PROTECTION, PRESERVATION AND PROMOTION OF TRADITIONAL KNOWLEDGE IN SWAZILAND: A CASE OF TRADITIONAL MEDICINE

BY

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A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER IN INTELLECTUAL PROPERTY IN THE INSTITUTE OF PEACE, LEADERSHIP AND GOVERNANCE OF AFRICA UNIVERSITY

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ABSTRACT

This research study assessed the importance of traditional knowledge (TK) in Swaziland particularly in the health care sector in order to build a model that would ensure adequate protection, preservation and promotion. The research analysed laws and policies in place having a bearing on TK. It employed triangulation approach in the collection of data, wherein qualitative data was quantized and analysed qualitatively using IBM SPSS. The research was conducted in all the four administrative regions of the country. The population for the research comprised TK-holders, community leaders, policy makers, scientific researchers and members of staff from the Swaziland Intellectual Property Office. A random sampling method was used when sampling TK-holders, community leaders and policy makers, while for researchers and members of staff from the country's IP office, the research used a convenient sampling method, since the population was very small. The study established that currently there are no policies related to traditional knowledge or traditional medicines (TMs) in Swaziland though the country is in a process of domesticating provisions of the Nagoya Protocol on Access and Benefit Sharing. The study noted that the absence of policy on TK is having serious implications on issues of protection and utilization of TKs in the country. The study recommends that the Government of Swaziland should form an Inter-ministerial body that should deal with the complexity of TK which cuts across different Ministries.

DECLARATION

This research Project/Dissertation is my original work except where sources have been acknowledged. The work has never been submitted, nor will it ever be, to another University in the awarding of a degree.

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DEDICATION

I dedicate this work to my family for being tolerant, accommodating and supportive.

God bless you girls: Tinotenda, Sibongokuhle and Nandi.

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INTRODUCTION

1.1 Overview of study

Traditional Knowledge (TK) may be defined as the totality of all knowledge, whether explicit or implicit used in the management of socio-economic and ecological facets of life, that is held by members of a distinct and or sometimes acquired by means of inquiry peculiar to that culture and concerning the culture itself or the local environment in which they exist (Mugabe, 1998 & Wekundah, 2012). Such knowledge is usually established on past experiences and observations, and it is usually a collective property of a society. It is modified and enlarged as it is used over time by the members of the society or community, and it is transmitted from generation to generation.

Traditional Knowledge is justly cherished as an important part of the cultural heritage and historical identity of many indigenous and local communities, as well as many nations and regions with a shared cultural history. Its conservation, protection and promotion is increasingly considered an important component for a bottom-up approach to economic development. This approach builds upon the local knowledge of the

community or country by utilizing and harnessing the great potential that traditional knowledge and grassroots innovations have in order to improve local livelihood conditions and sustainably utilize natural resources. Traditional knowledge is therefore, recognized as an important source of innovation for improving local livelihoods and sustainable resource use, which has been underutilized in the past (WIPO, No. 920E).

This study will look at protection, preservation and promotion of traditional knowledge (TK) with an emphasis on traditional medicine in the country. World Health Organisation (1976) defines traditional medicine as the sum of all knowledge and practices, whether they can be explained or not used in the prevention, diagnosis and elimination of physical, mental or social imbalances, and relying exclusively on past experiences and observations handed down from generation to generation, whether orally or in writing.

The World Intellectual Property Organization (WIPO) is a specialized United Nations (UN) agency established with a mission to promote through international cooperation the creation, dissemination, use and protection of works of human mind for the economic, cultural and social progress of all mankind (WIPO IP Handbook, p. 5). Through its Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (IGC), established in 2000, they came to an agreement in 2009 to develop an international legal instrument(s) that would give TK, genetic resources and traditional cultural expressions (TCEs)/ Expressions of

folklore (EoF) effective protection, which could range from a recommendation to WIPO members to a formal treaty that would be binding to ratified countries.

WIPO actually started its work on TK-related issues in 1978, by initiating discussions on the *sui generis* protection of EoF in collaboration with the United Nations Educational, Scientific and Cultural Organization (UNESCO) which yielded the Model Provisions for National Laws on the Protection of EoF against Exploitation and other Prejudicial Actions (Batti, undated). The work was put to a halt, and resumed in 1998, with an exploration of the IP aspects of TK protection, with an intention to identify and explore the IP needs and expectations of TK holders in order to promote the contribution of the IP system to their social, cultural and economic development.

WIPO has also cooperated with the United Nations Environment Programme (UNEP) on undertaking an On-site Documentation Project on the Role of IPR in the Sharing of Benefits Arising from the Use of TK and Associated Biological Resources (Bhatti, 2004). WIPO works closely with the Convention on Biological Diversity (CBD) and FAO secretariat on matters relating to the protection of the TK of indigenous and local communities. The CBD is so far the only international instrument comprehensively addressing biological diversity. Article 1 of the CBD (1992) lists the three objectives of the Convention, which are: the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of benefits arising from the utilisation of genetic resources. The third objective led to the establishment of the

Nagoya Protocol adopted at the 10th Meeting of the Conference of Parties 29th October 2010 (COP 10).

The CBD was the first International Convention to develop measures for the use and protection of TK but related to the conservation and sustainable use of biodiversity. Its Article 8 (j) States, "subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity". It also paved ways for establishing access and benefit-sharing (ABS) regimes, underscoring the importance of prior informed consent (PIC), and recognizing the sovereign rights of the states over genetic resources.

The Convention, however, according to Srinivas (2012) has some weaknesses, *inter alia*, the absence of indigenous communities during its negotiation. It is therefore considered as a compromise between developed and developing nations, as it was perceived that developing nations are rich in terms of genetic resources compared to the developed ones, thus the developed ones needed access to the resources. Srinivas (2012) also stated that the CBD lacks an effective mechanism for dispute settlement, and some of the terms used, such as "fair and equitable" can be interpreted in many ways.

Other important developments were the formation of World Trade Organization (WTO) and the coming into force of the WTO Trade-Related Aspects of Intellectual Property Rights (TRIPS) agreement, the signing and ratification of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), and the Intergovernmental Committee on Intellectual Property and genetic resources, traditional Knowledge and Folklore (IGC) process under WIPO in which countries are discussing proposals for an international framework for protecting TK (Wekundah, 2012). TRIPS inserted Article 27.3 (b) which allows member states of the WTO to use *sui generis* system to protect their TK.

In as much as TK can be protected through the use of the current IPRs regimes, there are some limitations which kind of render them unsatisfactory. The major limitation is the requirement of novelty, inventive step and commercial viability. This is where TK fails, in that, it is not new, it has no inventive step and the restriction of ownership within families or communities does not make it commercially viable. According to Wekundah (2012) IPRs are largely individual rights and as such they recognise individual ownership of an invention. This is not the case with TK, as it is largely owned by the community and is passed on from generation to generation. In addition, it is largely in public domain.

The importance of protection, preservation and promotion of traditional knowledge and associated genetic resources for an integrated development policy is increasingly

recognized at regional level. The African Regional Intellectual property Organization (ARIPO) came up with the Swakopmund Protocol, which is aimed at harmonizing laws governing the protection of TK and EoF within the African region. The purpose of the Protocol as indicated in Article 1 is "to protect TK holders against any infringement of their rights and to protect EoF against misappropriation, misuse and unlawful exploitation beyond their traditional context."

1.2 Background to the study

Swaziland, officially called the Kingdom of Swaziland is a small landlocked country in southern Africa covering about 17,400 km^2, with a population of approximately 1.3 million. The country is bordered to the north, south and west by the Republic of South Africa and to the east by the Republic of Mozambique. The western half is mountainous, descending to a lowveld region to the east while the eastern border with Mozambique and South Africa is dominated by the escarpment of the Lebombo Mountains.

It has an interesting geographical terrain that encompasses virtually every feature of the African continent. Such diverse terrain is attributed to its range of climate zones: the highveld (with an altitude of 900 -1400 m), the midveld (with an elevation of 400-800 m), the lowveld (with an elevation of 200-400 m) and the Lubombo plateau in the western part (with an elevation of 600 m). The climate is temperate in the western part

of the country, but may reach 40°C in summer in the lowveld. Such attributes of the country provide a rich diversity of flora.

Swaziland is facing economic crisis due to the ever declining GDP growth rate experienced in the last two decades. The economic crisis has been worsened by recurrent droughts, declining export receipts, volatile exchange rates and most significantly the high HIV/AIDS prevalence. This has then resulted in high unemployment rates as some companies close down thus leading to about 69% of the population living below the poverty line. The country has very high HIV prevalence and TB incidences estimated at (26%) and (1,198/100,000 population) respectively, which leads to weak human development and fragile basic services delivery (UNCT, Swaziland UNDAF, 2011-2015). As a result the country spends approximately 3.8 per cent of its GDP on health care (WHO, 2013).

However, the tiny Kingdom is endowed with rich traditional knowledge especially in the medicinal field which can help uplift the economy. Such knowledge is in a raw state. In this era of knowledge-based economies, knowledge, information and ideas are the prime economic drivers and through use of proper intellectual property system it is possible to convert these ubiquitous intangible Swazi assets into concrete economic gain.

Mdluli (2002) reported that about 85% of the Swazi population relied on TK (traditional medicines) for their medical needs. This is partly because majorities of the people are

poor and cannot access the health care facilities and also due to the fact that traditional medicine (TM) is embraced by both educated and un-educated people, simply because: practice is anchored in cultural and religious beliefs, and that TM is a holistic approach to healing and prevention of diseases (Makhubu, 2003). This means that it does not only heal physiologically, but also reaches out to the socio-cultural needs of the Swazis.

Swaziland is a party to the CBD which envisages that the benefits accruing from commercial use of TK have to be shared with the people responsible for creating, refining and using this knowledge. Swaziland is also a party to the TRIPS Agreement of the World Trade Organization (WTO), which creates, *inter alia*, private rights over inventions. The CBD offers opportunities for Swaziland to realize benefits from these resources. Swaziland is, therefore, expected to enact a legislation to realize the benefits provided for by the Convention which it has not done yet. Such a legislation should provide for a National Competent Authority that will grant approvals for access, subject to conditions designed to ensure equitable sharing of benefits.

Surprisingly, a country so rich in TK and whose people so much rely on it is having an ambiguous policy or non-policy at all (Green and Makhubu, 1983; Dlamini, 2002). Traditional Knowledge holders are to date suffering from the colonial-era law of 1905 which criminalises the practice of traditional healing and refers to Swazi healers as "witch doctors". The lack of policies governing TK and acknowledgement has made the country face serious problems in strengthening and nurturing it, so that its fruits can

vastly contribute to socio-economic development of the indigenous people and the country at large and also be enjoyed by future generations.

1.3 Statement of the Problem

Many products based on traditional knowledge (TK) are important sources of income, food and health care for large parts of the populations of a number of developing countries. A study by Bierer, *et. al.,* (undated) showed that over 120 pharmaceutical products currently in use are plant-derived, and some 75% of these were discovered by examining the use of plants in traditional medicine. Another study by Newman and Cragg (2007) demonstrated that out of the about a hundred anticancer agents developed between 1981 and 2006, twenty five were natural products derivatives, eighteen were natural product mimics, eleven candidates were derived from a natural product pharmacophore, and nine were pure natural products. Thus natural sources make a very significant contribution to the health care system. Moreover, the Secretariat of the CBD reported that the world market for herbal medicines, including herbal products and raw materials, was estimated to about US$60 billion (Zhang, 2004). It is therefore imperative that countries especially developing nations put in place measures for adequate preservation, protection and promotion of the TK, innovations and practices of local and indigenous communities in developing countries. Swaziland, a least developed country endowed with rich TK and biodiversity which play a crucial role in, *inter alia*, its health

care, tourism sector, food security and identity. However, the question is the extent to which the Kingdom of Swaziland has put in place such mechanisms. This research aims to establish that in relation to the importance of TK in therein.

1.4 Specific Objectives

The objectives of this study are to:

1. investigate the level of awareness of intellectual property rights in Swaziland;
2. determine the value of traditional knowledge (Traditional Medicinal Knowledge) in Swaziland;
3. determine the rate at which traditional knowledge is lost, hence the mitigation strategies;
4. determine how traditional knowledge can be protected and harnessed for development; and
5. analyse domestic policies and legislations linked to TK, in comparison with international and regional treaties such as the Convention on Biological Diversity (CBD)—Nagoya Protocol and ARIPO Swakopmund Protocol, towards socio-economic development.

1.5 Research Questions

1. What is the level of intellectual property rights awareness in Swaziland?
2. What is the economic value of traditional knowledge (in the health sector) in the country?
3. At what rate is traditional knowledge getting lost and what can be done to limit the loss?
4. How best can traditional knowledge be protected and promoted, and harnessed for development?
5. What is the position of the country's policies in comparison to international and regional treaties in as far as traditional knowledge is concerned?

1.6 Justification

The findings of this research will be a contribution to academic research, creating a benchmark for the government of Swaziland and other neighbouring least developed and developing countries to adopt for the protection of TK, preservation against the rapid loss and also promotion and harnessing for development through commercialization. It is a research that will help in building IPRs awareness to traditional knowledge holders, and make them contribute freely whenever policies regarding TK are being developed in the country.

