياء . وجميع هذه الأنشطة تتضمن عنصر الملكية الفكرية ، كليا أو جزئيا، و الذي يمكن حمايته. يسلط هذا التقرير الضوء على سياق تنمية الملكية الفكرية في الجامعة الجزائرية ؛ كما يوضح سبل تثمين نتائج البحث العلمي، زيادة نقل التكنولوجيا، وإقامة روابط قوية بين الوسط الاكاديمي والمؤسسات الاقتصادية.
الكلمات المفتاحية: الابتكار، الملكية الفكرية، الجامعة، براءات الاختراع، الشركات الناشئة.

Introduction

Algeria is witnessing a shift from static industrialization policies to dynamic, flexible and competitive industrial policies based on science and technology (WEF, 2015). Universities are the main source of scientific and technological knowledge. Scientific research and technological development have a social dimension. Over the years, their development has required increasingly important means. In addition, their institutionalization and integration into social, cultural, economic and political life have been priorities for many nations.

Intellectual property has been a dry subject and reserved for specialists until recently. It is now at the center of passionate polemics that show the importance of legislation in this area for society as a whole.

Universities are a place where ideas, knowledge, and innovations are disseminated, used, and even "recycled". Intellectual property issues arise in all areas of university activity in a variety of ways. First, in education, where creation and dissemination activities involve both the "ownership" of intellectual property rights and the use or adaptation of works protected under those rights. Also, in research, where similar questions arise in the dissemination of research results, whatever they may be,

as well as in the continuation of research work, increasingly oriented and often conducted in partnership with external private organizations or companies,

As part of this report, we will discuss how a researcher could protect the results of his or her scientific research and also how to leverage them in the entrepreneurial world.

1. Intellectual property in the university

Intellectual property (IP) is an additional means by which universities can disseminate the knowledge they generate and ensure that this knowledge benefits the economy. To be able to develop, big ideas must go beyond universities and research centers and reach the consumer. Knowledge of intellectual property issues in the context of knowledge transfer can contribute to the commercialization of research results. Indeed, university research is very beneficial to SMEs (small and medium-sized enterprises) and even large enterprises (Kerzabi and Tabet, 2008). Many researchers have therefore examined the relationship between universities and entrepreneurship (Schmitt, 2008).

2. Some basic notions of intellectual property

The concept of intellectual property covers both the fields of literary and artistic property on the one hand and industrial property on the other (WIPO, 2021). It is a tool against counterfeiting or plagiarism. Intellectual property allows the author of a creation to protect his work and to grant him the benefits resulting from his work.

The purpose of industrial property is to protect and exploit inventions, innovations, and creations. In principle, industrial property rights are acquired by filing a patent, design, or trademark.

Copyright ownership refers to literary works, musical creations, films, graphic documentaries, plastics, fashion creations, etc., and software, as well as a number of "neighboring rights" (INPI,2021).

❖ The Patent

An invention is an idea (i.e., a product or process) of an inventor that allows in practice the solution of a particular problem in the field of technology. The patent (also called "patent of invention") is thus the title of industrial property granted by the competent authority to protect an invention.

Therefore, a patent is an exclusive right granted by the state to its owner to protect its invention and allow it to use and exploit it, preventing third parties from using it without its authorization. If they choose not to use their patent, they can sell it or transfer the rights to another company for licensing (INAPI, 2021).

The significance of patents to the university

Inventions are mostly in the early stages and need improvements to become economically attractive. A patent can also be a tool for disseminating knowledge, as there is no "secrecy" protection policy. The patented inventions (disseminated) will thus promote the partnership, especially with the economic sector. In addition, create an E-reputation/image for the university through exploitation of the invention by an industrial partner (need a license) that will generate a source of income (return on investment).

