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Minor Dissertation (LLM)

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The effect of stronger intellectual property protection on technological innovation in developing countries: The case of Lesotho

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Declaration

Research dissertation presented for the approval of Senate in fulfilment of part of the requirements for the Master of Laws in approved courses and a minor dissertation. The other part of the requirement for this qualification was the completion of a programme of courses.

I hereby declare that I have read and understood the regulations governing the submission of Master of Laws dissertations, including those relating to length and plagiarism, as contained in the rules of this University, and that this dissertation conforms to those regulations.

Signed by candidate

15th September 2011

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DEDICATION

To my parents, Mr. Teboho Leseeo and Mrs. Malerato Leseeo for being a pillar of hope and strength in all my studies.

GLOSSARY

ACP/EU	African, Caribbean and Pacific and European Union Protocol
AGOA	African Growth and Opportunity Act
ARIPO	African Regional Industrial Property Organisation
AMTS	Advanced Manufacturing Technology Strategy
AU	African Union
CEAC	Copyright Enforcement Advisory Council
CGPDTM	Indian office of the Controller General of Patents, Designs and Trademarks
CIPRO	South African Companies and Intellectual Property Office
CSIR	South African Council for Scientific Industrial Research
DG	South African Director General
DST	South African Department of Science and Technology
DSU	WTO Dispute Settlement Understanding
DTI	South African Department of Trade and Industry
EPAs	Economic Partnership Agreements
EPC	European Patent Convention
EU	European Union
FAO	Food and Agriculture Organisation
FDI	foreign direct investment
FTAs	free trade agreements
GATT	General Agreement on Tariffs and Trade
GCI	Global Competitive Index
GDP	gross domestic product
GERD	gross expenditure on research and development
HCD	human capital development
IP	intellectual property
IPC	International Patent Classification system
IPRs	intellectual property rights
KEI	Knowledge Economy Index
LDC	least-developed country
MFN	most favoured nation

NACI	South African National Advisory Council on Innovation
NEPAD	New Partnership for Africa's Development
NGOs	Non-governmental organisations
NIIPM	South African National Institute of Intellectual Property Management
NIPMO	South African National Intellectual Property Management Office
NRDS	South African National Research and Development Strategy
OECD	Organisation for Economic Cooperation and Development
PCT	Patent Cooperation Treaty
PFC	Patent Facilitating Centre
PIS	Patent Information system
PO	Indian Patent Office
R&D	research and development
SACU	Southern African Customs Union
SADC	Southern African Development Community
SAPS	South African Police Service
SARS	South African Revenue Services
S&T	science and technology
TBP	technology balance of payments
TIA	South African Technology Innovation Agency
TRIPs	WTO Agreement on Trade-related Aspects of Intellectual Property Rights
TMR	Indian Trademarks Registry
UNESCO	United Nations Educational, Scientific and Cultural Organisation
USPTO	United States Patents and Trademarks Office
WCT	WIPO Copyright Treaty
WEF	World Economic Forum
WIPO	World Intellectual Property Organisation
WPPT	WIPO Performance and Phonograms Treaty
WTO	World Trade Organisation

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CHAPTER ONE

PROBLEM DEFINITION

1.1 Introduction

Intellectual property (IP) is one of the legal subjects which is increasingly receiving attention, but about which little is generally known outside specialised legal circles.[1] This is because IP in itself has always been an integral part of the general economic social and cultural development worldwide.[2] This begs the question: What is intellectual property?

IP refers broadly to a number of distinct types of creations of the human mind, for which property rights are recognised. Its influence extends to every aspect of life because it cuts across all disciplines.[3]

1.1.1 The intellectual property system

The primary justification for granting limited property rights to the products of the human intellect was that the grants benefit the society by promoting innovation, creation and consumer protection. Therefore, the IP system has been designed to create a balance between the private rights of the inventors and public interests, which arise out of the intellectual activity. Traditionally, the IP system was divided into two branches namely: the industrial property branch and the copyright and related rights branch, with the key forms being patents, copyrights, trademarks and trade secrets. However, technological advances have given rise to some hybrid sui generis systems, such as: integrated computer circuits, plant breeders' rights and database protection.[4]

Each branch of the IP system protects different creations of the mind; for instance, the copyright and related rights branch protects literary and artistic works,

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[1] T Black *Intellectual property in industry* (1989) at 1.
[2] WIPO intellectual property handbook: Policy, law and use [WIPO Publication No. 489] at 165. Available at http://www.wipo.int/about-ip/en/iprm (accessed 12 December 2010).
[3] R Reynolds, and N Stoinoff, *Intellectual property: Text and essential cases* (2003) at 7.
[4] T Wattanapruttipaisan 'Intellectual property rights and enterprise development: Some policy issues and options in ASEAN' (2004) 11(1) *Asia-Pacific Development Journal* at 74.

such as: books, poems, novels, music, paintings and cinematographic works.[5] Copyright protection gives the right holder the exclusive right to copy, reproduce, perform publicly, and to make adaptations of the copyrighted work to the exclusion of others.

The industrial property branch protects inventions, industrial designs, trademarks, service marks, and commercial names and designations, including indications of source and appellations of origin and the expression of unfair competition.[6] In terms of Article 1(3) of the Paris Convention, the term 'intellectual property' must be understood in the broadest sense as applying not only to industry and commerce, but also to agricultural and extractive industries, and to all manufactured or natural products.

The adoption of the World Trade Organisation (WTO) Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs) in 1994 led to IP protection, particularly the patent regime, becoming increasingly controversial in fostering innovation, technology, and the industrial development in developing countries.[7] Advocates of a stringent IP protection system argue that IP protection, by rewarding the inventor, acts as a spur to technological innovation, which, in turn, leads to economic growth and technological expansion.[8] Whereas, on the other hand, the opponents of stronger IP protection argue that, a strong IP protection inhibits diffusion of knowledge, and even technological development, in the countries that are technology followers.[9] They argue that there are other means, which can be employed, such as trade secrecy, as opposed to patents, to protect the property of the mind. This tension has generated a sharp division between developed and developing countries: developed countries are pushing for higher levels of protection in various global forums, and developing countries are resisting this push for higher levels of protection.

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[5] WIPO intellectual property handbook: Understanding industrial property WIPO Publication No. 895(E) at 4. Available at *http://www.wipo.int/export/sites/www/freepublications/en/intproperty/895/wipo-pub-895.pdf* (accessed 12 December 2010).

[6] See Article 1(2) of the Paris Convention for the protection of Industrial Property (1883).

[7] SK Verma 'Impact of the intellectual property system on economic growth' in WIPO report on Intellectual property in Asian countries: Studies on infrastructure and economic impact, at 45.

[8] G Dutfield *Intellectual property rights and the life science industries: A twentieth century history* (2003) at 44.

[9] Verma (n 7) at 45.

1.2 Background

Since the early 1990's, intellectual property (IP) has become one of the most economically and politically contentious subject in the international arena, in which the proponents of both sides profess their case ardently.[10] One of these fierce debates is on the impact of a stringent IP protection system on technological innovation in developing countries. Over the last decades, as a result of strong corporate lobbying in some key sectors, together with policy advice from donors and multilateral organisations, developing countries, including the least developed countries (LDCs), have been strongly encouraged to broaden the scope of IP protection, irrespective of their own needs and conditions. This pressure has been exerted through various fora, such as, multilateral, regional and bilateral obligations.[11] Advocates of a stringent IP system insist that IP will stimulate innovation, encourage technology transfer, and attract foreign direct investment (FDI), which will, in turn, improve developing countries' welfare.[12] The question of how and with what effect the rules governing intellectual property rights (IPRs) intervene in relation to technological innovation in developing countries has indeed been, and still is, the object of a timeless debate, which in contemporary days has of course eminently focused on TRIPs.[13]

TRIPs came about as a result of the Uruguay Round of the General Agreement on Tariffs and Trade (GATT) talks in 1994. Because its ratification is compulsory for WTO membership, it remains the most important international instrument for the globalisation of IP laws to date, and the first comprehensive IP treaty ever implemented by most of the world's trading nations. The rationale behind the formal incorporation of IP into the international trading system, through the TRIPs Agreement, was to ratchet up enforcement of IPRs in developing countries.[14] The TRIPs Agreement encompasses all the pillars of IP, and introduced the principle of minimum standards of IP protection, the principle that envisages that subsequent

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[10] G Gupta, and A Rastogi 'Intellectual property rights: Theory and Indian practice' (2002) Working paper series for Civil Society, at 1. Available at *http://www.ccsindia.org* (accessed 11 February 2011).
[11] UNCTAD LDCs report 'Knowledge, technological learning and innovation for development' (2007) Paper presented at the UN conference on 'Trade and development' UN Publication No. E.07.11.D at 92-93. Available at *http://www.unctad.org* (accessed 9 March 2011).
[12] Ibid at 95.
[13] R Eiss et al 'Developing countries and TRIPS: What next?' in *Intellectual property management in health and agricultural innovation: A handbook of best practices* (2007) at 247. Available at *http://www.iphandbook.org* (accessed 19 May 2011).
[14] F Musungu 'Enforcement provisions of EPAs' in R Melendez-Ortiz, and P Roffe (ed) *Intellectual property and sustainable development: Developing agendas in a changing world* (2009) at 390.

agreements on IP protection will have to adopt these minimum standards or much higher and expansive standards.

However, notwithstanding the massive ratcheting-up of the enforcement requirements on developing countries, through TRIPs, the new TRIPs- plus trend is emerging. Developed countries are lobbying for even much higher standards than those provided by TRIPs through various fora, such as, OECD, WIPO, WTO, INTERPOL, as well as through the free trade agreements (FTAs) and the economic partnership agreements (EPAs).[15] Their aim is to develop new and additional standards of IP enforcement.

1.3 Problem statement

The basis upon which the IP system was established was to balance the public and private interests for the promotion of a greater good, by fostering innovation for the social well-being overall. However, with the ever-increasing levels of IP protection initiated by developed countries; this fundamental balance seems to have been lost. The assumption seems to be that the promotion of IP automatically translates into the promotion of technological innovation, and is therefore, of benefit to the society.[16] This justification rests on the hypothesis that, in the absence of IPRs, inventors would be unable to appropriate the returns from their intellectual endeavours'. Therefore, it is argued that, in order for developing countries to reach the stage of technological and economic maturity, they have to upgrade their IP systems to provide for a stringent IP protection system.

However, in reality, the ever-increasing levels required for IP protection seem to be creating a technological roadblock for developing countries in their efforts to integrate into the world economy. This is evidenced by the little innovation that finds its way into the international markets from developing countries. The ratchet-up levels of IP protection are stifling innovation, and drastically undercutting the

[15] Ibid.

[16] F Musungu 'Rethinking innovation, development and intellectual property in the UN; WIPO and beyond' (2005) TRIPS Issues Paper 5 at 7. Available at *http://www.quno.org/geneva/pdf/economic/issues/TRIPS53.pdf* (accessed 12 December 2010).

opportunities for learning and dissemination of knowledge and information that industrialised countries previously enjoyed.[17]

It is the intention of this thesis to evaluate whether, strong IPRs protection does act as a spur to technological innovation in the context of developing countries. In relation to this, the thesis will examine if there are any incentives to innovate without the granting of stronger IPRs protection, and if so, how efficient an alternative system to monopoly setting would work, regarding competition and innovation for technological expansion and economic growth in these countries.

1.4 Scope and objectives of the study

Advocates of stronger IP protection argue that IPRs act as a spur to innovation, which, in turn, leads to economic growth. They further argue that IPRs are essential for knowledge generation, which leads to the economic development; therefore, in order, for developing countries to reach the stage of economic and technological maturity, they have to upgrade their IP systems to give effect to stronger IP protection. It is upon this basis that this thesis is going to make a critical analysis of the correlation between a stringent IP protection system and technological innovation in the context of developing countries. The focus will be on the industrial property branch of the IP system, to test whether the aforementioned argument is correct or not, and if not, what the alternatives are.

Generally, the study will examine the role played by a stringent IP protection system in the technological innovation of South Africa, India and Lesotho. A detailed analysis of the industrial property systems of these countries will be made by discussing the current laws, conventions and the institutions put in place for the protection of industrial property.

1.4.1 The major objectives of this study

- to test whether the hypothesis that, in order for developing countries to reach the stage of technological and economic maturity, they have to upgrade their IP systems to provide for much stronger IP protection is accurate or not;

[17] Ibid at 6.

- to explore the correlation between stringent IP protection and technological innovation in the economies of South Africa and India, and to explore whether stronger IP protection acts as a spur to innovation or acts as a deterrent in these countries;
- to make a critical analysis of the upgraded industrial property laws of Lesotho to ascertain whether they act as a spur to innovation or whether they hamper it; and finally,
- to make recommendations on how the Lesotho IP system can be changed in order to promote creativity and innovation.

1.5 Methodology

The thesis will provide an economic analysis of the industrial property law. To make this analysis, the thesis will utilise the two distinct theories of legal efficiency, namely, the positive law and economic theory, and the normative law and economic theory. The positive law and economic theory uses economic analysis to predict the effect of various legal rules, whereas the normative law and economics theory makes policy recommendations based on the economic consequences of various policies. In general, a positive analysis describes, explains and predicts, whereas a normative analysis compares alternatives and proposes solutions.[18]

These two theories will be used to test the hypothesis that stronger IP protection acts as a spur to technological innovation. A positive approach will be used to describe the economic effects of stronger IPRs on innovation in developing countries' markets. This will include an analysis of the current legal framework and practices of South Africa, India and Lesotho. A normative enquiry will be used to make recommendations on the positive findings in the thesis, as well as to compare alternatives to the IP system, and, finally, to propose how the system can be made more efficient in the context of Lesotho.

[18] FR Lewell The role of intellectual property rights, innovation and competition law in the European software industry – If there is no promise of monopoly would there be any incentives to innovate? (2009), at 2. [Master's thesis, Aarhus University].

1.5.1 Sources

This study is largely desk-bound. The main sources of material will be theory derived from academic books, research reports on IP and innovation, and the national and international laws on IP. The literature review covers and intensely examines the industrial property systems of South Africa, India and Lesotho in the context of a stringent IP protection system as envisaged by TRIPs. A detailed analysis of the role played by industrial property rights in technological innovation and economic growth in these countries will be made.

1.6 Chapter Synopsis

Chapter One: Introduction

In this chapter, the focus and scope of the study were highlighted.

Chapter Two: History of the intellectual property system

Chapter Two will give a brief historical background of the IP system, specifically what led to its establishment. The correlation between IP and innovation will be discussed and, the reasons for and against IP protection analysed.

Chapter Three: The industrial property systems of South Africa and India

A critical analysis of the value of the IPRs in the technological innovation landscape of South Africa and India will be given in this chapter by first discussing the IP systems of both countries and, thereafter, making an analysis of their economic and technological growth.

Chapter Four: The case of Lesotho

This chapter will present brief historical events of Lesotho and its status in the world map of economic growth. A critical analysis of the upgraded IP system of the country will be made.

Chapter Five: Recommendations for Lesotho

Chapter Six: Conclusion

CHAPTER TWO

HISTORY OF THE INTELLECTUAL PROPERTY SYSTEM

2.1 Introduction

This chapter will give a brief historical background of the IP system which will be recounted by means of presenting the theory, and doing a literature review. It will then proceed to make a critical analysis of the correlation between innovation and IP, with great emphasis on the arguments for and against IP protection.

2.2 Historical background of the IP system

The term 'intellectual property' was first introduced to the English-speaking world by Lysander Spooner in the nineteenth century.[19] While previously there was no formal legal term for IP, attempts were made to control valuable knowledge and information.[20] IP generally refers to the creations of the human intellect that result from human ingenuity, creativity and inventiveness, such as: the inventions; literary, musical and artistic works; designs; and marks.[21] An IP right is a legal right, which is based on the relevant national law encompassing that particular type of IP right. IP is divided into two branches; the first is industrial property which consists of the rights connected to patents, utility models, trademarks, industrial designs, and geographical indications, as well as acts of unfair competition. The other is the copyright and related rights branch, which protects works of literary, musical and artistic nature, as well as the performer's rights and broadcaster's rights.

However, the boundary between these domains has in some respects been eroding in recent years owing to the fast rates of diffusion of scientific innovation, that blur the boundary between patentable and copyrightable subject matters and its more widespread use as a source of corporate profits, as well as to convergent use of new technologies across sectors in what is increasingly being referred to the 'knowledge economy.' [22]

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[19] G Dutfield (n 8) at 4.
[20] C May, and SK Sell 'Intellectual property rights: A critical history' (2005) at 43.
[21] WIPO intellectual property handbook No. 895 (n 5) at 2.
[22] OECD report 1999.

The history of the IP system dates as far back as the Renaissance in northern Italy with the enactment of the Venetian law of 1474 which made the first systematic attempt to protect inventions by a form of patent.[23] However, prior to this piece of legislation, during medieval times in the eleventh to the fifteen centuries, there were attempts to organise the control of valuable knowledge and information on behalf of various groups, which stood to gain from their exploitation.[24] Certain segments of European commerce became centralised and exclusively controlled by various groups, which eventually led to the development of the patent custom. The most notable of these groups were the early guilds,[25] which were the groups of the masters responsible for maintaining a monopoly over their trade. They did this by regulating the prices, standards and wages, and by practising secrecy within their trade. For example, there were the craft guilds, which were responsible for controlling and limiting the availability of craft knowledge within the membership of the guild. This was done because they recognised the value of their craft knowledge and sought to protect it.

During the sixteenth century, the English monarchs discovered that the sale of monopoly privilege could be very lucrative.[26] They therefore took over the control of various sectors of the market by the granting of the 'letter patents'. The letter patents were grants for the exclusive exploitation of locally unfamiliar processes or devices that had originated elsewhere.[27] They were granted by the Crown on an indefinite basis to all manner of trades and manufactures, regardless of their novelty, to the foreigners who brought new technological skills into England. In turn, the patentee was required to train a number of citizens in the new art.[28] They offered the holder therein the privilege to exploit his invention to the exclusion of others. With time, this royal practice became burdensome on free competition and this situation was also exacerbated by the gradual transition from a feudal to a mercantile economy. In an attempt to remedy the situation, in 1623 the Statute of Monopolies was enacted to limit the power of the Crown to grant of wholesale monopolies by

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[23] K Idris 'Intellectual property: A power tool for economic growth overview' (2003) WIPO publication No.888.1 (2nd Ed), at 3. Available at *http://www.wipo.int* (accessed 12 December 2010).
[24] May, and Sell (n 20) at 475.
[25] R Miller, and MH Davis *Intellectual property, patents, trademarks and copyrights in a nutshell* (1983) at 4.
[26] Gupta and Rastogi (n 10) at 2.
[27] May, and Sell (n 20) at 476.
[28] Miller and Davis (n 25) at 5.

making such grants to the inventors only for a limited period and only for certain types of new manufacture. Even though the 1474 Venice Patent Act was the first Act, which made a systematic attempt to protect inventions by way of patents, the Statute of Monopolies marked the starting point of the modern patent system, because it addressed a number of basic patent issues that remain relevant today.

