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UNIVERSITY-INTELLECTUAL PROPERTY OFFICES: THE FOCAL POINT FOR THE
PROMOTION OF INNOVATION AND INVENTIVE ACTIVITIES IN UNIVERSITIES,
RESEARCH AND DEVELOPMENT ORGANIZATIONS AND AMONG
INDIVIDUAL INVENTORS

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ABSTRACT

1. Researchers and scientist; worldwide are generally involved in innovation and inventive activities. The overall objective is to seek for new knowledge and subsequently provide solutions to societal problems. This objective can only be realised if the innovations and/or inventions are effectively promoted and made available to the society. Universities as well as research and Development (R&D) organisations use various strategies to promote the innovations and/or inventions. This paper discusses the role of the University intellectual property offices as a focal point for the promotion of innovation and inventive activities in Universities, R&D organisations and among individual investors. The focus is basically on the Universities in Tanzania.

2. The presence of a (specialised) intellectual property office in Tanzania Universities is new phenomena. A survey has shown that there have been attempts in certain disciplines at the Universities in addressing issues related to the intellectual properties that have been generated by researchers. Unfortunately, these efforts are not co-ordinated.

3. This paper discusses further the essence of intellectual property rights (IPR) and the global issues between the north and south countries. The roles of the national office for intellectual property rights and those at the universities have been discussed showing potential relationships between them. Strategic recommendations for the establishment and operationalisation of the university intellectual property offices have also been covered.

INTRODUCTION

4. The economy of any country in the world is characterised by technology-led competition, in which intellectual capital and technical knowledge constitute the main assets. Possession of these assets has become the hallmark of a country's technological capabilities. Technological innovation requires not only venture capital and testing, prototype development and refinement of working models, etc) but also intellectual capital in the form of specialised skills and entrepreneurial competency.

5. Any economic activity aimed at producing goods or services is based on specific technologies that are not always freely available but are subject to exclusive rights. Thus, technological innovation and commercialisation are characterised by a need to consider intellectual property rights. Such rights are important from the inventive stage through the stage of commercialisation (marketing and post sales), as well as in any further innovation stages when the products/processes or technologies are improved. Singh (1991) acknowledges the significance of intellectual property rights that: "Any transaction for technology collaboration/transfer is, in fact, a transaction in these rights".

6. In many instances, for an enterprise to have access to new knowledge and to absorb complementary skills that may be needed to develop a new product or process, it has to give up part of its know-how and industrial property assets by sharing and exchanging them with other firms. This barter of technological knowledge and industrial property rights increasingly takes place within a framework of strategic alliances between enterprises, organisations, and nations. Such barter is generally institutionalised in R&D collaboration agreements based on reciprocity; they provide the means to enforce reciprocity which allows parties to combine the complimentary industrial property assets necessary to develop new

products or processes. This means that for an enterprise to have access to strategic knowledge protected under intellectual property laws, it must be able to exchange and share part of its background knowledge and industrial property with other firms or competitors (UNIDO, 1995).

7. The increasing importance of technological information and industrial property assets has led universities to change their approach to intellectual property. As differences between basic and applied research become blurred in some fields, e.g. biotechnology, and industrial property rights are more and more considered an important business asset, universities and research centres are increasingly willing to reap the benefits of their research results. Industrial property rights and the ownership thereof are, therefore a live and relatively recent issue for negotiation in University-industry contracts. In the past, industry expected to own any technologies and industrial property rights arising from University research they funded, even partially. Universities no longer accept this position, and the issue has become critical in technology transfer negotiations. One-way technology transfer, from a University to a firm, has been replaced by a two-way exchange of technological knowledge between a University and firm.

8. This paper discusses the role of a University intellectual property office, specifically as a link between the University and the society (industry, (R&D) organisations, individual investors, etc). A Brief discussion on the background of communication of (R&D) results in Africa is presented followed by an overview of the national office for the intellectual property rights and of the University intellectual property office. It is shown that the two offices generally complement each other. The discussion highlights the benefits for each of the stakeholders of the link, Universities, R&D organisations, industries etc.

COMMERCIALISATION OF RESEARCH AND DEVELOPMENT RESULTS IN AFRICA

9. Government's effective commitment to science and technology (S&T) issues in African countries varies widely resulting in uneven impact of the application of science and technology for socio-economic development. Hence, it has been difficult to formulate a definite set of S&T recommendations equally applicable and useful to all the countries in Africa. This diversity of S&T development is also evident when one surveys the establishment of Universities and Industrial research and development institutes on the African Continent (UNECA, 1991).

