IK Notes

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The Economics of African Indigenous Knowledge

African Indigenous Knowledge (IK) is labeled variously and misconceived at international discussions and in modern literature. The most commonly used phrases are "static," "low-value-added" and "prior art," primarily in the context of the Trade Related Aspects of Intellectual Property Rights (TRIPS), of the World Trade Organization. Frequently one finds expressions like mystery, charlatan, irrational, or miracle in relation to traditional medicine, for instance. Achievements of traditional medicine are considered anecdotal or beyond scientific validation The misconception is further aggravated by the little or no growth in the sector and a lack of understanding of the context in which practitioners apply traditional medicine. Yet, the literature produced on this sector has not given much attention to the factors that underpin these misconceptions.

This article therefore provides a basic explanation to the apparent lack of understanding and growth from African indigenous knowledge. The argument is anchored on the African customary law system that only recognizes communal ownership of knowledge and apportions little reward for individual innovations. The impact of this communal ownership of knowledge had produced different reactions from innovators and ingenuous knowledge bearers, in various sectors. In the high-income sectors like the medicine, innovators use "secrecy" to protect their knowledge. In the low-income sectors such as agriculture, innovators are "indifferent," in the absence of public incentive and protection to making their knowledge public. When the knowledge bearers die, the knowledge disappears with them. The result is what we call a "continuous but non-additive innovation" as against "continuous and additive innovation." In

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the absence of additivity in innovations, the knowledge remains basic and cannot produce much macro-economic growth.

In line with the above, the study argues that the "static semblance" labels and stigma are the product of the lack of incentive for individual IK innovators, in the customary law systems. In particular, it argues that traditional medicine is not a profession of charlatans, but rather a part of Africa's development resource not well-studied, not adequately appropriated and developed. African traditional healers (and other practitioners of IK) are equally capable of research, innovation and healing as their "allopathic" counterparts. Bone-setting, anti-snake venom production, active immunization practices or treatment of post-traumatic stress disorders are good examples of highly-appreciated products of African traditional medicine. As such, the study makes a case that it is the secretive applications that have beclouded the true value of the activities. This secrecy, however, has some economic rationale. The aim of this article, therefore, is to explain the economic rationale behind such secret behaviours — in what the author call the "the Secrecy-Motivation Model."

The questions expected to be answered, using African traditional medicine as an example are: why are African traditional medical practitioners secretive? Are the motivations for the secretive behaviours economic? What specific healing powers do the practitioners have, requiring secrecy? What are the economic impacts of such secretive behaviors?

To answer the above questions, the study posits that three factors determine the secret behaviours of African traditional healers. These are: the inadequacy of rents from innovation; absence of public protection of intellectual property rights in the African customary law system; and the threat of business-stealing and obsolescence by the arrival of new innovations. Innovation, has very little predictability. This is particularly so in medicine and agriculture, where research can be costly and long-term, and where the results are uncertain. In this situation, the innovators and bearers of the unique knowledge consistently work to regulate against any threat of knowledge stealing or obsolescence.

The Explanation

The author named the explanation the Motivation Model because of the motivational effects that explain the secrecy (search for innovation, investment in the research process and expected income effects). Initially, the study supposes that under normal economic circumstances, any new product is created not by a single innovation/imitation but by a whole sequence of innovations. The existence of the last innovation leads to further developments and innovations. Some of what will result from it will be more fundamental (horizontal), some will be more secondary, hence vertical. That said, the study explains why an innovative traditional healer would choose to remain indefinitely secretive.

In this explanation, the principal input/resource a traditional healer invests in the production and innovation processes, is himself/herself, defined as his/her physical power and knowledge. Having done so, innovation arrives randomly at a rate expressible as a fraction of the invested knowledge, indicating the productivity of the research. Randomness means that at the current time, the possibility and specificity of the innovation cannot be guaranteed. The innovator may

find another innovation in the process of solving a particular health problem at a time *unknown* to him/her. Even by allocating a large amount of his time and knowledge resources, it is still uncertain, to the innovator, when the next innovation may take place. The individual that succeeds in innovating prefers to monopolize the production sector until replaced by the next innovator.

When researching, the healer has to balance opportunity costs of marketable goods or services against the uncertain results of research Costs are likely to be high given the uncertainty of results of the research. Sharing the results of the innovation in the community would deprive him/her of the income deriving from the innovation, since it could easily be copied not only by other healers but also by his/her fellow community members in a do-it-yourself application of the new treatment.

