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An Assessment of Intellectual Property Rights in Nigeria Agriculture

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Abstract:

Despite the important role of Intellectual Property Right (IPR) as an incentive for promoting the development, dissemination and commercialization of technologies, and the supposed large volume of technological advancements in Nigeria Agricultural Research System; IPR has not been fully utilised for the greatest benefit of Nigeria as in some other developing countries. This study aimed at evaluating the existing gaps in knowledge, attitude and practice about IPR among researchers in the National Agricultural Research Institutes of Nigeria. Results showed good knowledge level on the concept of IPR, with an average score above 75%. Also, 84% of researchers knew with certainty the meaning of the concept, and the types of IP rights including copyright, trademarks, patents, and industrial design rights. Generally low knowledge (52%) was recorded about procedure for filling application for IPR; including the procedure for filling application for trademarks (0%), copyrights (6.7%), farmers' rights (13%), and patents and breeders' right (20%). About 67% of researchers expressed negative attitude about the procedure for application for IPR; that procedure was cumbersome (6.67%), not clearly understood (33.33%), and too lengthy (20%). Moreover, none of the respondents have been involved in filling application for any of the different forms of IPR. It was concluded that knowledge gap on agricultural IPR exist and could contribute to the weak IPR system in Nigeria. A more efficient IPR system could be achieved for the Nigeria agriculture subject to enhanced knowledge of agricultural researchers about procedure for harnessing IPR, capacity of agencies to deliver IPR, and a review of the legal framework for protecting IPR.

Keywords: Intellectual Property Right, Breeders' right, patents, farmers' right

1. Introduction

Though the origins of copyrights and patent law has been traced to the British Statute of Anne 1710 and the Statute of Monopolies 1623 (Shirman and Bently, 1999); *intellectual property* only became a common phenomenon in some parts of the world in the late 20th century (Lemley, 2005). Raysman et. al. (2008) defined Intellectual Property (IP) as a legal concept which refers to creations of the mind for which exclusive rights; such as patent, trademark, or copyright are recognized. Intellectual Property Right (IPR) is useful as an instrument for promoting technology development, commercialization and dissemination, based on the important role it plays as an incentive for scientists to create new innovations. According to WIPO (2004), intellectual property laws are on one hand, meant to give statutory expression to the moral and economic rights of inventors in their creations and the rights of the public to have access to those creations. On the other hand, IP laws are to promote creativity, dissemination and application of inventions, as well as encourage fair trading; in order to contribute to economic and social development. With respect to agriculture, IPR involves the conscious efforts to promote the rights of breeders or other crop scientists, livestock and fisheries scientists, as well as the rights of farmers.

The United Nations is mandated "to encourage creative activity and to promote the protection of intellectual property throughout the world". The mandate holder is the World Intellectual Property Organization (WIPO) which currently has 185 member states including Nigeria. The Federal Government of Nigeria administers the intellectual property system for the country under different agencies; the National Office for Technology Acquisition and Promotion (NOTAP), an agency under the Federal Ministry of Science and Technology which is responsible for registration of developed technologies for patent rights. Also, trademarks, patents and designs are administered by the Trademarks and Patents Office under the Federal Ministry of Industry, Trade and Investment; while copyright is under the administrative control of the Nigerian Copyright Commission (NCC), which is currently under the Federal Ministry of Justice (Ezekude, 2013).

Despite Intellectual Property being a powerful development tool, its usefulness has been the preserve of developed countries and has not been fully utilised for the greatest benefit of developing countries, particularly in most African countries, including Nigeria. In spite of efforts by the Economic Community of West African States (ECOWAS) to constitute a regional body for enacting law on how the member's national intellectual property legislation could enable them fully utilise the WTO –TRIPS (GianCarlo Moschini, 2004), and the existence of IPR organizations in Nigeria; intellectual property regime is still largely not impactful in Nigeria as a nation and West Africa as a sub-region. Indeed, in the opinion of Ezekude (2013), there is no intellectual property regime in Nigeria and West Africa sub-region. Most areas of the IP system as recognized at the global level, and in the developed and certain developing economies (ICAR. 2006), are still either relatively undeveloped or non-existent at all, in the public sector of the Nigerian economy.