The research findings of this study may also help politicians and policy makers in the contextualizing of international Treaties and Conventions such as the Convention on Biological Diversity (CBD) and the Nagoya Protocol, and regional ones such as the ARIPO Swakopmund Protocol. It will further help the research to gain knowledge of the country's policies with regard to traditional knowledge.

1.7 Scope of the Study

Traditional knowledge is a very broad field, ranging from traditional/indigenous healing, expressions of folklore, agricultural practices, food preparation and preservation, land use, education and a host of other activities especially in rural communities of Swaziland. This study will only look at traditional knowledge in the health sector. It will focus on traditional healing and traditional medicines, traditional healers and the communities they live in, as well as policy makers. It will, however, be conducted in all the four administrative regions of the country.

1.8 Limitations

Limitations and Challenges encountered while doing the study are that, there is very little local information documented for analysis and comparison purposes. Even in cases where the documents are available, access is a problem owing to the old filing system

used in archiving them as opposed to use of modern forms of archiving or filing which mostly uses computers and the Internet. Another challenge is the unavailability of funds to travel around the country to collect data. Some targeted people having knowledge of such priceless information on the subject could not be available to be interviewed.

1.9 Structure of Study

This research project will be made up of five chapters. Chapter one introduced the study by looking at the background information, the statement of problem, purpose of study, objectives and research questions. The chapter also discusses the rationale for embarking on such a project, the scope and also limitations of the study. A conclusion for the chapter draws this part to a close. Chapter two presents and analyses literature related to the objectives of the study. Literature to be reviewed will include those defining terms used like “traditional/indigenous knowledge” and the characteristics and economics of TK, and literature on national policies with reference to regional and international treaties.

Chapter three will discuss the research method and materials to be used for collecting data for the study. It will also look at the statistics for data treatment and presentation. Chapter four will present results and findings of the study. The results will be discussed and also compared with results obtained by other researchers in similar studies within

the country, regional and also internationally. The last chapter, which is chapter five, will focus on drawing the study to a conclusion. It will then provide recommendations.

1.10 Conclusion

This chapter introduced the subject by providing the background, rationale and a general preview of the manner in which the research will be conducted. The following chapter presents the literature review and analysis so as to inform the research on what other researchers in Swaziland have done so far on traditional medicine. It will also provide general information for an in-depth appreciation of the subject.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This Chapter reviews literature that is related to this study especially on key terms of the study and on forms of TK and ownership of TK. It will review literature on the characteristics and economics of traditional knowledge, looking at the contribution or potential contribution of TK to a country's GDP. Moreover, it will review literature on the TK and scientific development as well as its importance to communities. It will provide literature on some incidents of misappropriation of TK and bio-piracy in relation to the nation under study—the Kingdom of Swaziland. Finally the chapter will review available literatures on TK in Swaziland as well as some legislation and policies relating to TK in the country and the future of TK.

2.2 Traditional Knowledge (TK)

Traditional knowledge (TK) can be defined as that knowledge held by members of a distinct and or sometimes acquired by means of inquiry peculiar to that culture and concerning the culture itself or the local environment in which they exist. TK is, therefore, the totality of all knowledge and practices whether explicit or implicit used in the management of socio-economic and ecological aspects of life (Masango, 2010). It is

knowledge that is established based on past experience and observations. According to Wekundah (2012), it is as a result of contributions from many members of the Society over time, and it is modified and enlarged as it is used over time. It is also transmitted from generation to generation. Generally it is an attribute of a particular group of people who are intimately linked to a particular socio-economic context, through various economic, cultural, ritual and religious activities (Masango, 2010 & Croal *et al.*, 2012). Wekundah (2012) added that, TK is also dynamic in nature and it changes its character as the needs of the local people change.

Traditional Knowledge can be summed and grouped into the following categories, but all generally refer to the long standing traditions and practices of certain indigenous or local communities, and these are:

2.2.1 Indigenous Knowledge (IK)

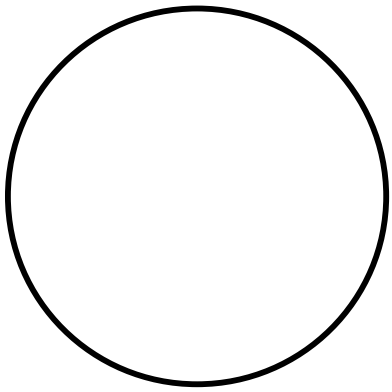
Many scholars tend to use traditional knowledge (TK) and indigenous knowledge (IK) interchangeably. Such is the approach this study takes. There is, however, an important, yet subtle distinction between the two. According to Mugabe (1999) the International Labor Organization (ILO) Convention Concerning Indigenous and Tribal Peoples in Independent Countries defines indigenous peoples as:

> Peoples in independent countries who are regarded as indigenous on account of their descent from populations which inhabited the country, or a geographical

region to which the country belongs, at the time of conquest or colonization or the establishment of present state boundaries and who irrespective of their legal status, retain some or all of their own social, economic, cultural and political institutions.

Viergever (1999) noted that the difference between traditional and indigenous knowledge peoples' communities is that indigenous knowledge peoples' communities still have their own distinct cultures, despite the pressure to integrate within the larger society of the national states of which they are part. Indigenous knowledge can, therefore, be defined as knowledge that is held and used by a group of people who identify themselves as indigenous to a place, based on a combination of cultural distinctiveness and prior territorial occupancy (Croal, *et al.*, 2012 & Mugabe, 1999).

While TK can be developed over time in any society or culture, indigenous knowledge is the subset of TK rooted in the fundamental distinction that forms the core of indigenous difference. This simply means that indigenous knowledge fits neatly in the TK category but TK on the other hand is not necessarily indigenous (IK is a subset of TK as shown in Figure 1). This means that IK is TK but TK is not necessarily indigenous (Mugabe, 1999) as illustrated in Figure 1.



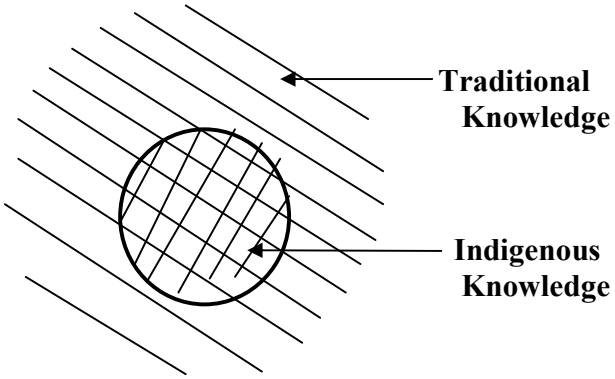


Figure 1: Relationship between TK and IK

2.2.2 Local Knowledge (LK)

It is a broader term that refers to the knowledge people in a given community have developed over time, and continue to develop. It is based on experience, often tested over centuries of use and it is adapted to the local culture and environment. Such knowledge is embedded in the community practices, institutions, relationships and rituals and it is dynamic and changing. LK comes from local communities. Local communities differ from indigenous ones in that; usually they do not have a cultural identity that sets them apart from the large society, or at least not to the same extent as in the case of indigenous peoples' communities (Viergever, 1999).

2.2.3 Traditional Environment Knowledge (TEK)

It refers to a particular form of place-based knowledge diversity and interactions among plants and animal species, land forms, watercourses and other qualities of the

biophysical environment in a given place. In some communities TK takes on a personal and spiritual meaning and it can also reflect a community's interests.

2.2.4 Traditional Cultural Expressions (TCEs)/Expressions of Folklore (EoF)

These are traditional cultural forms, may be tangible and/or intangible, expressed, passed down from generation to generation and they form part of the identity and heritage of a local community. TCEs or EoF may include *inter alia*; musical expressions, expressions dances, art, designs, names, signs and symbols, performances, ceremonies, architectural forms, handicrafts and narratives, or many other artistic or cultural expressions (Swakopmund Protocol, 2010 & WIPO).

2.3 Ownership of TK

Traditional knowledge (TK) may be produced and thus owned by an individual, by a group of individuals or by a local or indigenous community. However, according to Wekundah (2012) it is owned largely by the community than by individuals. Individuals may have knowledge, which they may have inherited from their forefathers, and they may have acquired the skill to practise it faithfully without modification or with modification and some of the knowledge may be kept confidential and accessed only with restrictions. That noted, some of the knowledge may be disseminated locally, but be restricted in scope or in terms of accessibility.

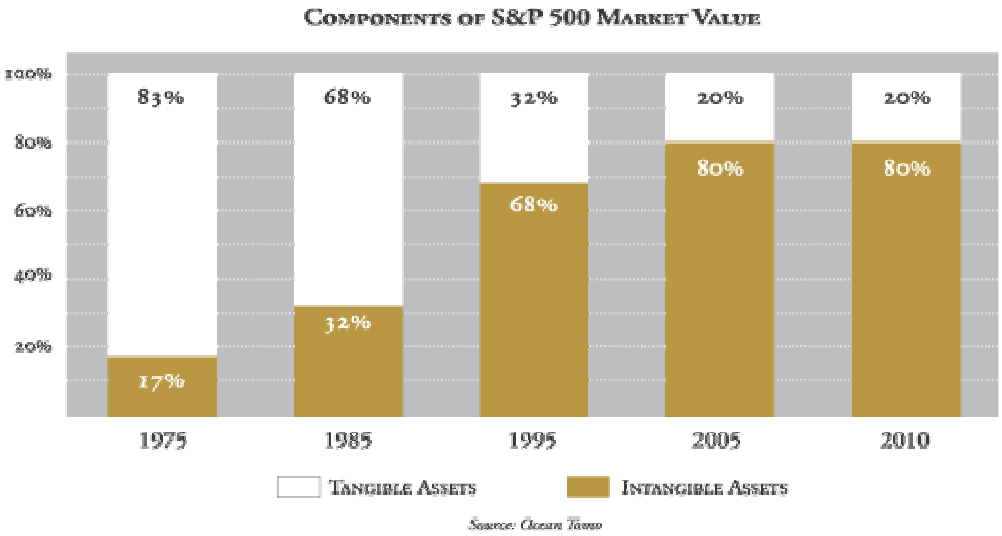
Finally some of this knowledge may be shared widely within a community and with outsiders, so that the knowledge becomes public domain TK. However, even if such knowledge is known or is in the public domain, expertise is restricted to individuals, for example, healers would be the only ones who know how to calibrate the dose and combination of herbal drugs according to the condition of the patient in the case of traditional medicine. Such an expert may, or may not, be free to share the knowledge, according to the rules of the community, since there may be taboos, implying that a particular remedy might lose its effectiveness if revealed to others.

2.4 Technology transfer/Knowledge Transfer

Knowledge transfer and technology transfer are ubiquitous processes, which can be identified in almost all temporal and spatial contexts. Knowledge transfer can be defined as the means by which expertise, knowledge, skills and capabilities are transferred from the knowledge-base (for example, a university or college, a research centre or a research technology organisation) to those in need of that knowledge. It is all about the transfer of tangible and intellectual property, expertise, learning and skills between academia and the non-academic community. Basically Knowledge transfer (KT) is a term used to encompass a very broad range of activities to support mutually beneficial collaborations between universities, businesses and the public sector (University of Cambridge, 2009).

2.5 Why Traditional Knowledge Matters

The world has entered an era of knowledge-driven growth and development, which can be referred to as "post-industrial" era. Resource-intensive growth is being replaced by economic development based on knowledge, innovation and creativity. As a result, Intellectual Property has assumed greater importance and pre-eminence. It impacts every facet of our lives and has become a critical tool for policy making with socio-economic, technological and cultural repercussions. The bar chart below (Figure 2) shows the shifts in the market between tangible and intangible assets from 1975 to 2010.



Source: Ocean Tomo

Figure 2: Market shifts from tangible to intangible assets

Traditional knowledge is very important to holders and their communities because they cherish it as part of their cultural identities. It forms part of a holistic world-view, and as such, it is inseparable from their ways of life and their cultural values, spiritual beliefs and customary legal systems; which means that it is very important to sustain the knowledge and also the social and physical environment which forms an integral part (WIPO Publication No. 920E). TK is also important because it has a strong practical component, since it is often developed in part as an intellectual response to the necessities of life. This, therefore, means that it can be of direct and indirect benefit to the society.

2.5.1 Contribution to drug development

Traditional knowledge plays a notable role in drug discovery and development, through a process known as bioprospecting. Bioprospecting is an umbrella term which describes the process of discovery of new chemical compounds with medicinal or anti-microbial properties based on biological resources. The process itself involves the exploration, extraction and screening of biological diversity and indigenous knowledge.

Onaga (2001) gave an example of bioprospecting, whereby a group of researchers was able to isolate two therapeutic agents from a Madagascar plant called rosy periwinkle, which was found using cues from local Shamans and spiritual herbalists. A lot more similar discoveries have been made to date. This shows the importance of TK in bioprospecting, thereby greatly contributing to drug discovery. Bioprospecting when properly done has a big potential of contributing to a country's GDP, and also in job creation. The table below (Table 1) shows some drug discoveries as a result of bioprospecting and the related uses in medicine industry.