❖ The brand

A trademark is a sign that distinguishes the goods or services of an enterprise from those of other enterprises. Marks are defined as any sign capable of being graphically represented, in particular words, including names of persons, letters, figures, drawings or images, distinctive forms of products or packaging, or colors, alone or in combination, that are intended to distinguish the products or services of a natural or legal person from those of others (WIPO, 2003).

The right to the mark is acquired by its registration with the competent authority and gives it the exclusive right to operate in a given territory for a period generally of 10 years, renewable indefinitely. Order no. 03-06 of July 19, 2003 (national) (Algerian Ministry of Commerce, 2003) and the 1897 Madrid Agreement, referred to in Stockholm in 1967 and amended in 1979 (international) (WIPO, 2022).

❖ Copyright in the digital environment

"The printing press has allowed people to read; the Internet will allow them to write." This quotation by Benjamin Bayart (Bayart, 2009) is probably one of the best expressions of the hopes placed in the emancipatory power of the Internet (Maurel, 2014). Thus, the protection of authors has become decisive in the circulation of knowledge and culture. To the extent that this protection is threatened on digital networks, it must be adequately taken into account.

However, not only the legitimate interests of authors, performers, and producers must be taken into account, but also the interests of users and society as a whole.

Copyright must not be used as an instrument to widen the gap between industrialized and developing countries. On the contrary, the Information Society is a great opportunity for the latter. The legal instruments that regulate it, in the foreground of which is copyright, must ensure that developing countries are not deprived of the benefit of access to technology and information.

Access to information and knowledge are the two basic principles of the creation and development of the information society and electronic networks. The digital age cannot deny its roots and must continue to benefit education, research, and the transmission of knowledge.

3. Algerian laws on intellectual property and invention patents

For the invention to be patentable, it must meet the conditions of patentability (an invention must be new, inventive, and capable of industrial application) as set out in Articles 3-4 and 6 of Order No. 03-07 of July 19, 2003 below: 1

Art.3. Inventions that are new, result from an inventive step, and are capable of industrial application may be protected by an invention patent. An invention may relate to a product or process.

Art.4. An invention is new if it is not included in the state of the art, consisting of all that has been made available to the public by a written or oral description, a use, or any other means, anywhere in the world, before the day on which the application for protection or the date of priority validly claimed for it is filed.

In view of Order No. 03-07 of July 19, 2003 relating to patents of invention, an invention is not considered to be made available to the public by the mere fact that, in the twelve months preceding the application for the patent or the priority date, its disclosure was the result of acts committed by the applicant or its predecessor in law, as denied in section 14 below, or of abuse committed by a third party against the applicant or its predecessor in law.

Art. 6. An invention is considered capable of industrial application if its object can be manufactured or used in any kind of industry.

What cannot be patentable:

According to Articles 7 and 8 of Order No. 03-07 of July 19, 2003, patents of invention cannot be obtained for:

Art.7. For the purposes of this ordinance, inventions do not include (1) scientific principles, theories, discoveries, and mathematical methods; 2) plans, principles, or methods for carrying out purely intellectual or playful actions; 3) methods and systems of education, organization, administration, or management; 4) methods of treatment of the human or animal body by surgery or therapy, as well as diagnostic methods; 5) simple presentations of information; 6) computer programs; and 7) creations of an exclusively ornamental character.

Art. 8. Under this order, patents of invention may not be obtained for:

1) Plant varieties or animal breeds, as well as essentially biological processes for obtaining plants or animals;

2) Inventions whose implementation on Algerian territory would be contrary to public order or good morals;

3) Inventions whose exploitation on Algerian territory would harm the health and life of people and animals, or plant preservation or seriously damage the protection of the environment.

❖ Intellectual property and the missions of universities

From the 1980s to the 1990s, the imperatives of applied research have generated a new reality and a new language. Since then, universities have become, or have been encouraged to become, major corporate partners, both public and private, in the "knowledge economy". Although there is an inevitable university-business relationship, this remains quite marginalized in national university traditions because training remains the main mission.

