

Patenting in Kenya: Status and Challenges

Mary Kiveu

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**THE KENYA INSTITUTE FOR PUBLIC POLICY
RESEARCH AND ANALYSIS (KIPPRA)**

**YOUNG PROFESSIONALS (YPs) TRAINING
PROGRAMME**

Patenting in Kenya: Status and Challenges

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Private Sector Development Division
Kenya Institute for Public Policy
Research and Analysis

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Abstract

Innovation is a key driving force for economic development and competitiveness in the 21st century. Patents provide incentives for innovation, knowledge creation and transfer. The patent system has long been used as a policy instrument to spur economic growth and competitiveness. In Vision 2030, Kenya aspires to become globally competitive and a knowledge led economy. The patent system is therefore an important policy tool that can be harnessed for wealth creation, poverty reduction and job creation. This is because increased innovativeness will boost productivity in all sectors of the economy.

This study is a background paper on patenting in Kenya that seeks to explore patenting, while isolating challenges that are faced by inventors in patenting their inventions. A survey was carried out on patent applicants to the national office KIPi for the period 1998-2008, in addition to literature review of relevant documents and legislation. Study findings indicate the level of patenting in Kenya is low, while that for grant rate is very low. IP knowledge, especially on patenting, was also found to be very low. Patent applicants from universities were extremely low contrary to expectations. Despite the low patenting levels, 80 per cent of respondents reported they had innovations that were not protected. Only 20 per cent of respondents had commercialized their patents. Outstanding challenges/obstacles to patenting are long and tedious patenting process, difficult patent drafting, limited IP knowledge, lack of IP professionals, limited R&D funds and a weak IPR regime.

Policy recommendations include intensified IP awareness creation through all means and increased budgetary allocation to KIPi to enable it to carry out its mandate effectively, inclusion of IP in the education curriculum, introduction of a national intellectual property day to create awareness and honour outstanding inventors, revision of legislation to strengthen IP regime and effective enforcement, and setting up of an IP commercialization centre. Lastly, the government needs public and private R&D through increased funding to public institutions and introducing expenditure incentives to the private sector.

Abbreviations and Acronyms

ARIPO	African Regional Industrial Property Organization
EPO	European Patent Office
ICIPE	International Centre for Insect Physiology and Ecology
ICRAF	International Centre for Research in Agro Forestry
IIPi	International Intellectual Property Institute
ILRI	International Livestock Research Institute
IP	Intellectual Property
IPERC	IP Education and Resource Centre
IPOS	Intellectual Property Office of Singapore
IPR	Intellectual Property Rights
IPTC	Intellectual Property Training Centre's
JPO	Japan Patent Office
KIPI	Kenya Industrial Property Institute
MyIPO	Malaysia Intellectual Property Office
NCST	National Council for Science and Technology
OECD	Organization for Economic Co-operation and Development
PCT	Patent Cooperation Treaty
PIDOC	Patent Information and Documentation Centre
STI	Science, Technology and Innovation
TRIPS	Trade Related Aspects of IPR
UNCTAD	United Nations Conference on Trade and Development
USPTO	United States Patent and Trademark Office
WIPO	World Intellectual Property Organization

Table of Contents

<i>Abstract</i>	<i>iii</i>
<i>Abbreviations and Acronyms</i>	<i>iv</i>
1. Introduction	1
1.1 Background Information	3
1.2 Problem Statement	5
1.3 Objectives.....	5
1.4 Justification of the Study	6
2. Literature Review	7
2.1 Theoretical Literature.....	7
2.2 Empirical Literature.....	9
3. Patenting in Kenya	11
3.1 The Position of IP/Patents in the Government Development Agenda.....	11
3.2 Legal Framework on IPR in Kenya.....	11
3.3 Patent Administration.....	13
3.4 Enforcement of Patent Rights Agenda	13
3.5 The Patenting Process in Kenya.....	14
3.6 The Cost of Patenting in Kenya.....	17
3.7 Professional Education and Training	17
3.8 Universities and Research and Development Institutions	18
4. Global Patenting and Best Practices	21
4.1 Global Patenting	22
4.2 Best Practices from Other Countries	22
5. Methodology.....	26
5.1 Conceptual Framework.	26
5.2 Data and Data Sources	26
5.3 Research Design.	27
5.4 Data Collection	28
5.4 Population and Sample Size	29
5.5 Data Analysis.....	29
6. Results and Discussion	30
6.1 General Observations.	30

6.2 Applicants Profile	30
6.3 Results from Respondents.	31
6.4 Research and Development	32
6.5 Challenges to Patenting (From Applicants Experience).33	
6.6 Obstacles to Patenting with Respect to Patenting in Kenya.	34
6.7 Factors that Would Promote Patenting in Kenya.....	35
7. Conclusion and Policy Recommendations	37
7.1 Conclusion.....	37
7.2 Policy Recommendations.....	37
References	42
Appendix	46

1. Introduction

The 21st century has been described as a knowledge-based economy where the creation and management of knowledge plays a predominant role in wealth creation and competitiveness (Nagaoka *et al.*, 2009). Knowledge and innovation have played a critical role in the recent growth of many economies with Intellectual Property (IP) playing a key role as a driver for business growth, economic productivity and wealth creation (World Intellectual Property Organization, 2003). Many governments have therefore taken active steps to strengthen their national innovation systems as a way of improving their national competitiveness (Nagaoka *et al.*, 2009). Knowledge is only useful when it contributes to development and this calls for its exploitation and transfer. Effective transfer of knowledge can be attained through legal protection and commercialization that require an owner and value. IPR is a means through which knowledge can have legal protection to facilitate its transfer. Patents provide an incentive for innovation, knowledge creation, use and transfer, hence the patent system is recognized as an important policy instrument that can be used to promote innovation, technological progress and technology transfer (Hall and Ham, 1999).

IPR/Patents

Intellectual Property (IP) is intangible property arising from human intellect that can only be protected upon expression. Like tangible property, it can be owned, administered by states, sold (assigned), leased (licensed), developed (exploited) and is usually enforceable by the law (Misati, 2009). Intellectual Property Rights (IPR) is defined as exclusive rights granted by the state giving the owner of IP the right to exclude all others from the commercial exploitation of a given invention, innovation, design or mark (Idris, 2002). IPR is categorized into three: a) Copyright and related rights, b) Plant breeders rights, and c) Industrial property rights. Industrial property rights include patents, trademarks, utility models and service marks. This study focuses on the patent category of IPR.

A patent is an exclusive right granted for an invention that provides a new way of doing something or offers a new technical solution to a problem for a period of time (mostly 20 years) in exchange for knowledge disclosure to the public (Bagheri, 2003; Idris, 2002). Patents, in essence, give legal recognition to the owners of new inventions, providing them

with authority to stop others from exploiting their invention and financial investment. Patent rights are granted for an invention that is new, has an inventive step and is industrially applicable.

The rationale for patents

The economic rationale for patents is to protect potential innovators from imitation and give them the incentive to incur the cost of innovation. This is because if potential competitors are not constrained from imitating an invention, the inventor may not re-coup the cost of innovation. A potential innovator without patent protection may therefore decide against innovating altogether (Idris, 2003). Patents provide returns to the inventor at three levels; recouping costs incurred in developing the innovation, returns from sale of products incorporating the invention, and revenues that can be gained from commercializing the patent, for example through licensing or franchising. Therefore, patents tend to spur innovation by granting temporary monopolies in the exploitation of property (Idris, 2002). The patent system has long been recognized as an important policy instrument that can be used to promote innovation and technological progress (Hall and Ham, 1999).

In general, a patent system is established for the following reasons:

- (a) To promote creativity and inventiveness by offering exclusive ownership rights and a reasonable period for recovering R&D costs for the invention;
- (b) To promote investment to commercialize new inventions through limited exclusive rights in working the invention and marketing it; and
- (c) To diffuse knowledge and information through publication of patent applications and grants for the benefit of other R&D and society as a whole (Misati, 2008).

Patents as tools for economic growth facilitate technology transfer and investment, stimulate R&D, support new technologies and businesses, help countries create incentives structure and institutional framework necessary for knowledge generation, diffusion, technology transfer and investment flows and fuel innovations enhancing economic growth and welfare (Idris, 2002). Patents are therefore an essential component of economic strategy to any country. Patent applications and published patents are a rich source of technical and scientific information that is readily accessible which stimulates further research and development, thereby creating a vicious cycle of innovation (World Intellectual Property Organization-WIPO, 2003).

1.1 Background Information

It has been observed that Kenya has many inventions that have not been transformed into IP and consequently, have not been exploited to realize their benefits (Moturi and Ogada, 2006). IP assets are important entrepreneurial products that need to be protected and exploited for development. It is recognized that the protection and economic utilization of IPR is one of the factors that have led to the economic success in developed world economies (Ogada *et al.*, 2004).

Kenya's long-term development blueprint (Vision 2030) endeavours to create a globally competitive and prosperous country. It proposes intensified application of science, technology and innovation to raise productivity in all sectors. This is because it recognizes the critical role played by research, development and innovation in accelerating development in all newly-industrialized economies of the world (Government of Kenya, 2007). Kenya intends to become a knowledge-led economy characterized by creation, adaptation and use of knowledge for rapid economic growth. This is to be realized through intensification of innovation in priority sectors, transforming research into inventions which should be protected by IPR (Government of Kenya, 2007). Among the challenges identified in this endeavour is low capacity for IPR, which is a disincentive to innovation and an inappropriate and unresponsive IPR regime. It has also been noted (Government of Kenya, 2008) that the Kenyan economy exhibits limited levels of innovation required to foster increased output and productivity necessary for employment and wealth creation. These challenges are key considerations for policy makers that should be addressed to stimulate growth and competitiveness of the nation to realize Vision 2030.