10. One of the most important pre-requisites for commercialisation of research results is the existence within the universities and R&D institutes having both entrepreneurship and marketing capability. There is a need for research and development institutes and universities in Africa to be made aware of this paramount factor. Indeed, some of the African R&D institutions came to learn this important ingredient of commercialisation process in the late 1980s. Such institutions included the Institute of Production Innovation (IPI) at the University of Dar-es-Salaam that established a department on Technology Promotion and Services with entrepreneurial and marketing capabilities in 1987 and capabilities were built only in 1993 (Chungu, 1994). These capabilities were unique to the IPI and could not be found in other units of the university with respect to commercialisation of the R&D results. This expertise is absent in most R&D Institutes in African countries and has contributed to

poor commercialisation of R&D results. Therefore, UNECA (1991) argues that R&D institutions and universities should be encouraged and assisted by their Government and international agencies to develop these attributes so as to assist in co-ordinating the issues related to the intellectual property right.

11. Moreover, Universities in Africa have been urged to streamline their curricula and research program in scientific technological disciplines to make them more applied in nature so that knowledge assimilation and research experience gained become relevant to the needs of the local environment. In other words, Universities in Africa should integrate academic research with the developmental research that is geared to actual demands of society in commensurate with the absorption capacity of those earmarked to commercialise the R&D results.

12. UNECA (1991) emulates the collapse of the economies of most African countries to be highly felt by the institutions that were created to provide adequate technological base to promote their industries and societal needs. The three of these institutions are universities, R&D institutes and local enterprise that have tried to strive in exploiting the locally available resources so as to enable them to recover from their current plight of promoting their industries and societal needs. The need for more intensive co-operation between them has been generally accepted and also as a way that will enable them to fully utilise their meagre and fast dwindling resources for socio-economic development of their respective countries. The role of intellectual property rights as a tool for forging partnership of these institutions for the national socio-economic development is therefore becoming important.

NATIONAL OFFICE FOR INTELLECTUAL PROPERTY RIGHT

Forms of Intellectual Property Coverage

13. Tanzania is a member of the World Intellectual Property Organisation (WIPO) since 1982 and has been a member of the Paris Convention on Industrial Property from 1963. Furthermore, the then Tanganyika has been a member of Berne Convention from 1964 and has recently joined the Patent Co-operation Treaty, the Madrid Union on Trade Marks and the Nice Agreement in International Classification of Goods. Tanzania is also a member of African Regional Industry Property Organisation (ARIPO) and recently joined the Harare Protocol on Patents and Banjul Protocol on Trademarks.

14. In Tanzania, intellectual property has been categorised into two main aspects namely:

- (a) Traditional knowledge of intellectual property; and
- (b) Modern aspects of intellectual property.

15. Traditional knowledge depicts itself in such ethnic groups, through cultural expressions, customs, healing and treatment methods. The traditional intellectual property protection systems are methods of protecting such knowledge from passing to other authorised groups of people, etc.

16. Mahingira (2000) points out that generally there were no formal, in the modern sense, legal protection systems of traditional knowledge. It is only recently (in Tanzania that legal recognition of expression of folklore is included in the Copyright and Neighbouring Rights

Act No. 7 of 1999) that formal legal forms are instituted in form of statutes to protect traditional knowledge. This new legal statutes, aim to providing legal protection of expression of folklore, an aspect of traditional knowledge in the modern sense. The intended outcome is to encourage the custodians of such knowledge, to disclose such knowledge's for general communal and public use and for the moral and economic benefits, to such custodians and their communities.

17. The second category is the modern concept of intellectual property systems that came into this country on board the colonial administration.

18. The introduction of the colonial legal systems in Tanzania also brought legal intellectual property protection system, which implied the recognition of modern intellectual property notion in the country. A legislation was introduced in 1931 of cap 271 to regulate registration of patents in the then Tanganyika. That legislation was repealed and replaced by a new Patent Act No. 1 of 1987. The new act is a modern piece of legislation and has the entire regulatory prowess, of a modern patent protection legislation, which requires equally modern patent infrastructure to complement, and provide effective patent protection system.