The history of IPRs in the nature of copyright is much more complex than that of patents. Its rise is inextricably intertwined with the development of printing.[29] In the eighteenth century, the term 'copyright' had a literal connotation, namely, 'the right to copy'. As in the case of patents, there was a craft guild in charge of text letters of those who served as limners or illustrators, as well as those who bound and sold books, who gradually came to be known as stationers.[30] The Crown also exercised its prerogative to grant monopolies with respect to the printing industry. However, these privileges were offered to the publishers, not the authors of the works. In essence, nowhere in these monopoly grants was there any recognition that the author might have property rights with respect to the works being printed.[31] In 1710, there was a huge change in the granting of privileges in relation to literary works. The Statute of Anne was enacted as a result of authors challenging the control that the publishing groups were exercising over the printing of their works; through the publishers being given copyright protection and not the authors, which resulted in the dependency of the authors on the publishers. The Statute of Anne established two new concepts, namely, copyright as a personal right of authors, and the principle of fixed term of protection for published works. Nonetheless, the publishers were still given legal protection of 14 years with the commencement of the Statute, and a further 21 years of protection for any book already in print. This marked yet another yardstick for the emergence of the modern IP system.

The rationale behind the Statutes of Monopolies and Anne was based on the economic interest of state. The right of the inventor was merely the result of a patent or copyright being granted in the interest of society.[32] After these Statutes came into being, various jurisdictions such as the United States enacted their patent and copyright statutes, which took their inspiration from the Statutes of Monopolies and

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[29] EC Waltercheid *The nature of the intellectual property clause: A study in historical perspective* (2002) at 59.
[30] Ibid.
[31] Ibid at 60.
[32] U Anderfelt *International patent: Legislation and developing countries* (1971) at 9.

Anne, thus continuing the emphasis on society's interest in such protection. These Statutes led to the evolution of different national IP systems, which however, varied in terms of the interpretation of novelty, length of protection, exceptions and the treatment for foreigners.

2.3 The Paris Convention for the Protection of Industrial Property (1883)

Because of the differing national IP systems of that time, it was difficult for inventors and creators to secure effective IP protection in foreign countries. The first multilateral response to this situation came about in 1883 in the form of the Paris Convention for the Protection of Industrial Property (Paris Convention),[33] which was followed by the Berne Convention in 1886. The Paris Convention introduced the concept of national treatment which eliminated discrimination among the patents applicants by conferring on foreign citizens a right to be treated in the same way as nationals in respect to the legal right and remedies attached to IP protection: each country party to the Paris Convention must grant the same industrial property protection to the nationals of other member countries as it grants its own nationals.

The Paris Convention further introduced the priority date concept, which entails that, the application for a patent in one member country permits the applicant therein to file his application in other member countries within a twelve-month period. During this time, the applicant could prevent third parties from applying for a patent on the same invention.

2.4 The Berne Convention for the Protection of Literary and Artistic work (1886)

In 1886, the second international treaty on IP protection titled, the 'Berne Convention for the Protection of Literary and Artistic Work, 1886', was adopted (Berne Convention). Like the Paris Convention, the Berne Convention introduced the principle of national treatment in respect of literary and artistic works.[34] It also established the minimum standards of national copyright legislation, such as, the term of protection being the life of the author plus 50 years after death.[35] Both the

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[33] G Dutfield (n 8) at 1.
[34] See Articles 3 to 5 of the Berne Convention for the protection of Literary and Artistic Works (1886).
[35] Article 5(2) of Berne Convention.

Berne and Paris Conventions are regulated under the auspices of the World Intellectual Protection Organization (WIPO).

2.5 The Agreement on Trade Related Aspects of Intellectual Property Rights (1994)

In 1994, there was yet another change in the international IP protection landscape, with the adoption of the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPs). The TRIPs Agreement encompasses all the pillars of IP and introduced the principle of the minimum standards of IP protection, the principle that envisages that subsequent agreements on IP will have to adopt these minimum standards or much higher and expansive standards. It is regulated under the auspices of World Trade Organisation (WTO).

The TRIPs Agreement has three main features: the standards, enforcement and dispute settlement. In terms of the standards, TRIPs sets out the minimum standards for IP protection, which are aimed at strengthening global norms and enforcement, as well as reducing the variances in national IP regimes.[36] Furthermore, the minimum standards oblige the signatories to adopt appropriate legislation protecting all the fields of IP. In terms of the enforcement, the second main set of provisions deals with domestic procedures and remedies for the enforcement of IPRs, by laying down certain general principles applicable to all IPRs enforcement procedures.

Lastly, the formal incorporation of IP into WTO via TRIPs, has led to the application of the WTO's Dispute Settlement Understanding (DSU) which could justify measures of commercial retaliation, including cross-retaliation in the event of non-compliance with TRIPs obligation.[37]

Since the adoption of TRIPs, there has been controversy on the role of IP protection in fostering innovation, technology and the industrial development.[38] There are differing opinions between developed countries, which are technology exporters, and developing countries, which are technology followers. The most

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[36] E Teljeur *Intellectual property rights in South Africa: An economic review of policy and impact* (2003) at 39.
[37] P Roffe, C Spennemann, and J Von Braun 'Intellectual property rights in free trade agreements: Moving beyond TRIPs minimum standards' in C Correa (ed) *Intellectual property in the WTO research handbook on the protection of intellectual property under WTO rules* (2010) at 4.
[38] Verma (n 7) at 45.

contentious part of TRIPs concerns patents. Even though TRIPs retained the basic principle of mutuality and quid pro quo for patent grant, it has widened the scope, duration and strength of patent protection.[39] In terms of Article 27.1, members are to grant patents for any inventions, whether processes or products, in all fields of technology without discrimination, if they are new, involve an inventive step and are capable of industrial application. It goes further to provide that patents shall be available and the rights therein exercised without discrimination as to the place of invention, the field of technology and whether products are imported or locally produced.[40] This has led to the broadening of the scope of patentable subject matter. In terms of Article 33, the period of patent protection is extended to 20 years.

However, TRIPs does allow for some important flexibilities, which the members can utilise to fine tune their national IP systems to meet their developmental requirements. These are contained in the preamble and several articles.[41] The preamble contains the general goals of TRIPs, which include, among others, the attempt to balance the rights of the right holder with his obligations and responsibilities to the society. It further, takes into account the need to promote effective and adequate protection of IPRs, but at the same time ensuring that measures and procedures to enforce IPRs do not themselves become barriers to legitimate trade.[42] These objectives should be read in conjunction with Article 7, according to which the protection and enforcement of IPRs should contribute to the promotion of technological innovation, and to the transfer and dissemination of technology. This has to be to the mutual advantage of producers and users of technological knowledge, and in a manner conducive to social and economic welfare, as well as to a balance of rights and obligations.[43]

In terms of Article 8, members may, when formulating or amending their laws or regulations, adopt measures necessary to protect public health and nutrition, and to promote public interest in sectors, which are vital to their socio-economic and technological development. In Article 8.2, the Agreement accepts the need to prevent

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[39]Gupta and Rastogi (n 10) at 8.
[40]Roffe, Spennemann, and Von Braun (n 37) at 5.
[41] See Articles 2; 7; 8; 27.2; 30; and 31 of the TRIPs Agreement.
[42]Gupta and Rastogi (n 10) at 8. See also V Manickavasagam 'Intellectual property rights and the impact of TRIPs Agreement with reference to Indian patent law' (2007) Planning Commission report, at 5.
[43] Manickavasagam (n 42) at 5-6.

the abuse of IPRs by the patent holders. The members can prevent abuse by employing measures, such as, compulsory licences, licences of right and government or third party use. In terms of Article 31, members are empowered to take legislative measures to provide for compulsory licences in their patent laws to guard against abuses, which arise due to failure to work or insufficient working of a patent. Further, compulsory licenses can be issued in case of lack of local working of a patented article. However, the scope of all types of licenses is on limited basis.

Furthermore, TRIPs allows for three exceptions to the basic rule on patentability. The first one is provided by Article 27.2, which states that members may exclude from patentability inventions, which are contrary to ordre public or morality. This explicitly includes inventions, which are dangerous to humans, animals or plant life or health or seriously prejudicial to the environment.[44] However, this is subject to the condition that the commercial exploitation of the invention must also be prevented and the prevention must be necessary for the protection of ordre public or morality. The second exception is that the members may exclude from patentability, diagnostic, therapeutic and surgical methods.[45] The third exception is that plants and animals other than microorganisms, and essentially biological processes for the production of plants or animals other than non-biological and microbiological may be excluded from patentability's scope.[46]

In addition, TRIPs provides for certain basic principles, such as, the National Treatment and the Most Favoured Nation (MFN) principles which guard against discrimination in IP protection.[47] The National Treatment principle forbids discrimination between a member's own nationals and the nationals of other members,[48] whereas the MFN principle forbids discrimination between the nationals of other members.[49] The obligations under TRIPs apply equally to all the signatories, however, in recognition of difficulties that some members might encounter in implementing it, TRIPs provides for progressive implementation of its obligations.[50]

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[44]Manickavasagam (n 42) at 6.
[45] See Article 27.3(a) of TRIPs.
[46] Article 27.3(b).
[47]Manickavasagam (n 42) at 3.
[48] Article 3.
[49] See Article 4. And also Manickavasagam (n 42) at 5-6.
[50] C Lumina 'Free trade or just trade? The WTO, human rights and development [Part 2]' (2010) 12 Law, Democracy and Development at 2. Available at *http://www.jutalaw.co.za/catalogue/itemdisplay.jsp?item-id=8843* (accessed 2 February 2011).

Thus, developing countries and least- developed countries (LDCs) were allowed five and eleven years, respectively, with the possibility of extension, to implement TRIPs obligations with the exception of Articles 3, 4, and 5.

2.6 The industrial property branch

The IP system is based on the premise that products of intellectual activity are personal property, and like real property, they deserve to be protected. The industrial property branch includes rights connected to patents, trademarks, industrial designs, utility models and acts of unfair competition.

2.6.1 Patents

Patents are one of the pillars of IP and are associated with technological innovation. They refer to rights granted to anyone who invents any new and useful process, machine, article of manufacture or composition of matter. The effect of a patent is to give a limited monopoly to the inventor to exclude third parties from making, using, offering for sale, selling or importing the patented product, using the patented process, or importing a product made with the patented process, for a certain period, usually 20 years per the TRIPs Agreement. Patents are granted on a country-to-country basis and, in a limited number of circumstances, on a regional basis, but the patents so granted are independent of one another because each country has its own statutory requirements for the registration of patents.[51]

In return for being granted a patent monopoly, the inventor has to fully disclose his invention, and during the subsistence of the patent, anyone who wishes to exploit the subject matter of the patent must first obtain a licence from the patent holder.

2.6.2 Trademarks

Trademarks do not squarely fall within the structure of IP. They are marks used in trade to distinguish goods or services from one another. They are not protected because one has invented something, but to protect the owner from the competitors. They give the owner the exclusive right to use the mark as a trademark. The mark can be used to distinguish either goods or services of the right holder from the goods or services of other traders in the same business. They are subject to registration. In

[51] D Collier-Reed 'Intellectual property' in Collier-Reed, D and Lehmann, K (ed) *Basic principles of business law* (2006) at 387.

their early days, trademarks were used to identify the goods as the product of a particular craftsman or a group of craftsmen, so their original function was to indicate the origin of goods by identifying the craftsmen who produced them.

2.6.3 Industrial designs

Industrial design protects the shape and appearance of an industrial article not the underlying principle of the article or its functional purpose. Design can be of an aesthetic nature or of a functional nature, and it may be registered as either or both design classes.

The origin of industrial designs can be traced back to the 1787 English Act on Designing, Printing Linens, Cottons, Calicoes and Muslins. At first, they applied only to the cloth industry, but as a result of the phenomenon of industrialisation and the use of mass production methods in other fields of industry, their scope was extended. In 1842 (Designs Act of 1842), the first legislation governing the industrial designs in all the fields of manufacturing industry was enacted. This piece of legislation led to the recognition of industrial designs as a fundamental element of all production and manufacturing industry.[52]

2.6.4 Utility models

A utility model is an exclusive right granted for an invention, which allows the right holder to prevent others from commercially exploiting the protected invention without his authorisation for a limited period. The basic definition of utility models, which may vary from one country to another, is that utility models are similar to patents, and they are usually referred to as 'petty patents or innovation patents'. They offer a cheap, non-examination protection regime for technical inventions, which would not usually fulfil the strict patentability criteria.[53]

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[52]WIPO intellectual property handbook No.489 (n 2) at 99.
[53]U Suthersanen 'Utility models and innovation in developing countries' (2006) UNCTAD-ICTSD project on intellectual property rights and sustainable development, at 1. Available at *http://www.iprsonline.org* (accessed 16 February 2011).

2.7 The correlation between IP and innovation

IP has been a subject matter of many a fierce debate in which the proponents of either side profess their case ardently.[54] One of those fierce debates is on the role which is played by IP in relation to innovation.

Innovation is defined as the first business use of something new, which results in commercial gain.[55] Generally put, an innovation is developing a new idea and putting it into practice. It is an interactive process, which is made up of a number of distinct stages, namely, the conception of an idea stage, and the research and development stage, up to the stage of bringing it into the market place.

There are several different types of innovation, which fall broadly into two categories: technological and non-technological innovation. Technological innovations may be classified in several ways, i.e. products vs. processes, radical vs. incremental, and descriptive vs. sustaining innovation. Types of innovations of a non-technological nature do not result from any scientific or technological research and development, and are: marketing, institutional, and complementary innovation.[56]

2.7.1 The role of IP in technological innovation

An examination of the literature reveals a sharp division in opinion concerning the exact role, which is played by IP in the technological innovation process. On the one hand, as the purpose of the IP system is to provide incentives to innovate, IPRs are considered as essential to encourage creative intellectual endeavour in the public interest. It has been argued that IPRs act as a spur to technological innovation activity, which, in turn, provides society with a steady stream of innovations that fuel economic, cultural and social progress.[57] This justification rests on the hypothesis that in the absence of IPRs, the inventors would be unable to appropriate the returns

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[54] Gupta and Rastogi (n 10) at 3.

[55] L Hua-wel Independent innovation and intellectual property rights at 196. [Master's thesis, Wuhan University of Technology, PR China, 430070].

[56] CM Kalanje 'Role of intellectual property in innovation and new product development'. Available at *http://www.wipo.int/export/sites/www/sme/en/documents/pdf/ip-innovation-development.pdf* (accessed 19 December 2010).

[57] International Chamber of Commerce report 'Making intellectual property to work for developing countries' (2005) at 8. Available at *http://www.iccwbo.org* (accessed 9 March 2011).

from their intellectual creations, with negative consequences in terms of innovation incentives for the society as a whole.[58]

This argument is based on the fact that technological innovations belong to the category of objects and services that economists refer to as public goods. The distinctive features of public goods are that they can be replicated easily and that they are nonrivalrous,[59] meaning that their consumption by one person does not compete with that by another.[60] Therefore, because a public good is non-exclusive, without IP protection, an innovation can be utilised by competitors as soon as it becomes available, which might lead to the fall of technological innovation pace below socially optimal levels.[61]The assumption seems to be that the promotion of IPRs automatically translates into the promotion of innovation, and this is therefore of benefit to the society at large.[62]

A differing opinion is that some observers believe that, in practice, the IP system hinders competition to the extent that it is often seen to be playing a negative role in innovation. It is argued that the cause of this is the ever- increasing levels required for the protection of information, technology and creative activity through IPRs, which, in turn, stifle innovation activity and are drastically undercutting the opportunities for learning and diffusion of information.[63] It is further argued that IPRs sometimes impede cumulative innovation because of their nature. IPRs give the holder therein the exclusive right to exploit his invention or creation to the exclusion of others. This creates a monopoly which might impede other eligible innovators to improve on an already- existing technology. For example, the United States Company, AT and T, slowed down the introduction of radio for twenty years because of the patents it had collected which ensured its monopoly on telephones.

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[58] The Commission on Intellectual Property Rights, Innovation and Public Health report on 'Public health: Innovation and intellectual property rights' (2006) at 32. Available at *http://www.who.int/ip/documents/thereport/CIPIHReport23032006.pdf* (accessed 21 February 2011).
[59] W Fisher 'Intellectual property and innovation: Theoretical, empirical and historical perspectives' in *Industrial property, innovation and the knowledge-based economy* (2002) at 1.
[60] Research perspectives of the Max Planck society on 'Innovation and entrepreneurship' (2010) at 78.
[61] Fisher (n 59) at 1.
[62] Musungu (n 16) at 7.
[63] Ibid at 6.

It has also been argued that, because IPRs empower the innovators with the right to price their commodities, they have a negative effect by pricing some consumers out of the markets for the goods produced with those innovations.[64]

Another argument against IP protection is that it is costly to administer. The cost of administration includes, for example, the establishment and maintenance of patent registration systems, the staffing of courts to interpret and enforce entitlements, and the employment of lawyers to obtain and to protect entitlements. All of these are said to consume substantial social resources.[65] Therefore, recognition of these drawbacks suggests that IPRs should not be created and extended casually. Instead, they should be established only in contexts in which their benefit in terms of stimulating productivity exceeds their concomitant social costs.[66]

[64] Fisher (n 59) at 4.
[65] Ibid.
[66] Ibid at 5.

CHAPTER THREE

THE IP SYSTEMS OF SOUTH AFRICA AND INDIA

3.1 Introduction

Proponents of stronger IP protection argue that, because IP acts as a spur to technological innovation, it should be accorded stronger protection. To investigate the truth of this hypothesis, this chapter will focus on the IP systems of South Africa and India, in particular the industrial property branch. The chapter will closely examine the developmental stages of the industrial property regimes of both countries as they are trying to integrate the global IP standards, especially the TRIPs' standards. The aim is to make a critical analysis of the impact of stronger IP protection on technological innovation of these two jurisdictions. This will be achieved by closely examining the performance of both countries in the global trade markets pre-TRIPs and after the incorporation of TRIPs provisions into their IP systems. The chapter is divided into two sections; section one will deal with the South African IP system and section two will be on the Indian IP system and its performance in the global markets.

SECTION ONE

3.2 South Africa

The Republic of South Africa, known as South Africa in short, is a parliamentary democracy, which comprises of nine provinces. It is located at the southern tip of Africa. Its population is about 49 million. The World Bank ranks the economy of South Africa as an upper middle-income economy, which makes it one of only four countries in Africa represented in this category.

3.3 South Africa's IP System

3.3.1 Domestic legislation

Intellectual property rights (IPRs) are essentially national regimes, albeit subject to international agreements, particularly the TRIPS Agreement that sets minimum

standards for IPRs protection. A country's IPRs regime consists of several aspects, which include standards, limitations and enforcement.[67]

Because of its colonial past, South Africa has at all times, had a modern IPRs system which is traceable to the Patents, Designs, Trademarks and Copyright Act No. 9 of 1916.[68] Thus, when South Africa joined WTO in 1995 and thereby adhered to the TRIPs Agreement, only minor changes were required in its legislation,[69] since it was already a signatory to many of the international treaties, which TRIPs incorporates. It was further, given until 1 January 1996 to become fully TRIPs compliant, unlike other middle income countries because, under TRIPs, it is considered developed. Furthermore, the South African IP system has retained close links with the British IP system and, more recently, with the European Union (EU) IP system.