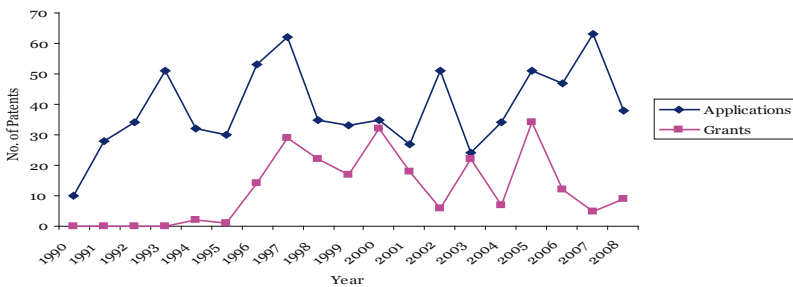
Sessional Paper No. 2 of 1996 on Industrial Transformation to the Year 2020 envisaged Kenya becoming a Newly Industrialized Country (NIC) by the year 2020. It proposes putting in place appropriate technology policies to spur industrial transformation, while emphasizing acquisition of technology by accessing patent documents. For effective industrialization, it is necessary for Kenya to identify its natural resources and products through branding and patenting. Simultaneously, the 9th National Development Plan (2002-2008) has also stressed the need to strengthen Kenya Industrial Property Institute (KIPI) to enhance patenting of new technologies as a way of enhancing the role of technology, research and development in industrial growth. This reflects how important patenting is to achieving development.

Kenya has exhibited low levels of patenting over the years as shown by statistics from KIPI. The patents have been filed by individuals, companies, enterprises and institutions both foreign and resident. Patent statistics show low levels of patenting as compared to other IPRs like trademarks and patenting in developed and newly industrialized countries. Another key observation from statistics is the very low patent grant rate implying among the applicants that file for patents, only a handful, are granted (Misati, 2009; Ogada *et al.*, 2004). According to the World Competitive Report 2008-2009, Kenya ranks no. 83 out of 133 countries in utility patent index that measures the number of patents granted per million populations. It however ranks a favourable 44 out of 133 for capacity for innovation, and 93 for technological readiness. This indicates low technological levels, moderate innovation and low patenting. Kenya, unlike most countries globally, does not exhibit a growth in patenting; in fact, it shows no meaningful trend in patenting.

1.1.1 The need for Kenya to enhance patenting

Innovation is a key driving force for economic growth and competitiveness in the 21st century. To become globally competitive, Kenya can exploit the potential of patents to promote innovation by providing an incentive for innovators. Unemployment still remains a major challenge for Kenya as a nation, whereas patenting/innovation has the potential to create new technology, products and processes that will lead to creation of industries that provide employment. Patents also have the potential to stimulate markets and competition, attract foreign direct investment and promote technology transfer. This will contribute to poverty alleviation and economic development.

Figure 1.1: Patent application and grants in Kenya (1990-2008)



KIPI, 2009

1.2 Problem Statement

The importance of patenting in Kenya is reflected in various government development strategies and in the enactment of a new patent law embodied in the Industrial Property Act. The patent law was to enable Kenya to use its patent policy to foster national developmental needs. However, an analysis of statistical information on patents reveals no significant change in patent applications and grants, with the enactment of this law. There is need to find out why growth in patenting in Kenya has not been experienced. Despite the recognition and acknowledgement of the importance of IPR and patents in the government development agenda, statistics on registered patents in Kenya indicate a very low patent application compared to that of developed and newly industrialized countries (WIPO, 2008). Furthermore, despite growing awareness about patents, Kenya has not experienced growth in patenting contrary to the global trend. Patent grant is also very low with a success rate of 31 per cent average for the ten year period (Ogada *et al.*, 2004). This negates the acknowledged importance of IPR/patents in spurring innovation and economic development. Low patenting and IPR is a challenge to the economic development and achievement of Vision 2030.

Given the potential of patents in the growth and competitiveness of our nation, and the low levels of patent applications and grants in Kenya, there is need to look at patenting in Kenya and identify challenges faced by inventors in patenting in order to identify critical factors to inform policy. Currently, the country does not have an IPR policy, but has a draft that is not yet operational.

1.3 Objectives

The overall objective of this study is to look at patenting in Kenya with the view of providing a framework for policy interventions.

The specific objectives are:

- a) To generally explore patenting in Kenya
- b) To identify best practices in other countries
- c) To identify challenges faced by inventors in patenting innovations in Kenya
- d) To make policy recommendations for enhanced patenting in Kenya

1.4 Justification

Very few studies (Ogada, 2008; Ogada *et al.*, 2004; Misati, 2009; Mbote, 2005; Odek, 2009 and Ouma, 2009) have been carried out on IPR in Kenya, but not specifically on patenting. Consequently, information on patenting in Kenya is very scarce and incomplete. This paper will look at the status of patenting in Kenya, while considering the challenges that inventors face in patenting their innovations.

The government of Kenya recognizes IPR as an important tool for trade, a cornerstone of modern economic policy and a catalyst for development. This is outlined in various government policy documents. Consequently, Kenya is actively involved in the formulation and implementation of legislation on IPR, has enacted a patent law to foster local incentiveness and has pegged its development strategies on IPR, especially on patents. To achieve the nation's development goals as envisioned in Vision 2030 and other development strategies, patenting is a key policy instrument that has not been adequately used. Patents spur innovation, which can lead to increased output and productivity vital for employment and wealth creation. The study is important as it will inform policy on critical areas for intervention, in order to enhance patenting as a tool for economic growth and global competitiveness. This will contribute to the achievement of Kenya's development goal of becoming globally competitive.

2. Literature Review

2.1 Theoretical Literature

2.1.1 Growth theories

Patents are generally considered as instruments for economic growth. Endogenous growth theories propose that growth originates from within a system and focuses on education, training and development of new technologies as major factors which determine the growth of an economy. New endogenous theories suggest that a country's long term growth rate could be influenced by government policies, among others the protection of IP (Idris, 2002).

Schumpeter, a proponent of endogenous growth theory, saw technological progress as a key factor in economic development and endogenous process. He developed a growth theory centred on innovation and entrepreneurship. In his theory, a dynamic economy is one that is constantly disrupted by technological innovation. Entrepreneurs took advantage of the basic invention, transforming it into economic innovation (Schumpeter, 1934). In his view, entrepreneurs were motivated by the potential to make profit. He regarded entrepreneurial zeal for profit making as a major driving force for most innovations, and some degree of monopoly power was necessary to enable entrepreneurs continue to innovate (Idris, 2002). IP regime is important in influencing the behaviour of the entrepreneur in encouraging innovation, applying the innovation, introducing it to the economy and marketing the product in an innovative way (Thompson and Rushing, 1999).

Another proponent, Romer, introduced a model that suggested that accumulation of knowledge was the driving force behind economic growth. The model assumes a monopolistic competitive environment and suggests that R&D activities and accumulation of human capital plays an important role in generating long term growth in per capita income (Romer, 1986). He argued that in order to encourage people or institutions to be involved in knowledge creation, the principle of excludability had to be invoked and IPR could be used. For countries to promote growth, their economic policies needed to encourage investment in new research and innovations as opposed to physical capital accumulation and subsidize the accumulation of total human capital. Policy makers have been encouraged by economists' findings

that a country's economic growth rate is influenced by government IP policies (Idris, 2002).

Recent recognition of the importance inherent in the "endogenous growth theory" suggests that governments should give a higher priority to policies that promote research and create a solid basis for indigenous technologies.

2.1.2 Economic theory of patents

According to economic theory of patents, they (patents) are necessary to enable innovators to recoup their sunk costs of R&D. This is because these firms incur huge and hard to recoup, sunk costs (Tabarrok, 2002). This theory provides an argument for why patents could improve the allocation of resources. Original R&D is usually more costly than imitation. Recognizing this, firms will have little incentive to invest in innovation. Patents act as an incentive to innovate by delaying the arrival of imitators, thus giving the innovators' firms time to recoup their sunk costs through monopoly pricing (Maskin, 1991 and Henderson, 2002 in Tabarrok, 2002). Though this theory is well accepted, it does not fit well with the actual patent system because the later ignores cost. Based on this theory, suggestions have been made that the patent law be reformed to take into account the costs incurred in patent grant (Maskin, 1999 in Tabarrok, 2002).

2.1.3 Incentive based theories

These theories assert that the prospect of earning some returns provide necessary incentives for inventions, innovations and knowledge disclosure. The incentive to innovation rationale focuses on the need to recover the costs necessary to bring an invention to the market. The reward of exclusive rights to inventors spurs creativity, productivity and dissemination of information and technology. In order to be granted a patent, inventors must fully disclose their inventions to the public. This contributes to knowledge transfer, hence scientific and technological progress. These theories provide justification for the patent system in Kenya as it seeks to promote innovativeness in all key sectors of the economy to spur growth (Heald, 2005). The incentive based theories provide a basis for the use of patents to spur innovativeness.

2.2 Empirical Literature

Empirical literature, specific to patenting, is lacking in Kenya. Currently, we have a few background studies on IPR. This study thus borrows from non-specific empirical literature from other countries and regions to inform areas of focus.