19. So the position of intellectual property in Tanzania can be summarised as that based on traditional knowledge and which at the moment is being given modern recognition and has even been included in the new copyright Act. No. 7 of 1999 in an aspect of Folklore. The second category is with respect to intellectual property on the basis of the modern concept, which include aspect such as Patents, Trade and Service Marks and Copyrights.

Role of National Intellectual Property Office

The business registrations and licensing of intellectual property rights in Tanzania are co-ordinated by a Government Executive Agency under the Ministry of Industry and Trade.

The most active aspect of intellectual property in Tanzania as pointed out by Mahingira (2000) is the aspect that deals with trade and service marks. The responsible office of intellectual property right registrations receives about 2000 applications for registration of trade and service marks annually from within and outside the country.

20. It can be noted that intellectual properties are properties, which like any other commodity are subject to personal ownership either privately or publicly. In other words, owners of intellectual properties may influence the development of technology by controlling their rights. This sometimes allows the possibility of mechanical control by superior economies to limit the growth and development of technology into the inferior economies. Economic sanctions by superior economy on the inferior ones, sometimes caused by political misunderstandings, could be typical examples.

21. However, it has been noted that technology grows and thrives where intellectual property protection systems are effective and thus encouraging investment in research and development. Experience has shown that technologies that have been transferred from one economic entity to the other can be through technological assignments or sale of intellectual property rights.

22. Technology development in Tanzania has inadequate bearing for both the two sources of technology, namely: technological assignments or sale of intellectual property rights.

Unfortunately both sources depend on the existing technology growth base and infrastructure in a receiving country like Tanzania. With a developed and sound technology growth base and infrastructure, there will be technological development by way of invention and innovations through sustainable investment in research and development. This condition will also provide for the optimum condition for the reception, integration and assimilation of transferred technology through sale and assignments of intellectual properties by licenses or through carefully managed foreign investments.

23. Therefore technology growth base, include existence of active technology research and development activities, and a comprehensive and effective legal and regulatory frameworks to protect intellectual property rights and to complement the first factor. The two factors will encourage vigorous investment in research and also encourage technology transfer from other socio-economic entities.

24. In Tanzania however, we do not have a sound technology growth base, which is the same case like in many other African countries. There is inadequate, in effective and less organised technology infrastructure. There are research and development activities here and there in Tanzania but most of them lack the necessary financial investment, political and moral support, for meaningful research outcomes. Likewise an enforcement of an effective legal and regulatory frameworks to protect intellectual property rights is much still to be desired. It has been noted that the national office for intellectual property rights has registered several foreign patents and none from Tanzanian R&D organisations. This signifies the weak technological base and infrastructure in the country. However, from 1982 to 1995 the Tanzania Commission for Science and Technology (COSTECH) has registered 19 recipients of TASTA (Tanzania Award for Scientific and Technological Achievements) of whom, 12 are individual innovators or inventors and seven are institutions. Of the seven recipients of the TASTA, two (small sugar production plant and amalgam gold retort) are from the Institute of Production Innovation (IPI) of the University of Dar-es-Salaam. The Ukiriguru Agricultural Research Institute has one TASTA award. The remaining four award among institutions are innovations or inventions captured from the industry. The R&D institutions in Tanzania and their areas of specialisation are shown in Table 1 (Kohi, 1996). Therefore the national office for intellectual property in Tanzania has two major roles namely granting intellectual property rights and to advocate as well as facilitate the parameters that induces technological development in the country.

25. Moreover, the R&D institutions and Universities in Tanzania, and some individual researchers as pointed out by Mahingira (2000), are less informed (if not completely uniformed) of the existence of intellectual property rights which they may acquire upon coming up with new inventions or innovations. They do not know that such rights have economic as well as moral benefits to them. They are also not aware of the disclosed technological information which is available in patent documents published globally, and are available free of charge in case of patent whose life spans have elapsed; and on specific arrangements (licenses etc) for patents which are still in force.

