

# **BENEFITS OF THE IP SYSTEM FOR UNIVERSITIES AND R&D INSTITUTIONS**

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## **Introduction**

With the increasing globalization of the world economy and the challenges facing us today, the importance of IP rights is becoming widely recognized as the crucial factor in safeguarding the results of technological development. There is therefore need for African universities and institutions of higher learning to understand the IP system better and establish ways to ensure their efforts may eventually lead to potentially sustainable benefits, both financially and intellectually for their organizations and countries. This paper discusses the exploitation of intellectual property by universities and the avenues available for their commercialisation.

## **Challenges for Research in Universities and R&D Institutions**

Universities are considered to be significant repositories of knowledge and information generated through theoretical and basic research as well as results of applied research, information packaged and processed in particular ways ranging from the publication of scholarly papers, books, journals, teaching and instructional materials. It should also be noted that meaningful research is hindered in most African universities as a result of the lack of adequate equipment and research facilities. This impacts negatively on efforts to generate IPs.

The need for technological advancement poses several challenges for research activities in universities and R&D institutions in Africa [1]). These entities are expected to play a leading role in spearheading technological development in Africa. In recent years, there has been a substantial rise in the rate of commercialization of university based technologies through patenting, licensing, research joint ventures and the formation of startup companies. There has also been an increase in investment in science parks and other property based institutions that facilitate the transfer of technology from universities to firms.

The scope and variety of intellectual productions in universities are numerous and will vary from institution to institution. Today, much of what universities generate can be highly marketable, and in most cases would be marketed if it were produced by ordinary commercial undertakings. To what extent therefore, should universities commercialize their intellectual property?

The following models of a university can be readily identified [2]: -

- i) *The University as a Teaching Institution* – as expressed by Cardinal Newman in his works; '**Idea of the University**'. It is argued that research function is complementary with this aim of the university in that academics should be participants in the process of intellectual debate and exploration [3].
- ii) *Universities as Both Teaching and Research Institutions* – this model sees teaching and research as inseparably linked and emphasizes the notion of the university as a centre of free enquiry and learning, committed to the pursuit of knowledge untinctured by commercial considerations. Consequently, academic independence and freedom to publish are fundamental values that prevail over all other considerations.
- iii) *The Entrepreneurial or Partnership Model of The University* – this model sees universities as forming partnerships with the outside world, particularly with commerce and industry. Under this view, universities can no longer exist in isolation from the communities in which they are located but should be fully engaged with all sectors of the communities.

In reality most institutions will fall somewhere along a spectrum of where elements of each model are mixed together in different degrees. In light of the above, how then should universities manage the intellectual capital with which they are so richly endowed.

### **Types of Intellectual Property Regimes**

There are several types of intellectual property which a university or R&D institution may pursue [4]. These are: -

- Patents
  - Utility models
  - Industrial designs
  - Trademarks
  - Copyrights
  - Trade secrets
- a) **Patent** – It is an exclusive right granted for an invention, which sometimes is a product or a process that provides a new way of doing something, or offers a new technical solution to a known problem. It provides protection for the invention to the owner of the patent. The patent is granted for a limited period, generally 20 years from the filing date of the patent application.

Our universities need to be patent conscious and should have in place internal mechanisms for dealing with patentable inventions arising from within departments and research centres.

- b) **Utility Model** – These protect “small inventions” which may be less inventive and thus may not be protected under a patent. In Africa this may be used to encourage innovations at the small and medium sized enterprises as well as the informal sector.

It is necessary to encourage such in our institutions so as to nature confidence in our researchers, scientists and inventors.

- c) **Industrial Designs** – An industrial design is the ornamental or aesthetic aspect of an article. The design may consist of three dimensional features, such as patterns, lines or colour. Industrial designs are applied to a wide variety of products and to achieve protection in most countries, an industrial design must appeal to the eye. It therefore is primarily of an aesthetic nature and does not protect any technical features of the article to which it is applied.
- d) **Trademarks** – A trademark is a distinctive sign which identifies certain goods or services as those produced or provided by a specific person or enterprise. The system helps consumers to identify and purchase a product or service because its nature and quality, indicated by its unique trademark, meet their needs.

In universities and R&D institutions, a trademark may be important where the institution owns an enterprise, and sells goods and services.

- e) **Copyrights** – Copyright is a legal term describing rights given to creators for their literary and artistic works. These works include: novels, poems, plays, reference works, newspapers, computer programmes, databases, films, musical compositions, choreography, artistic works such as paintings, drawings, photographs and sculptures, architecture, and advertisement, maps and technical drawings.

Universities should appreciate potential of copyrights as a source of protection for what is created in their various departments and centres.

- f) **Trade Secrets** – trade secrets comprise confidential data, information or compilations used in research, business, commerce or industry. Universities and R&D institutions, government agencies, business entities and individuals may own and use trade secrets. The information may include confidential scientific and technical data and business, commercial or financial information not publicly known which is useful in an enterprise and that confers competitive advantages on a person having the right to use such information. The secrecy of the information must be maintained so as to preserve its trade secret status.
- g) **New plant varieties (Plant Breeder's Right)** – This right is granted to a breeder if the obtained variety is considered to be new, distinct, uniform, stable and has a suitable denomination. The breeder's right means that authorization of the breeder is required before accomplishing some acts in respect of the propagating material of the protected variety.