Kortum and Lerner (1998) present several factors that have contributed to the surge in patenting in the USA in the 80s and 90s. The factors include: increase in R&D expenditures, changes in competition, and changes in patent regimes that made patents more valuable and easier or more costly to obtain. Court cases increased damage awards to plaintiffs in infringement litigation, extended the subject matter that can be patented and reduced patent fees.

Zachariadis (2003) tested the endogenous growth theory based on Scumpetarian endogenous growth model without scale effects. Results showed that R&D intensity has a positive impact on the rate of patenting. The rate of patenting is shown to drive technological progress, which in turn drives economic growth.

Furman, Porter and Stern (2002) examined the determinants of patenting at a national level. They found that the following factors impact positively on patent activity: GDP per capita, number of scientists and engineers, aggregate R&D expenditures, share of GDP spent on higher education, strength of intellectual protection, openness to international trade and investment, and the percentage of R&D funded by private industry and innovative output concentration index (cluster specific innovation determinants).

Hall and Ham (1999) did a study on the determinants of patenting in the US semi-conductor industry, 1980-1994. The study found that R&D intensity and spending, patent protection, cost of protection, age and size of the firm determine patenting.

A study done by Crawford, Fabling and Bonner (2006) on determinants of national R&D and patenting found that R&D intensity is important in patenting, the size of firm affected resultant patents, distance of firm from major markets led to lesser patents and a rigorous IP protection regime is conducive to turning R&D into patents. The study also found that privately funded R&D contributed more strongly to patenting than publicly funded R&D. Key resources contributing to the output of patents include: personnel engaged in R&D and the capital utilized in R&D. The efficiency with which these resources are

converted to patents may be affected by other variables which include the strength of IP protection, attitude and population.

2.2.1 An overview of literature review

From theoretical literature, we recognize that growth originates from within a system, nation or economy. Sources of growth include: knowledge accumulation and technology in addition to tangible assets. Technology stems from innovation which can only be sustained by incentives. Patents provide a way of ownership and exploitation of innovations to earn profit. Exclusive rights given by patents spur creativity, productivity and knowledge transfer, hence a country's economic growth can be influenced by its IP policy and patent system.

Research and development intensity and expenditure is a key determinant in innovation creation and patenting. Other determinants include: IP regime, cost of protection and number of researchers and firm/industry characteristics.

3. Patenting in Kenya

3.1 The Position of IP/Patents in the Government Development Agenda

The Government of Kenya recognizes IPR as an important tool for trade, a cornerstone of modern economic policy and a catalyst for development (Misati, 2008). This is outlined in various policy documents including Vision 2030, Sessional Paper No. 2 on the Industrial Transformation to the Year 2020, National Development Plan 2002-2008, and draft document on Science and Technology Innovation Policy 2004.

3.2 Legal Framework on IPR in Kenya

Kenya has several legislative instruments on IPR which include: Anti-Counterfeit Act (2008); Copyright Act No. 12 of 2001; Industrial Property Act (IPA) No. 3 of 2001; Trade Marks Act Cap 506 (as last amended by the Trade Marks Act, 2002) and the Seed and Plant Varieties Act, Cap 326.

These acts are administered by three different institutions with separate and distinct parent ministries. The IPA and the Trademarks Act are administered by the Kenya Industrial Property Institute (KIPI) in the Ministry of Trade. The Kenya Copyright Board under the Attorney General administers the Copyright Act, and the Kenya Plant and Health Inspectorate in charge of seeds and variety is under the Ministry of Agriculture. One of the biggest challenges for the institutions has been lack of a clear government policy on IPR (Ogada *et al.*, 2004).

3.2.1 The Kenya patent law

The importance of patenting in Kenya is reflected in the enactment of a new patent law embodied in the IPA. Prior to this, the patent law was based on the patent system of the United Kingdom where to obtain a patent in Kenya, an applicant was required to present a certified copy of patent letters from the UK patent office. The UK patent was subsequently re-registered in Kenya without further examination. This had two implications, only patents granted in the UK could be registered in Kenya and secondly, the duration of patent protection was determined by the UK office. The rationale for the dependent patent system was that the Kenyan Patent Office which was inadequately

equipped to examine and evaluate issues of novelty and inventiveness of patents (King'arui, 1989 in Ouma, 2006). The need for a Kenyan independent patent system for Kenya arose as a realization that the dependent Kenyan patent law was unresponsive to Kenya's economic needs. The enactment followed the discovery of 'kemron' by KEMRI that needed to be protected. It was argued that the UK based patent system did not promote the acquisition and transfer of appropriate technology in Kenya. The independent patent system enabled Kenya to use its patent policy to foster national developmental needs (King'arui, 1989 in Odek, 1994).

Under the law, an invention can only be patented if it is new, involves an inventive step, is industrially applicable and a patentable item. Some items are not patentable according to the Kenyan law and they include: parts of plant varieties as provided for in the seed and plant variety Act, or products of biotechnological processes, inventions contrary to public order, morality health and safety, principles of humanity and environmental conservation, schemes and rules of doing business, computer programmes and methods of treatment of the human or animal body by surgery or therapy.

The Kenya patent law has five objectives: to promote inventive and innovative activity, to facilitate acquisition of technology through the grant and regulation of patents, to screen technology transfer agreements and licenses, to provide information to the public in Kenya and to repeal the law. However, statistical information on patents reveals no significant change in patent applications and grants, following the enactment of the independent patent system. Both periods exhibit low patent applications, low resident applicants compared to foreign applicants, and low grant numbers for the applied patents (Odek, 1994).

It is apparent that the Kenyan patent law has not fully achieved its objectives and there is need to analyze whether it is appropriate in the enhancement of local inventiveness, acquisition and transfer of technology and whether it can be used as a tool to foster national development goals. The system needs to be reformed in order to accord protection in areas critical to the country's development goals. Countries like Japan and Singapore have used their patent system as a tool to foster their national development goals. However, there is need to examine the implementation/administration of the Act which may be affecting its effectiveness.

3.3 Patent Administration

The Kenya Industrial Property Institute (KIPI) was established in 1989 to deal with issues of administration of IPA and Trademarks Act. The institute is responsible for the promotion of inventive and innovative activities in Kenya as well as facilitating the acquisition of technology. It grants and regulates patents for inventions. KIPI deals with both local and international patents under the relevant national and international instruments. The institute has established Patent Information and Documentation Centre (PIDOC). The institute is limited in its operation by inadequate funding from the government, high staff turn over, lack of autonomy, inadequate marketing and publicity and poor linkages with stakeholders (KIPI Strategic Plan 2005-2010).

3.4 Enforcement of Patent Rights

Efficient enforcement of IPR has become central in the global economy, especially with the advent of Trade Related Aspects of IPR (TRIPS). The Agreement makes it mandatory for member states to provide for the minimum standards of protection (Ouma, 2009). Implementation of IPR requires a clear policy and legislative framework as well as an efficient administrative and enforcement structure. Factors that affect enforcement in Kenya include: the existing legal regime, institutional capacity, societal attitudes towards enforcement as well as technological and economic factors. Patents enforcement entails prevention of infringement of the rights, use of sanctions and obtaining remedies for infringement of conferred rights (Ouma, 2009). Infringement occurs when a third party reproduces, imports, sells or offers for sale a patented product without the authority of the rights holder and in the case of a process, exploits it without the authority of the rights owner (Industrial Property Act, 2001).

Remedies and sanctions provided by a legal instrument for infringement contribute to the level of enforcement (Ouma, 2009). Despite patent infringement in Kenya being a criminal offence, it is usually treated as a civil offence, hence impacting on the deterrent. The IPA provides for criminal infringement of industrial property such as patents, but the penalties provided are neither deterrent nor punitive. This has acted as a setback to enforcement, thus a disincentive to patenting.

Infringement is punishable with a fine of not less than one hundred thousand shillings, and not exceeding five hundred thousand shillings, or with imprisonment for a term of not less than three years, and not more than five years or with both (Industrial Property Act, 2001 SEC 109). In Kenya, custodial sentences have rarely been meted out by the courts, because this society mostly views infringement cases lightly.

The Kenyan law also recognizes IP as private property and expect the right holders to take the initiative to ensure enforcement. The state provides the legal framework and enforcement institutions such as courts, police, customs and standards organizations. The filing of suits, lodging of complaints for criminal prosecutions and, to some extent, investigation, are left to the rights holder. This has a cost element that is a burden to the patent holder and affects the effective enforcement. It should also be noted that the efficiency of public institutions involved in enforcement is determined by several factors, especially the availability of resources. In Kenya, resources to these institutions are limited in terms of personnel and facilities and this has hampered their efficiency. The limited resources are in many cases applied to criminal cases that are deemed to be more serious than infringement cases. In the case of personnel, there are very few people trained to deal with issues of IP infringement. There are no specialized courts to deal with IPR issues in Kenya and there is a shortage of qualified patent attorneys in Kenya, a disincentive to the development of an effective and modern patent rights regime. Legal processes involved in patent cases are, as a result, slow and cumbersome (United Nations Conference on Trade and Development-UNCTAD, 2003).

3.5 The Patenting Process in Kenya

There are three main requirements for an application for the issue of a patent: novelty, inventive step and industrial application.

Novelty: The invention must be new. It must not have been described sufficiently to enable the invention to be understood by word of mouth, use in any printed publication, or in any other way, anywhere in the world before a first application is made for a patent.

