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# The Importance of Intellectual Property for Universities of Technology in South Africa: Challenges Faced and Proposed Way Forward

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***Abstract*—**Intellectual property should be a day-to-day business decision due to its value, but increasingly, a number of institution are still not aware of the importance. Intellectual Property (IP) and its value are often not adequately appreciated. In the increasingly knowledge-driven economy, IP is a key consideration in day-to-day business decisions because new ideas and products appear almost daily in the market, which results in continuous innovation and research. Therefore, this paper will focus on the importance of IP for universities of technology and also further demonstrates how IP can become an economic tool and the challenges faced by these universities in implementing an IP system.

***Keywords*—**Intellectual property, institutions, challenges, protection.



## I. Introduction

THE importance of IP within an organization is the protection of IP rights, which plays an important role in persuasion of innovation and technological growth. Due to these reason, IP should be seen as a powerful tool for research and technological innovation growth within universities of technology, rather than the obscure legal concept it is currently perceived to be. According to [1], IP is a bundle of legally recognized rights that protects ideas or inventions.

Currently, the protection of intellectual property rights (IPRs) is said to be the main motivation for inventors to create new inventions with the idea in mind that such inventions will be protected. According to a recent survey, the value and awareness of IP potential for providing opportunities and gains in the future is widely under estimated by universities of technology in South Africa (SA). However, from a legal point of view, once IP is officially protected and there is request for the IP-protection of research and innovation or technology, it can become a valuable asset due to the encouragement of commercialization, technology transfer and also the promotion of international trade. According to [2], IP is an important component in a country's economic development, where the continuous creation of IP from time-to-time will increase investment and trading activities.

There are two categories of IP in SA: Industrial Property (Patent, Trade Mark, Industrial Design, Geographical Indication and Plant Breeder's rights) and Copyrights (Literary Works, Artistic Works and Architectural Designs). The legal protection of IP in SA gives owners the exclusive right to exclude others from exploiting (manufacturing, using, selling, offering for sale, importing) the patented invention. In addition, a patent holder (IP owner) has the right to take legal actions against any party that infringes on their rights.

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## II. Significance of IP to SA Institutions

The value of IP in SA universities of technology is often not adequately appreciated. IP should be a key consideration in day-to-day business decisions in any increasing knowledge-driven economy. However, research, innovation and creativity capacity is not always fully exploited as many universities are not aware of the importance of protecting IP generated within the institutions [3]. New research products, innovative and creative designs appear in almost every public space without property protection, leaving the creators/inventors vulnerable to exploitation of the intellectual.

According to [4], if left unprotected, a good invention or creation may be lost to opportunistic competitors who might have a better chance of taking the product or service to the next level, which is the commercialization process at a more affordable price. This situation results in the original inventor or creator being left with no reward or financial benefit for their hard work. Adequate protection of IP generated within the university is therefore a very important step in turning ideas into market values or business assets, as well as deterring a potential infringement right. Taking full advantage of the IP system enables universities of technology to profit from their research, and creativity and innovative capacity, which will result in assisting further innovation funding and encourages other researchers. IP protection potential for providing opportunities for future profit is widely underestimated in universities of technology in SA. IP is a valuable business asset if it is legally protected and there is a demand for the IP related products or services in the marketplace. It can generate income for the universities through licensing, sale or commercialization of the protected IP products or services that may significantly improve universities incomes. Moreover, IP rights, if used adequately, may enhance the worth of universities in the eyes of financial institutions. Hence, in the event of licensing or trade, IP assets may significantly raise the value of the university. Usually, the assets that have tended to constitute the majority value of most business entities and have largely been responsible for determining the competitiveness of an organization are the physical or tangible assets. However, these scenarios have changed as a result of the revolution of the information

technologies, and intangible assets ranging from human capital such as research and innovation, designs and other intangible assets from the creativity capacity, are often today become more valuable than the physical assets [5].

The strategic utilization of IP assets can, therefore, substantially enhance the competitiveness of research and innovative ideas within universities of technology. These assets must be acquired, maintained, accounted for, valued monitored closely and managed carefully in order to extract their full value. But before this can be done, universities of technology in SA must first acknowledge the value of IP and begin to appreciate it as a valuable tool.