Before 1910, South Africa consisted of several British colonies and the Boer Republics, which were also known as the 'Zuid-Afrikaanse Republiek'. Each of the colonies and republics had its own IP laws, which were similar to the then current British, and Dutch IP laws.[70] In 1909, the South Africa Act was passed which effected the bringing of the colonies and republics (the Cape Colony, Natal, Orange Free State and the Transvaal) together as the Union of South Africa. In 1910, the Union of South Africa was finally formed, and subsequently became the Republic of South Africa in 1961. After the merger in 1910, the IP laws of the colonies and republics were consolidated and resulted in the Patents, Designs, Trademarks and Copyright Act 9 of 1916 which was influenced to a large extent by British Patents Act of 1917. This was compendium legislation dealing with the major IP categories. Subsequently, when this Act (1916) was repealed, separate Statutes were enacted for each category.[71]

The principal legislation and formal legal instruments directly dealing with IPRs protection in South Africa include, amongst others, the Patents Act, 1978, the Merchandise Marks Act, 1941, the Trademarks Act, 1993, the Copyright Act, 1978, the Designs Act, 1993, the Counterfeit Goods Act, 1997, and their respective

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[67] Teljeur (n 36) at 50.
[68] D Kaplan 'Intellectual property rights and innovation in South Africa: A framework' in WIPO handbook: *The economics of intellectual property in South Africa* (2009) at 1. See also Teljeur (n 36) at 51.
[69] Kaplan (ibid) at 2.
[70] D Burrell *South African patent law and practice* (1986) at 7.
[71] Kaplan (n 68) at 1.

amendments. These Acts each had their own particular provisions and they have subsequently developed more or less independently to conform to the international development and best practice.[72] However, more recently, efforts have been made to bring the various IP Acts more in line with each other, and several amendment Acts were passed in 1996, 1997 and 2001 to effect this change.[73]

3.3.2 International treaties, convention and institutions

On the international level, South Africa is actively involved in the formulation and implementation of international policy on IP and is a member of most of the international treaties on IP. South Africa has been a member of the Paris Convention since 1947, the 1970 Patent Cooperation Treaty (PCT) since 1994, the Budapest Treaty since 1997, and is a member of TRIPs. It has also been a member to the Berne Convention since 1928, and the WIPO Copyright Treaty (WCT) and the WIPO Performance and Phonograms Treaty (WPPT) since 1997.[74] It has also been a member of the 1967 Treaty establishing WIPO since 1995.

Of particular interest is the TRIPs Agreement, which constitutes a milestone in the process of the harmonisation of IP standards globally. The TRIPs Agreement came into effect on 1st January 1995, and it is to date the most comprehensive multilateral agreement on IP. It covers all the areas of IP, namely, copyright and related rights; trademarks; geographical indications; industrial designs; patents, including the protection of new varieties of plants; and undisclosed information, including trade secrets.

3.4 South Africa's IP policy framework and administration

The Department of Trade and Industry (DTI) is the custodian of IPRs in South Africa. It is responsible for policy formulation in all the realms of IPRs. It furthermore, provides the framework for registration, examination (in the case of trademarks) and adjudication.[75] However, legislation on IPRs involves participation from a number of government departments and statutory bodies, such as, inter alia, the Departments of Arts, Culture, Science and Technology; Health; and

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[72] N Phaswana, and D Tanziani 'The business impact of intellectual property laws in South Africa' in Routledge (ed) *Intellectual property, innovation management in emerging economies* (2010) at 1.
[73] Teljeur (n 36) at 51.
[74] Kaplan (n 68) at 2.
[75] Teljeur (n 36) at 50.

Communication, as well as the National Advisory Council on Innovation (NACI) and the Council for Scientific and Industrial Research (CSIR).[76]

The Companies and Intellectual Property Office (CIPRO) was responsible for the administration of IPRs legislation. However, on the 1st May 2011, the new formed Companies and Intellectual Property Commission (CIPC) took over. CIPC was formed by the merger of CIPRO and the office of Company and Intellectual Property Enforcement (OCIPE). Its main functions include amongst others, maintenance of current registers of enterprises, trademarks, designs, and patents; conducting ex parte hearings; and adjudicating in cases involving trademarks opposition. To discharge its mandate, CIPC works closely with the South African Revenue Services (SARS) and the South African Police Service (SAPS) in enforcing IPRs legislation.

3.5 South Africa's industrial property regime

South Africa has a relatively sophisticated IP system that is in line with TRIPs. The national IP system is supported by sound policy and regulations.[77] South Africa is seen as quite advanced by international standards in terms of its legislation. Lesser (2001) ranked it highest among developing countries based on an indicator that includes TRIPs compliance, PCT application and prices as proxies for efficiency of the patent regime.[78] Out of a total of 44 developing and industrialising countries for the year 1998, South Africa scored highest. Again, in 2005 it scored 4.25 on the Ginarte Park index, higher than many countries at comparable stages of development, such as, Brazil, and comparable with a number of industrialised countries.

As mentioned before, South Africa's IP regime has an elaborate array of legislation dealing with IP protection, but for the purposes of this thesis, the focus will be only on the industrial property laws. The specific protection of industrial property under South Africa's IP system is provided by, inter alia, the Patents Act

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[76] Ibid at 51. See also P Kameri-Mbote 'Intellectual property protection in Africa: An assessment of the status of laws, research and policy analysis on intellectual property rights in South Africa' (2005) International Environmental Law Research Centre, at 6. Available at *http://www.ielrc.org/content/w0503.pdf* (accessed 9 March 2011).

[77] S Pefile 'Innovation in developing countries to meet health needs: Case of South Africa' in Commission on Intellectual Property Rights, innovation and Public Health's report on Innovation in developing countries: Experiences of China, Brazil, South Africa and India (2005) 7 at 17.

[78] Teljeur (n 36) at 50, and Kaplan (n 68) at 2.

1978, the Merchandise Marks Act 1941, the Trademarks Act 1993, and the Designs Act 1993, together with their respective amendments.[79] In addition to this, there is also the Intellectual Property Rights from Publicly Financed Research and Development Act, 1998, which came about as a result of the National Research and Development Strategy (NRDS) efforts. The government in 2002 passed NRDS in an effort to stimulate innovation by way of providing the IP policy framework. It introduces a framework for the establishment and funding of a range of technology missions that are crucial to promote economic and social development, such as, the Biotechnology mission. There are also the Counterfeit Goods Act 1998 and the Common Law remedy of Unlawful Competition.

3.5.1 Patents Act of 1978 (as amended in 2001 and 2004)

The South African Patents Act of 1978 was initially closely based on British law and, much more recently, with the European Patent Convention (EPC).[80] The scope of South African patent is wide, as stipulated by s 25(1) of the 1978 Act, which specifies that 'A patent may be granted for any new invention which involves an inventive step and which is capable of being used or applied in trade or industry or agriculture'. The duration of patent is twenty years from the date of application, with an annual renewal obligation (s 46 (1)), which is in line with TRIPs' provisions. In terms of s 32, the applicant is required to disclose the invention in a manner that would enable the person skilled in the art to put it into practice. The disclosure, in turn, increases the body of knowledge that is made available for further research.[81] An invention can only be patented if it satisfies the following three requirements as stipulated in s 25(1): it must be new; it must involve an inventive step - not obvious to the person skilled in the art; and it must be industrially applicable.

The applicant has to file his application with CIPC, however, CIPC does not examine patents application; it only registers patents that fulfil the formalities set out for registration. The substantive novelty and the inventive merit of the application are not subjected to verification.[82] This has been taken as a major drawback, because owning a South African patent does not give the owner the guarantee that it is valid.

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[79]Teljeur (n 36) at 51.
[80] Kaplan (n 68) at 1-2.
[81]SG Mukuka Indigenous knowledge systems and intellectual property laws in South Africa [Doctorate thesis, University of Witwatersrand, Johannesburg, 2010] at 6.
[82]Kaplan (n 68) at 3.

Possession of a patent granted in South Africa will be of no substantive value to any South African innovator wishing to commercialise a product abroad.[83] Another setback to the patent regime is the simple search of patents, which is followed by CIPC. There is WIPO's international patent classification system (IPC) which provides subclasses levels and groups and subgroups levels. CIPC does follow IPC, but only to the level of subclasses, not to the level of groups and subgroups.[84] This tends to lead to excessive broad scope of patents, which might lead to the discouraging of new innovators.

The South African patent system operates on the basis of the first-to-file rule as opposed to the first-to-invent rule. The first-to-file rule postulates that the granting of a patent is on the basis of the first person to file, not on the first person to invent.

3.5.2 Trademarks of 1993 and the Merchandise Act of 1941 (as amended in 2001)

The Trademarks Act of 1993 and the Merchandise Marks Act of 1941 govern South African trademarks. The trademark gives the owner the exclusive right to prevent third parties from using, without consent, identical or similar signs for goods or services, which are identical, or similar to those in respect of which the trademark is registered, where such would result in a likelihood of confusion or dilution of the trademark. A trademark is defined in s 2 as:

> 'Any sign capable of being represented graphically, including a device, a name, signature, word, letter, numeral, shape, configuration, pattern, ornamentation, colour or container for goods or any combination of the aforementioned.'

The period of protection is 10 years calculated from the date of application, and can be renewed indefinitely subject to payment of the prescribed renewal fees. Trademarks applications are examined for conditional approval or rejection after a statutory waiting period of six months. The examination conducted involves a search among registered marks, and pending applications to ascertain the presence of conflicting marks.[85] The approved applications are subsequently open to a three-month opposition period.

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[83] Ibid.
[84] Teljeur (n 36) at 54, and Kaplan (n 68) at 3.
[85] Teljeur (ibid).

Furthermore, the marks which have become distinctive through use but which are not registered under the Trademarks Act are protected under common law by means of a common law action of passing off.[86] The Merchandise Marks Act of 1941 as amended in 2001 makes provisions for the application of trade descriptions to goods and alteration of trademarks. It also prohibits the unauthorised use of flags and other official signs as trademarks.[87]

3.5.3 Designs Act of 1993(as amended in 1997)

The Designs Act of 1993 governs designs registration under the South African IP system. The Act provides for registration of both aesthetic and functional designs. An aesthetic design has to be new and original, have beauty in its shape, configuration or ornamentation, and capable of being produced by an industrial process (s 1(1)). The term of protection for aesthetic designs is 15 years and has to be renewed annually. A functional design has to be new and not common place. Its shape or configuration must be necessitated by the function, and capable of being produced by an industrial process (s 1(1)). The term of protection for functional design is 10 years and has to be renewed annually.

3.5.4 Counterfeit Goods Act of 1997

The Counterfeit Goods Act has been enacted to counteract the increasing problem of counterfeiting in the country. The Act aims to enforce and protect intellectual rights holders against counterfeiting and piracy. In accordance with TRIPs provisions, the Act complements the Copyright Act, 1978, the Trademarks Act, 1993 and the Merchandise Marks Act, 1941, particularly s 15. In terms of s 1 counterfeiting is defined as:

> 'manufacturing, producing or making any goods, whether in South Africa or elsewhere without the authorisation of the owner of the IPR in the protected goods or applying to such goods the subject matter of that IPR or a colourable imitation thereof, so that the goods are calculated to be confused with or be taken as being the protected goods of the owner of the right.'

To constitute an act of dealing in counterfeit goods, the act must also infringe on the IPR. The following acts constitute an act of dealing in counterfeit goods:

- the possession or control of such goods in the course of business;

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[86]Mukuka (n 81) at 9.
[87]Kameri-Mbote (n 76) at 7.

- the manufacture of such goods, except for private and domestic use;
- the sale, hire, barter or exchange of such goods and the offer or exposure of such goods for sale;
- the exhibition of such goods in public for purposes of trade;
- the distribution of such goods for purposes of trade or for any other purpose resulting in the owner of the intellectual property right suffering prejudice;
- the importation or export of such goods, except for private or domestic use; and
- the disposition of such goods in any manner in the course of trade.

3.5.5 The Intellectual Property Rights from Publicly Financed Research and Development Act of 1998

The primary goal of this Act is to ensure that IP outcomes of publicly financed R&D are protected, and commercialised for the benefit of the people of South Africa, be it social, economic, military or some other benefit. The basis for this Act is the 2002 National R&D strategy, which identified a need for a policy, and legislative framework for managing IP emanating from publicly financed R&D.[88] The Act regulates IP developed by publicly financed institutions and small businesses.

The Act provides for the establishment of a National Intellectual Property Management Office (NIPMO), which will be the overseer of IPRs arising out of publicly funded R&D.[89] NIPMO's primary purpose is to ensure effective implementation of the Act through appropriate capacity building, advisory services, funding of IP costs, exercising public rights in respect of IP governed by the Act and regulatory measures required in terms of the Act. NIPMO further, assists with the establishment of Offices of Technology Transfer at the higher education institutions. Where such offices exist, NIPMO provides support and works with such offices to inculcate best practices in IP management and commercialisation as needs dictate (s 6).[90]

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[88] M Sibanda 'Intellectual property, commercialization and institutional arrangements at South African publicly financed research institutions' in WIPO handbook: *The economics of intellectual property in South Africa* (2009) 113 at 114.
[89] See s 8.
[90] Ibid.

3.5.6 Unfair/unlawful competition

The Harmful Business Practices Act of 1988 provides general protection from unfair competition. The law applicable for unlawful competition is the received Common Law. Unlawful competition can take a variety of forms, such as: trading in competition with others whilst breaching statutory provisions using a deceptive get-up, trademark or name of the goods, or services; wilful false statements about one's business; intimidating a competitor; spreading false or malicious rumours about a competitor's business; and misappropriating a competitor's confidential information or trade secret, as well as passing off.

Passing off is a species of unlawful competition. It concerns the wrongful appropriation of the benefit of the goodwill or reputation of another.[91] The basis of this is threefold: a) the act committed must be unlawful; b) it must be deliberately or negligently committed; and c) it must cause or be likely to cause patrimonial loss. The classic example of passing off consists of representations by a trader that his goods, services or business is that of another.[92]

3.6 Innovation landscape in South Africa

Innovation is vital for boosting economic growth and enhancing the quality of life. In order to foster innovation as a driver for economic growth and productivity, countries have to invest in human capital, and infrastructure for high technology industries. The South African government, through the Department of Science and Technology (DST), is seeking to shift the economy from being efficiency- driven towards being more knowledge- intensive.[93] The strategic policy instruments, which are aimed to transform South Africa to be a knowledge-based economy, have been set and are based on the concept that knowledge and innovation are essential elements for economic growth and development, as well as for global competitiveness.[94] However, to achieve this goal, the government will have to invest in new technology; and high technology industries, as well as a highly skilled labour force.

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[91] U Kumar *An introduction to the African industrial property system* (1993) at 74.
[92] Ibid.
[93] M Kahn and L Hounwanou 'Research and development in the services of an emerging economy: The case of South Africa' (2008) 35(7) *Science and Public Policy*, at 515.
[94] W Blankley and I Booyens 'Building a knowledge economy in South Africa' (2010) 106(12) *South African Journal of Science* at 475.

To evaluate innovation activities effectively, all the steps involved in the innovation process will be analysed. These steps will be divided into two categories for the purpose of this study: the first category is the input step, which comprises of Research and Development (R&D) and the human capital, the second category is the output step, which comprises of publications, patents, royalty receipts and payments, share of the global market and composite indicators.

3.6.1 Inputs

3.6.2 Trends of R&D in South Africa

Science and Technology (S&T) policy concerns have traditionally centred on R&D in many countries and South Africa is no exception. Just as Gross Domestic Product (GDP) has been taken as the measure of economic growth, so has the share of GDP devoted to R&D been taken as the measure of the S&T systems.[95] Gross expenditure on R&D (GERD) as a percentage of GDP is one of the most important indicators of a country's potential for innovation and growth because it reflects the intensity of R&D performance in a country.[96] In terms of the R&D survey for 1997/98, GERD dropped from 1.04% of GDP in 1991/92 to 0.69% in 1997/98. Since then, GERD showed a steady growth from 0.69%t to 0.95% in 2007 and dropped slightly in 2008 to 0.92%. As shown by the figure below, during the period between 2007/08 and 2008/09, the total GERD increased from R18 624 billion to R21 041 billion, which is a nominal annual increase of R2.4 billion. The 2008/09 expenditure represents a 13.0 % nominal increase over that of the previous year but was insufficient to keep up with the increase in the nominal GDP of 14.2% over the corresponding period. Consequently, GERD dropped slightly from 0.93% to 0.92%.[97]

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[95] W Blankley and D Kaplan 'South Africa's first survey of innovation in the manufacturing sector and recommendations for the next survey' in *Measuring innovation in OECD and non-OECD countries* 217 at 219-220. Available at *http://www.hsrcpress.ac.za* (accessed 28 February 2011).

[96] Blankley and Booyens (n 94) at 475.

[97] DST annual report 2009 at 2-3.

Table 1: Trends in high-level indicators for R&D intensity in South Africa

Indicator	Value		
	2006/07	2007/08	2008/09
GERD (Rand millions)	16 520.6	18 624.0	21 041.0
GDP at market prices (Rand millions)	1 741 060	1 999 086	2 283 822
GERD as a percentage of GDP	0.95	0.93	0.92
Total R&D personnel (FTE)a	30 986	31 352	30 802
Total researchers (FTE)b	18 572	19 320	19 384
Total researchers per 1000 total employment (FTE)c	1.5	1.5	1.4
Total R&D personnel per 1000 total employment (FTE)	2.5	2.4	2.2
Civil GERD as a percentage of GDP	0.89	0.87	0.87
Total researchers (headcount)	39 591	40 084	39 955
Women researchers as a percentage of total researchers	39.7	40.3	39.7

a FTE = Full time equivalent.

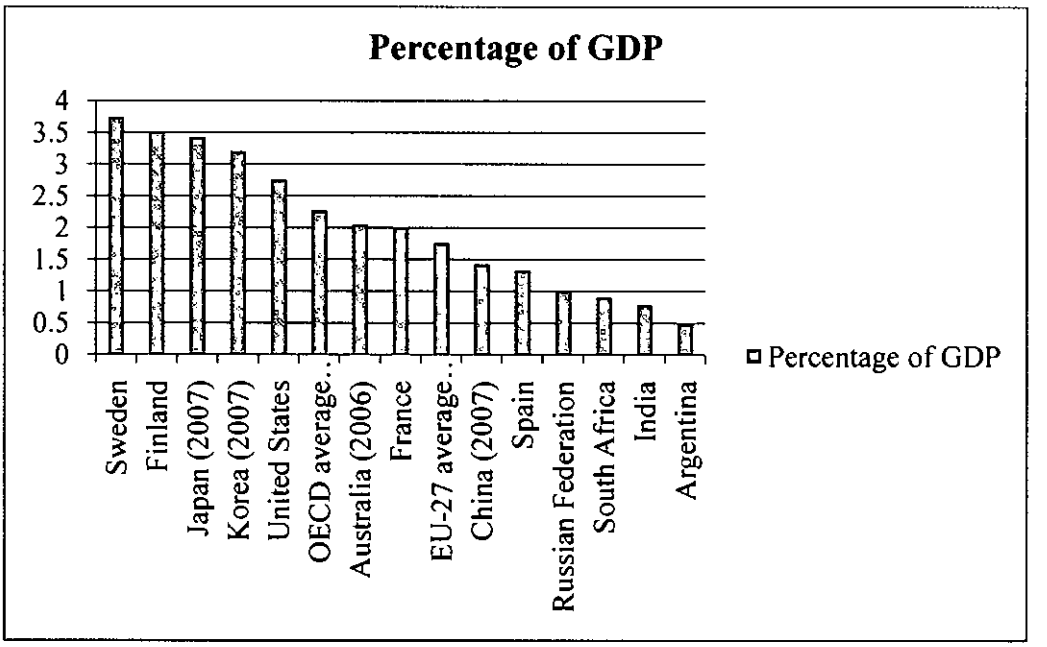
b FTE = Following OECD practice, doctoral students are included as researchers.

c FTE = Total employment is provided by the OECD form the International Organisation based on the Labour force survey statistics of South Africa.