❖ Scientific research for entrepreneurship

The new national policy enacted by the Ministry of Higher Education and Scientific Research encourages the university in its role of spreading entrepreneurial culture as a local development actor to promote, actions related to entrepreneurship.

The initialization reflects the actions of the state in order to promote entrepreneurship in part through the university. Institutionalization is a continuation of the actions carried out within the university, and in this case, the university becomes a pillar of economic development. While integration is a rapprochement of actions often scattered within the university to develop new forms of organization (Tabet and Berbar, 2014).

- Initialization: Algeria has chosen to encompass research as well as innovation in the university within laboratories, divided into research teams with defined themes. The laboratories depend on the Vice-Rector of Post-Graduation and Scientific Research.
- Institutionalization: As regards the exploitation of research it is framed by research centres (CDTA, CDER, etc.) and national research agencies (ANDRU, ANDRS, ANVREDET) They are directly under the supervision of the Directorate General for Scientific Research and Technological Development (DGSRTD). The latter are more focused on support, the development of research in the field of health (ANDRS) or in general (ANDRU) and the exploitation of these results (ANVREDET). The mission of ANVREDET is, among other things, to identify and select the results of research to be valorized, to promote the systems and methods of valorization, to develop and promote cooperation and exchanges between the research sector and the user sectors, to support and accompany innovative ideas towards business creation and to participate in job creation.
- Integration: The Algerian National Institute of Industrial Property (ANIIP) is in charge of integrating research into economic development. The latter's mission is trademark registration and invention patents (Tabet and Berbar, 2014).

❖ Technology transfer from research laboratories

Technology transfer (TT) is defined as taking ideas, inventions, and technologies developed with public money and giving them to the private sector as quickly as possible and in a useful and exploitable form.

The activities considered as TT are: internal marketing, patent filing, proof of concept, development and design, production of license of use, and startup, spin-out, business model, and fundraising (USDC, 2003).

Valuation

Valuation is the use for socio-economic purposes of publicly funded research results. For civil society, it represents a direct or indirect return on public sector investment in research and development.

Exploitation in research and development involves several stages, first the identification of results, the evaluation of technological potential, technological monitoring, innovation analysis, protection of intellectual property, the search for market opportunities, the business model and finally marketing (OCDE/Eurosat, 2019).

Marketing

It is the process of turning a new technology into a commercially successful product. Marketing includes market assessment, marketing strategy development, product design, manufacturing, engineering, employee training, intellectual property rights management, and fundraising (Lachmann, 1993).

The Service Delivery Agreement

It is the completion of a study or a technical service. It uses a recognized laboratory with expertise in a specific area to perform spot tests and/or characterize third party products. This contract is established in the customer/supplier mode. It allows the company to benefit from technical means already experienced in the laboratory. For this type of contract, it is important to define precisely the nature of the service and its purpose. The advantage of these types of contracts is that the service is generally performed over a short period of time and is billed to the company at full cost (Charron and Separi, 2001).

The Material Transfer Agreement

This contract defines the conditions under which a third party may use, for research purposes or for technical-commercial evaluation, mainly but not exclusively biological material. This contract governs the use of the material while defining the rights and duties of each party, in particular as regards the inventions that could result from it. The advantage is that this contract makes it possible to identify the ownership of the transferred products, to guarantee confidentiality on the products both on the structure and on the characteristics, to define the conditions of their use as well as the duration and to determine in certain cases financial conditions (Couso and Hémici, 2006).

The Research Collaboration Contract

It is a collaboration contract between one or more partners who jointly conduct a research program (a laboratory and a company, for example). The parties agree on an obligation of means to achieve a result without it being certain (hazard of the research). Each team specifies its contribution (funding, know-how, technology, equipment, industrial techniques...), and its specific potential in order to achieve a result, and/or the tasks to be performed for the execution of the research programs are clearly distributed (OCDE/Eurosat, 2019). The advantage is to be able to collaborate with other teams and establish a contract, defining in advance and in a precise manner who does what and who pays what. In addition, the laboratory is associated with the R & D of the company requesting it. Finally, the result of this collaboration will be the co-ownership of the parties. The management and exploitation of these results must be defined in a co-ownership and exploitation agreement.