Inventive step: It must be a development or an improvement that would not have been obvious before hand to workers of average skill in the technology involved.

Industrial application: A valid patent cannot be obtained for something that does not work or that has no useful application, hence the invention must be capable of being applied in industry or agriculture.

The ACT excludes discoveries, scientific theories, mathematical methods, schemes, rules or methods of doing business, performing purely mental acts or playing games and mere presentation of information from being patented as inventions (Section 21 of the Act).

In Kenya, patents are given to the first inventor to file an application. Therefore, it is wise to file by preparing a formal application together with a written request as soon as possible after the completion of the invention.

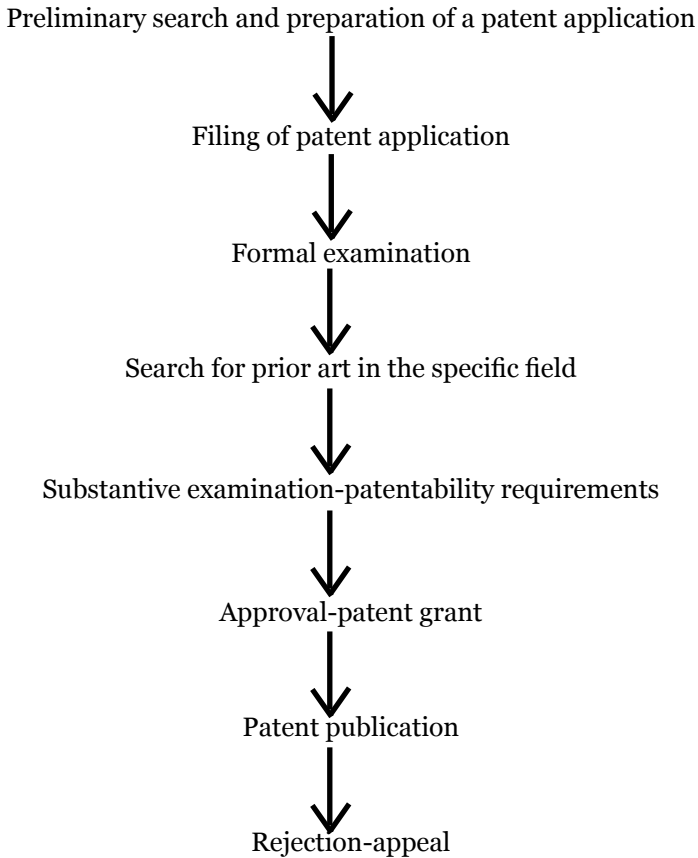
a) Application for a patent

This is done by filing a patent specification together with the necessary forms and application fees at the KIPi office. The application includes request, description, claims, drawings and abstract. Once the application is accepted for filing, it is assigned a number and a filing date and is published 18 months after the filing date. The applicant must formally request for preliminary examination and search and attach the examination fees within 3 years of the filing date, otherwise the application is regarded as abandoned.

b) Grant of patent

If the applicant has fulfilled the requirements for patentability set out in section 23-25 of the Act, a patent is granted, provided that maintenance, grant and publication fees are paid. Patents granted are registered and published in the industrial property journal. A certificate of grant is issued accompanied with a copy of the patent documents (abstract, disclosure and claims) as at the time of grant. Time taken to grant a patent under the act is at least 18 months. A patent may be deemed unsuccessful, if after 3 years from the date of filing, the applicant will not have requested for substantive examination as required by section 44 of the Industrial Property Act.

Figure 3.1: Summary of steps to obtain a patent in Kenya



c) International and regional patents

Obtaining a Kenyan patent does not protect the invention in another country, hence the need for international applications. Apart from patent applications made to the national patent office (KIPI), an inventor can make application to other international patent offices. Such foreign patent applications are however made through the national office at KIPI. These can be made through two offices:

- i. Patent Co-operation Treaty (PCT) administered by the World Intellectual Property Organization (WIPO) in Geneva, Switzerland covering over 100 countries. A single application is sufficient to cover those countries, as opposed to making many separate applications to the different countries.
- ii. African Regional Industrial Property Organization (ARIPO) in Harare, Zimbabwe. This covers 14 African countries. The applications are filed through the national office KIPI.

Table 3.1: Patent application through different offices 2004-2008

	2004		2005		2006		2007		2008	
	Apps	Grants	Apps	Grants	Apps	grants	Apps	Grants	Apps	Grants
KIPI	34	7	41	34	45	12	47	5	62	9
PCT	52	4	67	15	35	19	89	13	89	33
ARIPO	211	101	220	156	190	144	256	170	-	-

KIPI, 2009

From Table 3.1, the number of applications made through the PCT and ARIPO is higher than that of the national office KIPI. This could be as a result of more Kenyans seeking patents in international and African countries members of ARIPO as opposed to having patent rights in only one country. The patenting process can also be a contribution factor, though for now, we cannot be certain.

3.6 The Cost of Patenting in Kenya

The fees for patent application are divided into various items as shown in the fees schedule. Total fee required for patent registration is Ksh 19,000 as shown in Appendix 1.

a) Annual patent maintenance fees

Under section 61 of the Act, in order to keep alive a patent application or a granted patent, an annual fee is due in advance by or before the anniversary of the filing date, starting one year after the filing date. Failure to pay annual or maintenance fee results in the application or patent being withdrawn or lapsed. In the case of PCT applications, annual fees need not be paid until the application enters the national phase. Annual patent maintenance fees in Kenya are shown in Appendix 2.

3.7 Professional Education and Training

There is no set professional education or training on IP in the country though IP law is studied as one of the courses by law students at the University of Nairobi. The main mode of training of examiners is on the job training and this is complemented by workshops and seminars attended by staff and trainees. To qualify as a patent examiner, one must hold a degree in any of the following fields: law, any engineering field,

chemistry, physics, natural sciences, medicine and biology (Ogada, 2006).

3.8 Universities and Research and Development Institutions

As earlier seen, R&D is an important factor that contributes to innovations which are then protected using patents. There is a direct relationship between the amount of R&D and the patenting activities of a nation (Idris, 2002). Kenya has recognized the role of R&D in spurring economic development and has put in place systems to enhance it. These include the creation of a National Council for Science and Technology (NCST) as the main governance body to oversee science, research and technology issues; and Science, Technology and Innovation (STI) policy to promote efficiency, productivity and competitiveness and an innovation fund to spur up innovativeness for development.

Universities and R&D organizations are an important part of any country's national innovation system, because they are considered as the main potential generators and users of IP. The mandate of these institutions include capacity building and creation of new knowledge through research and knowledge transfer. In Kenya, public research institutions and universities provide the primary source of knowledge by conducting basic and applied research. There has been a significant growth in the number of public universities over the years. Currently, there are 10 public and over 10 private universities in Kenya.

Many Kenyan universities like their counterparts in developing countries are characterized by low research funding, most of which is foreign funded, increased enrolment and courses without specialization in their key competent areas, lack of research facilities, poor university-industry linkages, poor remuneration of researchers which has led to brain drain and poor support from industry and multinational companies in their research endeavours. Implementation of their research findings is wanting and research is treated like academic research. The researchers also lack incentives to engage in research. The mandate of these institutions of applying knowledge into production of goods, services and technology has been given little attention and has remained underdeveloped (WIPO, 2000).

There are several public research institutions involved in R&D including KARI, KEMRI, KEMFRI, KIRDI, KEFRI and KIPPR. In

addition, there are international research institutions in Kenya involved in R&D, they include: International Livestock Research Institute (ILRI), International Centre for Research in Agro Forestry (ICRAF) and International Centre for Insect Physiology and Ecology (ICIPE). Most of the public R&D institutions are bogged down by low staffing and inadequate funding as well as lack of essential facilities for research. Poor linkages with industry, farmers, firms and consumers of their knowledge is evident. Poor linkages with industry, farmers, firms and other consumers of their knowledge are evident and research results are not being translated to solutions to problems (Kahiti, undated).

On the other hand, R&D can only be useful to the extent that it leads to economic development, industrialization, job creation and poverty reduction. There is need for these institutions to transfer and exploit the knowledge from R&D for economic growth. It has been observed that large amounts of scientific and technological research in public research institutions and universities go unused and is only viewed as academic achievement. Research efforts seem not to be linked to commercial application of the research results (Moturi and Ogada, 2006). Technology transfer from universities to industry would be greatly facilitated, if the institutes endeavour to patent and license their results of research.

Consequently, patent applications from these institutions that generate knowledge are very dismal. From the patent statistics at KIPi (1990-2008), universities had applied for only 4 patents, while research institutions applied for 31 and individuals from the university 11 patents. We can infer that a lot of researches from the universities go unnoticed as academic research is not translated into IP, especially patents. A comparison with universities in developed and NICs shows Kenya has negligible patents emanating from university. This is an opportunity that Kenya can explore for economic development.

Table 3.2: Patents filed by universities in other countries

Number of patents filed by universities 1995-2003	
Japan	5,506
China	13,353
Korea	5,272
Singapore	993
India	467
Thailand	139 (granted)

Source: Moturi and Ogada, 2006

Statistics from other countries show that research institutions and universities have been instrumental in creating industries, products, employment and generating income.

USA: 3,500 companies created as a result of R&D which have created 400,000 jobs, generated US\$50 billion on sales annually and remitted US\$10 billion as tax revenue annually.

