

Vulnerability of Indigenous Knowledge Systems' initiatives in South Africa.

Author: **Mr. Mphela Raphesu**
Tel: +2712 844 0166
Fax: +27 86 565 7036
Email: km@biopad.org.za
<http://www.biopad.org.za>

Executive Summary

This study was inspired by Matthew Hill's article on Biopiracy published on the Financial Mail. The article indicated the level of vulnerability of the majority of African states by international companies where resources are taken by international corporations out of Africa for nothing and giving nothing in return to the Knowledge holders.

The topic induced intellectual curiosity that led to the convening of a conference on "*Synergizing Indigenous Knowledge Systems into Business Innovation through Knowledge Management*".

The conference aimed at identifying challenges and a possible solution towards ensuring that indigenous knowledge is documented, commercialized and knowledge holders are rewarded accordingly. Delegates highlighted the link between indigenous knowledge and global

" ... it is not just about woven baskets and handicraft for tourists *per se*... [It is about] exploring indigenous technological knowledge in agriculture, fishing, forest resource exploitation, ...,medicine, pharmacology, and recasting the potentialities they represent in a context of democratic participation for community, national and global development in real time..."

Dr Catherine Odora-Hoppers

knowledge systems and some of the lessons learnt from development initiatives. The paper concludes with recommendations for enhancing the role of information and communication technologies in particular to collect, preserve indigenous knowledge, detailed treatment of these issues but rather to raise salient points around the intersection between information and communication technologies and IK systems.

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1. Introduction

This study will confirm, refute, extend previous findings and provide new findings with regards to Indigenous Knowledge Systems initiatives and how knowledge holders in South Africa should benefit from such initiatives. Historically, indigenous knowledge has been downplayed in the management of information. However, the growing realization that indigenous knowledge has a role to play in national development as well as the knowledge management environment has led to the growth of interest in preserving and managing it.

Biopiracy is highlighted as a major challenge in preserving traditional knowledge from major corporations that openly take advantage of weak “intellectual property” protection in most emerging economies. The paper also tries to bring the flavor of leveraging strategic partnerships to bridge the innovation chasm in South Africa. This can be made possible based on the given recommendations that include a blend of information and communication technologies which promote easy access of indigenous knowledge systems. The study ends with concluding remarks with regards to the status of IKS in the country.

2. The concept of Indigenous Knowledge Systems

Quiroz (1994) defines *Indigenous Knowledge Systems* (IKS) as the sum total of the knowledge and skills which people in a particular geographic area possess and which enable them to get the most out of their environment. Social networking sessions like camp-fire storytelling settings were used to transfer such knowledge to the younger generations in an effort to provide them with survival strategies.. It should be noted that knowledge holders in each new generation adapted and added to this body of knowledge in a constant adjustment to changing circumstances and environmental conditions. In present times, the creation of knowledge is complex; its sharing requires diverse tools for translation, conversion, filtering and a two-way communication and interaction. As indicated by Chabalala (2010), IKS needs to be approached in a holistic manner in order to go beyond the boundaries of the physical body into the spiritual. This is in contrast to bio-medicine which views the body mechanistically mainly in terms of individual parts.

- Prah (1991) identified the following types of knowledge that have implications to IKS:
 - *Tacit knowledge* - unconscious and intuitive knowledge gained through experience that allows individuals to make decisions without referring to rules or principles (e.g. knowing how to perform medical operations, knowing how to network at a conference)
 - *Explicit knowledge* – knowledge that is articulated and accessible to anyone who reads, hears or looks at it (e.g. a training guide on using a software package or the conclusions of a policy briefing paper)
 - *Implicit knowledge* - helps individuals to know what is socially and culturally appropriate in a given circumstance including shared beliefs, values and expectations (e.g. knowing that it is inappropriate to undermine colleagues in public, understanding management attitudes within a given organization).

In addition, De Carvalho (2010) summarized the importance of IKS to South Africa that:

- IKS can lead to increased revenue from sales.
- Induce renewed interest in the floral kingdoms of Africa and associated research.
- Increase job opportunities in harvesting, preparation, transportation, and manufacturing and distribution sectors.

3. Background to the state of IKS in South Africa.

Many South African citizens, especially in the countryside are still dependent on indigenous knowledge for health and agriculture. Nxumalo (2010) also stressed the over-reliance of IKS for healing purposes by citing the usage of Rooibos tea to ease digestion. Although considerable progress has been made by the NIKSO (National Indigenous Knowledge Systems Office) in promoting indigenous knowledge systems a dearth can still be identified through scattered IKS initiatives run by various government and not-for-profit organizations. This can be the fact that indigenous knowledge still lies in the margins of science, where most scholars consider it as part of the informal market, Alum (2009).