Table 1: Some drugs obtained from bioprospecting and their related uses

Drug	**Treatment**	**Plant used**	**Origin of plant**
Lovastatin	Cholesterol Lowering	Penicillin spp	Microorganism
Artemisinin	Anti-microbial	Artemisia annua	Chinese Herb
Manoalide	Anti-inflammatory	Sponge lLuffariella variabilis	Found in the ocean
Ephedrine	Anti-asthma	Ephedra sinica	
Taxol	Anti-cancer	Taxus brevifolia	
Hoodia	Anti-suppressant	Hoodia plants	San Tribe

2.5.2 Economic value

Traditional Knowledge plays a notable role in many sectors of life, particularly the health care and agriculture sectors. These two sectors are very important because they provide the basis for survival for the majority of the population in developing countries, predominantly the poorer and more marginalized segments, including indigenous groups, women and rural communities. In the health care sector, TK can range from home level understanding of nutrition, management of simple ailments and reproductive health practices to treatment of serious chronic illnesses or addressing public health requirements (Unnikrishnan & Suneetha, 2012).

Tilburt and Kaptchuk (2008) estimate the worldwide annual market value of herbal medicine to be around USD 60 billion, with industrial estimates that the value would rise to USD 90 billion by 2015 (Global Industry Analysts, 2012). According to a report by WHO (2001); China gets an estimated US$ 2.3 billion per annum, republic of Korea gets US$ 543.5 million, Japan US$ 1.5 million and the Philippines US$ 10 million from traditional medicines. These figures clearly indicate the significant value of TK towards contributing to a country's GDP. Table 2 shows a list of top 12 leading countries of import and export of medicinal and aromatic plant material from 1991 to 1998.

Table 2: Top 12 leading countries on import and export of medicinal and aromatic plant materials from 1991-1998

Country of import	Volume [tonnes]	Value [1000 US$]	Country of export	Volume [tonnes]	Value [US$1000]
1. Hong Kong	73 650	314 000	1. China	139 750	298 650
2. Japan	56 750	146 650	2. India	36 750	57 400
3. USA	56 000	133 350	3. Germany	15 050	72 400
4. Germany	45 850	113 900	4. USA	11 950	114 450
5. Rep. Korea	31 400	52 550	5. Chile	11 850	29 100
6. France	20 800	50 400	6. Egypt	11 350	13 700
7. China	12 400	41 750	7. Singapore	11 250	59 850
8. Italy	11 450	42 250	8. Mexico	10 600	10 050
9. Pakistan	11 350	11 850	9. Bulgaria	10 150	14 850
10.Spain	8 600	27 450	10. Pakistan	8 100	5 300
11.UK	7 600	25 550	11. Albania	7 350	14 050
12.Singapore	6 550	55 500	12.Morocco	7 250	13 200
Total	**342 550**	**1 015 200**	**Total**	**281 550**	**643 200**

Source (WHO, 2005)

2.5.3 Climate change and Food security

Climate change is proving to be a major challenge to agriculture at the present moment, and researchers expect the situation to worsen. Climate change results in rising temperatures and extreme weather and rainfall becoming more variable among other things, and such changes pose a major threat to agriculture (Swiderska, *et al.* 2011). The situation has challenged researchers and policymakers to adapt agriculture to these impacts, and often they focus on modern science, ignoring TK. But evidence, both old and new, suggests that the traditional knowledge and crop varieties of indigenous peoples and local communities could prove even more important in adapting agriculture to climate change (Swiderska, *et al.* 2011).

Indigenous peoples and local communities have relied on their TK, not modern agriculture, to cope with extreme weather and environmental change for many centuries. TK plays an imperative role in the interaction between *in situ* and *ex situ* conservation of traditional agricultural varieties. This knowledge has also given rise to thousands of traditional crop species and varieties that local farmers have domesticated, improved and conserved over generations. Table 3 shows at least five types of TK useful for adaptation in agriculture.

Table 3: List of TK practices useful for adaptation in agriculture

Traditional knowledge	**How it helps adaptation in agriculture**
Resilient properties	Traditional farmers often live on marginal land where climate change impacts and selection pressures are greatest. This enables them to identify resilient crop species and varieties for adaptation.
Plant breeding	Traditional farmers—particularly women and the old—re active plant breeders, conserving local landraces and selecting seeds for preferred and adaptive characteristics over generations. Some innovative farmers cross lines for crop improvement.
Wild crop relatives	Local communities often draw on wild areas around farms for crop improvement and domestication as well as to supplement their diet and provide food when crops fail.
Farming practices	Traditional farming practices—from water, soil or pest management to erosion control and land restoration—conserve key resources for resilience and adaptation, such as biodiversity, water, soil and nutrients.
Climate forecasting	Traditional knowledge can help forecast local weather, predict extreme events and provide accessible information to farmers at a local scale. Traditional

	farmers can also monitor climate change in specific locations and fill the resolution gap of scientific models.

Source: Swiderska, *et al.* 2011.

2.5.4 Conservation of biological diversity

The importance of TK is not limited only to the health or medicine and agriculture fields; it also plays a vital role in nature conservation. Mazzocchi (2006) noted that its importance for the protection of biodiversity and achievement of sustainable development is being recognized internationally. The Convention on Biological Diversity (CBD) took the initiative to show the recognition of TK in biodiversity and genetic resource conservation. Its Article 8 states that; respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity (CBD, 1992). TK has been rediscovered as a model for a healthy interaction with, and use of, the environment, and as a rich source to be tapped into in order to gain new perspectives about the relationship between humans and nature.

2.6 Rationale for protection and Promotion of TK

The rationale for protection and promotion of TK suggested in various analyses of IPRs centres on questions of fundamental justice and the ability to protect from

misappropriation, preserve against erosion, promote self-determination and the right to development and to control indigenous people's cultural heritage, not overlooking the concomitant right to receive a fair return on what these communities have developed. The incentives of protection do not only end with the indigenous people, but rather extend even to the non-indigenous people, that is, to ensure fair use of TK since it has much to offer to the modern society.

Many areas of Traditional Knowledge have potentially lucrative applications and on this basis TK should be protected due to the following reasons:

2.6.1 Equity

The main reason for protecting TK would be to obtain recognition and some compensation for the commercial use of the knowledge outside the community or society which generated it (Correa, 2002). This can be achieved either by excluding unauthorized use by third parties, or by ensuring a right to remuneration (or benefit sharing) for such use. It can also be understood by allowing traditional people to access an IPR system that other peoples can access to gain reward for their own knowledge/innovations, so that they have the capacity to be rewarded through licensing or undertaking commercialisation themselves (Wekundah, 2012). This, therefore, is a common implicitly assumed rationale for expanding IPRs to cover traditional knowledge.

2.6.2 Conservation of biodiversity

Local communities and traditional people's knowledge and practices demonstrate their cultures. Its protection thus entails preserving the link between the people and nature. As a result, protection of TK can help conserve the environment and promote sustainable use of biodiversity (Wekundah, 2012).

2.6.3 Preservation of traditional practices

The preservation of traditional practices helps to preserve the self identification of people and can also ensure a continuous existence of indigenous and traditional people as well as their cultures. Preservation may require actions such as avoiding uses that may erode the TK, addressing problems that negatively affect the life or culture of the communities that hold it, and documenting the relevant knowledge (Correa, 2002).

2.6.4 Prevention of misappropriation

There is an increasing number of claims relating to the unauthorized appropriation of TK-based products, processes and biological resources by Western companies. Thus there is a great need to prevent TK from bio-piracy and misappropriation.

2.6.5 Promoting development

Traditional Knowledge has a great potential to contribute to the economic development, particularly one that would benefit local communities. This means that if TK holders are compensated for their knowledge, they would open up and release their knowledge to the advantage of the society and the world at large. Wekundah (2012) noted that they could also be encouraged to conserve their TK and ensure future use and access.

2.7 Bio-piracy and Misappropriation of TK

The Convention on Biological Diversity (CBD) signed in 1992 as an international instrument that recognizes the rights of indigenous communities under Article 8(j) and it also paves way for establishing access and benefit-sharing (ABS) regimes was according to Srinivas (2012) a compromise between developed and developing nations as it was perceived that the developing nations are rich in terms of genetic resources to which the developed ones needed access. Consequently indigenous groups expressed an uproar, protesting about the appropriation and unauthorized commodification of the knowledge they have held for generations (Milius, 2009).

Misappropriation is the intentional, illegal use of a property or funds of another person for one's own use or other unauthorized purpose, resulting in loss or harm to the property owner. Misappropriation of genetic or biological resources can also be referred to as bio-piracy. There are a number of recorded cases of TK bio-piracy, especially those occurring on the African soil:

- Industrial enzymes from microbes stolen from Lake Ruiru in Kenya, used for fading jeans and is worth US$600 million per year.
- The devils claw plant stolen from Namibia which is used as an analgesic and anti-inflammatory, and is worth US$ 2 million annually.
- *Prunus Africana* was imported from Kenya, Ethiopia and Cameroon by Germany in 1994 and it was worth US$150.
- Hoodia plant stolen from the San tribe of South Africa by a British Company, and is worth about US$ 20 million.

There are several other cases within the target countries but they are yet to be studied, for instance, that of Amarula in Swaziland. The above cases signal the economic value of TK and hence the need to find protection and promotion measures for TK, which will in turn put an end to this issue of illegal bioprospecting.

2.8 Background on Intellectual property right Systems

Intellectual property rights (IPR) consist of special kinds of property rights. They basically award an individual a limited right of exclusivity as a reward (and thus an incentive) for his or her contribution to society through innovation and creativity, and as an incentive for the open distribution of information. However, IPRs are distinctive in that they create property rights over an intangible resource, consisting of certain types of information created by human beings and also in that they are limited in important ways. Exemplifying that, most of them are limited in terms of duration, for instance patents typically expire after twenty years (UNEP/CBD/COP/3/22).

Basic categories of IPR found in many systems include patents, plant breeders' rights (PBRs), trade secrets, copyrights, industrial designs, and trademarks. The most relevant IPR categories for the purposes of this research are patents, although PBRs, trademarks, geographic indications and trade secrets also have some relevance.

Patents provide the inventor of a useful technology such as a mechanical or chemical product or process with the exclusive right to reproduce or use the patented invention for a limited period, typically twenty years from the date the patent application is filed, in exchange of full disclosure of the invention (TRIPS Agreement: Articles 27, 29(1) and 33). There are some exceptions to exclusive rights conferred by a patent, provided that they do not unreasonably conflict with a normal exploitation of the patent and unreasonably prejudice the legitimate interests of the owner, for instance research

provision that allows use of the patent for certain experimental purposes (TRIPS Agreement: Article 30 and WIPO 1990:4).

Plant breeders' rights are a system of patent-like rights specifically designed to provide breeders with the exclusive right to sell commercially a new variety that is novel, uniform and distinctive. Like patents PBRs also provide for certain exceptions to exclusive rights: the farmer's privilege, and the research exemption or breeders' privilege. The farmer's privilege gives the farmer a right to keep a part of the crop grown from PBR-protected seed and use it as seed for the next crop, while the breeder's privilege authorises others to use a protected variety freely in research on or the development of new varieties. A trade secret consists of information that is commercially valuable and whose holder makes reasonable efforts to keep it secret. Trade secrets have no the duration, as long as the requirements are met.

According to the WIPO IP Handbook (2004: 68) a trademark gives a producer the exclusive right to use a distinctive, recognisable, reliable mark or name to distinguish its products from those of its competitors. Similarly, marks of geographic origin allow producers to identify their products as coming from a specific region that is identified with quality and authenticity. Systems of geographic indications are used in a number of countries to regulate labeling of products historically associated with certain regions (UNEP/CBD/COP/3/23).

The principal underlying rationale for IPR systems is that they serve an important function by creating incentives for investment in the development of innovations. IPRs are limited in scope because of the recognised need to balance the scope of such rights of exclusivity with the principle of free exchange and use of information in order to achieve a mix of social goals. These goals include, *inter alia*, encouraging robust innovation; freedom of communication on social, cultural, scientific and political matters; equitable distribution of economic benefits; and strengthening technological infrastructure and the capacity for technological research and development. This balance according to UNEP/CBD/COP/3/22 can be struck in a number of ways, like the fact that IPR systems allow for the protection of technological and artistic innovation, but not of scientific knowledge about natural phenomena and also through the duration of protection, thus after a certain time, the invention would fall into public domain.

2.9 IPRs and the CBD

According to Article 1 of the CBD, the objectives of the Convention are: the conservation of biological diversity; the sustainable use of its components; and the fair and equitable sharing of the benefits arising out of the use of genetic resources. The sharing of the benefits arising out of the use of GRs include the appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies. The reference to rights can be understood to include IPR, thus, technology

transfer is highlighted as a method for achieving one of the Convention's three principal objectives, and IPR are identified as a significant aspect of technology transfer.

The emphasis of Article 8(j) on knowledge and innovations makes it potentially relevant to IPR. It requires each Parties respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices. Indeed, much discussion among the Parties has concerned the relationship between IPR and the knowledge and innovations of local and indigenous communities within the terms of Article 8(j).

Many developing countries argued that using the existing IPR systems hampers the transfer of technology to the developing world, and unfairly disregards the contributions of indigenous and local communities to new technologies and research and development, whereas some developed countries argued that strong universal protection of IPR would stimulate technology transfer and investment in research and development in developing countries, indirectly increasing the incentives to conserve biological diversity (UNEP/CBD/COP/3/23, 1996). Although the use of IPRs brings differences between developing and developed countries, Article 16(5) of the Convention states that

Parties generally must cooperate to ensure that IPRs promote and do not run counter to the Convention's objectives, which means that the Parties have a general obligation to begin with a process of consultation.