Massachusetts Institute of Technology has been granted 1,500 patents since 1986, has 600 active licences, gets on average 80 new licenses per year, spin out 20 new companies annually, and generates about US\$40 million gross annual income.

Sweden Chalmers University of Technology has created 240 companies from R&D in 30 years.

National University of Singapore and Nanyan Technological University have filed 500 patents, had 107 technologies licensed and 136 research agreements signed worth US\$42 million for the period 1998–2002.

India: The Council for Scientific and Industrial Research has created 42 laboratories from research, each with technology transfer offices, filed 170 patents between 1995-1999 and patented a polymer used in coating 30 per cent compact disks produced worldwide.

Korea: Seoul National University was granted 260 patents (Moturi and Ogada, 2006).

There is a lot of potential from research and learning institutions through R&D and patenting that has not been harnessed for development in Kenya. Research and technology transfer hold the key to accelerate wealth and employment creation and lead to technological and economic development.

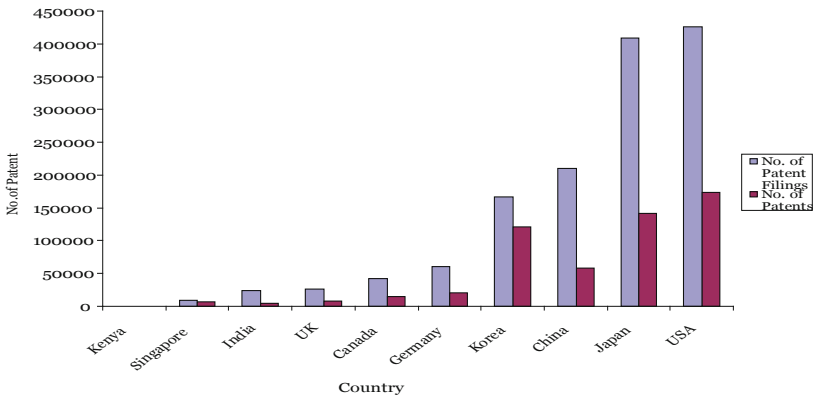
4. Global Patenting and Best Practices from Other Countries

Patents play a very important role in economic development of both developed and developing countries. However, developed countries own 97 per cent of the world's patents and have filed more than 95 per cent of patent applications in developing countries (Organization for Economic Co-operation and Development-OECD, 2008). Patenting activity is concentrated in a set of countries; the US, Japan, Germany, Korea, France and the United Kingdom. Japan has the highest ratio of patent families per population (Idris, 2002). The United States, Japan and the European Union contributed almost 90 per cent of patent families in 2005.

Generally, most patent offices have experienced a surge in patent applications in the past two decades, with the largest contribution to growth being made by new technologies, especially ICT and Biotechnology. The number of ICT related patents grew steadily from mid-1990s to 2005, at an average rate of 4.7 per cent. ICT related patents grew more rapidly than the total number of patents (OECD, 2008). The number of applications in the three major patent offices (European Patent Office-EPO, Japan Patent Office-JPO and United States Patent and Trademark Office-USPTO) increased by about 40 between 1992 and 2002 (OECD, 2004). The most remarkable surge was observed in the Asian countries, notably China and India, with average growth of 33 and 26 per cent, respectively (OECD, 2008). The increasing use of patents to protect innovations by businesses and public research institutions is closely related to the recent evolutions in innovation processes, the economy and patent regimes. The surge in patent applications can also be attributed to an increase in R&D expenditures, changes in patent regimes, sharp reduction in patent fees and the extension of the patentability subject matter (Kortum and Lerner, 1998).

Between 2003-2005, 45 per cent of all international applications were filed by universities. The proportion of patents owned by universities has increased markedly since the mid-1990s in many countries, notably Japan, US, France, Spain and Italy. The government sector owned less than 2 per cent of all PCT filings in that period, and almost 80 per cent of patents originated from the private sector (OECD, 2008).

Figure 4.1: Patent applications and grants for different countries (2006)



Source: WIPO, 2008

4.1 Global Competitiveness and Patents, R&D and Capacity to Innovate

World Global Competitive Report indicates a correlation between Global Competitiveness Index, GDP and utility patents. Countries that are ranked well in global competitiveness also rank well in utility, patents, GDP and R&D (Economic World Report).

4.2 Best Practices

4.2.1 Japan

Japan is one of the leading countries in patent applications and has used the patent system as a development tool that has seen the country transform from a developing nation to a developed nation. The system has been used to create new technologies and support technology transfers from research to industries (Kondo, 2004). The patent law in Japan has been designed with the ultimate objective of contributing to the development of industry and not as an end by itself (Kumar, 2009). Japanese policy makers and industrialists have recognized the increasing importance of patent system in an economy, where investments in intangible assets have become very substantial. Many of them also believe that stronger protection of IPR is key in fuelling patenting.

Special features of the Japanese patent system

- Computerized procedures from filing applications to examination and distribution of patent information to the public. About 96 per cent of applications are filed online. This has made the patenting process fast and efficient.
- Strategic patent law/policy: Japanese patent law is formulated with the objective of encouraging inventions by promoting their protection and utilization so as to contribute to the development of the industry.
- An IP high court that deals with appeal for refusal and other IPR related cases. Authority is also provided for patent attorneys to act as counsel in IP infringement lawsuits.
- A bill was passed in April 2004, with the objective of reducing patent pendency, that is to expedite patent examination process with the aim of making Japan a state built on IP. The bill also proposed an increase in the number of patent examiners.
- Japan has undertaken the promotion of university-industry partnerships through joint knowledge creation, knowledge transfer and knowledge based start-up (Kondo, 2004).
- The Government of Japan has increased government spending on R&D in universities and research institutions.
- Research and development tax credit: This is used by the Japanese government to promote private sector R&D.
- Japan has innovation promotion policy towards SMEs.

4.2.2 USA

- Computerized patent application and information retrieval system that allows applicants to file for patents online, retrieve information regarding patents application status and provide access to issued and published patent applications. About 80 per cent of patents are filed electronically.
- Payment of patent maintenance fees can also be done online using EFT.
- The government invests substantially in R&D. One third of R&D funding is contributed by the government, while the rest comes from industry. To promote private sector expenditure in R&D,

the country has provision of tax rebates for companies' R&D expenditure.

- In 1980, the US passed the Bayh-Dole act which granted recipients of public R&D funds the right to patent inventions and license them to firms. This was to facilitate the exploitation of government-funded research (OECD, 2004).
- The US has established a centralized court system to ensure higher legal certainty of enforcing IPR.
- Small Business Innovation Research Programme and the Advanced Technology Programme that help small innovative firms overcome hurdles, while also enhancing networking among US universities, large firms and small innovative companies capabilities.
- Promotion of university-industry collaboration.

4.2.3 Singapore

The Intellectual Property Office of Singapore (IPOS) has been able to issue quality patents in a timely manner (International Intellectual Property Institute-IIPI, 2007). IPR protection and enforcement is well executed through modern administrative procedures and serious enforcement mechanisms.

A unique feature of Singapore is the outsourcing of substantive examination or through a certification process that uses patents granted by other patent offices as a basis for granting local patents by the IPOS. Instead of maintaining a patent office with patent examiners and required technological capabilities, the patent examination function for domestic patents is outsourced from IP offices of Austria, Australia and Denmark.

To make Singapore a compelling IP hub with an IP savvy generation, several programmes have been developed for different target groups; the general public, schools, businesses and IP professionals. A flagship public outreach initiative - the Honour IP (HIP) Alliance, was established in 2002 as a collaborative effort between the public and private sectors to inspire the general public to respect IP and reject piracy. Members of the public are encouraged to support this movement by pledging their respect for IP and becoming HIP friends through active participation.

In recognition that a healthy respect for IP is best inculcated from the young, IPOS runs a targeted IP resource site comprising interactive and interesting resources such as e-learning modules, IP-related comics and

IP learning kits for schools and the general public. These resources are ideal for self-learning in school and at home for those who are curious about IP and would like to know more.

Singapore has set up an IP Education and Resource Centre (IPERC), an education and training unit that provides informative resources and education programmes to equip individuals and organizations with the tools and knowledge to apply for IP effectively.

Leveraging technology, online searches and filing systems for patents (ePatents), offer greater convenience to applicants that have been developed.

Online tools that can assist you in IP management such as Strategies for Creation, Ownership, Protection and Exploitation of IP or SCOPE IP™, a diagnostic programme on IP management, have also been developed (IPOS).

4.2.4 Malaysia

A special feature of the Malaysia Intellectual Property Office (MyIPO) is the promotion and publicity section which enhances IP awareness and fosters valuable networking and partnerships.

Intellectual Property Training Centre's (IPTC) mandate is to enhance IP human capital through teaching, training and research in IP related areas. The centre does capacity building in collaboration with their institutes of higher learning, professional bodies, industry partners and other leading IP institutions. The programmes cater for inventors, creators, IP professionals, business managers, government officials, students, academicians and the civil society.

National Intellectual Property Day was introduced in 2005 in conjunction with the celebration of the world intellectual property day. Its main aim is to increase public awareness and knowledge on IP issues, encouraging innovation and creativity and honouring the contributions of the IP community. Activities for the day include expo and exhibitions, recognition of inventors, IP mobile clinic-serve as a mobile information centre, state library exhibition in all states, IP book launch and distribution of reading materials on IP (MyIPO). National intellectual property award recognizes inventors for the contribution of their IP in the country's socio-economic development.