4. Indigenous Knowledge Management Systems Challenges in South Africa

In comparison with other countries in both emerging and mature markets, the following major challenges to the management and preservation of indigenous Knowledge were identified in South Africa:

- There are few linkages between IK and the curriculum in terms of needs, goals, teaching strategies and instructional resources of various kinds. Australia supported identifying framework projects and suggested educating government policymakers and encouraging them to create permanent taxonomist positions. Indonesia has gone far by developing necessary expertise and curricula for university courses on taxonomy. As indicated by Chabalala (2010), South Africa is now planning to go the same route, by introducing an accredited degree in indigenous Knowledge Systems. This initiative is steered by the *Department of Science and Technology* and the *South African Qualifications Authority*. However, more strategies and experimental projects are required for students undertaking such studies to gain knowledge.
- There is scarcity of dedicated taxonomists to study biodiversity, identify species, describe species that are new to science, determine their taxonomic relationships and make predictions about their properties. Nxumalo (2010) highlights the value of local information to be increased in line with globalisation. Matsabisa (2010) also emphasized on South Africa's *Farmer 2 Pharma Grand Challenge* which is "to be one of the top three emerging economies in the global pharmaceutical industry, based on expansive innovation system using the nation's indigenous knowledge and rich biodiversity".
- Due to rapidly changing natural environments and fast-paced socio-economic conditions like urbanization, indigenous knowledge systems is at risk of becoming extinct. Mayeng (2010) supports such a statement by highlighting a poor coordination of South African experts in various fields related to IKS to take a lead in documenting Indigenous Knowledge. Although this is debatable, Mayeng (2010) supported his argument that both Nigeria and India have gone far by documenting their unique species into published

glossaries despite limited resources. The intrusion of technology aggravates the disappearance of indigenous knowledge. Local practices conducted by the CSIR as indicated by Maharaj (2010) can be adopted to alleviate this problem. Maharaj (2010) further indicates that traditional healers provide the CSIR scientists with indigenous knowledge (IK) that stimulates research that can eventually lead to discovery and development of new drugs.

- Uncoordinated research activities into Indigenous Knowledge Systems pose a major problem in keeping momentum. Despite the existence of the NIKSO, IK activities continue to be desynchronized. As a result it becomes unmanageable to leverage limited resources earmarked for IKS projects. Mayeng (2010) also stressed the importance of cooperative efforts at local, regional and national levels and called for strategic alliances between the existing institutions
- Knowledge hoarding impedes proper utilization of the wealth of natural products to discover, extract, synthesize, optimize and develop patentable medicines. The mind setting of the majority of local researchers is to restrict the capturing and preserving of collected IK by not providing it to knowledge practitioners who ensure easy access and dissemination.
- Activists argue that, multinationals make huge profits from African biodiversity but rarely share proceeds with the communities who discovered, kept and transmitted the knowledge. In some case, pharmaceutical companies and research companies from more mature markets often send agents to tap the knowledge of traditional African pharmacologists for attainment of economic self-determination and self-reliance. Before the promulgation of the *IPR Act* (Intellectual Property Rights Act), traditional systems of IP protection in South Africa were not adequately suited to the protection of indigenous knowledge since these are individualistic systems, whereas indigenous knowledge is held by communities.

The United Nations Convention on Biological Diversity in force since 1993, recognizes the sovereignty of states and communities over their genetic resources. Doubell (2010) indicates that “traditional knowledge, innovations and practices are constantly challenged and exploited by local and foreign commercial interests”. Namibia has gone far to prevent such malpractices by introducing stringent laws to ensure that proceeds are equally shared with local knowledge holders, Knott (2010). As indicated by Dr. Tewolde Berhan Egziabher, a leading expert on the topic at the Institute for Sustainable Development in Ethiopia "They are stealing the loaf and sharing the crumbs". Documenting and publicizing IK could immediately lead to their appropriation by others without return to innovators, particularly, if indigenous knowledge leads to profit for transnational corporations. Therefore it is crucial that the contribution of the indigenous knowledge holders be recognized and rewarded. Doubell (2010) further accentuates that intellectual property rights of the individuals and communities have to be protected and benefits have to be generated for innovators as well as local communities.

5. Conclusion

Apart from developing a policy on indigenous knowledge systems adopted by the South African Parliament in 2004 and the development of the NIKSO situated within the DST, the government has also made significant strides in promulgating the IPR ACT and Biodiversity Act. Professor Yonah Seleti (2010) states that “Indigenous knowledge is difficult and costly...”. What is crucial is the synchronization and implementation of institutional frameworks for supporting indigenous knowledge systems, academic and applied research issues, systems for capturing indigenous knowledge, the promotion of networking among practitioners and legislations to protect intellectual property associated with indigenous knowledge. This invariably means a realignment of IKS thinking within all structures and clearly a well-thought out plan is essential to ensure that IK becomes a usable knowledge.