Currently most universities and R&D institutions in African countries are involved in research in areas such as crop production, livestock and animal health, forestry, fisheries and crop storage. Research efforts in these areas have led to a number of specific achievements e.g. varieties of many crops, which are capable of producing

high yield, more adapted to specific farming systems, resistant or tolerant to main diseases and pests etc.

### **The Importance of Patent Information in Universities and R&D Institutions**

The use of patent information should be an integral part of R&D activities in universities and research organization as well as investors for the following purposes: -

- providing technological information for research
- providing solutions to technical problems
- identifying alternative technologies
- evaluating specific technologies offered for acquisition
- identifying of rights in the public domain
- identifying the patentability potential of R&D activities at early stages of development
- avoiding the risk of R&D duplication
- solving potential disputes involving patents
- providing assistance during the development and marketing of new products
- monitoring trends in R&D activities, and
- monitoring the success of funded R&D activities.

### **Support Services for Successfully Exploiting Intellectual Property**

Most universities as well as R&D institutions do not have in place clear and comprehensive operating guidelines to govern day to day management of consultancy, technology transfer and commercialization of IPRs. Several other bottlenecks inhibit the smooth commercialization of IPRs[4] and these include:

- bureaucracy
- lack of entrepreneurial, management and legal skills
- lack of awareness of IPRs
- lack of an intellectual property policy
- lack of data bank on specialists and research findings from R&D institutions
- insufficient marketing strategies for products and services
- weak university - industry linkages

An intellectual property policy should aim at achieving the following: -

- creating an environment that encourages and expedites the dissemination of inventions and new knowledge generated by researchers for the greatest possible public benefit;
- protecting the traditional rights of scholars to control the products of their scholarly endeavours;
- ensuring that the commercial results, financial or otherwise, are distributed in a fair and equitable manner that recognizes the contributions of all stakeholders;
- ensuring that both intellectual property and other research products are made available to the public through an efficient and timely technology transfer process;

- promoting, preserving, encouraging and aiding scientific investigations and research;
- establishing standards for determining the rights and obligations of a university as well as inventors and their sponsors with respect to inventions;
- encouraging, assisting and providing mutually beneficial rewards to a university or R&D institution and its members who transfer intellectual property to the public;
- ensuring compliance with applicable laws and regulations, and enabling a university or R&D institution to secure sponsored funding at all levels of research.

In support of IP exploitation, universities may need to set up technology transfer centres where activities and functions should include: -

- ❖ processing and safeguarding patent and copyright agreements;
- ❖ determining patentability or copyrightability (including receiving patent disclosures, undertaking patent searches as well as filing applications for patent and copyrights);
- ❖ evaluating the commercial potential of an invention;
- ❖ obtaining appropriate patent protection;
- ❖ locating suitable commercial development partners;
- ❖ negotiating and managing licenses.

### **The Route to Commercialization**

Technology transfer and commercialization initiatives are the means by which research and development and the market place can encounter one another and ideas transformed into products and new businesses. This is because inventions are not of any use if they are not marketed and commercialized. The road to commercialization can be cumbersome. It requires careful planning, market analysis and evaluation of the various alternatives.

It is evident from the above regimes that universities as well as R&D institutions can exploit IPs for their own economic benefit. However, it is critical for each university to be clear about what it is that it owns or controls before commencing any kind of commercialization activity. It is also essential to consider the classes of persons who may generate intellectual property within the university context.

Where a university or R&D institution comes up with an invention that has economic and commercial value, the institution has the following commercialization and marketing options: -

i) **Selling Patent rights**

This does not entail major expenses; however, the returns are small.

ii) **Licensing IPRs**

Here the institution enters into a licensing agreement with another company which will commercialize the invention. The institution in return receives royalties. The product is then manufactured under license e.g. coca-cola, Nike, Colgate etc.

iii) **Joint Venture or Collaboration**

Universities and R&D institutions forge strategic alliances with the business community in order to exploit their inventions. Here the university shares the income that accrues from sales.

iv) **Science Parks and Business Incubators**

These have given rise to a number of spin-off companies in various countries e.g. Brazil, Indonesia, Sweden, China, USA etc. Just like with joint ventures, such centres feature strategic alliances between research institutions and high technology firms.

v) **University Companies**

Some universities have incubated a number of large multinational companies e.g. Stanford University and Massachusetts Institute of Technology. In Sweden, Chalmers University has created 240 companies in the last 30 years.

The need for equity and balance to be achieved between the various parties involved when a university moves towards commercialization requires careful handling. From a university's perspective, there are obligations which are owed in two directions[2]: internally, towards its employees and student creators, and externally, towards its potential commercial partners, whether these are business organizations, government departments, statutory corporations, or other universities.

This can be aided if universities can establish clear and explicit policy that will protect the interests of both its creators and the university while ensuring that society benefits from the fair and full dissemination of that knowledge.

## **Conclusion**

Universities are increasingly being regarded as ordinary industries that trade in particular goods and have to make profit in order to survive. While this rationalist policy may be abhorred by many, the public funders of education in many countries have drastically reduced funding to universities so that they have to adopt this attitude in order to continue their existence.

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