## III. IP for Research and Product Development

IP assets accrue to their owners through its idea development and strategies: from research and design to product development, IP instills trust, confidence and loyalty to the consumer and public. Furthermore, IP provides a distinct identity, image and reputation to its owner [6].

In a similar research carried out by [7], IP was defined as an important tool in creating an image for an organization or business and potential customers and in positioning it in the spotlight. IP rights, combined with research (such as innovation and product development) are crucial for differentiation and making them easily recognizable and diversifying from other research out-puts in foreign countries. Nevertheless, not all IP may be relevant or applicable to research, innovation and product development [8]. A brand is something that is unique and is able to attract people to a certain product or service. It is an intangible asset that is more powerful than the real product or service itself. Today, it is much easier to sell a brand instead of selling the real product, as consumers tend to be influenced by the brand instead of the product or service.

In order to register an innovative or research idea, researchers must have a complete knowledge of their ideas and also that such ideas have never been developed by another person previously, or if it has been developed before, there needs to be a complete modification/optimization of the existing idea showing the initial idea and the modifications made. In addition, these ideas must be commercially viable. Registered innovative or research ideas gives the owners exclusive right to use their ideas and also the right to take legal action for infringement by others who use their ideas without consent. Furthermore, an IP owner may opt to take civil action or lodge infringement complaints to the IP Enforcement Division at Nation Intellectual Property Management Office [9]. In addition, having a registered research/innovation enables researchers and innovators to have added advantage as the registration certificate (patent grant) would be a conclusive evidence of ownership.

## IV. Innovation and IP

According to [10], innovation is an idea, practice or object perceived as new by an individual or other unit of adoption. For any idea or product to be considered as innovative, it must undergo the process of being translated from an idea into a good or service that creates value, and for which, customers/ consumers will be willing to pay. More so, the idea must be replicable at an economical cost and must be able to satisfy a need.

In general, universities of technology have to try to stimulate research and innovative activities geared towards economic and social empowerment. Innovations to a considerable degree depend greatly on intellectual activities of several categories and groups of people, as well as on their intentions and opportunities available to them to enable the implementation of the results of their scientific and creative activities within the universities and industries.

From the aforementioned, it clearly shows that IP is the result of an intellectual creative activity, which is why it is closely connected with a person known as the inventor/author. Only the creator has the copyright, moral rights and exclusive rights to the invention. Copyright is the exclusive right to make copies, license and otherwise exploit a literary, musical or artistic work whether presented in the form of audio or visual. In the United States, IP is regarded as a form of personal property, bringing with it the right to own, sell, use or market as the owner sees fit. While in Russia, IP is regarded as something intangible, a result of intellectual activity (creations, inventions, know-how, etc.).

A patent is a right granted by the government to an inventor to exclude others from exploiting (manufacturing, using, selling, offering for sale, importing) for a 20 years period. Moral rights protect the inventor/author against unfair use of his or her work. It should be noted that moral rights are recognized in civil law as rights of creators and include the right of attribution, the right to have a work published anonymously and the right to the integrity of the work.

## V. Patent

A patent is an official document issued by a government that allows the creator of an invention not only the sole right to make, use, and sell that invention, but also the right to exclude others from exploiting the invention without the consent of the IP owner for a predefined period (20 years). In order for a patent to be granted, the invention has to incorporate some specific characteristics, it has to be novel, inventive and commercially applicable. For the researcher/innovator or product designer, the term inventive step is of key importance. The inventive step is defined as being non-obvious in the light of the prior art or to a skilled person. If a patent is filed, the newness/inventiveness is checked using two important infringement rules. These two rules check if the new patent would impinge on earlier patent claims.

There elements/rules and/or principles which are applicable to patents, according to which each element of a patent claim must be present in an allegedly infringing device in order to establish literal infringement.

## VI. Challenges

Challenges faced by universities of technology in SA with regards to appreciating the importance of protecting IP generated within the institutions is the fact that there is insufficient information on the relevance of IP in everyday business, and the high costs associated with obtaining and enforcing IP rights, as well as perceptions that the IP system is obscure, too cumbersome and time-consuming [11]. These are among the reasons why many universities in SA are sometimes slow to protect their IP assets. Given the importance of research and innovation to the improvement of products and ideas of a nation, it is important for all IP arising from research and innovation to be legally protected.