It is the possibility of a 'business-stealing effect as a result of openness that is of serious interest to the study and of concern to the *knowledge bearer* Through this effect, it is entirely possible for a new entrant in the innovation field to successfully destroy the monopoly rent attributable to the previous generation of innovators, by making their products obsolete.

Also relating this to cost of innovation, one assumes that research costs/expenditures are financed at the proportional rate that is equal to the resources and labour force committed to research. Only a portion of the resources and finance will produce any research objectives. If the costs and benefits are also measured in units of final outputs, the marginal cost is the amount over and above initial investment.

When the expected net income from the use of the innovation is included, one gets a different effect, where profit is the exponentiated at the time. In the case of business stealing, therefore, the loss will be expressed as a loss of both the invested resources as well as the expected profit. The double loss of both, investments and expected income is thus a driving force to hide the new idea or innovation in the absence of institutional and other legal support or protection.

Within the above framework, any "new" innovation poses a serious challenge to the livelihood and means of existence of the previous incumbent of the previous innovation. It is in anticipation of the loss of income and the threat of obsolescence, to be associated with the introduction of the superior rival good from the "new" innovation, that the incumbent will create confusion regarding the value of goods and services that he/she produces by keeping the technical information anonymous and secret.

Also aware of the absence of any public institutions to protect his/her indigenous knowledge, the owner has to find a creative way to shield his/her monopoly earnings from imitators and the process of business/knowledge-stealing. In terms of application, other disguises follow in the form of incantation, masquerading, diversionary sacrifices and scare tactics. In this way, even the patients or customers who are allowed to come in close contact with the products may not easily and freely understand which among the array of acts contributed the actual solution that they required. It thus appears *magical.*

In the absence of guises and disguises, the probability increases that consumers of the medical products may imitate the innovation and increment the frequency of do-it-yourself (DIY) self-treatments, thus depriving the practitioner of monopoly income. This self-protective approach thus helps the innovator or bearer of the new knowledge to continue collecting monopoly rents as well as to protect against "intruders" who may steal and improve on the intermediate input and render the original idea obsolete.

The main argument once again is that those working in African traditional medical sector have finite resources, just like anyone else, and interest invested in their work. In the absence of public protection of their innovations and uncertainty associated with discovering a new solution, they hedge against getting these innovations into the public domain. The objective they achieve through this is that the public cannot engage in imitation and do-it-yourself, thus depriving them of their monopoly rent. The process of hedging induces the distortions and magical performances associated with the activities. The above explanations have been tested using empirical data. The results strongly support the main argument of the model.

In the other low-income sector such as agriculture, what one found was that the innovators/indigenous knowledge bearers do not pro-actively hide their knowledge. Commonly, they tend to be *indifferent* to whether their discoveries are made public or not (partly, because most of their activities can easily be studied on their fields). When asked,

they reveal what they know but most of the time, nobody asks. Also, since there are usually no forums to share their knowledge, the owners keep it to themselves..

In the end, however, the impact of both "secrecy" and "indifference" are unambiguously negative on the macro-growth of the economies and the original knowledge itself. When the knowledge-bearers cease to operate, they disappear with their knowledge. This means that the next generation has to start afresh on the same process. The result is what the author calls "continuous but non-additive innovation" as against "continuous and additive innovation," In the absence of additivity of innovations, the knowledge cannot produce much growth. The conclusion from this is simple. African countries have not put in place the incentive policy that can help achieve a "continuous and additive innovation" in the indigenous knowledge system. The customary law system has also not self-corrected for this. Therefore, the growth-enhancing effects of indigenous knowledge system will remain minimal, thus falsely supporting the misconception of the whole knowledge as static.

What are the other conclusions that one can draw? The incentive structure to promote indigenous knowledge innovation and development has to be put in place. Doing this, may neither be inherently good nor bad, but holds the potential for great benefits. More research might also bring about a change of heart about African indigenous knowledge, in particular, medicine, natural resource management, and agriculture and livestock keeping. The abandonment of the associated stigma and lack of policy attention could be overcome by enabling the creation of constituencies; traditional healer associations are a first step.

The potential for growth and poverty reduction and the expected contributions to the stock of knowledge for resolving several intractable global problems, that could come from this locked potential, are an *incentive for action.*

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