Source: DST R&D survey reports (2007 and 2009).

When compared with other comparable countries, South Africa's GERD is very low. As shown by the figure below, South Africa's GERD in 2008/2009 was 0.92%, which is very low compared to countries such as, Korea, which stands at 3.21%, and Finland at 3.41%.

Figure 1: Gross expenditure on R&D as a percentage of GDP 2008 (or the latest year)

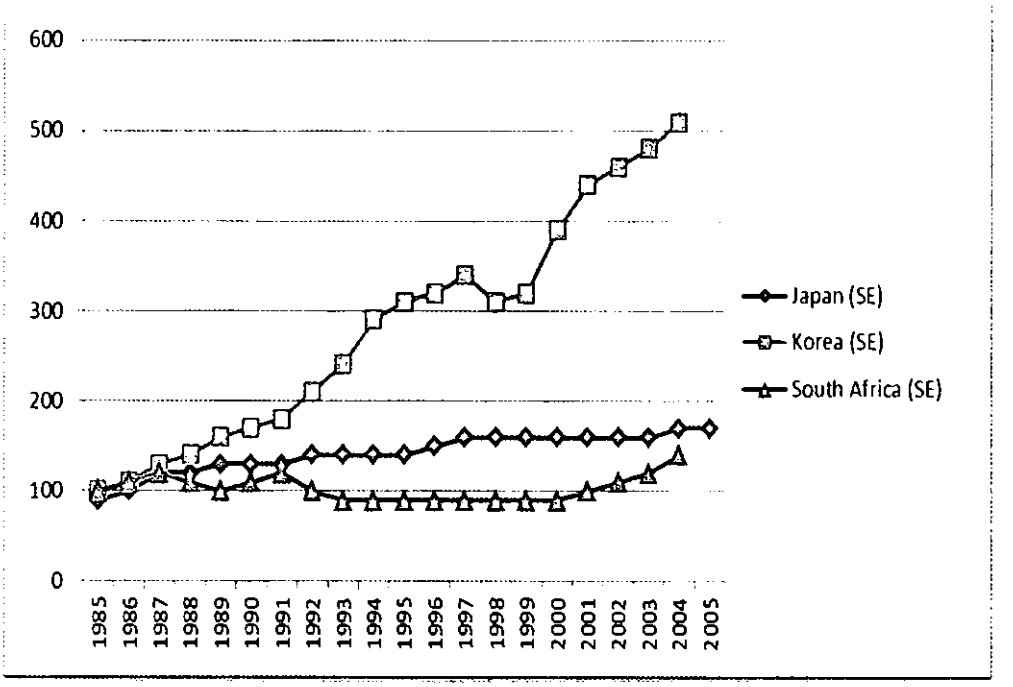


Source: International comparisons –OECD science and technology indicators (2009/02 edition). Data for India is from UNESCO Institute for Statistics (UIS).

3.6.2 Trends in human capital

Since 1985, the total number of researchers has increased from 20 000 to 22 000 in 2003. This reflects a growth rate of 10.11%, and in 2004 the number increased to 27 000. However, when compared to other developing countries, such as, Japan and Korea, this indicates a low growth rate in human resource development. For instance, as suggested by the data in the figure below, Korea has eight times more researchers than South Africa. The figure further reflects that Korea and Japan have seen growth rates of 406% and 70.87%, respectively, which are extremely higher than that of South Africa.

Figure 2: Growth rate in number of researchers (SE)



Source: Lingela and Buys (2007) at 9.

As reflected by Table 1 above, South Africa devotes comparatively large resources to R&D but this is not reflected in a greater number of researchers employed (as shown by Figure 1 above). There are various reasons for this, one of which is that South African research workers command significantly higher salaries than in comparable countries.[98] The other reason is that South African researchers are migrating in large numbers to other countries. The statistics show that in the ten-year period, 1989 to 1999, an estimated 10 000 South Africans engaged in science and technology immigrated, mainly to developed countries. Further, in terms of the 2004 World Competitiveness Year book, South Africa's brain drain was listed as one of the country's key challenges in global competitiveness = it ranked 58th worldwide in terms of the rate at which professionals are emigrating. This indicates that South Africa is in a weak position as far as the availability of skilled labour is concerned.[99] In terms of the 2008 OECD report, South Africa ranked lower (with 1.4% total researchers per thousand employed) than countries comparable to it, such as, China (2.1%), and Hungary (4.5%) in terms of the total number of researchers employed.

[98]Kaplan (n 68) at 6.
[99]Pefile (n 77) at 17.

3.6.3 Outputs

3.6.4 Science publications

The primary objective of research is to uncover information about a specific subject to generate new knowledge, which can be applied by various institutes, such as, universities, research institutes, and financial institutions. Publications generally represent the output of academic research, and the total number of scientific papers published by researchers of a particular country represents the intensity or level of scientific research in that specific country.[100] Regarding publications, there has been a slight increase in the number of South Africa's scientific publications since 1994. South Africa ranked 38th in the world in terms of the ISI citations in all fields over the ten-year period 1999-2009.[101]

However, South Africa's global share in publication has declined significantly from a peak of 0.7% in 1987 to 0.48% in 2003. In contrast, other comparable countries, such as, Brazil, India and Korea, starting from a lower base, have overtaken South Africa as their share of world publications has climbed steadily.[102] As reflected by the figure below, South Africa at 38 ranks lower than comparable countries, such as, India and Brazil.

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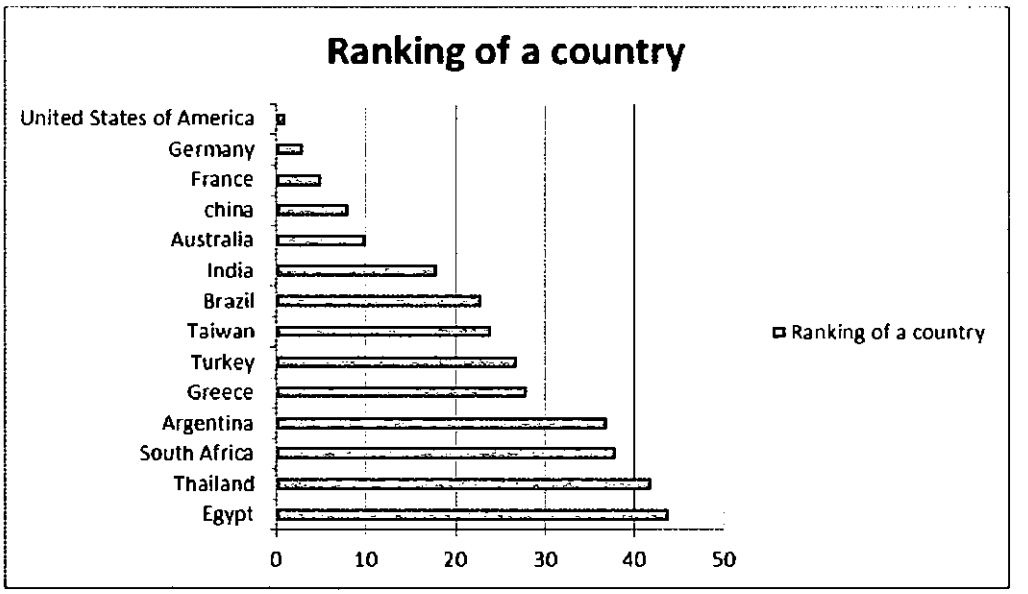
[100] V Lingela and A Buys 'An innovation management framework to improve national competitiveness in developing countries' (2007) Paper for the 16th international conference on 'Management of technology' at 11. Available at *http://www.nacinnovation.biz/wp-content/uploads/an-innovation-management-framework-to-improve-national-competitiveness-in developing-countries.pdf* (accessed 19 May 2011).

[101] Blankley and Booyens (n 94) at 477.

[102] Kaplan (n 68) at 6.

Figure 3 Country rankings on the institute for scientific information citation in all fields (1999-2000)



Thomson Reuters ISI, Essential Science Indicators.

3.6.5 Patents applications

Patents represent the technological outputs of industry in a country. The patents applications have been relatively stable in South Africa in the last decade. The number of patent application filed with CIPRO remained constant throughout the period of 1994 to 1998 and then declined by a third in 1999. The decline was attributed largely to South Africa becoming part of the PCT system in March 1999 as many international companies channelled their applications to South Africa via the PCT system, with a time-lag until such applications entered the national phase in South Africa.[103] However, the numbers picked up in 2001 but have been slowly declining to the point of reaching 9 271 in 2010. The Tables below illustrate this:

[103] Ibid.

Table 2: Number of patents applications at CIPRO (1994-2005)

Year	1994	1996	1997	1998	1999	2000	2001	2004	2005
Total patents	10 414	10 956	11 734	11 953	7 838	9 955	10 553	10 396	10 044

SOURCE: Teljeur (2007) at 55.

Table 3: Intellectual property offerings

Years	Patents volumes	Growth year on year (%)	Trademarks volumes	Growth year on year (%)	Designs volumes	Growth year on year (%)
2006/2007	10 753	0	30 149	0	1 370	0
2007/2008	10 830	0.7	31 627	4.9	1 200	-12.4
2008/2009	10 191	-5.9	28 671	-9.3	1 074	-10.5
2009/2010	9 271	-9.0	27 383	-4.5	1 805	68.1

Source: CIPRO Annual Report (2010) at 15.

Table 3 shows a further year on year decline in the number of patent application at CIPRO. New registration of patents in 2009/10 showed a negative year on year growth of 9%, which is far worse compared to the previous year, whereas design applications showed a positive growth of 68.1%. There are no reliable statistics available indicating the number of patents filed by residents vs. non-residents. According to WIPO statistics, 99% of patents filed in South Africa in 1999 were filed by non-residents, and, in terms of CIPRO's 2010 report, 86% of patents applications received came from non-residents.[104] This shows that the number of patents filed by residents is alarmingly low.

The situation with regard to patents registered abroad by South African nationals is broadly similar to science publications.[105] Indications are that South Africa's output of patents registered with the USPTO slightly increased after the end of the apartheid regime; however, there is no clearly discernable trend. In 1992, South Africa's share of all foreign patents registered in the USPTO was 0.28%, but

[104] CIPRO annual report 2010 at 16.
[105] Kaplan (n 68) at 6.

in 2007 this share dropped to 0.13%. For utility patents registered in the USPTO its share was 0.3% in 1992 and in 2007 this has dropped to 0.11%,[106] as illustrated by the table below. In 2008 South Africa applied for 265 patents at the USPTO and was granted 91 patents in the same year while other countries comparable to it, such as, India and Brazil, were granted 679 and 103 patents, respectively.[107]

Table 4: The patents of South African origin granted by the USPTO (1994-2007)

Patents	'94	'95	'96	'97	'98	'99	'00	'01	'02	'03	'04	'05	'06	'07
Utility	101	123	111	101	115	110	111	120	113	112	100	87	109	82
All patents	109	127	116	114	132	127	125	137	123	131	115	108	127	116

Source: USPTO

In terms of patent applications by South African nationals filed through the PCT, South Africa ranked third among developing countries in the number of PCT applications after South Korea and China.[108] South Africa's PCT applications totalled 419 in 2001, but since then, there has been a consistent decline, which pushed South Africa to rank fifth among developing countries in 2005. As illustrated by the table below, the decline started from 0.42% in 1999 to 0.26% in 2005.[109]

[106] D Kaplan 'South Africa's exports of high-technology products: A comparative perspective and some policy priorities' (2009) 2(3) *International Journal of Technological Learning Innovation and Development*, at 197-198.
[107] Ibid at 197.
[108] Teljeur (n 36) at 58.
[109] SA Kumari and RD Reddy 'Intellectual property rights management and its growing importance in diversified field of technology in the context of developing countries' (2006) *The Chartered Accountant Corporate and Allied laws* at 731.

Table 5: Representation of the trends in PCT filings by top five developing countries (1995-2005)

Country	'95	'96	'97	'98	'99	'00	'01	'02	'04	'05
Korea	196	306	305	510	870	1 580	2 324	2 250	3 556	4 422
China	103	123	166	348	277	784	1 731	1 018	1 704	2 501
India	0	4	13	14	101	190	295	525	723	675
S. Africa	42	72	84	114	317	387	419	384	411	360
Singapore	26	35	80	125	168	222	288	330	431	441

Source: 1) WIPO Statistics, Report on PCT Filing 2005; 2) Manual of Patent Practice and Procedure Patent Office India 2005.

3.6.6 Royalty payments and receipts

The technology balance of payments (TBP) registers a country's commercial transactions related to international technology and transfer of know- how. TBP is a statistical statement that systematically summarises, for a specific period, the economic transactions of an economy with the rest of the world. It consists of payments made or received for the use of patents, licences, know-how, trademarks, designs and technical services. These receipts and payments are generally registered as royalties paid abroad and royalties received from abroad. [110]

South Africa is, on balance, a technology importer. The total cross-border royalties receipts amount to approximately R400 million per year whereas the royalties payments are estimated at R1.5 billion per year, which translates as a net deficit on the technology balance of payments of R1.1 billion per annum.[111] Analysis of the data regarding royalties receipts/payments from 2000 shows that in the period 2000 to 2007 royalties received from abroad increased by 58%, a compound annual growth rate of 6.8% per annum. In the same period, royalties paid abroad increased by 360%, a compound annual growth rate of 20.1% per annum.[112] All in all, the

[110] Kaplan (n 68) at 8.
[111] Teljeur (n 36) at 57.
[112] Ibid.

South African TBP landscape reflects that royalty payments greatly exceed royalty income, as shown by the table below:

Table 6: South African industry and global market indicators (2005-2008)

Main Indicators	2005	2006	2008
Foreign direct investment (% of GDP)	2.0	-2.0	4.0
Gross fixed capital formation (% of GDP)	17.1	18.8	23.2
Information and communication technology expenditure (% of GDP)	9.0	10.0	-
Manufacturing trade balance (% of total trade)	-56.8	67.0	-67.3
Trade balance of high technology manufacturing goods (R millions)	-66 566	-78 700	-98 571
Technology balance payments: Receipts (million current dollars)	45.3	45.7	53.2
Technology balance payments: Payments (million current dollars)	1 070.8	1 279.6	1 662.1
Technology balance of payments (% of GDP)	48.1	52.4	-

Source: World Bank report (2009)

The widening adverse TBP and the relatively slow growth of royalty receipts are a further index of South Africa's weak overall innovation performance.[113]

3.6.7 South Africa's share of global trade

A country's performance in global trade in industries where innovation is central to the economic success is an important output indicator, particularly in respect of the business sector R&D.[114] South Africa's exports in high technology products grew at 9.5% per annum in the 1992 to 2005 period. However, this was lower than the global average (11%), as well as below the substantial increase for developing countries (21%).[115] South Africa's share of global high technology exports shows a poor

[113] Kaplan (n 68) at 9.
[114] Ibid.
[115] Ibid.

performance similar to the indicators discussed above when compared to other developing countries, such as, China and Brazil, as reflected by the table below:

Table 7: The country share of global high-technology exports: China, Brazil, Argentina and South Africa (1992-2005 %)

Country	1992	2003	2004	2005
China: HT1	1.61	10.71	12.91	15.35
HT2	1.22	3.35	4.28	5.64
Total	1.49	9.26	11.21	13.43
Brazil: HT1	0.26	0.26	0.23	0.35
HT2	0.37	0.84	1.13	1.03
Total	0.29	0.37	0.40	0.49
Argentina: HT1	0.05	0.01	0.01	0.02
HT2	0.05	0.11	0.06	0.07
Total	0.05	0.03	0.06	0.03
South Africa: HT1	0.05	0.05	0.06	0.05
HT2	0.15	0.12	0.12	0.13
Total	0.07	0.06	0.06	0.07

HT1 = Electrical and electronic high-technology products

HT2 = Other high-technology products.

Source: COMTRADE, TIPS and Kaplan (2009) at 198.

3.6.8 Composite indicators

There are a number of composite indicators that measure a country's ability to generate, adopt and utilise new knowledge.[116] The World Bank has compiled the Knowledge Economy Index (KEI), which consists of four areas, namely: the economic incentives, institutional regime, education and human resource; and, the innovation system and ICT. KEI provide a measure of the relative state of the knowledge economy in a country. It affords a view of the larger picture of a country's performance in the modern knowledge economy, as well as enabling monitoring and benchmarking.[117] In terms of the KEI South Africa has declined since 1995. In contrast, other commodity based exporters, such as, Brazil (ranks 54, +4 places) have seen a rise in the KEI, as has the upper-middle income country

[116]Kaplan (n 68) at 10.
[117]Blankley and Booyens (n 94) at 476.

group. Overall, South Africa is currently ranked 65 out of 140 countries, a decline of 12 places since 1995. [118]

3.7 Conclusion

The South African IP system was said to be advanced in terms of the international standards even before TRIPs. When it joined WTO and had to comply with TRIPs provisions, it did so without any difficulties. It even had to be TRIPs compliant in the same year along with developed countries and not with other developing countries, which were given five to ten year transition periods. Since 1995, South African IP Laws have been amended to meet the international standards with the adoption of acts such as the Intellectual Property Laws Amendment Act, 1997. The Government has undertaken several initiatives to create a healthy environment for innovation in the form of policy frameworks, capacity building and innovation incentives. For capacity building, the aim is to disseminate, share information on IP and also to train all the stakeholders. This is done by the DTI conducting regular workshops and information sessions for the public. The DTI also provides training for the enforcement role players, such as, members of the Judiciary, members of SAPS and Customs Officials.