2.10 Current IP Regimes and Limitations

Intellectual property laws play a notable role in driving technological innovation and industrial change. The protection of TK through the existing IP systems prevents unwanted use by others. It can also be seen as a tool for promoting the conservation of biological diversity, sustainable use of its components, and for ensuring that benefits arising from the utilization of genetic resources are shared in a fair and equitable manner among the relevant stakeholders. However, the fact that the progressive appropriation of TK through IPRs also has an impact on the ownership of TK should not be overlooked (Andanda, 2012). Thus a meaningful protection of TK as pointed out by Munzer and Raustila (2009) requires a major deviation from the established legal as well as philosophical doctrine.

The existing framework of intellectual property laws that can help in the protection of TK that are recognized internationally are those identified by TRIPS governed by the World Trade Organization (WTO), and they are: Patents, copyrights, trademarks, geographical indications and industrial designs. The criteria laid down for inventions under all these IPRs render them inadequate for TK protection.

The first major challenge of protecting TK under the existing IP system is the underlying problem in so far as the IP needs of TK holders are shaped by their contact with the formal IP system on the one hand and the informal IP regimes that prevail in their societies and communities on the other, which is termed cross-cultural challenge (WIPO, 2001). One notable feature of the societal structures that govern TK in a manner that creates incompatibility with the formal IP system highlighted by Dutfield (2006) is the collective ownership, which is complex in that ownership is often subject to customary law and practice based on the collective consent of the community.

The second challenge is that the IP system is based on document-intensive, codified and governmentally administered structures and procedures (WIPO/GRTKF/IC/1/3). This attribute of IP system makes it inaccessible to TK holders who may find the requisite formalities difficult to comply with and the costs may be equally prohibitive. This suggests that TK be documented and IP offices be granted access to the database so that the information can be used for defending the rights of TK holders against inappropriate use by third parties (Andanda, 2012).

Another notable limitation of IPRs in the protection of TK is the requirement by TRIPS Agreement (1994) which requires Member States to provide patent protection for "any inventions, whether products or processes, in all fields of technology, provided that they are new, involve an inventive step and are capable of industrial application. TK does not pass the test for the three requirements because the knowledge under

TK is not new, has no inventive step and the restriction of ownership within families or communities does not make TK commercially viable. Also IPRs requires full disclosure of the invention, yet under TK the families or communities in possession of it take pride in keeping it secret (Ragavan, 2001).

2.11 Human rights approach to TK protection

The United Nations Universal Declaration on Human Rights (UDHR) adopted on December 10, 1948, provided a common standard which recognises the inherent dignity, equality and fundamental rights of all people in all nations. Even though it does not expressly refers to IP, its Article 27(2) states that everyone has the right to the protection of the moral and material interests resulting from any scientific, literally or artistic production of which he is the author. The interest of authors is complemented by Article 17(1) which states that everyone has the right to own property alone as well as in association with others, and Article 17(2) which states that no one should be arbitrary deprived of his property. These provisions advocates for the protection of the creators of information and those that ensure the use and diffusion of information.

Intellectual property has been recognised in the International Covenant on Economic, Social and Cultural Rights (ICESCR) and also contextualised in diverse policy areas such as trade, health, culture and heritage environment, food security, scientific and technological progress. Article 1 of the ICESCR states that all peoples have the right of

self determination, that is, they have the right to determine their political status and freely pursue their economic, social and cultural development. There are two key issues that need to be considered; Non-discrimination and protection of traditional knowledge and folklore.

2.11.1 Non-discrimination

Discrimination is defined by the International Convention on the Elimination of all Forms of Racial Discrimination as any distinction, exclusion, restriction or preference base on, inter alia national or ethnic origin in the application of human rights and fundamental freedoms including cultural rights. International human rights instruments in fact complement intellectual property law; for an instance, Article 15 (Paragraph 1(c) of the ICESCR stipulates that everyone has the right to benefit from the protection of moral and material interests resulting from his works.

States Parties to the covenant not only have an obligation to respect this right, they are also to respect the freedom indispensable for scientific research and creative activity and to recognize the benefits to be derived from the encouragement and development of international contacts and cooperation in the scientific and cultural fields (paragraphs 3 and 4 of Article 15, respectively). This, therefore, means that there should be no discrimination; TK/TCEs should also be protected just like

other IP works. The complementarity of intellectual property rights and international human rights in relation to non-discrimination is provided for by the principle of national treatment.

2.11.2 Protection of TK/TCEs

The ILO Convention (169) provided an important legal standard for indigenous rights. It however, did not make any provisions conferring special protection on indigenous intellectual property rights. These rights have been addressed in the United Nations Convention on Biological Diversity (CBD), addresses the rights of indigenous and local communities. Article 8(j) stipulates that each contracting party shall:

> as far as possible and as appropriate respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices.

The Draft Declaration on the Rights of Indigenous Peoples (DRIP) (2008) provides that, Indigenous peoples are entitled to the recognition of the full ownership, control and protection of their cultural and intellectual property. Moreover, according to the draft they have the right to special measures to control, develop

and protect their sciences, technologies and cultural manifestations, including human and other genetic resources, seeds, medicines, knowledge of the properties of fauna and flora, oral traditions, literatures, designs and visual and performing arts.

2.12 Swakopmund Protocol on TK/TCEs

On the region, the African Regional Intellectual Property organization (ARIPO) was established in 1976 with the purpose of pooling of resources together for promotion, development and harmonization of IP laws and policies. ARIPO was mandated by AU Heads of States to come up with a framework for the protection of traditional knowledge, folklore and genetic resources. ARIPO came up with the Swakopmund Protocol in August 2010, which was signed by nine ARIPO member states. The Protocol is underpinned by the principle that the knowledge, technologies, biological resources and cultural heritage of traditional and local communities are the result of tested practices of past generations (Swakopmund Protocol, 2010).

These resources are held in trust by today's custodians for future generations. It affirms the principle that traditional or local communities are the custodians of their TK, its associated GRs and TCEs, and empowers them to exercise rights over their knowledge and resources. The Protocol recognizes the need to respect, recognize and protect Africa’s abundant multi-ethnic character, as well as its rich cultural heritage and TK. It

further articulates and amplifies the shared position of African countries relating to collective or community rights and the sharing of benefits accruing from the commercial exploitation of their biological resources, TK and TCEs.

This regional legal framework is designed to accommodate the characteristically holistic world view of African TK holders, and to provide legal certainty in the exercise and management of their irrefutable rights. As such, it empowers them to use their knowledge for socio-cultural development. It also makes provision for the registration of multicultural and trans-boundary TK and TCEs to resolve uncertainties relating to ownership of this knowledge which may be held by more than one community within the same or neighboring countries (Swakopmund Protocol, 2010). The Protocol has already been ratified by five ARIPO member states, and awaits just one to come to force.

2.13 Efforts geared towards protecting TK

Currently there are two broad approaches towards the protection of TK which are under consideration, and they are: exploring further avenues with the formal IP system and developing a separate *sui generis* system for the protection of TK. Both approaches are being explored because TK holders do not find the existing formal IP system suitable for protecting and preserving TK.

2.13.1 *Sui generis* system of protection

Protection of IPR is considered to be a reward to creators for their creativity. Therefore, from the same perspective, it is significant to consider traditional creations that are part of community assets but are not actually protected or protectable under the existing IP system (Kongolo, 2008). During the discussions at the IGC, it has been recognised that the existing IP regime is inadequate for protecting the holistic character of TK (WIPO/GRTKF/IC/3/8).

Kongolo (2008) noted that it is not fair to deny protection to traditional creations, known as TK, merely because most of them do not meet the criteria of protection as provided for under the current IP system, instead it is appropriate to consider the unique features of TK and set up a protection mechanism different from the existing one which could protect and safeguard the rights of traditional communities.

The IGC came up with a draft of the *sui generis* legal instrument (WIPO/GRTKF/IC/21/4) and the instrument does not contain any legally binding rules that member states are obliged to follow and as such the reach of these articles depends on the establishment of *sui generis* protection system at the national level. These factors taken together indicate that there is an urgent need for a legally binding international instrument in view of the fact that non-binding

instruments, such as the UN Declaration on Rights of Indigenous Peoples is too weak to provide adequate protection of TK (Andanda, 2012).

A striking concern on the international *sui generis*, however, is that it may end up hindering access to affordable knowledge goods even for indigenous and local communities, especially if the system is not flexible enough to accommodate the local needs of individual countries.

2.13.2 Improving on the current IP system

The current IP system does protect TK even though the protection is limited. An alternative would be to improve on it and explore other avenues still within it. Specific means within the current IP system that are currently being used to protect TK are the creation of databases and registries, including disclosure of origin and prior informed consent requirement in the patent applications, joint inventorship and introduction to petty patents (Twarog, 2004). These means have been proposed by the IGC and they are equally identified in the current literature as possible ways of accommodating the needs of TK holders.

2.14 Status of TK/TCEs in Swaziland

Currently Swaziland does not have any laws governing the protection of TK and TCEs. Herbal medicines however can be safeguarded by environmental management laws

under Swaziland Environmental Authority. The Authority looks at the fair use of genetic resources with respect to conserving nature. There is no instrument at all that can protect EoF or TCEs since the country uses an old Copyright Act which does not provide for that, as seen in other countries.

2.15 Conclusion

This chapter reviewed some literature relevant to the importance of traditional knowledge, in Swaziland, in the region and also throughout the world. It looked at definition of TK from different literature. It further looked at the custodians of TK, characteristics of TK. The study also looked at defining traditional cultural expressions (TCEs) or expressions of folklore (EoF). Literature of preservation, protection and promotion of TK in pioneers in the field like India were also reviewed.

The chapter further looked at the rationale for TK protection through reviewing relevant literature, and also looked at regional and international debates pertaining to the subject of TK protection. It also reviewed internationally recognised treaties in relation to TK, like the TRIPS Agreement. Also some international treaties on human rights were reviewed to find their take on the issue of TK protection.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the approach, methods and techniques that were used to collect the data for this study. In the course, the chapter describes the population and the sample, including the criterion used to select the sample. The chapter also describes the procedure used in designing the instrument and collecting the data, and provides an explanation of the statistical procedures used to analyze the data. Issues of ethical considerations, validity and reliability are also discussed in detail.

3.2 Research Approach and Design

This study used mixed-method approach (Triangulation), which involves using a method which appears best suited to a specific research question instead of getting caught up in philosophical debates about which is the best approach. According to Dures *et al.* (2010), mixed methods designs have been viewed as a useful alternative to either utterly quantitative (numbers as data) or qualitative (text and pictures as data) approaches. This means such an approach will combine both quantitative and qualitative data collection techniques and analysis procedures. Saunders *et. al.* (2009) cited by Mkansi and

Acheampong (2012) recorded that this method provides a wealth of data that researchers discover using the resultant findings that they had not anticipated.

Qualitative elements of a research on one hand often ask questions like “what” and “how” in order to explore, gain insights and understand underlying issues, while quantitative elements on the other hand ask questions like “how many” and “how strong” in order to measure, predict and correlate. Mixed methods approach offers an upper hand, in that it aims at identifying, looking at relationships and examining links between the phenomena under investigation (Dures *et al.* 2010). It is therefore, for many researchers, conceptualized as a powerful third paradigm choice that often will provide the most informative, complete, balanced, and useful research results (Burke Johnson, Onwuegbuzie, & Turner, 2007).

3.3 Study Population

The definition of population for the purposes of this research is used in the narrower sense not to refer to the ordinary definition but to apply to the total group of subjects that meet a designated set of criteria. There is a difference between a target population and an accessible population. Target population includes all the cases about which the researcher would like to make generalizations, while accessible population comprises all the cases that conform to the designated criteria and are accessible to the researcher as a pool of subjects for a study.

The target population in this study comprised all the members of staff in the Swaziland Intellectual Property Office, Lawmakers and Policy makers, community leaders, traditional knowledge (TK) holders and researchers. Subjects in all the above mentioned groups except TK-holders are accessible. In as far as TK-holders are concerned, some are not registered in the country because they are not its citizens among other reasons. The accessible population involved only those TK-holders who are registered in their constituencies, and hence in the government registry, whose names and contact numbers are known to the researcher.

3.4 Sampling

A sample is a scientifically drawn group that actually possesses the same characteristics as the population if it is drawn randomly. Sampling is therefore the process of selecting a portion of the population to represent the entire population in the study (Landreneau and Creek 2008). In qualitative research individuals are selected to participate in the research based on their first-hand experience of the phenomenon of interest, while quantitative research requires individuals to be selected randomly. In this study the researcher tried by all means possible to use random sampling. In cases where the population was too small, the researcher used convenient sampling.

Swaziland is made up of four (4) administrative regions, and fifty five (55) Tinkhundla centres (Laws and Policy makers). Sampling was done as per the schematic

representation shown in Figure 3. The sampling of TK-holders and Law and policy makers was done through employing the random sampling technique—whereby a simple random sample was selected from each group. Four (4) communities were randomly selected from each administrative region. One leader from each selected community was selected, and four (4) TK-holders were randomly selected from each community. Finally five (5) Law and Policy makers were randomly selected from each region. This gave about twenty five (25) subjects from each region, hence, one hundred (100) subjects from the whole country.