5. Methodology

Ascertaining the status of patenting was achieved through literature review of various documents which include the Industrial Property Act, patent statistics from the KIPi, patenting procedures, the cost of patenting, the National IPR audit, the patent law and the regulatory framework in addition to IPR papers that are specific to Kenya.

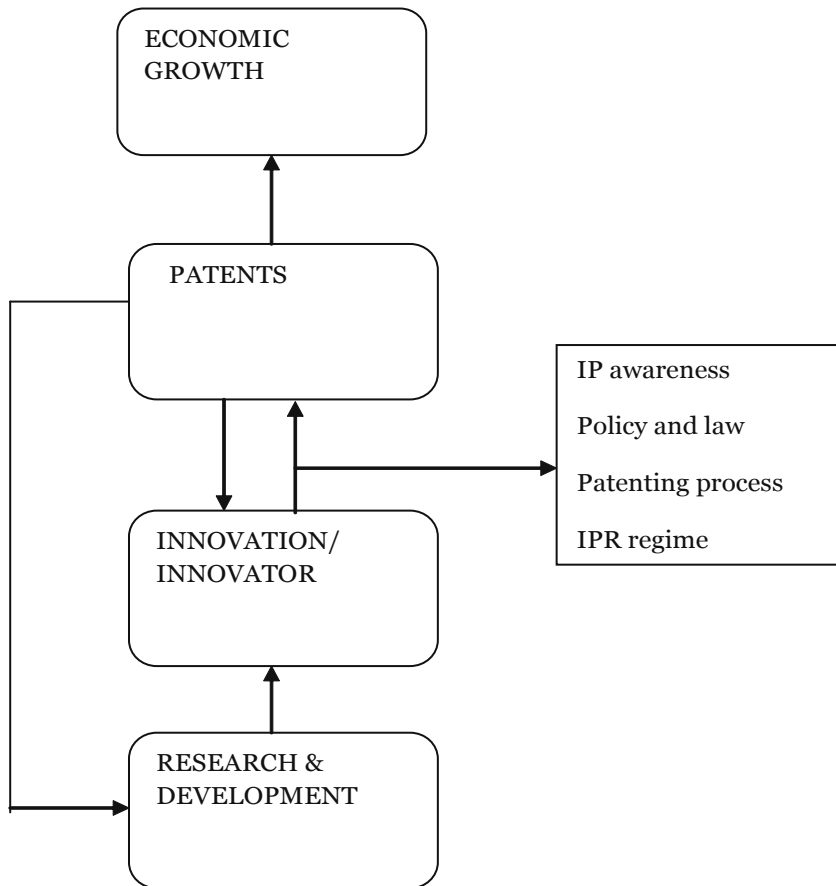
5.1 Conceptual Framework

From literature reviewed and best practices, several factors influence patenting but the most crucial is the R&D activity which leads to innovation. Several factors influence the conversion of an innovation into a patent or influence firms decision and ability to seek IPR in form of patents. These factors include the patent law, patenting procedures, patenting cost, the patent office, patent enforcement, IP awareness/patent knowledge and availability of patent professionals. Challenges to patenting arise from these and other factors unique to the applicant.

Patenting contributes to economic development through creation of new technologies, technology transfer, creation of new products and services, and provision of solutions to technical problems. Patents stimulate further research and innovation, creating an innovation cycle. This is because the patent system provides incentives for the innovators to further engage in research.

5.2 Data and Data Sources

The study used both primary and secondary data. Secondary data for patent applicants for the period 1998–2008 was obtained from KIPi from the register of patent applicants and includes the applicants name, type and description of the invention, the address of the applicant and the date of application and grant, if applicable. This data was not sufficient for the study, hence primary data was collected from patent applicants to KIPi for the same period to complement. From literature review, factors that influence patenting were identified and this formed the basis for the questionnaires. Variables in the study included the type of applicants, the sector of the applicant, R&D, commercialization of patents, engagement of professionals, number of patent applications, patenting cost and patenting process. The instrument of data collection was semi-structured questionnaires which were administered through email, mail and personally.

Figure 5.1: Conceptual framework

Source: Author's conceptualization

5.3 Research Design

To attain the research objectives, a survey was carried out to obtain primary data from patent applicants. Data was collected from a sample drawn from the population with the purpose of making inferences about the whole population. This was necessary due to logistics, resource and time limitations. The sampling frame consisted of patent applicants to the national patent office KIPI for the period 1998–2008. The frame provided the name of applicants, their addresses and type of inventions. This facilitated identifying and locating the applicants. However, this frame had the short coming of not including all patent applicants as some applications are made through the regional office (ARIPO) and the international office PCT. Nevertheless, the frame is good enough to provide accurate information on patenting in Kenya.

5.4 Population and Sample Size

The total population of patent application for the period 1998-2008 was 345, but these were made by 274 applicants. A number of applicants had made several applications for patents, with some having as many as 8, 6 and 5 applications for that period. The applicants comprised individuals, enterprises/companies and institutions. The applicants were categorized as in Table 5.1.

Sampling and sample size

A probability sample of 50 applicants was drawn from the sampling frame. Simple random sampling technique without replacement was used to draw the sample from the sampling frame. This method was used because it ensures the sample is representative of the population due to the fact that each applicant has an equal and independent chance of being selected in the sample. Random numbers used in the sampling were computer generated.

Sample size

A sample of 10 per cent of the population was drawn giving a sample size of 27. This was increased to 50 to cater for non-response and applicants who may not be located.

Out of the sample of 50 applicants, 8 could not be reached through the given addresses as some could have changed their addresses, while others had relocated to unknown places. Probably, some enterprises could have wound up. According to Lohr (1999), 10-30 per cent of the population is an adequate sample that can be used to generalize the research findings to the population. Saunders, Lewis and Thorn-Hill (2003) recommend a minimum size of 30 items for statistical analyses, which they say is also appropriate for descriptive analyses.

Table 5.1: Patent applicants (1998-2008)

Type of patent applicant	No. of applications
Individual applicants	247
Enterprises/companies	73
Universities	4
Research and development institutions	21
Total	345

Source: Author's compilation from patent applicants listing from KIPI

5.5 Data Collection

Semi-structured questionnaires were used as the main instrument of data collection. The questionnaires were self-administered through email and post mail as the respondents are geographically dispersed and most of them well-learned with computer skills. Personal and telephone follow-up was used for applicants that were mainly in Nairobi. Apart from data collected through questionnaires from patent applicants, some information to supplement the same was also obtained from KIPI.

Data was collected on opinions, behaviour and attributes that could help explain patenting in Kenya. On opinions, information was sought on the perceived obstacles to patenting and factors that could promote patenting. On behaviour, information on the choice to patent innovations, use professionals and their R&D activity was sought after. Information was also collected on the attributes of the applicants that could influence patenting, for example level of education, R&D expenditure, and size of enterprise and location of the applicant relative to the national patent office.

Point scale consisted of a series of items to which the respondents were to indicate their agreement or disagreement on an intensity scale. This was mainly for questions on opinion. Scale was also used for information on attributes, where the respondent had chosen the category where they fell.

Response rate

Out of the 50 questionnaires sent to patent applicants, 31 were returned but one was not filled giving a response rate of 60 per cent, which is sufficient for analysis. The sample size was 27, but was increased to 50 to cater for non-responses. However, a lot of personal and telephone follow-up was done to ensure that more questionnaires were returned.

5.6 Data Analysis

Descriptive statistics including frequencies, percentages and ranks were used to analyze challenges to patenting in Kenya. Use of descriptive statistics for analyses was found appropriate due to the nature of the study, which is a background study. There was data limitations in the area of patenting in Kenya for further analyses.

6. Results and Discussions

6.1 General Observations

It was observed that most of the respondents, despite having applied for patents, had limited knowledge on patents and some referred to them as trademarks. A number of respondents were unable to fill all the sections of the questionnaires, especially those relating to the patenting process and the cost incurred. As a result, it was not possible to analyze the patenting process from the applicants' experience.

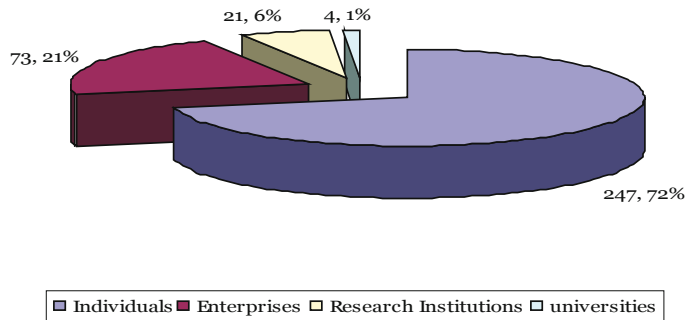
In enterprises and institutions, the persons responsible for IPR, who were respondents, did not have a lot of information that was required even on the number of patents applied and owned by their institutions/enterprises. Response from research and learning institutions was very poor contrary to expectations. Only three institutions responded after a lot of follow-up and a number indicated that they were still searching for the information required. Even though most of the institutions have an IP office, the officers seemed not to have information especially on patents, an indication that most of the IP offices were not well developed with good information/IP management. A few respondents seemed unwilling to divulge information for fear of their inventions becoming public, before they receive the patent grants. This is an indication that they could have perceived that the IPR regime is not very strong to protect their innovations. A few respondents who had infringement cases were unwilling to divulge information on the same.