To promote R&D and innovation the government through the DTI provides for a number of fiscal and support measures to industries through institutions, such as, the Innovation Fund, the Advanced Manufacturing Technology Strategy (AMTS), and the Tshumisano Trust and the Technology Innovation Agency (TIA). In 2008, the DTI passed a Ten-Year Innovation Plan (TYIP), which will run from 2008 until 2018. This plan is aimed at underpinning the country's transformation to a knowledge economy and will be driven on four elements, namely: Human Capital Development (HCD); Knowledge generation and exploitation (R&D); knowledge infrastructure development; and policy and institutional enablers to address the 'innovation chasm' between research results and socio-economic outcomes.[119]

However, despite the efforts made by the government to provide for stronger IP protection and to promote technological innovation within both the private and public sectors, South Africa's innovation activity performance is largely stagnant. All of the system level output indicators point to this conclusion. The prevalent

[118]Kaplan (n 68) at 10.
[119] OECD economic outlook report 'Developments in non-member economies' (2010/1) at 80.

constraint of performance of South Africa's innovation is the limited supply of high-level skilled labour. The empirical evidence shows that the number of personnel engaged in research has risen slowly over the years and is lower than for many comparable countries, such as, India and China. This is reflected by the high cost of skills involved in research.[120]

In conclusion, South Africa's innovation performance shows that a stronger IP system is not the only feature, which acts as a spur to technological innovation. The empirical evidence shows that South Africa's performance within the global arena is declining. In terms of South Africa's competitive index (GCI) as published by the World Economic Forum (WEF) in 2007, South Africa's performance has been declining since 2005 and it has been projecting its lowest economic growth since 1998, slowing to 1.2% in 2009.[121] There are some factors, which play an important role in technological innovation, such as, human capital (both skilled and high skilled labour) and infrastructure to innovate, to mention, but a few, which need to be in place for technological innovation to occur in a satisfactory manner. The poor South African technological innovation performance post-TRIPs, proves that the hypothesis that stronger IP protection acts as a spur to technological innovation is wrong.

SECTION TWO

3.8 India

The Republic of India, known as India in short, is a parliamentary democracy, which comprises of 28 states. It is situated in the southern part of Asia, with its coastline stretching for 7 517 kilometres on the Indian Ocean, Arabian Sea and the Bay of Bengal. It occupies 2.4% of the world's land area, with a population of 1.8 billion, which make it the second most populous country in the world after China.[122] The Indian economy is the 12th largest economy at market exchange rates, and the 4th largest in purchasing power. Her economic reforms have transformed India into the second fastest growing large economy; however, India still suffers from high levels of poverty, illiteracy and malnutrition.

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[120]Kaplan (n 68) at 10.
[121] Fin24.com (2009).
[122] http://en.wikipedia/wiki/India (accessed 2 April 2011).

3.9 The Indian IP system

3.9.1 Domestic legislation

The history of the Indian IP system can be traced back to the Patents Act VI of 1856, while it was still a British colony. The 1856 Act was the first legislation to deal with IP protection in India. The object of this Act was to encourage the invention of new and useful manufactures and to induce the inventors to disclose the secrets of their inventions. The 1856 Act was subsequently repealed by Act IX of 1857, which, in turn, was replaced by Act XV of 1859. In 1872, the 1859 Act was consolidated to provide protection relating to designs. This Act was then renamed the 'Patents and Designs Act under Act XIII of 1872'. The Patents and Designs Act was amended in 1883 to introduce a provision to protect novelty of the inventions, which, prior to making application for their protection, were disclosed in the Exhibition in India.

The Act remained in force for 30 years without change, to be modified only in 1888 in accordance with the British Act of 1883 on Inventions and Designs. In 1911, the Patents and Designs Act was enacted and it replaced all the previous Acts. The 1911 Act brought patent administration under the management of the Controller of Patents for the first time. The Act was amended in 1920, 1930 and 1945. In 1947, India gained its independence from Britain and its leaders grappled with the problems of poverty, unemployment, a small industrial base and a predominantly agrarian economy.[123] As one of the strategies needed to attack these problems effectively and relatively quickly, it was felt that the 1911 Patents and Designs Act was at odds with the aspirations and goals of a young, newly-independent nation.[124] With that in mind, two committees were formed, the Tek Chand Committee and the Ayyangar Committee, to review the adequacy of the Indian Patent system and to adapt it to conform to national goals. The resulting legislation was the Patents Act of 1970,[125] which repealed and replaced the 1911 Act in so far as the patents were concerned. However, the 1911 Act continued to be applicable to designs. Most of the provisions of the 1970 Act were brought into force on 20th April 1972, with the publication of the Patents Rules of 1972. The repercussions of the 1970 Act were to create a weak patent system for India. This has been hailed as a model legislation for

[123] S Banerji 'The Indian intellectual property rights regime and the TRIPS Agreement' (2000) in C Long (ed) *Intellectual property rights in emerging markets*, at 69.
[124] Ibid at 62-63.
[125] Ibid at 63.

developing countries because it seeks to balance both the need for granting rewards for inventors, while ensuring that India's developmental needs are not ignored.[126] This model was even followed by some of developing countries, such as, Brazil, Argentina, Chile, Mexico and Egypt.[127]

3.9.2 International treaties, conventions and institutions

On the international level, India is a member of several international treaties and conventions such as TRIPs, the Convention establishing the WIPO, the Paris Convention, the PCT and the Berne Convention.

3.10 India's industrial property regime

The industrial property system in India is governed by the Patents Act of 1970 as amended, the Patents Rules of 1972 as amended, the Trademarks Act of 1999 and the Designs Act of 2000.

3.10.1 Patents Act of 1970 as amended in 1999, 2002 and 2005

The Patents Act of 1970 is a landmark legislation in the industrial development of India. The basic philosophy behind this Act was that patents are granted to encourage inventions and to ensure that these inventions are worked on a commercial scale without undue delay (s 83).[128] This philosophy was implemented through compulsory licensing, registration of only process patents for food, pharmaceuticals and agrochemicals industries. However, some sectors vital for the country's economy, such as, agriculture and horticulture, atomic energy and inventions on living things, were not patentable (s 3).[129] This weakened the Indian patent system, and when the Act went into effect in 1972, domestic firms could legally manufacture patented drugs either by using an old process or by developing a new one, which was not mentioned in a patent holder's patent application.[130] This resulted in the booming of the pharmaceutical industry in India.

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[126] A Ramanna 'India's patent policy and negotiations in TRIPS: Future options for India and other developing countries' (2001/02) Indira Gandhi Institute of Development Research Report, at 4.
[127] Gupta and Rastogi (n 10) at 8.
[128] SK Verma, and NV Rao- Muralidhar 'Impact of the intellectual property system on economic growth: Country report –India' (2007) WIPO-UNU joint Research Project, at 3. See also Gupta and Rastogi (n 10) at 7, and SK Verma (n 7) at 46.
[129] SK Verma (n 7) at 46.
[130] Banerji (n 123) at 69.

The Act restricts the field of patentability by permitting product patents in all the fields of technology except for the food, pharmaceuticals and agrochemicals fields, where only process patents are allowed. This was done in the spirit that food and health are crucial for the wellbeing of the people, thus the process patents in these fields will make sure that these commodities are not highly priced by allowing other competitors to find new and improved economical processes for producing the same product. In terms of s 53(1), patent protection is for a 14-year period from the date of filing in all other fields, but, in the case of food and medical drugs, the period is limited to only seven years from the date of filing or five years from the date of sealing, whichever is earlier. The shorter period of protection in the food and medicines sectors, was believed to be necessary to prevent exploitation of the society's needs by the patentee.[131]

The Act also provides for an elaborate system of licences to ensure that patents are worked in India.[132] Section 84 provides for two types of licences: compulsory licences and licences of right. The provision on compulsory licensing ensures the working of the patent after three years from the date of sealing. If the patentee ignores this provision, any person may apply for a compulsory licence. Licences of right are issued in terms of inventions relating to method or process for the manufacture of substances intended for use or that are capable for being used as food, medicines or drugs, or relating to substances prepared or produced by chemical process (such as alloys, optical glass, etc). These shall be deemed to be endorsed 'licences of right' from the date of expiry of three years after the sealing of the patent.[133] These enable any interested person as a matter of right to be entitled to work such patent.[134]

There is also government use provision. In order to ensure that the scarcity of a patented article does not arise and lead to high prices, the government is vested with the power to make use of or exercise any patented invention solely for its own purpose.[135] Further, the Act also provides for compulsory working of a patent, which postulates that the patentee cannot hold the patent in India and import the product from another country, thereby compelling the Indian consumer to pay an excessive

[131]Gupta, and Rastogi (n 10) at 7.
[132]Ramanna (n 126) at 4.
[133]Gupta and Rastogi (n 10) at 8.
[134]Ramanna (n 126) at 6.
[135] Ibid.

price.[136] The patentee is mandated to manufacture the product in India. The rationale behind this is that the state undertakes to protect IPRs only to ensure that new products are available cheaply and in abundance, thus a compulsory licence is issued if it is in the public interest or if the patentee does not work the patent.[137]

The philosophy of the Indian patent regime varied to a great extreme from the framework established under TRIPs, and India had to overhaul its patent regime when it joined WTO in 1994.[138] To meet its obligations under TRIPs, India had to change its patent laws by the end of 2005 to allow for pharmaceutical product patents on any product with a patent issued after 1st January 1995.[139] The amendment to the 1970 Act was done in three phases, the first phase ending in 1999, the second in 2002, and the third in 2005. Phase one of the amendment started in 1994 with the issuance of an Ordinance (on the 31/12/1994), effecting changes in the 1970 Act. The Ordinance ceased to operate after only six months and was subsequently followed by the issuance of another Ordinance in 1999. The 1999 Ordinance was subsequently replaced by the Patents (Amendment) Act, 1999 which was brought into force retrospectively from 1st January 1995. The 1999 amendment resulted in the creation of a 'mailbox' which allowed for the filing of applications for products patents in the areas of food, drugs and medicines and agrochemicals, even though such patents were not allowed. These applications were to be put into a 'mailbox' to be examined at the end of India's ten- year transition period when product patents were to be brought into full effect to determine whether product patents should be granted or not.[140] Meanwhile, the applicants were allowed Exclusive Marketing Rights (EMR) to sell or distribute these products in India, subject to the fulfilment of certain conditions.

Phase two came in 2002 via the enactment of the Patents (Amendment) Act 38 of 2002 which further amended the 1970 Act by providing the TRIPs required 20-year patent term, a reversal of the burden of proof for process patent infringement

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[136] Ibid.
[137] Ibid at 8.
[138] Ramanna (n 126) at 7.
[139] C Grace 'The effect of changing intellectual property on pharmaceutical industry prospects in India and China: Considerations for access to medicines and health systems' (2004) DFID Health System Resource Centre report, at 19.
[140] Gupta and Rastogi (n 10) at 20. See also A Dutta, and S Sharma 'Intellectual property rights and innovation in developing countries: Evidence from India' (2008) World Bank Group report, at 5.

and modifications to compulsory licensing requirements.[141] The 2002 Amendment came into force on 20th May 2003 with the introduction of the new Patents Rules, 2003 that replaced the 1972 Patents Rules. Phase three came through the Patents (Amendment) Ordinance, 2004 which was subsequently replaced by the Patents (Amendment) Act 15 of 2005. This last amendment incorporated provisions for granting product patents in all the fields of technology including chemicals, pharmaceuticals, food and agrochemicals. Even though it was enacted on 4th April 2005, it was brought into force from the 1st January 2005.

The other element, which needed to be TRIPs compliant, was the Patents Rules. Pursuant to Section 159 of the Indian Patents Act, 1970, the Patents Rules, 1972 were promulgated to implement the Act and regulate patents administration. These Rules were amended from time to time until 20th May 2003 when the new Patents Rules were introduced. These Rules were further amended by the Patents (Amendment) Rules, 2005 and the Patents (Amendment) Rules of 2006. The last amendments were effective from 5thMay 2006. However, since 2006, additional amendments were made in 2010 and 2011.

3.10.2 Designs Act, 2000

The first Act to govern designs in India was the Patents and Designs Act, 1911 but this Act was replaced by the Design Act, 2000 in respect of designs. Designs under the Act mean the features of shape, configuration, and pattern, ornament of composition of lines or colours applied to any article whether in a two-dimensional or three-dimensional form (s 2(d)). To qualify for design protection, the design must be new or original (s 5(1)); it should relate to features of shape, configuration, pattern or ornamentation applied to an article by a mechanical process. The eligibility for design registration is judged solely by the appearance. The design should not include any trademark or property mark or artistic works.

The total term of protection is 15 years: first registration continues for 10 years, which can be extended by another five years subject to paying a certain fee by the expiration of the initial 10 years. Designs are granted on the first-to-file basis.

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[141] Dutta and Sharma (ibid) at 5.

3.10.3 Trademarks Act, 1999

The Indian trademarks law can be traced back to the Trademarks Act, 1940 and the Trade and Merchandise Marks Act, 1958. However, the new Trademarks Act, 1999, has replaced these two Acts. The salient features of the new Act are as follows;

- The Act provides for the registration of the service marks, collective marks and certification marks, which were not provided under the 1958 Act.
- The period of protection is extended from 7 years to 10 years, by the stipulation that the initial registration of a trademark shall be for a period of 10 years. However, it may be renewed from time to time for an unlimited period subject to the payment of the renewal fees.
- The new Act allows for the filing of a single application for registration in more than one class.
- It has simplified the procedure for registration of registered users and has enlarged the scope of permitted use.
- It provides for exhaustive definitions for terms frequently used.
- It has enhanced punishment for offences related to trademarks.

3.11 India's IP policy framework and administration

IP policy in India is linked to economic development through trade, and is viewed as an important component of science and technology policy. The Ministry of Commerce and Industry is responsible for IP policy framework and administration. It discharges its duties by maintaining an extensive and comprehensive inter-ministerial and private sector consultative network for purposes of building a better IP policy framework and administration. The key ministries involved in the development of IP policy include the Ministry of Science and Technology, the Ministry of Human Resource Development and the Ministry of Agriculture.

The office of the Controller General of Patents, Designs and Trademarks Office (CGPDTM) is responsible for the administration of the Indian IP system. CGPDTM is a subordinate office under the Department of the Industrial Policy and Promotion in the Ministry of Commerce and Industry. It has the statutory

responsibility for the administration of patents, trademarks and industrial designs. It serves as a main source of policy advice to the Indian government on industrial property matters. CGPDTM is the administrative and statutory head of the Patent Office (PO) and the Trademarks Registry (TMR). The PO is responsible for the granting of patents and the registration of industrial designs. The TMR is responsible for the registration of trademarks.

Further, under the auspices of the CGPDTM, are the Patent Information System (PIS) and the National Institute of Intellectual Property Management (NIIPM). PIS is responsible for maintaining a comprehensive collection of patent specifications and patent-related literature on a world-wide basis. It provides the technological information contained in patent or patent- related literature through search services to various users engaged in R&D establishments, Government offices, industries, business enterprises, inventors and other users within India.[142] NIIPM, on the other, hand acts as a national centre of excellence, which is responsible for the training of examiners of patents, designs and trademarks, as well as the IP Professionals and IP Managers. It also serves as a research and education centre in the field of IPRs related issues, by the provision of basic education to the user community, government functionaries and other stakeholders involved in the creation, commercialisation and the management of IPRs. It also facilitates research on IP-related issues, which includes the preparation of study reports and policy analysis of relevance to the government. NIIPM further, addresses the need of increasing the general awareness and understanding of government officers and users of the IP system, including those in universities and other educational institutions.[143]

Enforcement of IPRs, as provided by the Indian IP system, lies with the Indian Judiciary (High Court and Supreme Court). Furthermore, there are various initiatives such as the anti-piracy activities, which are carried out by the enforcement agencies throughout the country, to strengthen the IP law enforcement and administration.

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[142]CGPDTM annual report (2008/09) at 5 and 66.
[143] Ibid at 6 and 69.

3.12 Innovation landscape in India

As innovation is a dynamic process which includes various steps, in order to capture the exact landscape of innovation, all the steps involved in the innovation process will be analysed. To do this, these steps will be divided into the input and output sections. The input section focuses on the R&D and the output section on publications, patents, trade in high technology exports and composite indicators.

3.12.1 Inputs

3.12.2 Trends of R&D in India

Proponents of TRIPs argue that stronger IP protection could increase incentives for domestic firms in developing countries to conduct R&D, thereby making these firms more likely to become owners of the rights to future innovations.[144] The trends of R&D in India after the adoption of TRIPs do suggest a marked rise in domestic innovative activity. R&D spending by publicly listed firms in India has risen sharply since the early 1990s, with United States patent applications by the Indians growing more than fourfold between 1995 and 2004.[145]

The landscape of R&D in Indian firms before the adoption of TRIPs was on a low scale. The Indian firms spent less than 1% of total sales on R&D. However, with the advent of TRIPs, the scenario has changed dramatically. The national expenditure on R&D increased from Rs 8 913.61 crores in 1996/97 to Rs 12 901.54 crores in the 1998/99 period. However, though in absolute terms R&D expenditure has shown an increasing trend, the GERD has hovered around 0.8%.[146] The rise in R&D can thus be solely associated with the transformation of the Indian IP laws; R&D has also been affected by the liberalisation era, which began in 1991.

3.12.3 Outputs

3.12.4 Science publications

The number of science publications from India was stable at around 15 000 papers per year until 2000 when there was a pronounced upturn. It increased to just over 25 000 papers per year, which is a 45% increase.[147]

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[144]Dutta and Sharma (n 140) at 3.
[145]Abrahamson cited in Dutta and Sharma (n 140) at 3.
[146] Workshop paper, at 21.
[147] B Stembridge 'Innovation in India' (2007) Thomson Scientific Research Brief at 2.

3.12.5 Patents applications

Since the introduction of economic reforms in 1991 and the change of the patent regime in 2005, India is experiencing a rapid increase in patenting activity both locally and internationally.[148] Patents applications at the CGPDTM have risen from around 10 000 per annum to 24 505 for the 2005/06 period, a growth rate of 40% over the previous year 2004/05.[149] As reflected by the table below, the number of applications is showing a tremendous growth year after year.

Table 8: Trends in patent application at the CGPDTM (2005-2009)

Year	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009
Filed	17 466	24 505	28 940	35 218	36 812
Examined	14 813	11 569	14 119	11 751	10 296
Granted	1 911	4 320	7 539	15 316	16 061

Source: CGPDTM Annual Report (2008/09) at 7.

Since the change of the IP regime, the number of patents filed by Indian residents has seen a slight growth compared to the number of patents filed by non-residents, which has seen 100- fold growths. As indicated by the table below, since 2000 up until 2009, the number of patents filed by residents has grown by 3%. In 2008/09 the number of patents filed by the residents contributed approximately 16.73% of the total number of applications filed during that period; this is substantially low when compared with the number of applications by non-residents.

[148] P Malhotra 'The impact of TRIPS on innovation and exports: A case study of the pharmaceutical industry in India' (2008) 5(2) *Indian Journal of Medical Ethics*, at 62.
[149] Stembridge (n 147).

Table 9: Applications filed from residents and non-residents through various routes (1999-2009)

Applicants	'99/00	'00/01	'01/02	'02/03	'03/04	'04/05	'05/06	'07/08	'08/09
Residents	2 206	2 179	2 371	2 693	3 218	3 630	4 521	6 040	6 161
Non-residents:									
1. Ordinary	2 349	2 160	1 870	1 723	1 678	3 165	1 008	834	681
2. Convention	-	-	-	-	-	-	3 509	4 453	4 264
3. National phase, under PCT	269	4 164	6 351	7 049	7 717	10	15	23	25
						671	467	891	706
Grand total	4 824	8 503	10 592	11 466	12 613	17 466	24 505	35 218	36 812

Source: CGPDTM Annual Report (2008/09) at 29.