Moreover the researcher used non-probability sampling (Convenient sampling and Purposive Sampling) for both the IP office personnel and the researchers respectively, since the population was small for these two groups. In Purposive Sampling, the researcher handpicks cases to be included in the sample on the basis of their judgment of their typicality. Convenience sampling is a non-probability sampling technique where subjects are selected because of their convenient accessibility and proximity to the researcher.

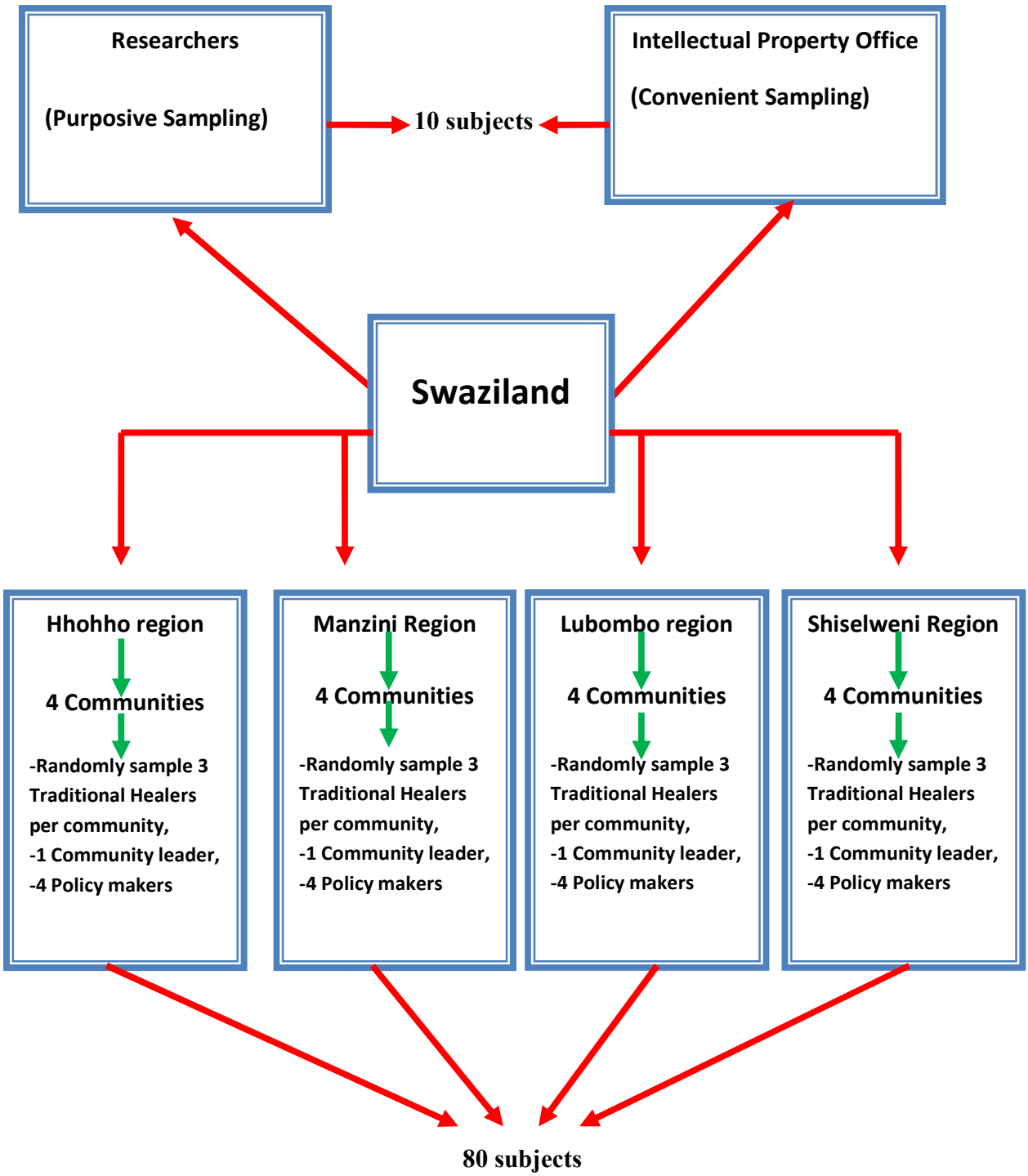


Figure 3: Schematic presentation of sampling

3.5 Data Collection Instruments

The various methods of data gathering involve the use of appropriate recording forms. They are referred to as tools or instruments of data collection, and they consist of observation schedule or interview guide, interview schedule, questionnaire, rating scale, check list, among many. In this study the researcher used two of the data collection instruments: Interviews (semi-structured interview) and Questionnaire.

3.5.1 Interview

An interview may be defined as a two way systematic conversation between an investigator and an informant, initiated for obtaining information relevant to a specific study. It is a research instrument that is used in gathering in-depth information when the subject matter is potentially sensitive and when the issues under investigation would benefit from clarification of issues that are raised (Harris and Brown, 2010). Semi-structured interviews were employed in this study, and were used at an exploratory stage, in order to get a feel for the key issues before using a questionnaire to collect descriptive or explanatory data.

Berry (1999) asserts that a guide can be focused on a given set of predetermined questions that are covered in turn. The researcher used semi-structured interviews, which served as a useful tool in guiding the discussion and keeping each participant

focused on the topic. The order in which the topics were arranged gave the interview a smooth flow, and allowed the interviewees to express additional ideas about recommendation for a system that will ensure protection, preservation and also promotion of TK in the country.

The justification for that is that it has a distinct advantage of enabling the researcher to establish rapport with potential participants and therefore gain their cooperation. The interviews yield high response rates in survey research. They also allow the researcher to clarify ambiguous answers and when appropriate, seek follow-up information. They also have an advantage of allowing the interviewer or interviewee to diverge in order to pursue an idea or response in more details.

3.5.2 Questionnaire

A questionnaire was chosen as the main data collection instrument in this study. A questionnaire is a printed self-report form designed to elicit information that can be obtained through the written responses of the subjects. The information obtained through a questionnaire is similar to that obtained by an interview, but the questions tend to have less depth (Kendall, 2008 cited by Harris and Brown, 2010).

The questionnaires consisted mostly of closed-ended questions and a few open-ended questions, since these provide more diverse details. In the open-ended questions, the subjects were required to respond in writing, whereas closed-ended questions had options which the subjects chose from which were predetermined by the researcher (Johnson and Christensen, 2008). Open-ended questions were included because they allow subjects to respond to questions in their own words and provide more details. Closed-ended questions were included because they are easier to administer and to analyse. They are also more efficient in the sense that a respondent is able to complete more closed-ended items than open-ended items in a given period of time.

Questionnaires were chosen to be the major collection instrument because of the following reasons:

-They ensured a high response rate as they were distributed to respondents to complete and were collected personally by the researcher.

-They offered the possibility of anonymity because subjects' names were not required on the completed questionnaires, therefore suitable for sensitive issues.

-There was less opportunity for bias as they were presented in a consistent manner.

-Most of the items in the questionnaires were closed, which made it easier for all respondents to attempt and to compare the responses to each item.

However, questionnaires have some weaknesses apart from the above listed advantages, for instance the question of validity and accuracy of the answers provided by respondents. Another drawback is that the subjects might not reflect their true opinions but might answer what they think would please the researcher, thus giving inaccurate responses and also valuable information may be lost as answers are usually brief.

3.5.3 Data Collection Procedure

The questionnaires were personally distributed by the researcher to respondents. Questionnaires were also sent via emails or by fax to the subjects who work in the IP office and also to those who are researchers to complete at their convenient time. The researcher completed two questionnaires: one in English and the other one in SiSwati to enable those who could not clearly understand English to complete them in SiSwati. Some of the TK-holders and community leaders could not read or write either English or SiSwati, so the researcher read and wrote their answers for them. The data was collected over a period of one month, which was not enough as some respondents were very busy or out of the country for all that period.

3.6 Research ethical consideration

Conducting a research does not only require expertise and diligence, but also honesty and integrity. This is done to recognise and protect the rights of human subjects. To render the study ethical, the rights to self-determination, anonymity, confidentiality and informed consent were observed. Written permission to conduct the research study was obtained from relevant authorities of Africa University.

Anonymity and confidentiality were maintained throughout the study, as subjects were requested not to put their names in the questionnaires and they were given assurance that the answers would not be able to link their responses to them at any stage of data collection and analysis, thereby ensuring anonymity. Johnson *et al.* (2007) defines anonymity as when subjects cannot be linked, even by the researcher, with his or her individual responses. The promise of confidentiality meant that the information provided by the subjects will not be publicly reported in a way which identifies them.

The researcher followed informed-consent rules, that is, participants were given all of the information about the study that might reasonably influence their willingness to participate in a form that they can understand and comprehend. Johnson *et al.* (2007) defines informed consent as the prospective subject's agreement to participate voluntarily in a study, which is reached after assimilation of essential information about the study. The ethical principle of self-determination was also maintained in the study.

Subjects were treated as autonomous agents by informing them about the study and their rights to decline to participate and to withdraw from the study once it has started, as well as the anticipated consequences of doing so.

The researcher also tried by all means possible to practise scientific honesty even though he conducted the research study away from the supervisor, which is regarded as a vital ethical responsibility when conducting research. Dishonest conducts were distanced from the researcher, and they include, *inter alia,* manipulation of design and methods, and retention or manipulation of data. The researcher tried to avoid any form of dishonesty by truthfully recording the answers of those subjects who could not read or write.

3.7 Data Analysis

Data analysis may be viewed as a process which entails an effort to formally identify themes and to construct hypotheses or ideas as they are suggested by data and an attempt to demonstrate support for those themes and hypotheses. It is a continuous process, which starts by selecting, simplifying and transforming the data as it appear in the original document (collection tools), followed by data display and finally conclusion drawing.

The data analysis consisted of examining both data collection instruments (semi-structured interview and questionnaire) for correctness, completeness, coding. The analysis of quantitative data (closed-ended questions), employed a computer programme called Statistical Package for Social Sciences (SPSS). Data was analysed by using descriptive statistics. Frequency tables were drawn and from these the data was presented in pie diagrams and bar graphs.

Qualitative data (open-ended questions) on the other hand were analysed through quantitative content analysis by the researcher with the aim of quantifying emerging characteristics and concepts. Concept analysis is the process of analysing verbal or written communications in a systematic way to measure variables quantitatively. Also analysis of the open-ended questions involved its organization by searching for patterns and congruence with the ultimate aim of explaining the relationship between variables, which was done after establishing a set of analytical categories.

In order for the researcher to exclude all preconceptions of the phenomenon of TK protection, preservation and promotion and harnessing for development obtained from the review of literature and lectures, it was necessary to use bracketing before the analysis of the data. Bracketing is the process of identifying and setting aside any preconceived beliefs and opinions one might have about the phenomenon under investigation. It was very important for the researcher to put aside all the preconceived information to avoid bias during the analysis of the obtained data.

3.8 Reliability and Validity

The researcher was throughout the study trying all means to ensure that reliability and validity was maintained. Reliability refers to the degree of consistency with which an instrument measures the attribute it is designed to measure. Reliability can also be ensured by minimising sources of measurement error like data collector bias. In this study data collector bias was minimised by ensuring that the researcher was the only one to administer the questionnaires, and standardizing conditions such as exhibiting similar personal attributes to all respondents, such as friendliness and support. The physical and psychological environment where data was collected was made comfortable by ensuring privacy, confidentiality and general physical comfort.

The validity of an instrument is the degree to which an instrument measures what it is intended to measure. The definition of validity has two parts, namely; whether the instrument actually measures the concept in question and whether the concept is measured accurately. Content validity refers to the extent to which an instrument represents the factors under study. To achieve content validity, questionnaires included a variety of questions that are rephrased to test a question asked in another page within the questionnaire, known as *Split-Half* technique.

3.9 Research limitations

Major limitations encountered by the researcher while collecting data, were that some of the respondents, especially the traditional healers, though wanted to acquire IP rights, wanted financial favours from the researcher prior to giving out information. They believed that the researcher had a budget from his funders to pay out money for conducting the research. Even though they ended up participating in the study, they, at times, reluctantly responded to questions.

Another drawback was that the responsible persons in some communities would shift the responsibility of responding to the questionnaire to their junior personnel, especially community Chiefs would direct the researcher to community headmen (*Indvuna*) or even to a lower ranked person called Chief's runner.

3.10 Conclusion

This chapter described in detail the approaches, methods or strategies the research used to collect data. The various concepts to ensure bias-free results the researcher employed have also been described. The following chapter makes use of the data collected using these instruments to analyse and interpret the data, attaching meanings to the data collected.

CHAPTER 4

DATA PRESENTATION, DISCUSSION AND INTERPRETATION

4.1 Introduction

This Chapter presents the data collected during the field work. The data is analyzed both qualitatively and quantitatively, and discussions and interpretation of the research findings follow. The qualitative analysis principally deals with traditional knowledge protection, preservation and promotion mechanisms currently present in the country. The analysis involves the organization of the collected data by searching for patterns and congruence with the ultimate aim of explaining the relationship between variables, and this will be done after establishing a set of analytical categories.