Following the “*Synergizing Indigenous Knowledge Systems into Business Innovation through Knowledge Management*” conference, significant steps were undertaken by BioPAD/TIA and the NIKSO office to strengthen partnerships between institutional frameworks and government departments for supporting indigenous knowledge systems. Based on talks between the two organizations, networking of major local institutions will begin to work on indigenous knowledge projects.

6. Recommendations

- Doubell (2010) who has been instrumental in the promulgation of the IPR Act mentions the need for the unambiguous definition of discovery and invention in the granting of patents for biotechnological investigations. In addition to the South African Patents Act that was amended to be linked to the Biodiversity Act, the IPR Act will soon be enacted to bolster the protection of IP rights of communities so that they share in the benefits of the commercialization of products of their indigenous knowledge. Advocacy campaigns to educate communities and other stakeholders about the benefits of the IPR Act in the protection and commercialization of Indigenous Knowledge Systems must be undertaken in the simplest language that can also be understood illiterate citizens.
- It is critical that cooperative efforts at national, regional and international levels are forged by the NIKSO office for such projects to be documented. In most cases these projects are costly therefore, stakeholders need to contribute resources and time to make such initiatives fruitful.
- There is a need for establishing various community-based structures to be used in order to protect and transfer indigenous knowledge and the best practices in using IK systems for development. This is important to prevent indigenous knowledge that is already in the public domain from being patented as new. The International Federation of Library Association asserts that libraries could also help in:
 - collecting, preserving and disseminate indigenous and local traditional knowledge
 - publicizing the value, contribution, and importance of indigenous knowledge to both non-indigenous and indigenous peoples.
 - raising awareness on the protection of indigenous knowledge against exploitation.
 - involving elders and communities in the production of IK and teaching children to understand and appreciate the traditional knowledge.
 - encouraging the recognition of principles of intellectual property to ensure the proper protection and use of indigenous knowledge and products derived from it.
- Furthermore, it is crucial to safeguard indigenous knowledge holders from exploitation by commercial players. As indicated by Doubell (2010), their rights need to be protected and any

agreements entered into by themselves and their commercial partners should provide for equitable benefit-sharing and material transfer agreements. Doubell (2010) further mentions the newly promulgated IPR Act as one mechanism for the regulation of benefit-sharing.

- Improved ICT services such as Broadband, Mobile technologies (3G) will assist in improved efforts to successfully gather IK. Open Source has a major role to play, especially in an emerging economy like South Africa. A reliable and accessible infrastructure is a prerequisite for modern information exchange. Different software tools and platforms ranging from Database Management Systems, Geographic Information Systems to text and speech and character recognition tools, graphical touch screens, audio and video editing tools may be considered for the management and dissemination of indigenous knowledge. Nxumalo (2010) further indicates more advanced and new tools like wikis (collaborative authoring), blogging (personal journal, commentary and online diaries) and podcasting (syndication of digital media for playback on portable players and computers) which could be adapted to capture and disseminate indigenous knowledge. The application of ICT for managing knowledge is not without problems. For instance, not all aspects of living traditions of indigenous knowledge can be captured as 'artifacts' using digital technology. Again, the collection of information from diverse indigenous sources is often a laborious, time-consuming and costly process. Knowledge holders may not be willing to share their actual knowledge. Taxonomists are required to forge strategic partnerships with knowledge holders in communities that still have the technique of rainmaking, knowledge of plants, traditional handcraft, agricultural acumen, health and illness etc.
- Matsabisa (2010) emphasized the importance of "getting research results into policy, practice, promotion and product" through understanding the industry, local conditions and constant interaction and intervention. Matsabisa (2010) further mentions that when blended with business models like Michael Porter's Competitive Advantage Strategy and Geert Hofstede's Theory of cultural differences IKS products made in South Africa can be best products that cannot be copied or replicated by competitors.
- Community-based resource centers that can enhance the flow of IK must be adopted based on the success of countries like Namibia. There is a need to strengthen the capacities of local

authorities including teachers, nurses, and community workers as intermediaries to support communities to manage and share their indigenous knowledge and acquire knowledge from the outside world.

- A more conscious approach will have to be cultivated to ensure that homegrown applications such as the IKS blueprints of various government ministries are integrated through the NIKSO to ensure that resources are leveraged and also alleviate silo activities.

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