With regard to patents applications made by Indian nationals at the USPTO, empirical studies show that innovative activity in India increased significantly, particularly to a greater extent in more innovation-intensive industries, such as, the chemical and pharmaceutical sectors. A study conducted by NISTADS demonstrated a steep ascent in the number of patents filed by the Indian institutions in the USPTO and in Europe.[150] The study from 1990 to 2002 placed India's patent applications into three categories: 1. IOPs category which consists of domestic firms, institutions and universities; 2. FOPs which refer to patent applications by Indian subsidiaries of foreign companies; and 3. unassigned category which consists of non-institutional individuals based in India. As reflected by the table below, the overall IOP patent applications increased more than ten times compared with less than three times for the FOP increase in the same period. The pharmaceutical patent applications in the USPTO by the Indian institutions increased by around 25 times from just 9 in the

[150]Malhotra (n 148) at 62-63.

1990 to 1994 sub period to 227 in the 1999 to 2002 sub period, with IOPs in the chemical and biotechnology sectors also registering significant increases.[151]

Table 10: Sector-wise Indian patents activity at the USPTO (1990-2002)

Sector	Indian institutions (IOP)			Foreigners (FOP)			Indian individuals (unassigned)		
	90/94	95/98	99/02	90/94	95/98	99/02	90/94	95/98	99/02
Chemicals	24	42	166	10	6	22	4	3	7
Pharmaceuticals	9	48	227	29	14	30	1	7	9
Machinery	7	6	15	4	3	2	2	5	7
Electrical equipment	0	0	1	1	3	9	1	2	3
Instruments	0	5	13	1	4	10	5	4	5
Transport	0	0	6	0	0	0	4	0	7
Electronics	0	2	7	3	5	23	2	0	1
Miscellaneous	8	15	42	4	21	59	3	9	9
Biotechnology	0	7	46	2	5	6	1	4	2
Total	48	125	523	54	61	161	23	34	50

Source: NISTADS (2002) at 57.

Since 2002 the number of patents applications from India filed at the USPTO is significantly growing, from 919 in 2002 to 3 110 in 2009.

India is also performing well at the PCT filings. In terms of Table 3 above, out of five developing countries, India ranked 3 in the period 1995 to 2005. PCT filing from India had the highest growth rate up to 2003. Even though it was on a lower base, the growth rate showed an increase of 50% in 2002 and 45% in 2003.[152] Statistics of filing of PCT international application for the period 2005 to 2009 show a further increase. As shown by the table below, the number of applications filed by Indian applicants using the PCT system was 887 in 2008/09 compared with 707 in the previous year 2007/08, a growth rate of approximately 25.5%.[153]

[151] Ibid at 63.
[152] Kumari and Reddy (n 109) at 731.
[153] CGPDTM annual report (n 142) at 19.

Table 11: Indian patents activity at PCT (2005-2009)

Year	Individual	Legal Entity	Total
2004/2005	105	351	456
2005/2006	130	352	482
2006/2007	144	390	534
2007/2008	169	538	707
2008/2009	232	655	887

Source: CGPDTM Annual Report (2008/09) at 19

3.12.6 Royalty payments and receipts

As stated previously, TBP registers a country's commercial transactions related to international technology and transfer of knowledge. The receipts and payments of licence fees and royalty are the important components, which show the intensity in the development of technology worldwide. India, like South Africa, is on balance, a technology importer. In terms of the World Development Indicators, India's receipts of royalty and licence fees decreased from US$ 83 million in 2001 to US$ 25 million in 2005. On the contrary, India's payments increased from US$ 306 million in 2001 to US$ 421 million in 2005. The Indian share of global receipts increased from 0.06% to 0.49% in the 1995 to 2006 period, whereas its share of global payments increased from 0.15% to 0.96% in the same period. Like South Africa, India's TBP landscape shows that the royalty payments greatly exceed the royalty income, which indicates that India is a technology importer.

3.12.7 India's Share of global trade

Creating, exporting and commercialising new technologies have become essential in the global race for competitiveness. High technology sectors are the key drivers for economic growth, productivity and social protection, and are generally a source of high value added and well paid employment. Since 1991, India has undertaken a process of major economic reforms. This has helped the Indian economy to enter into a new phase of development directed toward becoming globally competitive through opening up to trade, foreign investment and technology inflows.[154]

The economic reforms seem to have paid off because India is now among the fastest growing economies of the world. The Indian economy is currently on a high

[154] S Pohit 'Trends in high-technology trade' (2009) National Institute of Science, Technology and Development Studies report, at 2.

growth trajectory, registering growth of around 8% in the present decade.[155] India's trade to GDP ratio has increased from 15% to 45% between 1990 and 2007. India's share in global high technology trade has increased, though marginally, from 0.14% points to 0.23% points between 1995 and 2006.[156]

3.13 Conclusion

The issue of strengthening IPRs in developing countries via TRIPs has led to a multi-faceted and acrimonious debate. Given the large number of poor people in such countries, the risk of higher prices in a stronger IPRs regime and the low levels of indigenous innovation, the issues involved in this debate have ranged from concerns about market access for the poor to the implications of stronger IPRs for the international distribution of wealth.[157] Since the adoption of TRIPs, there has been a race for both developing and the least developed countries to overhaul their IP regimes to be TRIPS compliant.

This has certainly been the case for India, which had previously resisted the incorporation of IPRs in the framework of the multilateral trading system, but finally agreed in 1994 to a ten- year deadline to completely overhaul its existing weak IPRs regime.[158] In 2005, India became fully TRIPs-compliant by bringing into effect its most important requirement of enforcing product patents in all the fields of technology. The importance of IP as a major source for economic and technological development is now recognised within India, and several initiatives have been undertaken to create a healthy environment for innovation.[159] These initiatives are in the form capacity building, innovation incentives and the policy frameworks. For capacity building, the aim is to disseminate IP awareness to all the stakeholders and several agencies, such as, the Patent Facilitating Centre (PFC), government departments, such as, the Department of Science and Technology and educational institutes.

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[155] Ibid.
[156] Ibid at 3.
[157] Dutta and Sharma (n 140) at 28.
[158] Ibid.
[159] Stembridge (n 147) at 1.

To promote R&D and innovation in Indian industries, the government provides a number of fiscal incentives and support measures to industries,[160] such as, the excise duty waiver on patented products, exemption from Drug Price Control Order, weighted tax deduction on R&D expenditure, accelerated depreciation allowance, tax holiday to R&D companies, income tax relief on R&D expenditure and tax deduction for sponsoring research.

The policies in place include the guidelines issued in 2000 by the Ministry of Science and Technology titled 'Instructions for Scientists, Research Institutions and Universities in projects funded by the Department of Science and Technology, Department of Biotechnology, Department of Scientific and Industrial Research and the Department of Ocean Development.'[161] Another policy in place is The Science and Technology Policy, 2003 aimed at the transforming of new ideas into commercial successes, which is considered vitally important to the nation's ability to achieve high economic growth and global competitiveness.

The empirical evidence reflects that India's trends of R&D and patenting activity by domestic firms have seen an increase both locally and internationally post-TRIPs. The evidence further shows an increasing creativity impact of Indian research and technology, as illustrated by the trends in both scientific literature and citations. In conclusion, the immediate short-term effects of TRIPs in India show promising trends in the ability of stronger IPRs to create incentives for greater R&D and transfer of technology,[162] but one has to take into consideration phenomena, such as, the trade liberation, which occurred at more or less the same time as the adoption of TRIPs, and which have contributed so much to the growth of India's economy.

However, the overall performance of India's innovation activity is stagnant. There are still some components, which need to be improved: such as, share of global trade, royalty payments and receipts and patents applications by the nationals at the local patenting office. India seems to be lagging behind other comparable countries, such as, China and Korea in these areas. Nonetheless, the empirical evidence finds that a stricter patent regime did indeed stimulate technological

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[160] R Saha 'Management of intellectual property rights in India' Department of Science and Technology report, at 25.
[161] Ibid at 24.
[162] Dutta and Sharma (n 140) at 29.

innovation to some extent in India, more especially in research-intensive industries such as, pharmaceuticals and agrochemicals.

CHAPTER FOUR

THE IP SYSTEM OF LESOTHO

4.1 Introduction

The objective of this chapter is to explore the current controversies around how a stringent IPRs regime, as encouraged by TRIPs, affects technological innovation in Lesotho. Over the last decades, because of strong corporate lobbying in some key sectors together with policy advice from donors and multilateral organisations, developing countries, including the LDCs, have been strongly encouraged to broaden the scope of IP protection, irrespective of their own needs and conditions. This pressure has been channelled through multilateral, regional and bilateral obligations.[163]

Proponents of a stronger IPRs regime argue that IPRs encourage technology transfer, stimulate innovation and bring collateral benefits by strengthening the investment climate and attracting foreign direct investment (FDI), which, in turn, improves welfare in developing countries. The focus will, therefore, be on the economic development processes and the range of policy issues related to facilitating technological development through the lens of development economic, rather than a narrow legalistic perspective in the context of the LDCs, in particular Lesotho.

4.2 Brief historical background of Lesotho

Lesotho is one of the least-developed countries situated in the southern region of Africa. It is an enclave, surrounded by the Republic of South Africa. It covers about 30,355 square kilometres, with a population of two million. It was a British colony from 1884 until 1966, when it gained independence from Britain. Its highlands constitute two-thirds of the country's territory, less than 10% of which is suitable for cultivation. Poverty is widespread, with 43.4% of the population living on less than $1.25 a day. The HIV/AIDS infection rate is the third- highest in the world and it has had a devastating impact on the country in the form of loss of the work force in large

[163]UNCTAD LDCs report (n 11) at 92-93.

numbers.[164] The primary developmental goal of Lesotho is sustainable human development, which broadly encompasses the objectives of poverty alleviation, employment creation, social integration, and land conservation.

4.3 Economic overview

Lesotho's economy is open, with imports amounting to 111% of GDP. The economy depends heavily on inflows of mineworkers' remittances and water royalties from South Africa, diamond mining, external assistance, receipts from the South African Customs Union (SACU), and textile exports. Agricultural activities, including animal husbandry, are mainly subsistence in nature, even though they have been exalted as the backbone of the country's economy.[165] Lesotho's economic growth leading up to the recent global recession averaged a respectable 3.4% a year from 2004 to 2008.[166] The global recession undermined textile exports and remittances and led to loss of jobs in the garment sector. It was also responsible for a sharp reduction in revenue received from SACU, which resulted in deterioration in both fiscal and external accounts. The economy grew by just 1.4% in 2009, compared to 6.5% in 2008 and 2.4% in 2007.[167]

Over the last decade, Lesotho has successfully diversified its economy away from relying heavily on subsistence agriculture and mineworkers' remittances, to a more competitive economy, based on, manufacturing, services and export of abundant water resources.[168] The garment sector is the most important sector in the economy for generating employment and exports. For instance, in the period 2000 to 2003, the sector created approximately 30, 000 jobs.[169] Lesotho attracted FDI in the manufacturing sector, particularly in the garment and textile sectors, due to the investment-friendly environment set up by the government to leverage its preferential status under the African Growth and Opportunity Act (AGOA).[170]The

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[164]eStandards Forum report 'Country brief: Lesotho' (2010) at 3. Available at *http://www.estandardsforum.org* (accessed 16 February 2011).
[165] M Sithetho 'Trade agreements that Lesotho has acceded to' The Justice Network-Lesotho report, at 3. Available at *http://www.ejnl.org.ls/documents/TradeAgreementsthatLesothohasaccededto.pdf* (accessed 14 April 2011).
[166]World Bank annual report (2010). Available at *http://siteresources.worldbank.org/EXTANNREP2010/Resources/Worldbank-AnnualReport2010.pdf* (accessed
[167]eStandards report (n 164).
[168] World Bank report (n 166).
[169]Sithetho (n 165) at i.
[170] UNCTAD report on 'Science, technology and innovation policy review: Lesotho' (2009) at 2.

United States government in October 2000 adopted AGOA, in an effort to liberalise trade between it and the African continent. AGOA conferred a preferential treatment, in the form of quota and duty- free concessions on clothing articles directly imported into the United States from beneficiary countries.[171] Lesotho is one of the beneficiaries under this Act, and therefore, took advantage of it to boost its economy by exporting garments and textiles to the United States under the terms of AGOA. As a result, the garment and textiles industry played a major role as one of the main sources of wage income in the country. In 2002, manufacturing sector exports totalled $320 million, and for the first time in Lesotho's history, the sector surpassed the government as the major employer, by employing more than 50 000 people.[172] The other important contributors to the economy are services, such as, wholesale and financial services.

Lesotho shares membership in several regional and international groups, which together offer many opportunities for export and trade development, such as, the Southern African Development Community (SADC), SACU, the New Partnership for Africa's Development (NEPAD), and the African Union (AU). It also enjoys preferential trade treatment from the European Union under the African, Caribbean, and Pacific/EU Protocols.[173]

In terms of infrastructure, Lesotho lacks the infrastructure to innovate. According to the African Development Bank Strategy Report for 2008 to 2012, there are various challenges facing Lesotho which need urgent attention, including transport infrastructure, which continue to impose a significant loss on trade transactions. Lesotho is faced with low levels of infrastructural facilities, such as, an inadequate transport network, and a lack of efficient utilities, such as, electricity, water and telecommunication services. An example of the impact of these deficiencies can be seen in the textile and clothing industry, which has been facing inadequate water supply, and waste treatment facilities, which affect their factories. This acts as a disincentive to new foreign and domestic investment as well as

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[171] P Gibbon 'The African Growth and Opportunity Act and the global commodity chain for clothing' (2003) 31(11) *World Development* 1809 at 1810.
[172] Ibid.
[173] UNCTAD report (n 170) at 1. See also Lesotho science and technology policy report (2006/11) at 20.

dissuading garment manufactures from engaging in further expansion of their existing operations and diversifying into higher value- added processes.[174]

The following tables clearly show the dire landscape of infrastructure in Lesotho, even when compared with some other LDCs.

Table 12: Selected transport indicators for LDCs (2000-2007)

Country	Roads Kilometres Paved (%)		Railways kilometres	Waterways kilometres	Pipelines kilometres	Air transport departures
	00/07a	00/07a	2000-2007a	2006/2007a	2007	2007
Lesotho	5 940	18.3	..	..	..	..
Malawi	15 431	45.0	710	700		5 900
Mali	18 709	18.0	734	1 800	..	..
Mongolia	49 250	3.5	1 810	424		6 200
Nepal	17 280	56.9	59	..	..	6 900

a = Data are for the latest year available in the period shown.

Source; World Bank Development Indicators 2009 (Washington DC, 2009); also available at *http://www.worldbank.org* or *http://www.cia.gov/library/publications/the-world-factbook/index.html* (accessed 21 April 2011).

[174] eStandards report (n 164) at 6.

Table 13: Selected telecommunications indicators (2000, 2006-2007)

Country	Telephone lines (per 100 population)		Cellular subscribers (per 100 population)		Internet users (per 100 population)	Total annual investment in telecom (millions of US dollars)
	2000	2007	2000	2007	2006	2006a
Lesotho	1.6	3	7.7	22.7	3.5	..
Malawi	0.6	1.3	0.8	7.5	1.0	
Mali	0.5	0.6	0.4	20.5	0.8	122
Mongolia	5.0	6.8	8.5	34.4	12.0	

Source: International telecommunications Union (ITU), ICT Eye and World Telecommunications/ICT indicators Database 2008; available at *http://www.itu.int/ITU-D/ict/* (accessed on 21 April 2011).

A = Or latest year available.

4.4 Lesotho's IP system

4.4.1 Domestic legislation

The history of Lesotho's IP system can be traced back to the 1919 Proclamation for the Protection of Patents, Trademarks and Designs (Proclamation). This Proclamation was based on the British IP Law of that time. The effect of the Proclamation was to establish a 'dependent' industrial property regime for Lesotho, whereby patents granted, and designs and marks registered in the United Kingdom and South Africa automatically applied in Lesotho without the need for designating Lesotho as one of the countries in which the applicant wished to be granted a patent or register trademark or design.[175] This meant that the nationals of Lesotho had to apply in the United Kingdom or South Africa in order to be granted IP protection in Lesotho.

In 1966, when the country gained its independence from Britain, the Proclamation was retained and remained in force until the late 1980s,[176] the repercussion of which was the ignorance of the people in the country of exercising

[175]Kumar (n 91) at 27.

[176] R Shale 'Current status of the intellectual property system in Lesotho' (2006) Report submitted at the Training and Advisory programme on Intellectual property Rights in the global Economy [Nov 6-24 2006], at 1.

their IPRs. In 1984, the then government enacted two Acts, namely: the Patents Act, 1984 and the Trademarks Act, 1984, both of which repealed the 1919 Proclamation. However, later in 1989, the Industrial Property Order No. 5, 1989, replaced these Acts.

Currently, IP is regulated by the Copyright Order No. 13 of 1989 (Copyright Order) and the Industrial Property Order No. 5 of 1989 (Industrial Property Order). The Copyright Order is applied together with the Copyright Regulations of 1989 for the protection of copyrights and related rights. The Copyright Order has its roots in the WIPO/UNESCO Tunis model law for developing countries. It repealed Chapter 93 of the Copyright Proclamation of 1912, which incorporated the British Imperial Copyright Act of 1911 into the legal system of Lesotho.[177] The Copyright Order embodies provisions for the protection of both the economic and moral rights in literary, artistic and scientific works. It further enshrines the provisions, which give effect to the protection of the neighbouring rights, such as the performer's rights, and broadcasters and producers of the phonograms' rights. The Copyright Order is also read in conjunction with other statutes, such as, the Cultural Heritage Act of 1993, the National Archives, Library and Museums Act of 1993, for the protection of copyrights and related rights.

4.4.2 International treaties and institutions

Lesotho has been a member of the African Regional Industrial Property Organisation (ARIPO) since 23 July 1987, which deals with industrial property in the English-speaking African countries. The 1989 Order gives effect to the provisions of the ARIPO-Harare Protocol through ss 13(4) and 24(5). It has been a member of the World Intellectual Property Organisation (WIPO) since 18 November 1986 and a party to the Paris Convention since 28 September 1989. The Order makes explicit reference to the Paris Convention in ss 2, 9 and 27. It is also a member of the World Trade Organization (WTO) and by virtue of that, a party to the TRIPs Agreement since May 1995. It has also been a party to the Patents Cooperation Treaty (PCT), 1967, since October 1995 and the Rome Convention for the Protection of Performers, Producers of Phonograms and Broadcasts of Broadcasting Organization, 1961, since January 1990. Furthermore, Lesotho is a party to the Madrid Agreement

[177] Ibid at 2.

and Protocol on international registration of marks. In addition to these, it is also a party to several bilateral treaties, such as, the Trademark Convention of 1879 with Denmark, the Trademark Convention of 1898 with Costa Rica, the Trademark Convention of 1898 with Guatemala and the Trademark Convention of 1880 with Portugal.

4.5 IP policy framework and administration

Lesotho presently lacks adequate organisational structures for an efficient IP policy framework and administration.[178] The Ministry of Law and Constitutional Affairs is responsible for IP policy framework and administration. It is responsible for policy formulation in the realms of IPRs, however, other ministries, such as, the Ministry of Science and Technology, Ministry of Trade, Ministry of Agriculture, and Ministry of Education are involved in the formulation of IP legislation.