4.2 Policy and Legislation status in Swaziland

4.2.1 TK, TCEs and EoF

Traditional knowledge systems are a valuable resource in Swaziland and efforts to secure their preservation, protection and promotion are expected to be actively supported by the Swazi government. However reality on the ground seems otherwise. Traditional knowledge of herbal medicines has the potential to translate

into sound commercial benefits by providing leads for the development of useful products and processes in the pharmaceutical industry (WTO, 2006).

According to ARIPO (2012) there is resurgence of interest in traditional knowledge and associated genetic resources stimulated by the importance of traditional knowledge as a lead in advancing the frontiers of science and technology. This is a positive development indeed, but one that comes with a lot of responsibilities for developing countries' governments. Such developments mean there is a lot of TK misappropriation and bio-piracy. Other fellow African countries are busy drafting policies and looking at measures to protect and preserve their heritage.

At the present moment there is nothing noticeable happening in Swaziland towards the protection of TK. Swaziland is very rich in TK, TCEs/EoF, but presently there the country does not have any policy on traditional knowledge systems and TCEs. Swaziland does participate in all the regional or international platforms where TK/TCEs protection is discussed. For instance, the country participated from the beginning until the conclusion of the ARIPO Swakopmund Protocol for the protection of traditional knowledge, folklore and genetic resources. Swaziland to date has not signed or acceded to the Protocol or translated its provisions into a policy.

Traditional knowledge is widely utilised in the health care sector, but even there the country does not have any policy related to TMs, much as the World Health Organization helped developing countries by drawing up a strategy in 2005 for them to use as a model for developing theirs. Traditional healing in the country was found to be still suffering from the pre-colonial suppression Acts. In Swaziland the colonizers outlawed the practice of traditional healers by the Act of 1905, which to date has not been reviewed.

The Act of 1905 was the one which forced traditional healers to work secretly because they were afraid of being penalized for witchcraft practices. The King then made a declaration, which is known as the King's Declaration of 1954 which allowed traditional healers to register and pay tax in order to practice in the country. The Declaration further stipulate allowed fees to be charged by traditional healers on their clients. There is a need again to review the provisions of this Declaration because the fees stipulated therein are very low to be used at the present time. Presently traditional healers are not even registering and they do not pay the tax, as per the requirement by the Declaration. This means there are no control measures put in place to monitor if healers do follow the Declaration.

To pour fuel on the flame, Swaziland does not have a Council of traditional healers, even though there are so many healers practising in the country. This means that there is no body to regulate and monitor traditional healing or even to regulate and

monitor the healers' work ethics. Citizens are therefore in danger as anyone can decide at anytime to start the practice of healing using TK whether he or she has enough knowledge or not. Such lack of direction makes traditional healing lose value, and in turn force people to look down upon it. The only structures in existence are the traditional healers associations, which are also not much effective.

However, strides have been made in recognizing traditional knowledge systems by the establishment of the Swaziland Institute for Research in Traditional Medicine, Medicinal and Indigenous Food Plants (SIRMIP) which is a research institute mandated to conduct research in traditional medicinal plants and indigenous food. The Institute has since then been working in collaboration with people who are holders of the traditional knowledge systems apart from scientists and customers involved in developing this area. At that moment SIRMIP was collaborating with TK stakeholders towards developing a policy for TMs, and also working on IPRs issues.

4.2.2 Genetic resources

Swaziland is a signatory of the Convention on Biological Diversity which it ratified on February 7, 1995. Despite this, the country has not yet come up with a comprehensive biological diversity regulation instrument. The Swaziland Environment Authority (SEA) was mandated to regulate all environment-related issues in the Kingdom by the Swaziland Environment Authority Act 1992. The

Authority made all efforts to domesticate the provisions of the CBD, and eventually came up with a bill, the Swaziland Biodiversity Management Bill 2008, which later on was opposed by some stakeholders, resulting in it not being assented into an Act. When the Bill was constructed, it did not cover issues of access and benefit sharing (ABS).

However, there are some existing Acts which do cover biological diversity in Swaziland, like the Flora Protection Act 2001 and the Game Act 1993 in the custodian of the Forest Department. Unfortunately, these Acts in as much as they can play a role in the preservation of biodiversity, they do not cover the sensitive issues of ABS. Traditional Knowledge holders distance themselves from such Acts as they feel they are part and parcel of Acts such as the Witchcraft Act, 1905, that are there to stop them from practising their TK practices. This is because such Acts ban TK holders from harvesting and using some flora or fauna necessary for the practice. Another major drawback of these Acts is that they do not provide for punishment of offenders.

Swaziland has not yet ratified to the CBD's Nagoya Protocol on ABS. However an effort to domesticate the protocol was done and a Bill was produced, the Access and Benefit Sharing Bill of 2007. Again the Bill was opposed by some stakeholders who were complaining that there was no proper consultation and awareness building campaigns during its development. Currently SEA is on a mission to educate and

make some awareness campaigns on ABS so as to launch the process of redeveloping the ABS Bill.

4.3 Empirical research findings

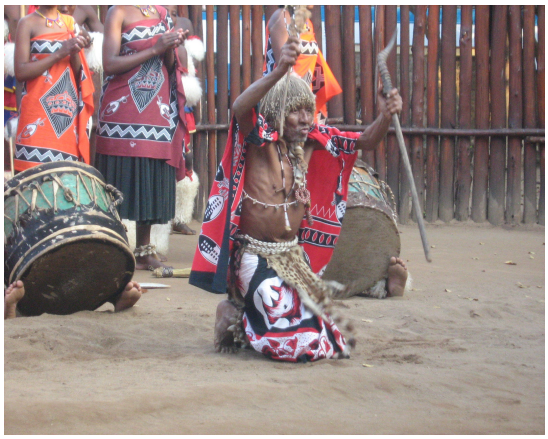
4.3.1 Characteristics of respondents

On the empirical data, the research population was 92 respondents. Out of the 92 respondents, 48 are traditional knowledge holders (i.e. traditional healers, herbalists, and those who do traditional music and dances as well as traditional fine art), 16 law and policy makers (Members of parliament), 16 community leaders (Chiefs or Indvuna) and the last 12 composed of scientists and IP office personnel. Almost all the respondents were able to define traditional knowledge (TK).

4.3.2 Types of TK found in Swaziland

There are a lot of misconceptions when it comes to forms of TK, researchers usually emphasize traditional technical knowledge of the environment or the medicinal TK, however the study found that TK goes beyond this narrow interpretation. It can be considered to be cultural knowledge in its broadest sense, including all of the social, political, economic and spiritual aspects of a local way of life. This study found the following forms of TK existing in Swaziland (some are shown in Figure 4):

- Traditional healing or Traditional Medicinal Knowledge (TMK)—it is associated with empirical knowledge about flora, fauna and inanimate resources and their practical uses in the medicinal context. This knowledge according to the TK-holders (Traditional healer or *Sangomas*) is often embedded in a cosmology, and the knowledge in those cosmologies is inextricably bound to ancestors, and ancestral lands. Traditional Medicinal Knowledge is greatly supported by the rich flora diversity found in the country.
- Traditional agricultural practices (farming skills, traditional crops and cereals varieties), agro-forestry, water management and the gathering of wild food (traditional wild leafy vegetables and wild fruits). Other examples of agricultural practices, techniques or rules were those related to pastoralism.
- Indigenous/Traditional food and methods of preparations.
- Traditional Cultural Expressions [Traditional cultural dances (e.g. *sibhaca*, *indlamu*), traditional music and dramatic plays and also cultural events like *Umhlanga* ceremony (females), *Incwala* (males)].
- Traditional clothing (Skins and Kangas), traditional fine art.
- Traditional technologies and problem solving techniques.



a) A *Sangoma* in spirits (Traditional healing)

b) Traditional dancers dancing for tourists

c) A typical traditional hut

d) Maidens during the umhlanga ceremony

Figure 4: Pictures of some of the existing TK/TCEs in Swaziland

4.3.3 Economic value of TK in Swaziland

It was very important for the study to find the economic importance of TK. Responses obtained from the respondents were summarized and presented in the following points.

- Swaziland is very rich in TMK, supported by the high biological diversity. Respondents agreed that the country would make more money in exporting its TMs if it were to do research on those TMs in order to validate and determine the active compounds, than allowing people to illegally export the raw materials. They added that even at that present moment, a lot of people were illegally harvesting and exporting GR to neighbouring country (South Africa) which then exports to overseas at very high prices. A study done in Eastern Cape—South Africa by Dold and Cocks (2002) revealed that only 166 medicinal plants trade produced about 27 Rand million annually, which shows that while Swaziland is not gaining anything, her neighbours on the other hand are. All the respondents agreed that there is a big potential but not yet discovered by the country. It was also found that if traditional healing was to be practised properly, it would reduce government's costs of providing health care to people, thus positively contributing to the country's national budget. The study also found that a lot of people are employed to sell TMs and in that way it helps in lowering the high unemployment rate in the country.
- Traditional cultural invents (like *Umhlanga* ceremony) tend to produce a lot of money, especially in the tourism industry, as a lot of people from outside

Swaziland like to attend such events. This is supported by the fact that Swazis are so much glued to their cultures, which is no more the case in other countries. Traditional cultural designs like *emahiya* (kanga) are sold locally and outside the country, in that way contributing to the economy of the country.

4.3.4 Holders/custodians of TK in Swaziland

It was so important in the study to find out who are the owners or custodians of TK in Swaziland. Figure 5 shows the results obtained from the respondents.

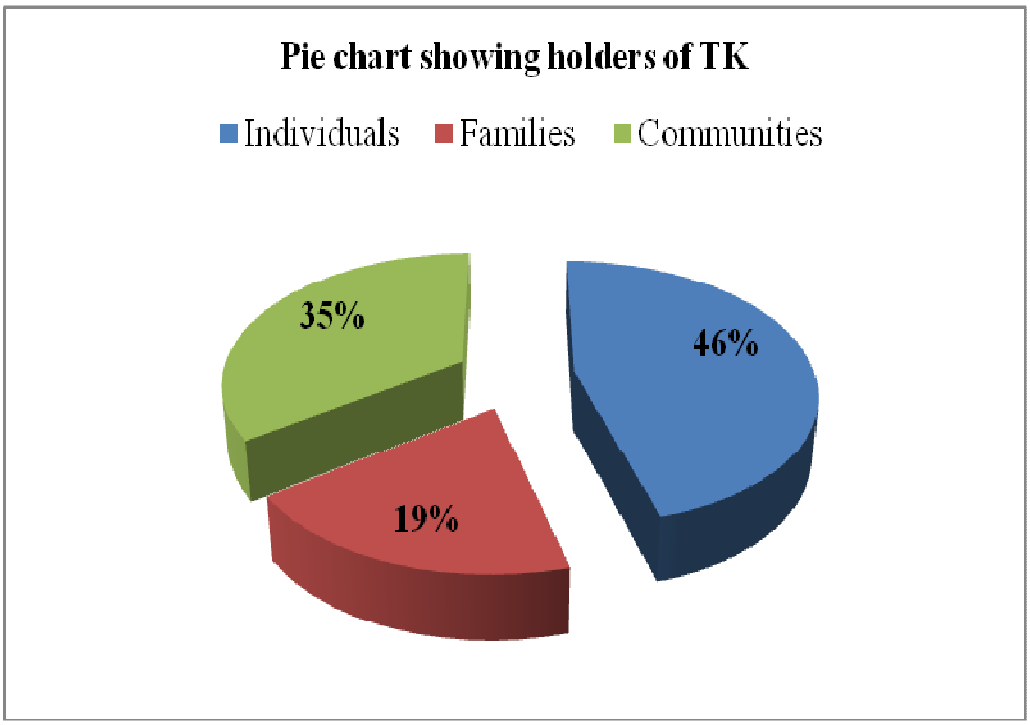


Figure 5: A pie chart showing TK holders or custodians

About half of the respondents (46%) believed that TK is owned by individuals. They said that the knowledge is passed by the great great forefathers to an individual in a family or community, whom they have trust in, so the knowledge would belong to that choosen individual. However, others differed from that theory, and said the knowledge belongs to a family (19%) regardless of who was choosen. The last group believed that the knowledge belongs neither to an individual nor family, but to the community (35%), because that particular individual would not be the only one having that knowledge in the community. They also highlighted the issue of genetic resources accompanying the knowledge, that such resources belong to the community, and so does the knowledge.

4.3.5 Level of use of Traditional Medicines (TM)

Table 4 reveals that about 48.9% of the respondents thought TM was moderately used in the country while only 20.0% thought it was high. The remaining 45% of the respondents thought it low. This finding attests to a significant knowledge and use of the TM among the Swazi population. Also, no individual respondent recorded a zero score in the use of TMs. This implies that the TMs probably offer some positive benefits to users, or it might be because the users are forced by some factors (no money for hospitals and clinics or they are far from them) to rely on TM.