Table 1: Research and Development (R&D) Institutions Affiliated with Tanzania Commission for Science and Technology (COSTECH)

ITEM	R&D INSTITUTION	COVERAGE
1	National Agricultural Research Council - NARC	Agriculture

2.	Tanzania Industrial Research and Development Organisation - TIRDO	Engineering
3.	National Institute for Medical Research - NMR	
4.	Tanzania Engineering Manufacturing and Design Organisation - TEMDO	Engineering: Prototype Development
5.	Centre for Agriculture Mechanisation and Rural Technology - CAMATEC	Engineering: Prototype Development
6.	Tanzania Bureau of Standards - TBS	Standard
7.	Uyole Agriculture Research Centre	Agriculture
8.	Building Research Unit - 13RU	Construction
9.	National Construction Council -NCC	Construction
10.	Tanzania Fisheries Research Institute - TAFIRI	Fisheries
11.	Tanzania Forestry Research Institute - TAFORI	Forest
12.	Tanzania Wildlife Research Institute - SWRI	Wildlife
13.	Tanzania Food and Nutrition Centre - TFNC	Food
14.	Tanzania National Radiation Commission	Energy
15.	Tanzania Industrial Studies and Consulting Organisation - TISCO	Engineering and manager Consultancy
16.	Institute of Production Innovation of the University of Dar Es Salaam	Engineering: Prototype development
17.	Tropical Pesticides and Research Institute - TPRI	Pesticides

26. The Government Agency that is responsible for intellectual property matters has not been active to co-ordinate such researches and to sensitise them, as potential users of the intellectual property information that is available in its custody. Nothing much has been done to expose such researchers to other sources, so as to make them active users of such information for their research activities benefits and for the development technology.

27. Other factors that have contributed to poor and non-effective transfer of technology in the country include:

- ◆ Non-affordability of technology;
and more important is
- ◆ The low level and inferior bargaining power of Tanzanian enterprise and Government institutions.

ROLE OF UNIVERSITY INTELLECTUAL PROPERTY OFFICE

University Mission

28. Beyond the universities as a supplier of the manpower in the economy, universities have a role of providing scientific prediction on the trends in the economy through R&D activities and guiding for a desired socio-economic development of the particular nation. In addition, universities are responsible also to provide services to the industries, enterprises, and communities through their consultancy wing. In a nutshell therefore, universities worldwide are responsible for training (teaching), research and development, and provision of services through consultancy. Table 2 depicts the universities role to its societal needs.

Table 2: The Role of Universities in Meeting Societal Needs

MODALITY GROUP	TYPE OF ACTIVITY AND FACULTIES INVOLVED	DESCRIPTION OF LINKAGE ACTIVITY
Training Education	Co-operative education (Faculty of Engineering and Faculty of Education)	Students Practical Training in Industry, curriculum development etc
	Continuing education (All Faculties)	Seminars /Workshops (also industry) on new technologies etc
	Small business training (Faculty of Commerce and Management, and Faculty of Engineering)	Addressing issues of concern to small or nascent entrepreneurs
	Visiting lectureships (All Faculties)	Companies provide part-time staff to teach and update professional subjects
Services	Industrial extension service (Faculty of Engineering)	Testing, calibration, repair services, simple design modifications
	Technology brokerage and/or licensing (IPI and Faculty of Engineering)	Assistance in obtaining, licensing and introducing (new) technologies
	Consulting/services (All Faculties and Institutes)	Design, manufacturing, maintenance schedules, servicing equipment etc
	Co-ordination of technology issues (IPI and Faculty of Engineering)	Through inter-organisational entries as technology councils or units
Research	Research Consulting (All Faculties and Institutes)	Research carried out for a company with specific terms
	Joint or collaborative research projects (All Faculties and Institutes)	Often carried out in dedicated laboratories, centres, or institutes
	Partnership contracts (All Faculties and Institutes)	Long-term arrangements between University and company
	Professorial Research Chairs (Potentially for all Faculties and Institutes but currently only two in Faculty of Engineering)	Research carried out with specific terms financed by a company
	Personnel interchange or industrial fellowship (All Faculties and Institutes)	Supervising/conducting joint research projects (including thesis)

Source: Wargner (1998) Modified

Note: The list of modalities does not include gifts or donation (such as equipment donations, endowment contributions, or other forms of financing research etc) to Universities which may we// be very good ways of improving relationships between a company or organisation and the University.

29. As pointed-out earlier, it can be seen that universities are the heart of generation of intellectual property in collaboration with the industry and society at large. Imperatively, universities therefore should be good users of the intellectual property information.

30. In Tanzania, universities as discussed in the preceding section, universities are among the poor users of the intellectual property information, which is just around the corner from the government office at the Ministry of Industry and Trade. It appears that there are problems in both institutions, which boil down to lack of awareness and to the low level of technological base.