The Office of the Registrar General is responsible for the administration of the IP system. This Office is a subordinate office under the Department of Law Office in the Ministry of Law and Constitutional Affairs. It has the statutory responsibility for the administration of patents, trademarks, utility models and industrial designs. In cases of disputes, the High Court has jurisdiction over all cases of patents, designs, utility models and trademarks infringement or imminent infringements. The court also has powers to adjudicate in cases of unfair competition. The Order does not preclude the Court from taking action under the received common law remedies of unlawful competition and passing off, meaning that these common law remedies are effective in addition to the statutory remedies.[179]

4.6 Lesotho's industrial property regime

The law which deals with the industrial branch of IP in Lesotho, is the Industrial Property Order No.5, 1989 (the Order) as amended. It governs patents, utility models, trademarks, service marks, trade names, well-known marks, industrial designs and matters relating to acts of unlawful competition; the Merchandise Marks Regulations, High Commissioner's Notice No. 83 of 1937 and the Industrial Property Regulations No.85 of 1989 as amended. The Order repealed both the Patents Act of 1984 and the Trade Marks Act of 1984. Prior to these two Acts the industrial

[178] Kumar (n 91) at 81.
[179] Ibid at 84.

property rights were governed by the Patents, Trade Marks and Designs Protection Proclamation of 1919 as amended. The Industrial Property Order was drafted by WIPO through its consultants in the late 1980s as an effort to bring Lesotho's IP system into conformity with the international standards. For this reason, the Order incorporates Articles 10bis and 10ter of the Paris Convention.

4.6.1 Patents

Patents protection is provided in Part Two of the Order – ss 3 to 16. In terms of the Order, an invention is patentable if it is new, involves an inventive step and is industrially applicable.[180] The Order provides for both product and process patents, which is in line with the TRIPs requirements. Under the Order, the duration for a patent is fifteen years, which may be renewed for a further five years subject to payment of a prescribed fee.[181] Section 13(5) provides for government use, the government or the third party designated by the government may exploit the patented invention in matters of public interest, such as, national security, health, nutrition or the development of other vital sectors of the national economy. Section 15(1) provides for compulsory licensing which is on the basis that the person granted the licence should work the patent in Lesotho.[182] Compulsory licence can be issued if the patented invention is not worked or is insufficiently worked in Lesotho. Even though the Order does allow for compulsory licensing and government use exceptions, in reality they have never been utilised.

4.6.2 Utility models certificates

Part Three of the Order, ss17-19, deals with utility models. In terms of s18 (1), a utility model certificate can be issued if the invention is new and is industrially applicable. The duration is seven years without any possibility of renewal.[183]

4.6.3 Industrial designs

Sections 20-25 under Part Four of the Order deal with industrial designs. The industrial design definition is provided under s 2 and is to the effect that an industrial design means any composition of lines, colours, or any three-dimensional form,

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[180] See s 5(1) of the Lesotho Industrial Property Order, 1989.
[181] Section 14(1) of the Order.
[182] See s 15(3) of the Order.
[183] Section 18(4) of the Order.

whether or not associated with lines or colours. Such composition or form must give a special appearance to a product of industry or handicraft and can serve as a pattern for a product of industry or handicraft, but it must not include anything in an industrial design, which serves solely to obtain a technical result. The duration of the industrial design is five years which may be renewed for two further consecutive periods of five years subject to the payment of a prescribed fee.[184]

4.6.4 Trademarks

The Order provides for trademarks, collective marks and trade names. Part Five ss (26-33) of the Order provide for the trademarks. In terms of s 2 a 'mark' means any visible sign which is capable of distinguishing the goods or services of an enterprise. A collective mark is defined under s 2 as:

> 'any visible sign designated as such in the application for registration and is capable of distinguishing the origin or any other common characteristics, including the quality goods or services of different enterprises which use the sign under the control of the registered owner of the collective mark.'

For all the marks, the term is ten years with possible renewals.[185]

4.6.5 Acts of unfair competition

Section 34 of the Order, which incorporates Articles 10bis and 10ter of the Paris Convention, provides for acts of unfair competition. The following acts constitute acts of unfair competition under the Section;

- All acts of such a nature as to create confusion by whatever means with the establishment, the goods or the industrial or commercial activities of a competitor;
- False allegations in the course of trade of such a nature as to discredit the establishment, the goods or the industrial or commercial activities of a competitor; and
- Indications or allegations, the uses of which in the course of trade, are liable to mislead the public as to the nature, the manufacturing process, the characteristics, the suitability for their purpose or the quantity of the goods.

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[184] See s 24(4).
[185] See s 29(4).

The unfair competition provisions of the Order are in many ways the statutory expression of what is known as the common law delict of unlawful competition. Delict of unlawful competition is an aquilian action, which is based on the principle of fault of the wrongdoer, thereby differing in this regard from the unfair competition as provided for in s 34 of the Order, which is not based on the fault principle at all.[186]

4.7 Intellectual property rights activity in Lesotho pre-TRIPs

The landscape of IPRs activity in Lesotho pre-TRIPs, as shown by the table below, does not reflect much innovation activity in Lesotho. All of the IPRs filed during the period 1982 to1990 were of non-residents. In 1987 and 1988, there was no registration because of the defective Acts, which were in force at that time. However, since the implementation of the Industrial Property Order, there has been a spurt in registrations, particularly of trademarks, though from non-residents.

Table 14: Intellectual property activity at the Registrar General office (1982-1990)

Year	Patents	Trademarks	Designs
1982-84	32	178	38
1985	57	100	20
1986	50	55	18
1989	21	98	N.A
1990	23	N.A	N.A

Source: Kumar (1993) at 83.

N.A = information not available.

4.8 Lesotho in the TRIPs- based policy regime

The obligations under TRIPs apply equally to all WTO members, but developing countries were allowed extra time to integrate TRIPs provisions in their national laws. This was done in two tiers of transition according to their level of development.[187] TRIPs recognised that the implementation of high IP protection

[186] Kumar (n 91) at 72-73.

[187] LDCs briefing book 'Trade-Related Aspects of Intellectual Property (TRIPs)' (2008) at 1. Available at *http://www.unctad.org/en/docs/idc2008en.pdf* (accessed 14 April 2011).

would be difficult for LDCs to implement immediately because of their special needs and requirements; they were therefore given a ten-year transition period which would expire in 2006 and TRIPs provided for technical assistance for the preparation of laws and regulations on the protection of IPRs, as well as for the prevention of their abuse.[188]

In terms of Article 66.1 of TRIPs, the transition period can be extended if a duly motivated request is submitted to the TRIPs Council. In October 2005, the LDCs group submitted their joint request to the Council based on common special needs and requirements, such as, economic, financial and administrative constraints and the need for flexibility to create a viable technological base.[189] The Council granted them an extension up to the 1st of July 2013 to be fully TRIPs compliant in all other sectors of technology, with the exception of the pharmaceutical sector, where they have up to 2016 to provide patents protection to both products and related processes.

In addition, to the transition period, TRIPs also have some important flexibilities, such as, compulsory licensing, parallel importation and Bolar exception, which are meant to be used by both developing and LDCs in order to make possible use of TRIPs- compatible norms in a manner that enables them to pursue their own regulatory policies.[190]

Lesotho, as a member of WTO and a signatory to TRIPs, is obliged to grant minimum standards of protection for all categories of IP as envisaged by TRIPs provisions, as soon as the transitional period expires which is in 2013 and 2016. As an LDC, it has in its corner the inbuilt flexibilities of TRIPs to utilise in a manner that will enable it to pursue its own public policies and to establish economic conditions which are supportive of its economic development objectives. However, in reality, Lesotho has not made use of these flexibilities, even though it has incorporated them into its national laws because of the impact of various factors, such as, lack of technical expertise and infrastructure. Most importantly, there is an emerging trend in the form of Free Trade Agreements (FTAs), and the Economic Partnerships Agreements (EPAs) which erodes the use of TRIPs flexibilities. This

[188] LDCs report 'Growth, poverty and the terms of development partnerships' (2007) at 95.
[189] LDCs briefing book (n 187) at 4.
[190] LDCs report (n 188) at 97.

came about as a result of developed countries' effort to ratchet the level of the global IP regime even higher than what is envisaged in the TRIPs Agreement. The FTAs and EPAs adopt TRIPs-plus provisions, focusing particularly, on the scope of some of the TRIPs flexibilities, such as, parallel importation and compulsory licensing.[191] Developing countries agree to FTAs and EPAs as a quid pro quo for potential trade benefits, even though they restrict their ability to use TRIPs flexibilities. Lesotho is a party to the regional arrangements for IP protection and bilateral agreements, such as, ARIPO, SADC, SACU and ACP/EU FTA, which have comprehensive chapters on IP protection, and which render the usage of the TRIPs flexibilities impossible. Because of this, Lesotho has not utilised TRIPs flexibilities, even though it was to its own detriment.

In addition to these, TRIPs is highly problematic for countries such as Lesotho in terms of its implementation, which commands high transaction costs.[192] The administrative costs of implementing TRIPs can be quite substantial when taking into account the need to write new laws, train the members of the Judiciary, and empower customs officials and police to interdict shipments of counterfeit goods and to establish and staff IPRs related agencies.[193] Lesotho lacks the relevant expertise and administrative capacity to implement TRIPs provisions.

Furthermore, although the Doha Declaration (2001) was an improvement over TRIPs, especially in the arena of health and access to medicines, it does not address the building of technological capacity, which is most needed in Lesotho.[194] In addition, despite the 2016 extension period given to the LDCs, Lesotho is in practice granting both products and process patents for pharmaceuticals.

4.9 Innovation landscape in Lesotho

A country's capacity to innovate depends on a whole range of economic, social and political factors which include IPRs, fiscal policies, competition, finance, and macroeconomic and monetary factors, especially the banking and credit system.[195] It is almost impossible to isolate the strength of certain inter-related variables in the innovation process. As mentioned earlier, proponents of a stringent IPRs regime

[191] F Musungu (n 16) at 66.
[192] LDC report (n 188) at 97.
[193] Sithetho (n 165) at 38.
[194] Ibid.
[195] LDCs report (n 188) at 107.

argue that IPRs act as a spur to technological innovation, induce technology transfer, as well as attracting FDI. However, in order to be successful in technology transfer and innovation, certain prerequisites must be in place, such as, a domestic knowledge system, ie, a pro-innovation policy framework, infrastructure and appropriate institutional development; producer competence and learning, imitative capabilities and innovation capabilities at the firm level.[196]

4.9.1 Inputs

4.9.2 Trends of R&D and total number of researchers in Lesotho

In reality, Lesotho lacks all the prerequisites of the healthy innovative environment, and without them, the potential benefits of new ideas and information - the benefits claimed for IPRs protection, namely induced technology transfer - are not forthcoming.[197] In terms of the recent data, Lesotho devotes few resources to R&D; the Gross Domestic Expenditure on R&D (GERD) as a percentage of GDP amounted to 0.0064% and the number of researchers involved in research is very low. Without innovation inputs, it will be completely impossible for Lesotho to progress technologically. The stringent IP system cannot help Lesotho without its having the proper equipment for innovation.

4.9.3 Outputs

4.9.4 Patents, trademarks and industrial designs applications

Lesotho's innovation activity is non-existent. As shown by the tables below, industrial property statistics reflect poor performance by residents as opposed to non-residents. Patents and trademarks filings through the PCT and Madrid systems also reflect the dominance of filings by non-residents over those of residents. In terms of the PCT statistics of 2002, Lesotho applications totalled 88 932 and were only by non-residents. Further, the Madrid report of 2005 shows that the total number of Lesotho applications was 981, which were also by non-residents.

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[196] Ibid at 118.
[197] Ibid.

Table 15: Industrial property applications in selected LDCs by residents and non-residents (latest year)

Country	Year	Patent applications		Trademarks applications		Designs applications	
		Residents	Non-residents	Residents	Non-residents	Residents	Non-residents
Haiti	1999	1	5	150	1306	..	..
Lao People	2002			19	672		
Lesotho	2001	1	54	..	19	..	1
Madagascar	2002	4	..	162	293	123	..
Malawi	2002	..	1	138	440	10	12
Mauritania	2002	6	..	9		0	

Source: UNCTAD secretariat compilation based on WIPO Guide to Intellectual Property worldwide, country profiles. Quoted from LDCs Report, 2007, p 94.

Table 16: Applications filed and/or registered for 2001: Patents and trademarks by ARIPO (Lesotho as a designated country)

Application by:	Patents	Trademarks	Industrial designs
Residents	1		..
Non-residents	54	19	1
Grants to:			
Residents			
Non-residents	11	19	0

Source: Industrial Property Office, Registrar General Office - industrial property statistics database.

In promoting technological learning and innovation, the national policy of Lesotho in the form of its Poverty Reduction Strategy Paper (PRSP) reflects that, although Lesotho is concerned with the promotion of sustainable economic growth as the basis

for poverty reduction, the treatment of technological change as a source of economic growth is weak.[198] The following table illustrates this.

[198]Ibid at 51.

Table 17: How S&T is treated in the PRSPS of selected LDCs

Priority areas in PRSP Documents	Lesotho	Haiti	Uganda
Was S&T considered a priority area in the PRSP document?	N	N	Y
Is there a specific section or paragraph covering S&T issues?	N	N	N
Are specific S&T initiative included at the level of: 1. Trade	N	N	W
2. FDIs	Y	N	N
Does the PRSP include specific S&T initiatives in: 1. Primary education	Y	N	Y
2. Secondary education	Y	N	Y
3. Higher education	Y	N	Y
Are infrastructural technology treated in the PRSP?			
Electrical networks: 1. General	Y	Y	Y
2. Rural	Y	N	Y
Telecommunications networks: 1. General	Y	Y	Y
2. Rural	Y	N	Y
ICT extension: 1. General	Y	W	W
2. Rural	N	N	N
Are there sector specific technology extension programmes: 1. In agriculture	Y	W	Y
2. In business development services	Y	N	W
3. In products standards and best practices	N	N	Y

Y = Yes

N = No

W = Weak

Source: UNCTAD secretariat based on Warren-Rodriquez 2007

4.9.5 Foreign direct investment (FDI) in Lesotho

In recent years, Lesotho has experienced export-led economic growth, which was influenced by FDI flow into the export-oriented garment and textile sector. The FDI inflow was influenced by the preferential treatment of products from Lesotho in the major markets, such as, the United States, where they receive a duty-free and quota-free access. In terms of the United Nations Conference on Trade and Development report, as shown by the table below, the FDI net flows in Lesotho have increased over a period of eight years beginning in 2000.

Table 18: FDI net flows (2000-2007)

Country	2000	2003	2005	2006	2007
Lesotho	32	42	57	92	106
Malawi	40	66	27	30	55
Mali	82	132	224	83	360
Mongolia	54	132	182	290	328

Source: United Nations Conference on Trade and Development, FDI online, FDI database, available at www.unctad.org/Templates/Page.asp?intItemID=1923 (accessed 21 April 2011)

Note: Components may not add to totals owing to rounding.

4.9.6 Lesotho's share of global trade

Lesotho's position in global trade shows a poor performance. As reflected by the tables below, Lesotho's merchandise imports far outweigh the exports, which results in high trade deficit. In terms of the World Development indicators for 2010, Lesotho's merchandise trade as a percentage of GDP increased from 138.0% in 2000 to 181.2% in 2008, however, it dropped to 171.0% in 2009 because of the economic recession. Merchandise exports are dominated by garments exports, with its share in domestic export amounting to 77.7% in 2000 and 32.45% in 2005. Lesotho does not

have a share in global high-technology exports; it only exports low- technology commodities.

Table 19: International merchandise trade, exports and imports (2003 and 2007)

Country	Exports of merchandise (millions of US dollars)		(% of world)		Imports of merchandise (millions of US dollars)		(% of world)	
	2003	2007	2003	2007	2003	2007	2003	2007
Lesotho	479	716a	0.01	0.01	1115	1950a	0.01	0.02
Malawi	502	869	0.01	0.01	785	1378	0.01	0.01
Mali	1007	1440	0.01	0.01	1271	2185	0.01	0.01
Mongolia	616	1887	0.01	0.01	807	2117	0.01	0.01

Source: United Nations Statistics Division, UN comtrade and WIPO Statistics database March 2011 available at *http://comtrade.un.org* and *http://www.wipo.org/WSBDcountryPFView.aspx.htm* (accessed 21 April 2011 and 18 April 2011respectively).
Note: a = latest year 2009.

Table 20: Trade structure of Lesotho (2009)

Principal exports (US$ m)		Principal imports (US$ m)	
Clothing	3, 841.1	Garment inputs	243.1
Water	138.2	Foodstuff	72.9
Diamonds	474.6	Other	1, 118.1
Main export destinations (% share)		**Main import origin (% share)**	
North America	42.2	SACU	83.9
SACU	29.5	Asia	14.4
EU	20.6	EU	0.1

Source: EIU Report, January 2009.

4.9.7 Composite indicators

The knowledge economy indicators (KEIs) provide a measure of the relative state of the knowledge economy in a country. In terms of the KEI index of 2008, Lesotho ranked 116, on the four pillars of the knowledge economy framework, scored 2.70 for innovation, 1.73 for education, 1.53 for information and communication technology (ICT), and lastly, scored 2.65 for economic incentive regime.[199]

4.10 Conclusion

Lesotho's IP system is advanced when taking into consideration that Lesotho is an LDC. For instance, it provides for both product and process patents in pharmaceutical products even though it has a transition period until 2016. It has to be fully TRIPs compliant in 2013. However, it will only need to make minor adjustments, such as, patents and designs duration. The greatest challenge facing Lesotho as an LDC, as indicated by Mahase-Moiloa (Lesotho's Minister of Law and Constitutional Affairs), is how to create an IP culture, and encourage and promote creativity and innovation in an environment subject to severe constraints, such as: limited experience, weak IP infrastructure and policy framework. What good is an efficient IP system if it cannot result in concrete and tangible benefit? The empirical evidence has shown that it is not only a stringent IP system, which can contribute to the technological development of a country. Other factors, such as, human capital, and infrastructure to innovate are also essential to spur technological innovation. Lesotho's technological innovation performance, like that of South Africa, negates the proposition upon which the stringent IP system movement is based.