The granting of an operating license or the provision of know-how

With this contract, your institution grants the industrial and commercial exploitation license of a patent, trademark, or software of which you are the inventor or co-inventor, to a third party (usually a company), in return for royalties. The license may be exclusive or non-exclusive, limited to a geographical area and determined in time. There is also the communication of know-how (a substantial and secret body of knowledge contributing to an invention) (OCDE/Eurosat ,2019). The advantage of this contract is that your invention becomes an innovation that will have a future market and will generate royalties for you, while your laboratory and industrial logistics management and marketing are managed by the company.

4. The creation of a start-up

As a researcher, you can also create a startup to develop your innovation. In this case, you can participate in three different ways in the creation of a company that values your research work in your laboratory. (a) by leaving your current position to participate in the creation of the corporation as an officer or partner, (b) maintaining your current position and providing scientific assistance and participating or not participating in the capital of the company that values your research, (c) maintaining your current duties and participating only on the Board of Directors or Supervisory Board. In this case, it is your company that acquires the license to exploit the technology that you are the inventor or co-inventor. You can thus embark on the adventure of entrepreneurship by creating your own company and/or developing cooperation with companies in agreement with your institution, thus developing your innovation.

❖ The characteristics of a start-up

Apart from the legal status, a startup differs from a conventional company in many respects. We are dealing with two types of structures that do not work the same way, that do not have the same dynamic or the same objectives.

The word "startup" is not an Anglicism to just say "start-up" or "technology company." On the one hand, we have a structure whose one of the challenges is to have efficient processes, allowing us to deliver the best possible service with optimal operation. On the other hand, we have a structure that explores and experiments in order to find out what has value for the client, how to deliver this value to the client, and how to earn money while doing so (this difference also explains why many companies have difficulties in innovating, because the processes that have made their success obstacles to innovation).

The fundamental difference is that a company is organized to run and optimize a Business Model that works, while a startup is organized to find one. But how do you know when you're dealing with a startup or not? Here are the different characteristics of a startup:

• Temporary: A startup isn't supposed to last forever. Being a startup is not an objective in itself. A startup is a particular phase, and the main objective is to get out of it. As Peter Thiel, a famous Silicon Valley entrepreneur, put it, it's about going from 0 to 1, turning an idea into a business, finding a new way to do a service, and creating value (Thiel, 2021).

• Looking for a Business Model: Being a startup entails providing value to customers through the creation of a product or service that no one has ever done before. And the challenge of a startup is to find and build the business model that goes with it. A business model that is not modeled on an existing structure, and that is not necessarily evident at the launch of the structure (Djekidel et al.2021).

Attention: do not confuse "business model" (the whole model, the mechanisms that allow the company to generate revenue) and "business plan".

• Industrialisable/Reproducible: This means that a startup is looking for a model that, once it works (i.e. we earn money and we know how we earn money), can be realized on a larger scale, in other places, or be done by others. The most telling example is that of Airbnb or Uber, which deploy city by city from a recipe that works (although it is, of course, sometimes necessary to adapt it to local contexts) (Djekidel et al.2021).

• Scalable: Another feature of a startup is its scalability. Having a model where the more customers you have, the bigger the margins. The first customers are more expensive than the next ones, and so on. It is this scalability, and the fact that the model is reproducible, that allows startups to grow so fast and so far away, in a short time, compared to more traditional companies (Djekidel et al.2021).

So if you want to start, don't try to start a startup at any cost, or want to be one, just because it's trendy. Create the best structure to address the problems you want to solve. And don't forget to find an economic model along the way!