The Need to Enhance Linkages Between Universities and Society

(i) The Need to Balance Academic Activities

31. A key question that has been raised in the literature concerns the extent to which university and societal needs linkage threatens the core mission and objectives of the University system - especially that the mission should relate to basic research, knowledge creation and academic integrity. This concern is the basis for attempts to ‘peripheries’ or “institutionalise” the linkage mechanism, and to create a “protective boundary” around the core function.

32. There are valid elements to this argument: If Universities are driven too much by the demands of the productive and service sector (in short, the market) imbalances or weaknesses may develop in the educational system and market failure may occur. This has been observed in many developing countries with regard to the allocation of resources to basic mathematics and science teaching, where lack of demand led to drastic reductions. Subsequently, there were a severe shortage of expertise in these areas (Wargner (1998).

33. Hence there must be recognition that some elements of a University’s basic mission ought to be protected. However, there is a need to create mechanism and structure for the university and societal linkages so that the core mission of the universities should be responsive to the rapidly changing global and national business and academic environments.

34. Therefore, a balance must be struck to allow the University’s core to retain its key characteristics and maintain its function as society knowledge base while at the same time permitting appropriate flexibility in the core mission to respond in a dynamic manner to changing conditions. Carefully structured University societal linkage mechanism and procedures can greatly assist the University to reach the desired goal. The current Institutional Transformation Programme at the University of Dar-es-Salaam (UDSM) is an effort towards balancing the core mission and societal needs and thus providing education that is relevant to the society of Tanzania.

35. Most Universities across the world have, until recently, co-operated in one or more ways with the world of academics. There have always been some links, often strong, between higher education institutions and the world of industry and commerce. But these connections have typically been based on personal contacts or the specific requirement of technologically based vocational training programs. Formalisation of these linkages for the interest of

enhancing a balanced mission of the university is a necessary undertaking. The UDSM through its Institution Transformation Programme has initiated since 1994 the formalisation of the academic (teaching, research, and services) links. Indeed, the formalisation of these linkages has benefits to the University.

(ii) Benefits To Universities

(a) Income generation

36. Knowledge gain and income Generation has often been one of the primary drivers and tangible benefits of developing linkages with industry and the society. In the past before economic recession in Tanzania, the public universities have often been able to provide service at no costs and in certain cases depending on the clientele at marginal costs, at rates that have enabled them to cover a percentage of their fixed costs. The particular level of recovery of the fixed cost has varied, historically, depending in part on the commercial acumen in providing the services.

37. Some modes of linkage, particularly consultancy support to industry and society, have historically benefited individual academics, rather than the institution. Such activities were only loosely regulated by the institution. This, too, has begun to change; particularly as the overall scale of activity increases and that institutions are seeking to exercise greater central control. The University of Dar-es-Salaam (UDSM) for instance, as of 1998, established a unit to co-ordinate the university wide income generation activities as part of Institution Transformation Programme approved by UDSM Council in 1994.

(b) Collaborative research

38. The UDSM Institution Transformation Programme has promoted collaborative research with universities in the developed and developing countries in partnership with local institutions and communities. Collaborative research has also been intensified even within the UDSM, among the different departments in the various faculties, institutes and academic centres. This has been a result of recognition that a partnership between parties whose contributions are broadly complementary but who share a common or a limited set of common goals may yield more than the sum successfully, than individually. The benefit of the partnership in a research produces an interaction that may spark off additional ideas and lines of thinking beyond the reach of either side alone. One major problem in collaborative research is the ownership of the intellectual property rights. The university-intellectual property office shall have to address this issue evolving from joint ownership. Traditional medicine unit for example, foreigner collaborators take with them samples of traditional herbs without clear indications and intended purposes. This has been a global issue between the north-south countries.

(iii) Benefits for the Productive Sector

39. Industry benefits from linkage mechanism by having the opportunity to contribute to higher education and to influence and interact with the development of the core function of Universities as the base of knowledge in society.

40. More specifically, individual firms and inventors who work with Universities may gain a competitive advantage by having privileged access to:

- Bright students who may be able to employ on trial basis to carry out a project.
- Experienced and skilled staff members who they may work with for that particular project.
- Endowed and furnished laboratories needed for the particular research project.
- Centre for on-going and post-experience training their staff.
 - Specialist academics who are not in commercial competition with the firm;
 - Up-to date information on -technological advancement and a window for the likely future developments.
- High-cost, specialised research facilities, which could be beyond the ability of the firm or individual to develop or to acquire it.