To promote R&D and innovation in 2006 the Lesotho government passed the first National Policy on Science and Technology (2006-2011) which calls on the Basotho to harness science, technology and innovation (STI) as tools to reduce poverty, create jobs and transform the country into a dynamic and informed society.[200] This came about as a result of a consensus view derived from a long, open consultation process that engaged all key stakeholders and non-governmental organisations, such as, UNESCO, UNIDO, UNECA and UNCSTD.[201] To chart the

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[199] KEI index, available at *http://info.worldbank.org/etools/Kam2/KAM-page5.asp* (accessed 19 May 2011).
[200] UNCTAD report (n 170) at 1.
[201] Lesotho science and technology policy report (2006-2011) at 1.

route for implementing this policy, the government, through the Ministry of Communications, Science and Technology, requested UNCTAD to undertake a science, technology and innovation policy (STIP) review in 2009. Furthermore, several actions have already been taken to implement this policy, such as, the setting of the legal framework for the Inter-ministerial Committee on science and technology, the Lesotho Advisory Commission for science and technology (LCST), and the Lesotho Innovation Trust Fund. The LCST acts as the advisory body to the government on matters of science, technology and innovation (STI). It is responsible for managing STI policy and processes, and oversees the implementation of the STI policy. Furthermore, it is responsible for the documentation, protection and development of indigenous knowledge and technologies, as well as the establishment of related databases.[202] However, this is not enough; much still needs to be done in order to create a healthy innovative environment, such as, reforming the educational system to increase the human capital, and investing more resources in R&D activities.[203]

Even though Lesotho has managed to attract FDI in the manufacturing sector, that was not because of the stringent IP system, but the result of the preferential trade treatment that Lesotho enjoys under the AGOA. Moreover, the FDI has focused only on low technology and low-skill activities, as opposed to high technology and high-skill activities. Further, expatriates, even in firms that have been in Lesotho for a decade or more, hold the supervisory, technical and managerial positions. This is because Lesotho lacks the industrial base, human capital, technical capabilities and entrepreneurial skills that foreign affiliates need to set up more advanced facilities.[204]

The key attributes of a modern knowledge economy encompass technology, human capital, institutions, networking, collaboration and communication, and the knowledge base.[205] Moreover, to attain the stage of maturity in technological innovation, particularly in the Science and Technology field, a functioning network of R&D institutions and a supportive policy framework, as well as a viable domestic market to test and nurture innovations and technologies generally underpins

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[202] ATPS newsletter 'Building Africa's science, technology and innovation (STI) capacity today for sustainable African development tomorrow (2009) Issue No.26, July-December, at 9. Available at *http://www.atpsnet.org* (accessed 19 May 2011).
[203] UNCTAD report (n 170) at 9.
[204] Ibid at 6.
[205] Ibid at 1.

innovation process. However, Lesotho lacks all of these attributes; its innovation landscape is riddled with a weak research capacity, it has a small domestic market with low purchasing power, a weak institutional mechanism for technology acquisition, (whether through own indigenous research or through adapting new innovations), and technologies produced elsewhere.[206]

[206] Ibid at 9.

CHAPTER FIVE

RECOMMENDATIONS FOR LESOTHO

5.1 Introduction

The purpose of this chapter is to present the findings of this study as highlighted in the literature review, and from the experiences of South Africa, India and Lesotho. Finally, recommendations for Lesotho will be made based on the experiences of India and South Africa.

5.2 Main findings of the study

The main objective of this study was to make a critical analysis of whether a stringent IP protection system as envisaged by the TRIPs Agreement acts as a spur to technological innovation in developing countries. The motive for undertaking this study is grounded in the realisation that since the adoption of TRIPs, global IP protection is increasingly being ratcheted higher and higher, to the detriment of developing countries, particularly LDCs, as they are being pressured to implement these stringent IP protection standards, which are not supportive of their developmental needs and goals.

The empirical evidence from this study on South Africa, India and Lesotho shows mixed results on the effect of a stringent IP protection system, as envisaged by TRIPs on technological innovations in developing countries. The evidence from South Africa reflects that since the adoption of TRIPs, South Africa's innovation landscape has been in decline. This is despite the fact that the government is investing much to encourage innovation. South Africa has a state- of-the-art IP protection framework, and it has infrastructure to innovate, in terms of both the fiscal and physical aspects. However, there is little innovation that finds its way into the international markets from South Africa. The drawback to South Africa's ability to innovate successfully lies in its severely inadequate human capital. As seen in Chapter Three, Section One above, South Africa is losing most of its highly skilled labour through migration to other countries.

On the other hand, India's innovation landscape post-TRIPs is on an upward trajectory. India, like most developing countries, was obliged to overhaul its IP

system after TRIPs' adoption in order to be TRIPs compliant. For example, it had to change its patent system to extend patent protection to the pharmaceutical and agrochemical sectors. Before TRIPs adoption, the Indian patent system was weak according to the world's standards. However, it was because of this weak patent regime that India attained innovative capacity and competence in some sectors that are vital for economic growth, such as, the pharmaceutical and agrochemical sectors.[207]

The importance of IP as a major source for technological development is now recognised in India. The government has undertaken several initiatives to create a healthy innovative environment, by providing for instance, incentives to innovate in the form of tax holidays, exemption from Drugs Control Order, and income tax relief. Further, there are capacity building programmes and a policy framework to promote innovation. The immediate short-term effects of TRIPs in India show promising trends in the ability of a stronger IPRs system to create incentives for greater R&D and technology transfer. However, India's technological innovation success cannot be solely attributed to TRIPs. Other phenomena, such as, trade liberalisation, which took place at more or less the same time as the adoption of TRIPs, have also played a crucial role in the growth of India's economy. Even though the overall performance of India's innovation landscape is stagnant, the empirical evidence finds that a stringent regime did indeed stimulate technological innovation to some extent, more especially in research-based sectors, such as, the pharmaceutical and agrochemical.

Lesotho as an LDC still has until 2016 to be fully TRIPs compliant. However, the current IP protection laws in Lesotho need only minor adjustment to be fully TRIPs compliant. For example, Lesotho is already providing for product patents on pharmaceutical products, even though it has been given until 2016 before it must provide for such protection. The empirical evidence reflects that Lesotho's innovation landscape is at the lowest level compared to other LDCs. The major drawback to Lesotho's innovative capability is the lack of R&D infrastructure, severe inadequate human capital, and lack of government commitment in promoting innovation activities. Unlike South Africa and India, which have both the capacity

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[207] See Chapter Three, Section Two.

and competence to innovate, Lesotho still, lacks innovative capacity and competence. The government of Lesotho is investing little in innovative activities.

Even though Lesotho managed to attract FDI in the last decade, that was not because of a stringent IP protection system, but because of the preferential concessions it enjoys under AGOA. Further, the FDI it attracted was only in the manufacturing sector, not in the sectors of high technological value, such as, science and technology,[208] and it did not even facilitate technology transfer.

5.3 Recommendations

Lesotho, like many developing countries, is seeking to develop economically. It has realised that technological progress is a major component of any economic development strategy, which is why it requested assistance from international bodies to create its first national STI policy in 2006. We are currently living in a knowledge-based economy of which the key attributes include, amongst others, technology, human capital, networking, collaboration and communication, as well as the knowledge base. It is not possible to survive in this kind of economy without a proper technology base and competence which is why Lesotho is in urgent need of building a local technological capacity and competence. It needs a healthy innovative environment to survive in this kind of economy.

Even though IP protection is still a new phenomenon in Lesotho, with few people who are aware of it, the importance of IP as a major source for economic and technological development is recognised. To create a healthy innovation environment, the government of Lesotho has undertaken several initiatives, which include, amongst others, the adoption of the first STI policy in 2006, the review of a science, technology and innovation policy in 2009, and the establishment of the Lesotho innovation fund. However, this is only the beginning; Lesotho still needs to do much in order to attain technological sovereignty.

The experiences of South Africa and India have shown that all the variables of the innovation process are vital. For instance, even though South Africa has a state-of-the-art IP system, and the best infrastructure to innovate, because of the

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[208] See Chapter Four.

severe shortage of skills, South Africa's innovation landscape is declining. This implies that, the effective inducement mechanism for innovation does not depend on a single variation of the innovation process, as proclaimed by the proponents of a stringent IP protection system. Even though the IP system is important in the innovation process, other factors, such as, a country's knowledge ecology, institutional framework for innovative endeavours, and the level of its absorptive capacity are also equally important.

Based on the experiences of South Africa and India, in order to attain the capacity and competence to innovate, the government of Lesotho needs to build R&D infrastructure, provide the incentives for innovation activities, adopt policy frameworks that support for innovative endeavours, and have capacity building programmes. The following are recommended for Lesotho:

- Lesotho has to first identify, adapt and develop technology geared to local resources, such as, technology in diamond mining, water conservation and usage, as well as in pharmaceuticals, because there is already initiative from the local people (traditional doctors) to create remedies for various diseases. Their indigenous knowledge needs to be protected so that it can be developed further.
- There is also a need to build R&D infrastructure, such as, roads and telecommunications, and further, to put in place the legal framework which is supportive of innovative endeavours, such as, laws which would protect the indigenous knowledge of its traditional doctors and its culture;
- To reach the stage of technological sovereignty, the important inputs are R&D and human capital (both skilled and highly skilled labour). Since Lesotho has severely inadequate human capital, there is an urgent need to address this. The government can address this issue by the establishment of the facilities which will be geared towards the nourishment of the local innovative initiative, such as, facilities for high school and tertiary institutions;
- Since technology expansion is rapid, there is a need for capacity building of all the stakeholders involved in IP matters, which has to be done routinely because they need to be up to date with these changes. For instance, a few decades ago, there were no talks about the protection of integrated circuits,

however, because of technology advancement, the IP protection had to be extended, so that they can be protected. The government can facilitate this through the organising of training programmes, seminars and workshops for all the stakeholders, as it is done in India.[209]

- As it was done in medieval time, the government can hold exhibitions and can also make use of prizes to encourage innovative spirit among the people;[210]
- To spur innovative activities, the government needs to provide for both fiscal incentives and supportive measures to industries, such as, tax deductions for sponsoring research, and tax holidays to R&D companies. This can work well because already the current Tax Law provides for tax deductions for companies that support innovative initiatives. Also, the government needs to put in place the institutions that will provide supportive measures to industries, such as, a technology innovation agency;[211]
- As it is not ideal for the government to finance each and every activity within a country, the government can co-ordinate the activities of R&D institutions by promoting partnerships between public and private sector research institutions, such as, universities and private R&D institutions, as is done in South Africa and India.[212]
- The government should assist in the practical application of the results of R&D activities, such as, conducting campaigns which encourage people to buy the products made in Lesotho, and also by restricting the entry of similar products into the borders of Lesotho.

Further, because R&D activities in Lesotho are oriented only towards absorbing and adapting the imported technology to the local needs, the patent system should be supplemented by utility models. This will help Lesotho to build its technological capacity and competence, as it was the case with India's patent regime pre-TRIPs.

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[209] See Chapter Three, Section Two.
[210] See Chapter Two.
[211] See the experiences of South Africa and India in Chapter Three.
[212] Ibid.

Since Lesotho does provide for utility models, they can be used to replace the patent regime.[213]

Lastly, Lesotho can make use of patents of importation, as the Monarchs did in the sixteenth century by granting royal privileges to encourage the working of the inventions in their countries.[214] As patents of importation confer the exclusive right on the right holder, and at the same time encourage him to work the patent in the country, the grant can be made on condition that the patentee employ and train the local workforce. This will help to impart the skills and know-how of the technology to the local workforce, so that they can absorb and adapt it to the local needs of Lesotho.

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[213] See Chapter Four.
[214] See Chapter Two, Section Two.

CHAPTER SIX

CONCLUSION

The focus of this thesis has been on whether IP protection does act as a spur to technological innovation in developing countries. The focal point being on whether a stronger IP protection system, as postulated by the TRIPs Agreement, does help in stimulating innovation activities in developing countries.

Over the past decades, the global IP protection's ratchet has been and is still being intensified on the assertion that, if developing countries can institute the IP systems with high standards of protection, which is akin to that of developed countries, this will act as a spur to local innovation and will again attract FDI and technology transfer, which will, in turn, translate into overall economic growth. However, there is no empirical evidence in support of this assertion. The empirical evidence on the impact of stronger IP protection on the economies of developing countries, reflect that a stringent IP protection system has negatively affected the public welfare in developing countries; it has not attracted the promised investment (FDI) and technology transfer, and seldom seems to increase the levels of local innovation.

The history of the protection of IP comes a long way; from the time of the guildsmen in the eleventh century, to the times of the royal privileges in the sixteen century; from the Paris and Berne Conventions in the nineteenth century, to the TRIPs Agreement in the twentieth century. The underlying justification for the protection of IP throughout its evolution has been that the recognition and granting of limited property rights in the form of IPRs for the products of the human intellect does stimulate innovation and creativity, which, in turn, stimulate economic growth. Thus, IP is considered to be a power tool for economic growth. It has even been suggested that, to promote economic growth, countries should put in place economic policies which encourage investment in new R&D, as well as subsidise programmes which develop human capital.

The evolution of IP protection led to the establishment of the IP system which was solely created to establish a fair balance between the public and private interests arising out of the products of the human intellect. However, this balance is shifting with the ever rising standards of IP protection as 'ownership of knowledge is becoming a key determinant in defining the 'haves' and have-nots' in modern society; powerful interested groups have stepped-up pressure on governments to implement stronger international protection and enforcement of IPRs'.[215]

The most significant development in the history of IP protection was a deliberate fusion of trade and IP through the TRIPs agreement in 1994. With the formal incorporation of IP into the international trading system, its main pillars, such as, the national treatment principle and the MFN principle, apply to the IP relations between WTO members. Further, this also brought about the application of the WTO's dispute settlement mechanism which justifies measures of commercial retaliation in case of non-compliance with the IP obligation.[216]

The modern debate on IP protection revolves around the contention that, without the IPRs, developed countries would not have been able to generate the technologies that made them prosperous today.[217] However, this kind of statement cannot be further from the truth, because the IP systems of that time were highly defective by the modern standards that are now asked of the developing countries.[218] For instance, patents systems in many countries lacked a disclosure requirement, offered inadequate protection for foreign inventions, and no protection was provided for sectors which were considered to be of vital importance for socio-economic development, such as, the agricultural and pharmaceuticals sectors.

Since the adoption of TRIPs, developing countries have been pressured to broaden the scope of their IP systems, irrespective of their own needs and conditions. This pressure has been exerted through various fora, such as, multilateral obligations (eg WIPO and WTO), regional (eg ARIPO, EU), and lately, through bilateral

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[215] S Walker 'The TRIPs Agreement, sustainable development and the public interest' (2001) Environment Policy and Law Paper No.41. available at *http://data.iucn.org/dbtw-wpd/edocs/EPLP-041.pdf* (accessed 19 May 2011).
[216] Roffe et al. (n 37) at 4.
[217] Technopolicy Brief No.1 'How important were strong private intellectual property rights in the development of developed countries? Evolution of national intellectual property rights regimes'. Available at *http://www.atpsnet.org/Files/technopolicy-brief-series-1.pdf*. (accessed 19 May 2011).
[218] Ibid.

agreements, such as, the free trade agreements (FTAs) and economic partnership agreements (EPAs). While the main aim of the FTAs and EPAs is to provide increased market access, the major trading powers are using them to further, ratchet-up the level of IP protection.[219] They contain comprehensive IP chapters, which undermine the use of the flexibilities provided by TRIPs to developing countries to adopt TRIPs provisions in a manner which is supportive of their developmental needs and goals. Nonetheless, developing countries are agreeing to these agreements as a quid pro quo for the potential trade benefits, as they did when they embraced TRIPs.[220]

Proponents of a stringent IP protection system argue that, a healthy IP system is a key element in encouraging innovation and FDI, which will, in turn, translate into technology transfer, particularly from developed to developing countries.[221] However, there is little evidence from developing countries to support this view, indicating that the IP system is not a key stimulus for innovation.[222] Indeed, for most developing countries with weak technological capacity, such as, Lesotho, the empirical evidence on innovation activities, trade, FDI and economic growth, reflect that IP protection have modest positive impact on innovation, nor is it likely that the benefits of IP protection will outweigh the costs in the foreseeable future.[223]

Even today, after fifteen years since the adoption of TRIPs, the persistent question in developing countries is still how, and with what effect, the rules governing IPRs intervene in relation to technological innovation in these countries.

On the other hand, this study has shown that innovation is a dynamic process which is influenced by many external variables, which are both economic and non-economic, such as, political stability, a viable domestic market, the IP system, the level of commitment of the government to support innovative endeavours, as well as the capability to innovate.[224] The difficulty is to assign a single variable, such as, the

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[219] Roffe et al (n 37) at 8.
[220] Ibid.
[221] See Chapter Two.
[222] See the experiences of South Africa and India in Chapter Three.
[223] See empirical evidence from Lesotho in Chapter Four.
[224] Eiss (n 13) at 247.

IP system a value.[225] To reach the stage of technological sovereignty, particularly in the science and technology sector, innovation process is generally underpinned by a functioning network of R&D institutions and a supportive policy framework, as well as a viable domestic market to test and nurture new innovations and technologies. However, most developing countries lack most of these variables. The most critical inputs for innovation, such as, R&D infrastructure and human capital, are neglected subjects of policy making. For instance, in most developing countries, there are no explicit national science, technology and innovation (STI) policies.[226] In Lesotho, for instance, the first STI policy was passed in 2006.[227] Further, STI policies in the economic investment and education policies are also neglected subject matter. Even institutions of higher learning, such as, universities, and technical colleges, lack the necessary facilities and equipment to furnish their students with necessary knowledge and skills, because for many years they have been neglected in, and disoriented from, local and national priorities.

While there is wide consensus that the IP system is one of the ingredients for creating a healthy innovative environment, which is vital for attaining technological sovereignty, there is no consensus regarding the need for IP system for attracting FDI and technology transfer.[228] The empirical evidence shows that the actual transfer of technology from developed to developing countries is on a marginal basis.[229] This is so because the most important reason for applying for patents in developing countries by the citizens from developed countries is for importation purposes, and only for being protected from imitators.[230] The intention is not to work the patent in these countries, which is the only way through which technology transfer can happen. The other reason is for having a defense mechanism - to prevent others from obtaining patents in the country for the same product. In general, there is no

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[225] Kumar (n 91) at 339.
[226] R Rena 'The internet in tertiary education in Africa: Recent' (2008) 2(1) *International Journal of Computing and ICT Research* 9 at 10.
[227] See Chapter Four.
[228] Ibid at 335.
[229] See the experiences of South Africa, India and Lesotho in Chapter Three and Four.
[230] HE Grundmann 'Foreign patent monopolies in developing countries: An empirical analysis' (1976) *Journal of Development Studies* at 186.

empirical evidence from developing countries, to suggest that a stringent IP system is a pre-requisite for attracting sufficient investment and technology transfer.[231]

Developing countries, as technology importers, focus on importing foreign technologies so that they can adapt them to their local needs. Whatever indigenous R&D activity there is, is oriented towards absorbing and adapting the imported technology to their local needs.[232] Thus IPRs, particularly patents, are not conducive for such intermediate and adaptive technologies. These kinds of technologies need some form of protection, such as, utility models and patents of importation, which are suitable for such technologies. Therefore, developing countries should not be forced to adopt stringent IP protection which is not helping them, but should be left to adopt systems which are supportive of their developmental stages, needs and goals, so that they can attain local innovative capacity and competence. It is only after attaining local innovative capacity and competence that they will be able to apply stringent IP protection developed countries have done.

Based on the findings of this study, it is evident that the vital ingredient to spur local innovation, to attract FDI and to advance technology transfer, is local innovative capacity and competence. Innovative capacity depends on a cluster of things, such as, political stability, the level of scientific and technological capacity, the existing level of economic development of a country, the infrastructure (physical, fiscal and intellectual ie, education, information and policy frameworks to innovate, the human capital (both skilled and highly skilled labour).[233] Developing countries should be given a chance to attain innovative capacity and competence, before they are forced to apply stringent IP protection.

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[231] Kumar (n 91) at 339. See also the experiences of South Africa, India and Lesotho in Chapter Three and Four.
[232] Kumar (n 91) at 335.
[233] See Chapter Three.

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