6.2 Applicants Profile

From the patent application register, majority (72%) of patent applicants were from individuals, followed by enterprises (21%), research institutions (6%) and universities (1%). This categorization is important when recommending policy interventions.

The kind of inventions that applicants were seeking for patents were grouped. Inventions that could not fit in the given categories were placed in the group of others by the author. Sector wise, majority of patent applicants were from the manufacturing sector/industry and construction (18%), followed by health (15%), ICT (14%), food/beverage and pest control (8%), agriculture, environment and water/irrigation (5%) and chemicals (3%).

Figure 6.1: Type of patent applicants 1998-2008



Location of the applicant has implications when seeking patenting services from the patent office at KIPI, which is situated in Nairobi. Eighty per cent of the respondents were located in Nairobi. The remaining 20 per cent were from other urban and rural areas.

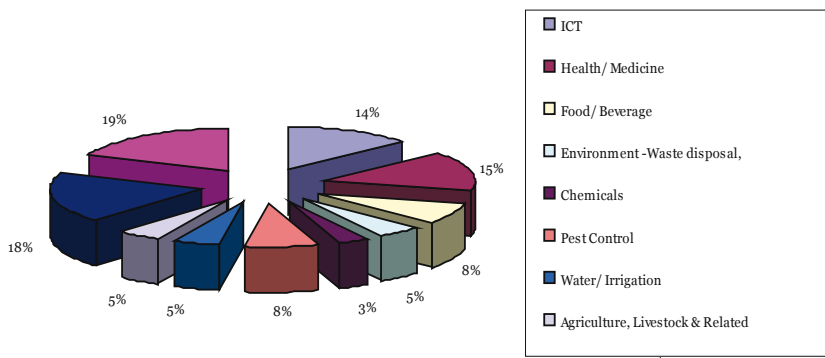
6.3 Results from Respondents

From the respondents, it was not possible to ascertain the accurate number of patents applied for and granted. This information will be based on data obtained from KIPI.

Eighty per cent of the respondents had innovations that were not protected. Among the reasons cited for not seeking protection through patenting were long tedious patenting process, many hard to fulfil requirements for patenting, high costs of patenting and weak patent regime in Kenya.

Eighty per cent of the respondents had also not commercialized their inventions and patents served only to protect their invention from exploitation by other parties. The reasons cited for non-commercialization of patents were lack of knowledge on how to commercialize, lack of funds and lack of markets for patent.

Figure 6.2: Patent applicants sector wise



Thirty one per cent of the respondents said they were licensed to use patents from other patent holders. These were mainly from the manufacturing sector/industries. This indicates an opportunity for Kenyan innovators to explore.

Only 31 per cent of respondents engaged the services of professionals in the patenting process. Professionals engaged include: lawyers, engineers for design and IP specialists including officers from KIPI and a patent agent. Some respondents were not even aware of the professional services and where to find them. Availability and high cost were cited by those who engaged professional services. However, those who engaged professionals rated their services as excellent. Low engagement of professionals could be attributed to very few professionals in the field of IP.

Only 7 per cent of the respondents had experienced patent infringement. The low percentage could also be from the fact that only a few of the respondents had been granted patents that could be infringed upon.

6.4 Research and Development

From literature review, R&D was a key factor in the creation of innovation and consequently patents. The study looked at R&D aspect from the applicants. Since R&D directly contributes to patenting, the R&D activity in organizations has a direct correlation with the patenting activity. Deficiencies in R&D can therefore be used to explain the low patenting.

From the results, 93 per cent of the respondents rated R&D as very important, while 7 per cent rated it as important. Among institutions and enterprises, surprisingly 65 per cent of the respondents had a R&D department. Of the organizations with R&D departments, 50 per cent had 1-5 employees, 25 per cent had 6-20 employees, while 25 per cent had over 50 per cent employees mostly research institutions. Seventeen per cent of the respondents had no budget for R&D, 72 per cent allocated 1-4 per cent of the budget to R&D, while 11 per cent allocated over 10 per cent of budget to R&D. Seventy two per cent of the respondents funded their R&D budget, while 23 per cent had their budgets funded both privately and by government.

Despite most of the respondents rating R&D as very important, this is not reflected in R&D activities of their organization, especially

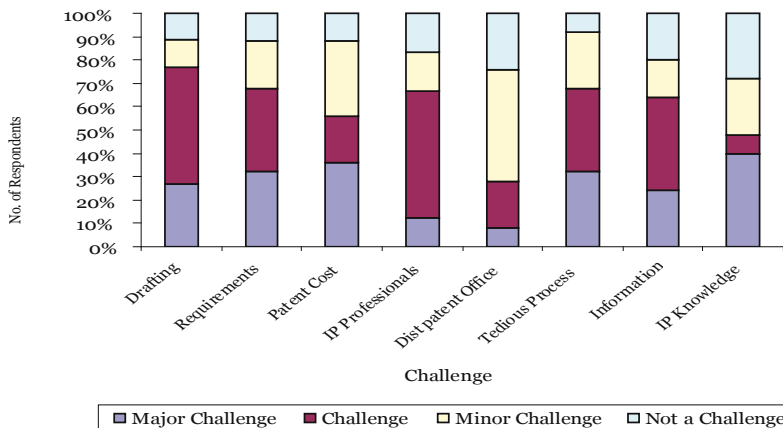
funding and the number of researchers engaged. This implies that there are constraints that need to be addressed, if the importance of R&D is to be reflected in R&D activity which will in turn contribute to patenting.

6.5 Challenges to Patenting (From Applicants Experience)

Respondents were asked to rate challenges to patenting from their experience on a scale of 1-4, where 1–Major challenge, 2–Challenge, 3–Minor challenge and 4–Not a challenge.

From the results, the factor rated by most respondents (40%) as being a major challenge to patent applicants was IP knowledge followed by patent cost, the tedious patent process, meeting patenting requirements and very difficult patent drafting in that order. Distance to patenting office was the least significant followed by lack of IP professionals. However, when the challenges are ranked on the basis of those that had the highest respondents, rating them as both a major challenge and challenge, patent drafting was ranked first with 77 per cent respondents, followed by hard to fulfil patent requirements (68%), tedious process (67%) and lack of IP professionals (66%). Distance was ranked last, followed by IP knowledge. Distance to the patenting office was probably not rated as a major challenge to respondents because majority of them were from Nairobi. There were mixed reactions to IP knowledge; whereas majority of respondents (40%) ranked it as a major challenge, only 7 per cent ranked it as a challenge, 23 per cent as a minor challenge and 29 per cent as not a challenge at all. It indicates that for the applicants who found it a challenge, it was a major challenge for

Figure 6.3: Challenges faced by inventors in patenting their inventions



them. This could also indicate the diversity in IP knowledge by patent applicants. From the findings, the following are significant factors that were challenges to inventors; patent process, patent requirements, patent drafting and IP knowledge of professionals.

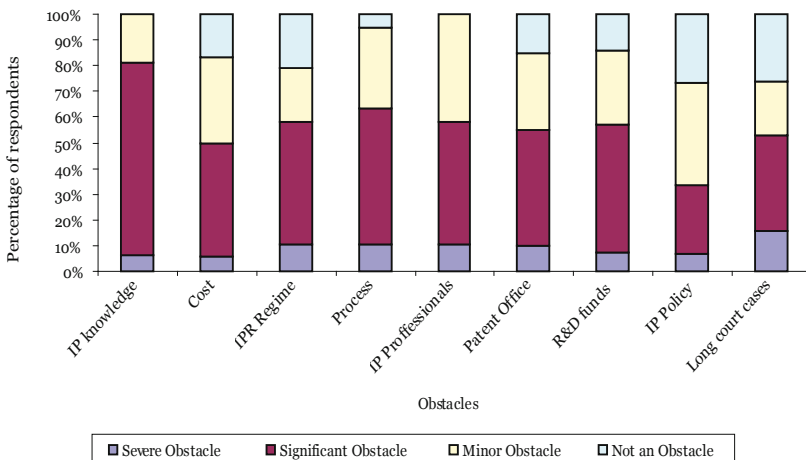
6.6 Obstacles to Patenting with Respect to Patenting in Kenya

Respondents were asked to rank obstacles with respect to patenting in Kenya on a scale of 1-4, where 1–Severe obstacle, 2–Significant obstacle, 3–Minor obstacle and 4–Not an obstacle.

Results indicate that long IP court cases were viewed as a severe obstacle by most of the respondents (15%), followed by tedious patenting process (11%), lack of IP professionals (11%), distance to patent office (10%), IPR regime (10%) and limited R&D funding (7%). IP knowledge, patenting cost and IP policy were rated by least respondents as being severe obstacles. However, when the factors rated as severe and significant obstacle are combined, we see a slightly different scenario.