Table 4: Level of traditional medicines utilization

Categories	Frequency	Percent
Zero	0	0
Low	25	27.2
Moderate	40	43.5
High	27	29.3
Total	92	100.0

Table 5 looks at the comparison of TM usage across the 4 administrative regions of the country. The extent of use of TM was expressed by the use of a four-point rating scale with the scoring order of 4, 3, 2 and 1 for Highly used (HU), Moderately used (MU), rarely used (RU) and no more used (NU), respectively. In capturing the utilization of TM, the researcher used a modified method by Islam and Kashem (1999), so that traditional medicine Use Index (TMUI) was calculated as follows:

$$TMUI = (N1\times4) + (N2\times3) + (N3\times2) + (N4\times1)$$

Where

PMUI is as already defined

N_1 = No of respondents selecting highly used

N_2 = No of respondents selecting moderately used

N_3 = No of respondents selecting rarely used

N_4 = No of respondents selecting no more used

Table 5: Comparing the utilization of TM across the regions

Categories	Hhohho region (Frequency)	Manzini region (Frequency)	Lubombo region (Frequency)	Shiselweni region (Frequency)
Zero	0	0	0	0
Low	7	7	4	3
Moderate	8	9	7	6
High	5	4	9	11
Total	20	20	20	20

Hhohho region TMUI = 58 **Manzini region TMUI = 57**

Lubombo region TMUI = 65 **Shiselweni region TMUI = 68**

The calculated TMUI shows that the utilization of TM is lower in Manzini and Hhohho, TMUI = 57 and TMUI = 58, respectively than it is in the Lubombo and Shiselweni regions, TMUI = 65 and TMUI = 68 respectively. The results show a positive

relationship between a region's development and the use of TM. The Hhohho and Manzini regions are by far developed than the other two regions, Lubombo and Shiselweni, hence the higher TMUIs. Hospitals are very few in these two regions and a lot of homesteads are far from them, a situation worsened by the shortage of public transports, which might be the cause of higher TMUI observed.

4.3.6 Traditional healing practices that pose some health concerns to users

Most of the respondents noted that the use of TM would be higher than it was, if it was not for some practices which pose some serious health concerns to users, especially in this time when people are always careful of what drugs are administered to them, even if it is by a trained medical doctor. The concerns listed by the respondents were recorded and summarized as follows:

- TM dosage not standardized properly, as traditional healers usually instruct patients to, for example, take a mouthful dose of drinking medicine or an amount of processed leaves in the healer's palm or other solid state medicines.
- Poor packaging with no proper labels. Some healers package their medicines in an unpleasant format, with no instructions on how to use it. As a result patients end up using them wrongly and put their lives in danger. Also wrongly packaging can lead to medicine reacting with the container and leads to unknown or expected reactions.

- The absence of clinical tests to ascertain the safety and efficacy of some of the drugs or concoctions. Moreover, no research done on the medicine to determine active compounds, concentrations and toxicology levels are not known. For use, one has to trust and rely on what they are told by the healer.
- There is a high emergence of bogus healers since no one is controlling the practice in Swaziland; a situation that is highly risky to users.
- Some medicine administration techniques pose danger to the users, for example, the use of incisions. Traditional healers are not trained properly; some use 1 razor blade for different patients, which can transmit HIV/AIDS.
- Another risky practice mentioned by the respondents was that of hygiene. Some healers work in filthy places and store their medicines uncovered.

The respondents noted that such practices need to be attended to if the country wants to develop its TMK. About 81.5% of the respondents thought that TK was developing at a very low rate, while the remaining 18.5% thought things were normal in as far as TK development was concerned. The above mentioned points were given as causes of the slow development. Other causes of the slow TK development given by the respondents were:

- Lack of traditional council to monitor the practice and also the welfare of users, and also to set standards to be followed by traditional healers, among other things.

- Ineffectiveness of traditional healers associations.
- Lack of collaboration between healers and scientists, and also between the healers themselves. There is therefore a question of how the healers can grow, gain new knowledge or even new technologies of better and safer practice.
- Modernization was also pinpointed as the cause for slow development of TK, as children do not have time to sit down with their parents and learn about their culture and way of living, instead they attend school as early as age 3.

4.3.7 Preservation of TK

Almost all the respondents (87%) felt like Swaziland is gradually losing its TK, however there was a small percentage (13%) who responded otherwise. Those who said the country was gradually losing its TK, were asked to further explain how the knowledge was lost and what strategies would be used by the country as mitigation measures. Their responses are summarized in Table 6.

Table 6: Responses on how TK is lost in Swaziland and possible mitigation strategies

Ways in which TK is lost in Swaziland	Mitigation strategies
Through destruction of the natural environment where indigenous or local communities reside, which in turn	Rights of these communities to their traditional lands must be recognised by the Kingdom. Whenever there is a serious

disturbs and even destroys the indigenous and local communities holding the knowledge.	need to move traditional people, it should be done with respect and after a series of consultation with them.
Rural-urban migration. Most of the local communities rich in TK are situated in rural areas. Owing to poverty and shortage of opportunities and support from government, they tend to migrate to urban areas, and as a result they lose their heritage.	Efforts to strengthen their economic opportunities need to be put in place.
Modernization and civilization. TK is passed from generation to generation orally and through interaction with the environment, but as a result of modernization and civilization, the transfer route is disturbed because children do not have time to sit down and get the knowledge from their elders nor interact with the environment since they attend schools at early stages.	- There is a need to do some promotions at schools or where the youth like to spend their time. - Inclusion of TK in the national school curriculum so that children get to know about their cultures and some of the important TK. - TK documentation, registries or databases which can also play a role in helping to keep the knowledge alive in the communities, by providing a modern-

	day approach for youth to assimilate the knowledge.
Religious misconception about TK. Many people, especially religious leaders have beliefs that TK is ungodly so they discourage the preservation, use and passing on of TK from generation to generation.	- Awareness campaigns to uproot the misconceptions - Exclude the cosmology from TMs

4.3.8 Protection of TK

Traditional Knowledge misappropriation is very high in developing countries and there are some documented cases in Africa with none from Swaziland. It was very important to try and collect information on TK misappropriation in Swaziland. Respondents were asked to give their opinion on Swazi TK use by unauthorized or inappropriate persons. The results as presented in Table show that the majority of the respondents (72.8%) said there was TK misappropriation even in the country, while 17.4% said it was not happening here in Swaziland and about 9% did not attempt the question.

Table 7: Responses on TK misappropriation in Swaziland

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	67	72.8	80.7	80.7
	No	16	17.4	19.3	100.0
	Total	83	90.2	100.0	
Missing	System	9	9.8		
Total		92	100.0		

The respondents were then asked if they think TK can be protected by the existing IP regimes; patents, utility models, geographic indications, trademarks, plant varieties or copyright. The question proved to be very difficult for the majority of the respondents as they did not have any knowledge about these regimes. Table 8 shows the results from the respondents. About 24% of the respondents failed to answer the question, 8.7% thought TK can be protected using the conventional IPR instruments, while 27% said partly it can be protected.

Table 8: Response on whether existing IP regimes can protect TK

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	8	8.7	11.4	11.4
	No	37	40.2	52.9	64.3
	Partly	25	27.2	35.7	100.0
	Total	70	76.1	100.0	
Missing	System	22	23.9		
Total		92	100.0		

The majority of the respondents (40.2%) thought it cannot be protected. Therefore, those who said it cannot be protected and those who said partly were asked to give their opinions on how the TK can be protected.

A consensus drawn up from the respondents' opinions was that they all felt that Swaziland needs to develop a unique set of policies aimed at preventing the unauthorized or inappropriate use of TK by third parties. They said this *sui generis* can cover all the forms of TK. They also agreed that after coming up with the new instrument, government must draw up a strong implementation plan and strong enforcement measures.

4.3.9 Customary laws and protocols in protection and preservation of TK

Still under protection respondents were asked to give the role of customary laws and protocols in preservation and protection of TK, especially the genetic resources associated with TMs and traditional cultural expressions like cultural events. Their responses were quantized and presented in Table 9.

The customary laws and protocols among other things oblige someone outside the community to seek permission first either from the Chief or the Headmen (*Indvuna*) before accessing GR found in the community and even after obtaining the permission, the outsider is not allowed to go and collect alone but instead he or she would be accompanied by a local person. In terms TCEs, these authorities have powers to force their subordinates to attend cultural events with an option of a fine for absconders.

The results show that approximately 36% said the protocols are there and are effective in protection and preservation of TK, 39% said they are in place but ineffective and 3% did not respond to the question. About 22% said there are no customary laws and protocols governing the use of TK and genetic resources in their communities, which was contrary to what was given by their community leaders, as all of the interviewed community leaders said such protocols are in place and working but only lack enforcement measures.

Table 9: Roles played by customary laws and protocols and their effectiveness

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	They are in place and effective	33	35.9	37.1	37.1
	They are in place but ineffective	36	39.1	40.4	77.5
	They do not exist at all	20	21.7	22.5	100.0
	Total	89	96.7	100.0	
Missing	System	3	3.3		
Total		92	100.0		

4.3.10 Promotion of TK and harnessing for development

This was a very important aspect in as far as traditional knowledge is concerned. It relates broadly to promoting the use and further development of TK systems and TK-based innovations. It is also about promoting appropriate and sustainable commercialization and ensuring that a fair and equitable share of the benefits resulting from the use of TK falls in the hands of the TK holders. Respondents were first asked if they thought TK holder or the country at large was deriving enough benefits from TK. Approximately 90% of the respondents said benefits derived from TK were not enough, with only 10% being contented. The results are shown in Figure 6.

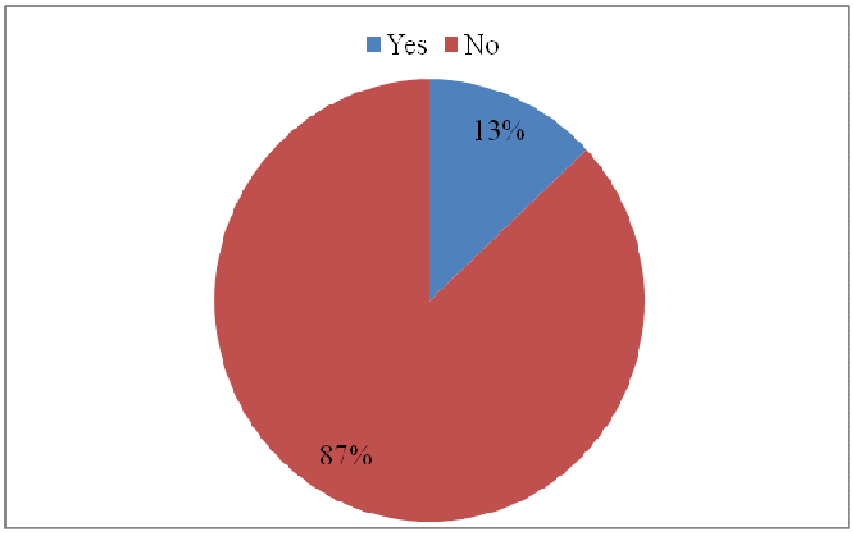


Figure 6: Ratio of respondents on benefits derived from TK

The 87%, who responded with a (**No**) were then asked to give opinion on how the TK can be promoted and harnessed for development. Respondents' responses were captured and summarized into the following points:

- Developing clear policies on promoting the use of TK and further development of TK systems and TK-based innovations.
- Establishment of a traditional healers' council, in the case of traditional healing, to monitor and set up guidelines for practitioners among other things.
- Through developing a proper IPR protection system
- Practitioners must collaborate with scientist, to do research on the practices, so as to validate it.

- Exhibition of TK based products whenever there are seminars or international show.
- Forming strong and effective associations or groups, which in turn will create platforms for knowledge sharing.
- Elimination of all practices that can pose some health concerns to the users, as listed in (section 4.3.7) above.

Respondents felt like the Swaziland Government was not doing enough on the promotion of TK, especially in traditional healing. About 71.7% of the respondents were blaming the government for not promoting TK, while 28.3% said the government was doing well, it was just upon the TK holders to promote their practices. Those who felt government was not doing enough were accusing government of the following:

- Not reviewing old laws like the colonial Witchcraft Act of 1905.
- Signing international treaties, protocols and agreements, but fail to contextualize and domesticate their provisions to benefit the Swazi citizens.
- Failure to spearhead collaboration of traditional healers with the Ministry of Health, under whom they thought they should be housed; instead, they are under the Ministry of Natural Resources.
- Failure to promote the integration of TK into national development strategies and development projects.

- Failure to form an Interministerial body to deal with issues such as TK that cut across two or more ministries.

The study established that TK has the greatest value to the TK-holding individuals, families and communities themselves since most of them rely on it for their very survival, particularly the poor rural communities. The preservation, protection and promotion of TK could not only help the TK holders financially but could even extend to the environment they live in. Interesting enough was that the majority the respondents (92.4%) understand that the preservation, protection and promotion of TK could also help in the conservation of biological diversity, as opposed to 7.6% representation which did not subscribe to that.

4.4 Conclusion

This chapter gave a detailed picture of responses the sampled subjects gave to various questions aimed at answering the objectives of this research. The data collected were analysed and presented in order to give themes. These themes are what form the basis of interpretation and conclusion, a central subject of the forthcoming chapter—Chapter Five.

CHAPTER 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This Chapter attaches meaning to the findings or results from the previous chapter, Chapter Four. It achieves this by looking at each objective in relation to responses given by the respondents on it. These meanings lead the study to conclusions which are used to make recommendations both on the study and for further studies. Finally, the Chapter makes concluding remarks for the whole study.

5.2 Conclusions on the objectives

The purpose of this dissertation was to determine the importance of TK, particularly TMK and to build a model that will ensure adequate protection, preservation and promotion of traditional knowledge and harnessing its potential for development and trade through commercialization, so as to benefit the traditional knowledge-holding community and the country at large.