❖ **Algerian success stories**

Startup Ranking, which is a site dedicated to the discovery of startups from around the world, published on Friday, September 03, 2021, the ranking of the most popular applications in Algeria.

The first place goes to "Siamois QCM", an online training platform for Algerian medical students, which has risen to the top of the ranking. This saves them a lot of time and money, but more importantly, it helps them to be more organized in their work.

The second place goes to "Batolis", a 100% Algerian e-commerce site, created in 2015 by BROS MAMS SARL.

Then we have "Sekoir," a platform for the exchange of money, which is ranked third. Focused on providing secure and secure money transfer solutions as well as recovering and transferring funds to its peer-to-peer assets.

Fourth place went to "YASSIR," which was created to establish commercial relationships between service providers and their potential customers in various fields. Transportation, health, food, logistics, and more.

5. Impacts and prospects

By tradition, the academic world is fiercely opposed to the privatization of knowledge and is now in an ambiguous position. In fact, faced for many years with a chronic problem of sub-funding, universities are increasingly turning to intellectual property protection mechanisms with the clearly stated goal of generating new funding for its activities. In their efforts to commercialize the results of their research, universities find themselves in a difficult position to defend a public domain that has been under attack from all sides in recent decades.

The university has a leading role to play in the debate about the respect and implementation of the legal regime of intellectual property, which certainly has the potential to privatize knowledge, reserving it for those who can afford it, but also to free it to make it accessible to as many people as possible.

References

Algerian Ministry of Commerce 2003. Réglementation | Ministère du Commerce Algérie. (Assessed on January 31 ,2022).

Bayart B 2009. La neutralité du réseau, in La Bataille Hadopi, InLibroVeritas.

Charro JL. S Separi S 2001. Organisation et gestion de l'entreprise,2 nd Edition, France.

Couso P. Hémici F 2006. L'entreprise en 20 leçons ,4th Edition, Paris 2006.

Djekidel Y. Doua M. Merrad R 2021. La startup en Algérie: Caractéristiques et Obligations. Revue d'excellence pour la recherche en économie et en gestion.5 (1) p:417-427.

INAPI 2021. Le brevet d'invention (inapi.cl) (Assessed on February 02 ,2022).

Institut National de la Propriété Industrielle (INPI) 2021. Le brevet | INPI.fr

Kerzabi A. Tabet W 2008. PME innovation et technologie, journée d'étude sur l'innovation et les PME en Algérie, Sidi bel abbes, juillet.

Lachmann J 1993. Financement des stratégies de l'innovation, Edition Economica, Paris.

Maurel L 2014. Droit d'auteur et création dans l'environnement numérique. Des conditions d'émancipation à repenser d'urgence. Mouvements .79 (3) :100-108.

OCDE/Eurostat 2019. Objectifs et résultats de l'innovation d'entreprise, in Oslo Manual 2018: Eurostat, Luxembourg. Guidelines for Collecting, Reporting and Using Data on Innovation, 4th Edition, Éditions OCDE, Paris.

Schmitt C 2008. Université et Entrepreneuriat une relation en quête de sens, Tome 1, Le Harmattan, Paris.

Tabet W. Berbar W 2014. La réalité de l'innovation dans les PME Algériennes. Revue Marocaine de Recherche en Management et Marketing N°9-10 p: 395-409.

Thiel P 2021. Zero-to-One, le monde selon Peter Thiel (15marches.fr). (Assessed on December 25 ,2021).

United States Department of Commerce (USDC) 2003. US-African Trade Profile, Washington, DC, mars.

World Economic Forum (WEF) 2015. The Africa Competitiveness Report 2015, Genève.

World Intellectual Property Organization (WIPO) 2021. Qu'est-ce que la propriété intellectuelle (wipo.int)

World Intellectual Property Organization (WIPO) 2022. Arrangement de Madrid concernant l'enregistrement international des marques (wipo.int). (Assessed on January 31 ,2022).