IP knowledge has the most respondents, rating it as an obstacle (81%), followed by tedious patenting process (63%), lack of IP professionals (58%), un-conducive IP regime (58%), limited and lack of R&D funds (57%) and long court cases (52%). Lack of a clear policy on patenting (32%) was rated by least respondents, followed by the patenting cost (50%). From the respondents rating, the patent process, unconducive IPR regime, lack of IP professionals, limited funds for R&D and IP knowledge were perceived as critical obstacles to patenting

Figure 6.4: Obstacles to patenting in Kenya



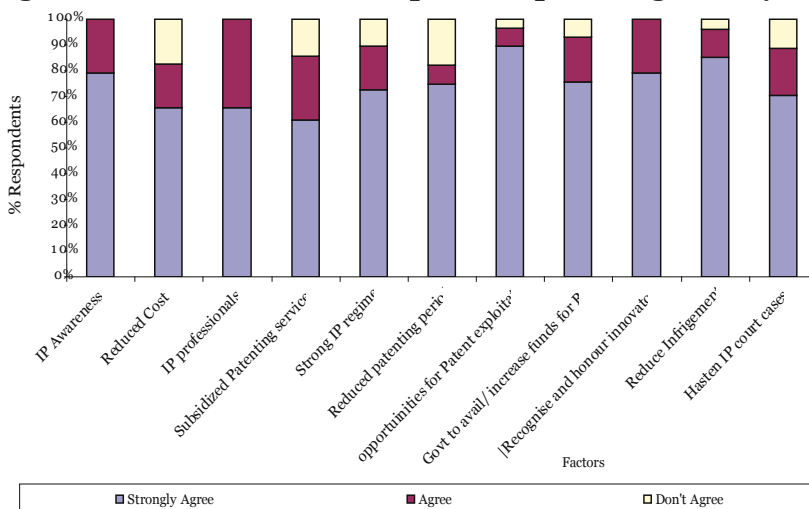
in Kenya. Even though lack of IP policy was not seen as an obstacle by many respondents, most of the other obstacles are as a result of lack of policy to guide patenting in Kenya.

6.7 Factors that Would Promote Patenting in Kenya

Respondents were asked to rate factors that would promote patenting in Kenya based on their patenting experience on a scale of 1-3, where 1-Strongly agree, 2-Agree and 3-Don't agree.

From the results, the factors that respondents strongly agreed with were availing opportunities for exploitation of patents, followed by reducing infringement, creating IP awareness, recognizing and honouring inventors, increasing R&D funding, reducing the patenting period and having a strong IP regime. Factors that were least considered by respondents were subsidized IP services, reduced patenting cost, availability of IP professionals and hastening court cases. At this point, we combine respondents that generally agree with the factors, that is those that agreed and those that strongly agreed with the scenario changes slightly. The most significant factors that would promote patenting in Kenya are creating IP awareness, recognizing and honouring inventors, availability of IP professionals, availing opportunities for patent exploitation, reducing infringement and increasing funds for R&D. While strong IP regime subsidized patenting services, reduced patenting period and cost were perceived as not very significant in promoting patenting.

Figure 6.5: Factors that would promote patenting in Kenya



Therefore, significant factors for the promotion of patenting are creating IP awareness, recognizing and honouring inventors, availing opportunities for patent exploitation, reducing infringement and availability of IP professionals. Even though few respondents felt subsidized, IP services were not important in promoting patenting. Most patent applications are rejected on the premise of poor patent drafting, which is also a major challenge.

7. Conclusion and Policy Recommendations

7.1 Conclusion

This paper's objective was to explore patenting in Kenya, while focusing on the status and challenges. The following conclusions were drawn: patenting in Kenya is low with a very low grant rate, an average of about 20 per cent. Majority of the patent applicants are individuals, followed by industries mostly from the manufacturing sector. Number of patent applicants from the university is very low contrary to expectations. Patent applications from research institutions are also low considering the fact that R&D is their core function. Most of the applicants (90%) were from Nairobi. Despite the low patenting levels in Kenya, most of the respondents had innovations that were not protected by IPR/ patents.

Several factors were highly perceived as challenges by the respondents and as obstacles to patenting in Kenya. They include the long and tedious patenting process, very difficult patent drafting, little benefit from patenting, limited IP knowledge, lack and limited R&D funds, limited IP professionals and high cost of patenting. Factors that would promote patenting as perceived by the respondents include: availability of opportunities for patent exploitation, creation of IP awareness, recognizing and honouring inventors, increasing R&D funding to institutions and availability of IP professionals and services.

Commercialization of patents was also found to be very low. Many respondents cited lack of markets, knowledge and funds for commercialization as the reasons. Use of professionals in the patenting process was very low even though officials from KIPiI cited poor patent drafting as one of the reasons for non-grant of patents to some applicants.

7.2 Policy Recommendations

7.2.1 IP/ Patent awareness creation

There is need to intensify IP awareness in the country, especially for patents.

This could be achieved through:

a) Increased outreach activities by KIPi. This is by:

- Workshops and capacity building for all stakeholders
- Special outreach programmes to universities and R&D institutions
- Use of shows, exhibitions and trade fairs to create awareness
- Use of publications to educate the public on the importance of IPR and to highlight current issues in IP
- Use of media: Newspaper articles, TV and radio talk to create awareness.

For these to be achieved, KIPi needs to facilitate the institution through availing the necessary resources (human and finances). The government should increase its budgetary allocation to cater for the institutes activities and awareness creation, as well as employ more staff who will carry out the outreach activities.

b) IP awareness can also be improved through the incorporation of IP as a subject at the college level in the education curriculum, similar to what was done to entrepreneurship.

c) There is need for a national intellectual property day which could coincide with the world intellectual property day. The day should be used to create awareness and recognize inventors that have made significant contributions in their areas.

7.2.2 The patenting process

The patenting process is a major challenge to inventors and perceived obstacle to patenting in Kenya because it is long and tedious. The process could be made more efficient through:

- Automation of the patenting process whereby applicants can apply for patents online and receive feedback immediately. Availing all the patenting information/requirements and application forms online, with a feedback system, will greatly improve the efficiency of the patenting system in Kenya.
- There is need to decentralize the patent offices to provinces and districts to enhance accessibility to inventors in all the regions of Kenya.
- To hasten patent processing, there is need for additional staff to be engaged by KIPi, especially patent examiners.

- There is need for the Government to employ IP professionals, especially patent drafters, to offer subsidized services and advice to the patent applicants.

7.2.3 Patent commercialization

Patent commercialization entails availing opportunities for exploitation of patents by the inventors. From the study, it emerged that patent commercialization is very low, making it hard for most inventors, especially individuals, to reap benefits from their inventions. Thus, to increase patent commercialization, the government needs to consider the following:

a. Facilitate the setting up of a commercialization centre by the Ministry of Trade and Industry that will:

- Provide information on commercialization to both inventors and investors
- Be a place where inventors can showcase their patented inventions
- Enable potential investors to meet with inventors to consider funding
- Maintain a database on inventions and technology available for industry

b. Government should come up with policies that promote and develop inventions in form of local technologies and products as opposed to imported technology and products. The government should strive to be a major consumer of these products and technology where possible.

c. A fund should be set up that will help inventors to develop and commercialize their innovations.

d. IP valuation is one of the bottlenecks to commercialization. There is need for the government, through KIPI, to build capacity in IP valuation and address the issue of IP valuation through policy.

7.2.4 Universities and R&D institutions

Universities and R&D institutions are an important part of a country's national innovation system and therefore very strategic in patenting. As earlier seen, R&D is a significant antecedent to patenting and thus to enhance patenting, there is need to increase R&D especially in universities, R&D institutions as well as private sector. This can be achieved through the following recommendations:

- Increased R&D funding to universities and research institutions for research, equipments and better remuneration to the researchers.
- Provide incentives in form of tax rebates on R&D expenditure to the private sector to encourage R&D.
- Government to provide scholarships for research in key strategic areas like health and agriculture which should be translated to development.
- Policies that promote applied research as opposed to basic research.
- Adequately compensate staff and researchers in institutions to allow them time to concentrate on research as opposed to using most of their time looking for part-time jobs to top-up their earnings.
- Provide researchers who come up with useful inventions incentives and adequate compensation for their efforts.
- The innovation and research funds to include a portion for IP protection.
- Encourage collaborative research between institutions and industry.

7.2.5 IP professionals

- There is need for the government to build its capacity in IP by having a training curricula on IP and training a pool of specialists, especially in the fields of patent drafting, IP valuers and IP prosecutors.
- The government needs to employ IP specialists to offer subsidized services to inventors and remunerate them competitively in order to retain them.
- For IP professionals who are available, there is need to have them register with the government and their services and fees regulated.

7.2.6 Legislation

Legislation is an important determinant in the patenting process and enforcement.

Policy recommendations for legislation:

- Quick implementation of the national IP policy to govern IP issues of management, administration, enforcement and ownership.
- Review the patent law to make it strategic in the country's development agenda and to promote patenting.

- Review the scope and depth of patentable matter to be in line with the current economical and technological development.
- Review penalties for IP/patent infringement and put in place structures for enhanced patent enforcement.

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Appendix

Appendix 1: Patent registration fees

Description of fees	Local fee (Ksh.)
Application for a patent with a final specification	3,000
Fee for filing a final specification	3,000
Fee for publication of patent application	3,000
Fee for a request of substantive examination	5,000
Fee for grant of a patent	3,000
Fee for a request of a certified copy	2,000
Total registration fees	19,000

Appendix 2: Annual patent maintenance fees

Year	Annual maintenance local fee
1,2,3,4,5,6,7	2,000 each year
8	6,000
9	7,000
10	8,000
11	10,000
12	12,000
13	14,000
14	16,000
15	18,000
16	20,000
17	30,000
18	35,000
19	40,000
20	50,000
Total fee for 20 years	280,000

Appendix 3: Patent applicants in various sectors

Sector	Patent applicants
ICT	43
Health/Medicine	48
Food/Beverage	24
Environment-Waste disposal	16
Chemicals	11
Pest control	24
Water/Irrigation	16
Agriculture, Livestock and Related	15
Industry, Engineering and Construction	60
Others	60
Total	315

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