Due to the limited knowledge of the pros and cons of the IP system, institutions in SA face a number of difficulties in using the IP systems, and as a result, the lack of clarity about its relevance/importance makes the IP protection system too complex and expensive to use. However, apart from lack of awareness and knowledge on IP, the costs of registering IP are generally perceived as one of the greatest barriers to IP protection for universities of technology in SA. In budgeting the costs relating to the acquisition of IP rights, universities of technology in SA need to consider also the cost related to the preparation of the application, transaction cost, legal advice and not only the official fees which includes the application, publication and maintenance fees. In addition, they also have to be aware of the translation costs as well as renewal costs whenever the applicant intends to apply for protection both nationally and internationally.

In actual facts, acquiring IP protection may be perceived by many universities of technology in SA as surpassing the potential benefits to be obtained from protection, particularly considering that a significant part of the costs may be incurred before the research or innovative idea can reach the market as a final product this causes lenders, investors and government agencies to barely provide financial support for the protection of the IP rights of the product or idea [12].

Beside the costs, there are an additional number of elements within the application process that may act as a deterrent for universities of technology to pursue IP protection, which includes, the duration of the time required to be granted a patent or to obtain a trademark registration. The increasing number of applications has often led to an escalation or backlog of the number of patents to be filed, resulting to an increase to the duration of time required and from filing to granting of a patent or registration of a trademark. This long delay for obtaining a patent leaves a great degree of uncertainty and delays the possibility of finding potential licensees or partners for exploiting an invention [13]. This limitation, as a result, creates a number of obstacles to the wider and more effective use of the IP protection system by universities of technology in SA. In conclusion, the first challenge to protecting IP in universities in SA is inadequate IP awareness campaigns and their inability to use all the elements offered by the IP system effectively, which includes according to [14], not just patents but also utility models, trademarks, industrial designs, trade secrets, patent databases, copyright and other IP rights. Poor IP management skills within universities of technology reduce their ability to fully benefit from the system, and therefore, discourage its full potential use. In addition, the limited access to appropriate legal advice, necessary human resources and accessible of the IP protection systems makes the use of the IP system complicated, and also decreases the chances of success in the application process for registration/grant of IP rights. Efficient IP management requires an array of skills ranging from the legal to the scientific/technical and the commercialization, which in reality, is generally lacking in many if not most institutions in SA.

## VII. Proposed Method to Overcome Challenges

There are many things to be done to overcome the aforementioned challenges of IP rights protection within institutions in SA. It is increasingly clear that, in order for institutions to be successful in their activities for promoting a wider and more effective use of the IP protection system, the institutions must seek to target not just researchers or innovators but also, everybody involved within the process and also those who are not aware of it. This includes an intensive IP awareness campaign program within the institutions, where clear examples and advice can be given when the need arises. Fig. 1 illustrates a conceptualized model that can facilitate IP awareness within institutions and other parties involved.

The initial part of the model starts with a main objective of IP awareness, and through this, the facilitation of IP rights and method of acquiring them will be presented to the universities of technology, researchers and innovators and industries. During this process, there has to be a feedback in order to review the entire process to see if there are any improvements to be made.

The last stages are product development and IP protection which will give an inventor, researcher the rights to their product or research. Within this process, it is also important to provide feedback so that every stake holder has an idea of the entire process that has been streamlined right up to the final stage.

Secondly, promotional activities on the importance of IP should generally be provided to all stakeholders. According to a research work done by [15], it was proven that the promotion of IP activities was more effective when included in other activities seeking to meet some of the most immediate needs including marketing, new product development, exporting, financing, etc. In other words, for IP to be included in the research/product development strategies it must also be integrated into the overall framework of the support system of the institution which in return promotes IP creation and subsequent protection.

The ambitious goal of increasing the database of registered new and existing IP rights can be achieved through a more effective use of the IP system. These results can only be attained if the public, civil society, private sectors and all the relevant actors along this line make sustained efforts to bridge the gap in awareness of, access to, and use of the IP system by

researchers, inventors, and entrepreneurs. This has begun to happen in some countries, but efforts are generally still scattered in SA, especially within universities of technology. For example in the Republic of Korea, close cooperation between the Korean Intellectual Property Office (KIPO), Chambers of Commerce, the Korean Patent Attorneys Association and other public and private partners, including financial institutions, which has proved to be very effective in achieving these goals [16]. In summary, Fig. 2 shows registrable IP properties and non-registrable IP properties.