(iv) University-Intellectual Property Office

41. All of the benefits mentioned in the two preceding sections as drivers from the university's interest or the productive sector both promote sustainability of the University's development agenda and partnership in the national socio-economic development.

42. Therefore, the rationale for establishing an office to co-ordinate and promote the intellectual property rights would be best suited at the university. A dynamic university has an interaction with other research institutions, government agencies, innovators and inventors in various sectors of the economy as well as foreign universities and research institutions as pointed out in the preceding sections. The exact placement within the university structure would be university specific. In some universities it may be placed in the directorate dealing with research or related activities. In the University of Dar-es-Salaam for instance, an appropriate placement shall be in the directorate of Research and Publication (R&P) established in 1999.

43. The coverage of the academic disciplines for the Sokoine University of Agriculture (SUA) shall be in all areas that are agricultural based. On the other hand the Open University of Tanzania (OUT) has recently been covering humanity studies. The University of Dar-es-Salaam as of 1st July 2000 has the following colleges, faculties and institutes with expertise in their respective areas:

44. The typical intellectual property to be generated with the colleges, faculties and institutes at the UDSM are shown in Table 3.

Table 3: The UDSM Typical Intellectual Property

INSTITUTE/ UNIT	TYPICAL INTELLECTUAL PROPERTY
1. Muhimbili University College of Health Science	Knowledge of traditional medicine, products of traditional medicine, Treatment of Unique diseases, New technology of medicine, Books/ Publications
2. University college of land and Architectural studies	Building materials, Architectural designs/ Publications
3. College of Engineering and Technology	New products (Mwarubaini soap), New processes, Books/Publications
4. Faculty of law	Books/ Publications

5. Faculty of education	Books/Publications
6. Faculty of commerce and Management	Books/ Publications
7. Faculty of Arts and social science	Plays, songs/ books
8. Institute of Kiswahili research	Poems, books
9. Institute of Resource Assessment	Books, Publications
10. Institute of development studies	Books publications

The UDSM is linked to the society through the following offices:

- i. *Public relations office:*
It provides information to the public in relation to the various activities of the University faculty/ institutes.
- ii. *Constancy Bureau:*
These co-ordinate consultancy activities within Faculties and Institutes. Some faculties like Engineering have well-established bureaux (BICO in this case) with a fairly large volume of activities. At the University level there is the University constancy Bureau (UCB) which co-ordinates consulting activities and link up the Faculty/ Institute bureau.
- iii. *Directorate of Research and Publications:*
It co-ordinates all research and publication activities. According to the research policy, all research projects should as much as possible address issues that have direct or indirect relevance to the society.
- iv. *Office for Relations with Industry (ORI):*
These are special offices in some faculties which co-ordinate students practical training (or industrial training in industry

45. It is evident that none of these offices directly addresses issues related to property rights. A specialised office for the intellectual property rights is therefore necessary. Alternatively, the Directorate of Research and Publications may be requested to establish a section dealing with intellectual property rights.

46. The role of the university-intellectual property office therefore shall be:

- Facilitation of intellectual property information to various users within the university, industry, innovators, and inventors by establishing and linking with government agency for intellectual property and other institutions electronically.
- Facilitation of applications for the intellectual property rights generated within the university for granting at the government agency in the Ministry of Trade and Industry.
- Centre of education on intellectual property rights for the national development.
- Centre for facilitation on negotiation on technology acquisition and importation in the country.

CONCLUSION AND RECOMMENDATIONS;

47. Poor intellectual property protection systems have discouraged investments that need technology transfer. There would be no serious investor who would wish to put investments involving technology transfer, in places where there is no comprehensive and effective intellectual property protection system.

48. Therefore, in the Tanzanian context, it is recommended that:

- (a) A sustainable dialogue be established between users and owners of intellectual property rights, on the one hand; and the office responsible for enforcement of intellectual property rights and which is also the custodian of intellectual property information, on the other hand so that an effective and sustainable use and granting intellectual property rights is in place for all parties.
- (b) Encourage universities to establish intellectual property offices.
- (c) A vigorous education and creation of awareness campaign is launched so that stakeholders in intellectual property are well informed to make the active participants and players in the field and have economic benefits derived from intellectual property.
- (d) Public information and awareness programs directed towards intellectual property demystification, from the policy formulating levels down to the actual users of intellectual property information should be launched. Alongside this exercise, intellectual property institutions should also be reconstituted to make them not only user friendly but also pro-active and market oriented.

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