In this dissertation the economic importance of TK/TCEs in Swaziland have been determined and a model that would ensure adequate protection, preservation and promotion of TK and harnessing its potential for development and trade through commercialization to benefit the TK holding communities has been defined.

5.3 Conclusions on TK policies and legislations

The significance of TK and the need to preserve, protect and promote it has been addressed in Chapter Three through the review of literature. Studies have shown that over the past years, TK has received increased attention on regional and international agendas. It has also been noted that such resurgence of interest in TK and associated genetic resources has been stimulated by the importance of traditional knowledge as a lead in advancing the frontiers of science and technology. Different studies have shown that factors contributing to this recognition include the contribution of TK to drug discovery, role of TK in the conservation of biodiversity, rapid loss of TK and global cultural diversity, concerns about unauthorized and inappropriate patenting and use of TK, with little or no sharing of resulting benefits with the original holders of TK.

The findings of the study revealed that even though Swaziland had always been represented in all the regional and international debates on TK, to date nothing has yet been done at national level to protect the country's rich TK/TCEs. It was found that the country was still having colonial Acts in force, with no reviews at all. Traditional

Knowledge holders were found to be working secretly, and they said that they decided to work like that ever since the Act of 1905 came to force.

The study also found that Swaziland ratified almost all of the international Conventions related to genetic resources, CBD, Cartagena Protocol on Biosafety to the Convention on Biological Diversity and International Plant Protection Convention among others. The country has not yet acceded to the CBD's Nagoya Protocol. However, it was found that the country has not yet enacted laws as expected by the international Conventions. The country is currently working on domesticating the Nagoya Protocol's ABS.

5.4 Conclusions on IP awareness

The first specific objective of this dissertation was to investigate the level of intellectual awareness, as stated in section 1.5. The findings of this research have shown that there is low IP awareness in Swaziland. Even among the politicians and scientists, the level of awareness was very low. The only group that was better in terms of IP awareness among the respondents was those involved in arts, probably because they were used to copyright their music or dances.

5.5 Conclusions on the importance of TK

As per the second objective of the study, the findings have shown that there is a great potential on TK. The study established that Swaziland is very rich in TMK, supported by the high biological diversity. It was found that there is a great potential, that is so far not been exploited on TMs, hence the need to do research so to validate and quantize active compounds herein. It was also found that a lot of traditional medicinal plants were exported to neighboring countries like South Africa at a very low cost, which then export at higher prices, thereby benefiting from Swaziland's resources.

Such allegations are proven by a study conducted in Eastern Cape—South Africa by Dold and Cocks (2002) which revealed that South Africa was making R27 million annually from herbal medicine, while Swaziland on the other hand has not been benefitting from such an illegal exportation of the plants. It was also found that if traditional healing was to be practised properly, it would reduce government's costs of providing health care to people, thus positively contributing to the country's national budget. The study also found that a lot of people are employed to sell TMs and in that way it helps in lowering the high unemployment rate in the country, with a potential of doing better than it is at the present moment.

5.6 Conclusions on preservation

Findings from this research study have shown that Swaziland was gradually losing its traditional knowledge, so it was important to come up with preservation approaches. To do that there was a need to first identify and understand the root causes of the TK loss. Some of the identified root causes were the destruction of the natural environment where indigenous or local communities reside, which in turn disturbs and even destroys the indigenous and local communities holding the knowledge, rural-urban migration, modernization and civilization, and also religious misconception about TK.

The study also proposed both *in situ* and *ex-situ*-preservation approaches as mitigation measures to the above listed TK loss root causes which are recognizing rights of TK holders, consultative meetings with TK communities before they are moved, strengthening the their economic opportunities, integration of TK into national curriculum, promotion and awareness campaigns to uproot misconceptions about TK, and also documentation of TK into registries or databases.

5.7 Conclusions protection and promotion of TK

Protection and promotion of TK was also found to be vital in further developing the practice. It was found that a lot of people were still using TMs, and among the four administrative regions of Swaziland, Shiselweni region was found to be leading in the

use of traditional medicines, and was closely followed by the Lubombo region. The use was found to be low in the Hhohho and Manzini regions, which is probably due to civilization. The study also found that there was a big need to involve scientists on TMs so as to conduct clinical trials on the medicines before using them on patients.

The fact that lots of people are relying on these TK practices calls for promotion and protection, which begins with ensuring safety of the users. The study identified a number of promotion measures that can help improve the situation. For instance, there is a need to develop clear policies on TK and its use and further development; establishment of a traditional healers' council to monitor and set up guidelines for practitioners among other things; working in collaboration; developing a proper IPR protection system; exhibition of TK based products whenever there are seminars or international show; and elimination of practices that can pose some health concerns to the users.

On protection, the study found that the existing IPR regimes were to some extent able to protect some forms of TK, but the problem with TK is that it is a complex and multi-faceted issue. Another biggest problem as found by the study was that TK fail to pass the three requirements provided by the TRIPS Agreement, which specify that for protection the invention must be novel, have an inventive step and be industrial applicable. The respondents noted that TK was not necessarily new, since holders got it from what they dubbed "the great, great ones" or forefathers.

Study also shows that respondents suggested that there is a need to formulate a holistic approach that would just be suitable for TK only, and one that would ensure the holders get benefits from emergence of new TK-based products, obtain increased attention or recognition in as far as their rights are concerned. It was also found that customary laws and protocols play a notable role in the protection and preservation of TK, especially the genetic resources related to TK. However, it was found that in many communities such systems were no more in place, or safe or effective. In all the communities the leaders said the protocols and laws were in place, even though their subordinates said otherwise. That therefore meant the protocols were in place but it was just a question of enforcement, which means there was a need for communities to revive such systems and make them effective, so as to protect the community's heritage.

5.8 Recommendations

Owing to the low levels of intellectual property rights knowledge, there is a need for the country to be involved in awareness campaigns. Also it is recommended that IPRs be introduced into the national curriculum at secondary level, and also at tertiary levels. Some of the respondents sampled here in this study had undertaken tertiary education but were ignorant of issues of IPRs.

Regarding the *ex situ* preservation of the valuable TK and TCEs, the TK holders should work in collaboration with researchers in trying to document their knowledge and

creating registries or databases. This will help in storing the knowledge in a format that is not at risk, like keeping it as a secret, in which case when the holders die the knowledge also gets lost too. This approach would also help them from misappropriation as patent agents would be able to access the databases in case a patent application that is based on TK is filed. On the *in situ* preservation, the TK holders need to work hand in hand with their governments in trying to ensure that TK holding communities are not disturbed, or when there is a great need, proper consultations be done.

Regarding the protection of TK, the holders need to collaborate with government or other stakeholders in coming up with issues that need to be addressed by the protection mechanism. They should stop their habit of shunning consultative meeting called by organizations that are working on TK.

Finally on promotion of TK, the holders need to form strong associations, whereby they will be able to debate pressing issues, teach each other ways of improving their practices. They should also conduct workshops whereby they will involve even people outside the TK communities, for example, traditional healers should also get teachings from complimentary medicine personnel about new diseases, their mode of infection and symptoms. They should also collaborate with researchers in an effort to validate their practices and determine correct doses and toxicities in case of TMs. They should also work on improving the packaging of their medicines to make them appealing to the users, and include instructions and blend their products.

The government must also try to initiate review of some old and offensive policies and legislation, like that Act of 1905. It is also recommended that the Swaziland Government through its Ministry of Health should collaborate with traditional healers and help them when needed. Government should also form a neutral body that would work on TK that involves more than one Ministry.

5.9 Recommendations for further research

This research has revealed some perspectives and experiences of a small sample of TK holders, their community leaders, policy makers, researchers or scientists and also IP Office personnel on the issues pertaining the protection, preservation and promotion of TK. In as much conclusions can be drawn from this results, since sampling was randomized, the size of the sample (n) was too small, hence generalizations from this results would have more errors than when the study were to be repeated with a bigger sample size. It is therefore recommended that another study similar to this one be done but broadening on the sample size. Another limitation of this study is that the users of TK or the general public was excluded from this study, yet they are also major stakeholders, again bringing up the need to perform a similar study with a broader scope.

5.10 Concluding remarks

This study was conducted in order to establish the importance of Traditional Knowledge in the context of Swaziland and the seriousness the authority attaches to the same. Literature on TK in Swaziland was analysed to establish the position of laws and policies on the same. This, it was felt, would establish the level of seriousness the Kingdom of Swaziland tags on promoting and protecting TK and even its holders therein. Opinion was sought from a representation of sectors involved in TK issues. The general picture at the end is that the Kingdom of Swaziland is a long way to go to harmonise its laws with international instruments that guide on issues to do with protection and promotion of TK. This research recommends as the first step a serious revisit of IP laws and policies to address the problem with speed.

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APPENDICES

Appendix A: Clearance letter

AFRICA UNIVERSITY
(A United Methodist - Related Institution)

INSTITUTE OF PEACE LEADERSHIP AND GOVERNANCE

P.O. BOX 1320, MUTARE, ZIMBABWE - TEL.: (263-20) 66788/60075/60026/61611 - FAX: (263-20) 66788/61785 - E-MAIL: iplgsec@africau.ac.zw

7 December 2014

TO WHOM IT MAY CONCERN

Re: Request for permission to undertake a research

VILANE Vusi is a student **(130103)** at Africa University, in the Institute of Peace Leadership and Governance (IPLG), studying for a Masters degree in Intellectual Property. In partial fulfillment of the requirements of the degree, students are required to write a research project in the area of Intellectual Property. VILANE Vusi `s research topic is **"The Role of Intellectual Property in the Promotion of Traditional Knowledge: A Case Study of Swaziland."** I kindly request your esteemed organization to assist the student. I assure the organization that the data will be used strictly for academic purposes.

Your cooperation is appreciated.

Yours faithfully

Prof P. Machakanja
IPLG DIRECTOR

APPENDIX B: DATA COLLECTION QUESTIONNAIRE

PROTECTION, PRESERVATION AND PROMOTION OF TRADITIONAL KNOWLEDGE IN SWAZILAND: A CASE OF TRADITIONAL MEDICINE

1. District	1. Hhohho 2. Manzini 3. Lubombo 4. Shiselweni
2. What is your constituency?	----------
3. Gender	1. Male 2. Female
4. What is your age group?	1. 21-30 years 2. 31-40 years 3. 41-50 years 4. 60 and above
5. What is your educational status?	1. Primary education 2. Secondary / High school educational 3. Tertiary education 4. No formal education 5. Other (specify) ----------
6. What is your occupation?	1. Traditional healer/ Traditional knowledge holder 2. Politician 3. Chief / Indvuna 4. Scientist/ Researcher 5. IP office personnel 6. Other (specify) ----------
7. In your opinion, what do you understand by the term 'Intellectual Property'? ----------	
8. Rate your knowledge of intellectual property (IP)?	1. Poor 2. Good 3. Excellent

9. In your opinion, what do you understand by Traditional Knowledge (TK)? --- ---	
10. What are the main types of TK in Swaziland? --- ---	
11. What is the level of use of traditional medicine in Swaziland?	1. Low 2. Medium 3. High
12. What are the practices of traditional healing that can pose some health concerns to the users? --- ---	
13. In your opinion, what is the economic value of TK in Swaziland? --- ---	
14. Who are the holders or owners of TK?	1. Individuals 2. Families 3. Communities 4. Other (specify)----------
15. In your opinion, do you think Swaziland lose its TK?	1. Yes 2. No
16. If **YES** above, how do you think the TK lost? --- ---	
17. How can the TK be preserved? --- ---	
18. According to your opinion, is TK used by unauthorized or inappropriate individuals in Swaziland?	1. Yes 2. No

19. Do you think TK can be protected by the existing IP regimes?	1. Yes 2. No (If you choose **No**, answer the next question)
20. Suggest how it can be protected? --- ---	
21. What role do customary laws and protocols play in the preservation and protection of TK? --- ---	
22. Is Swaziland deriving enough benefits from its TK?	1. Yes 2. No (If you choose **No**, answer the next question)
23. How can it be promoted and harnessed for development (i.e. commercialized)? --- ---	
24. Do you think Government is putting enough efforts in promoting TK?	1. Yes 2. No (If you choose **No**, answer the next question)
25. Suggest what needs to be done? --- ---	
26. According to your observations, is TK developing at a high or low rate in Swaziland?	1. High 2. Low (If your answer is **Low,** answer the next question)
27. In your opinion what causes the low development rate?	1. --- 2. --- 3. ---
28. Do you agree that preserving, protection and promotion of TK can help in the	1. Agree 2. Disagree

conservation of Biological diversity?	

29. What benefits do the TK-holders/owners derive or at least expected to derive from their TK?

APPENDIX C: QUESTIONS FOR SEMI-STRUCTURED INTERVIEW

1. What do you understand by the concept Intellectual Property?
2. According to your knowledge, what is traditional knowledge/indigenous knowledge?
3. What traditional knowledge do we have in Swaziland?
4. Who are the holders or owners of the traditional knowledge?
5. What economic benefits do the holders/owners derive or are expected to be derived from their TK?
6. What roles do community leadership and customary laws/protocols play in the protection of TK?
7. Does the country lose its TK at an alarming rate? If so, what are the root causes? How can it be preserved and protected?
8. Is the country deriving enough benefits from its TK? If not, how can it be promoted and harnessed for development (i.e. commercialized)?
9. Who will benefit from the preservation, protection and promotion of TK in Swaziland?