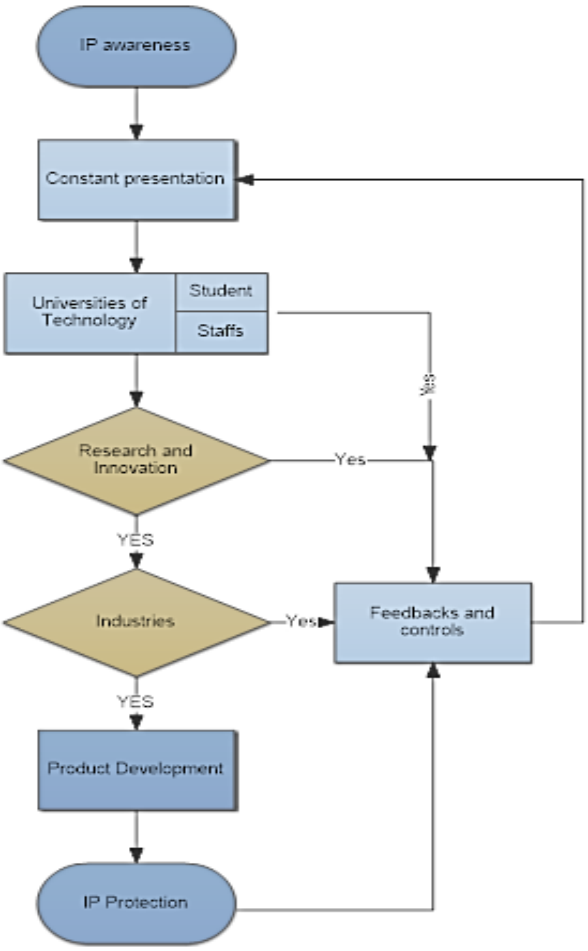


Fig. 1 Conceptualized IP awareness model

## VIII. Registration of IP

The difference between the two classes of IP is that some form of registration is required when industrial property is created, whereas this is not required for the non-registrable IP. South Africa complies at different levels with various international treaties that govern the benefits and restrictions that countries afford one another regarding the registration and maintenance of the various kinds of IP, including copyrightable works.

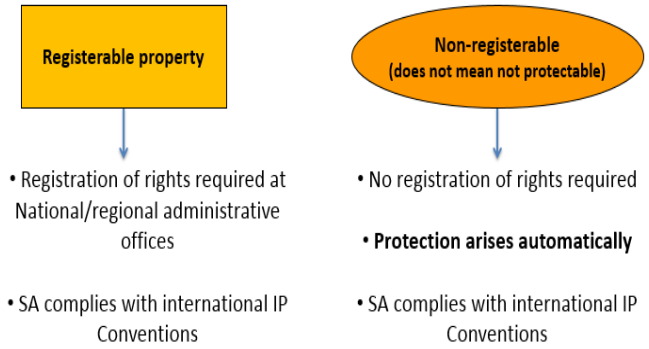


Fig 2 Product often include a combination of both IP forms

## IX. IP Protected by Law

Generally there are five categories of products that are protected by law in the world, namely:

- Patents protect the technical principle of an invention that is new, inventive and has utility.
- Copyright protects work reduced to material form from being copied.
- A design protects the shape of an article.
- A trade mark protects a trading name or logo.
- Plant breeders' rights protect the right to produce, propagate, sell, import and export a new plant variety.

## X. Conclusion

In conclusion, this paper shows that, there is an urgent need to strengthen interaction between IP offices, and universities of technology's researchers, inventors, business associations and other relevant institutions with a view to better identify the IP needs and the barriers to a more effective use of the IP system. Furthermore, there should be promotion and more effective use of IP systems and knowledge of all elements of the IP system, which includes not just patents, but also utility models that will help the innovation process with intensive cooperation with research and development, universities of technology and other innovative parts of the country.

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