The National Agricultural Research System (NARS) of Nigeria consists of fifteen research institutes under the Agricultural Research Council of Nigeria (ARC/N) in the Federal Ministry of Agriculture and Rural Development (FMARD), three other research institutes located in other ministries, three Universities of Agriculture (UAs), Faculties of Agriculture (FAs) in all conventional universities, and Colleges of Agriculture (CAs) located at different parts of the country. Notwithstanding the large amount of scientific and innovative advancements in these research institutes and universities which can be packaged into tangible technologies for the purpose of registration so the intellectual property right behind their creation can be properly appropriated; the practice of it takes place at a low level and neither the institutions nor their scientists presently enjoy the benefits of their creative works as a matter of right. This situation is capable of discouraging the breeders and other agricultural scientists as well as creative farmers to discover or produce new varieties of crops or breeds of livestock.

Against this background, the general objective of this study was to analyse the situation with IPR system for agriculture in Nigeria; and specifically to assess existing gap in knowledge, attitude and practice of researchers in the National Agricultural Research Institutes of Nigeria. It is hoped that a well informed stakeholder population would have the capacity to explore the IPR behind their innovations, as well as advocate for appropriate policy to reward creativity and promote the development of patentable agricultural technologies that would contribute to transforming Nigeria agriculture.

2. Methodology

2.1. Scope of work

The study covered fifteen commodity-based research institutes; involved in the development of a wide range of agricultural commodities including tree crops (cocoa, rubber, and oil palm), horticultural crops, cereal crops, root crops, livestock, veterinary, fishery, as well as food storage/processing technology research institutes. The research institutes covered were: the National Root Crops Research Institute (NRCRI), Nigerian Institute for Oil Palm Research, Rubber Research Institute of Nigeria (RRIN), Nigeria Institute for Oceanography and Marine Research (NIOMR), Cocoa Research Institute of Nigeria (CRIN), Institute for Agricultural Research & Training (IAR &T), National Horticultural Research Institute (NIHORT), Nigerian Stored Product Research Institute (NSPRI), National Institute for Freshwater Fisheries Research (NIFFR), National Cereals Research Institute (NCRI), Institute for Agricultural Research (IAR), National Agricultural Extension and Research Liaison Services (NAERLS), National Animal Production Research Institute (NAPRI), National Veterinary Research Institute (NVRI), and the Lake Chad Research Institute (LCRI).

2.2. Methods of Data Collection and Analysis

The data used for the situation analysis of IPR within NARS were obtained from both secondary and primary sources. Extensive review of literature provided secondary information about the existing situation regarding benefits and process of IPR in Nigeria and other countries. Primary data were obtained from a survey of researchers in the fifteen NARIs that were covered by the study. A total sample of seventy-five researchers was selected by stratified random sampling, five researchers from each of the fifteen research institutes. The data instrument was a semi-structured questionnaire; designed to assess gaps in the knowledge, attitude and practice (KAP) of researchers with respect to the concept, benefits and process of IPR services. Knowledge was measured at three normative levels: first was *outstanding* knowledge when the frequency of respondents who knew was up to 80% of the sample; second was *satisfactory* knowledge when the frequency of respondents who knew was between 80% and 50% of the sample; last was *unsatisfactory* knowledge level when the frequency of respondents who knew fell below 50%. The measure of attitude was based on a 4-point "Likert scale" for locating a particular respondent in the spectrum between his/ her *agreement* and his/ her *disagreement* with certain prejudices or stereotypes about IPR – strongly agree, agree, disagree, and strongly disagree. Mean and pooled percentages were used to analyze the response to each item. The mean response to each item was calculated using the formula: $X = \sum FiXi/N$. Where: X = mean response, \sum = summation, Fi = number of respondents choosing a particular scale point, Xi = numerical value of the scale points, and N = total number of respondents to the item. Similarly, pooled percentages were calculated as:

$$PP = \frac{\sum FiXi}{N} \times 100$$

Where: PP = pooled percentage, \sum = summation, F = number of respondents choosing a particular scale point, X = numerical value of the scale point, N = total number of respondents.

The measure of acceptable or unacceptable practice was premised on whether or not a researcher followed recommended or best practices in the delivery of IPR service. Descriptive statistics such as percentage frequencies and mean were used to analyze the data.

3. Results

3.1. Knowledge of Researchers about IPR

The knowledge level of participants about the concept of IPR was satisfactory, with an average of standardized scores being considerably high for different knowledge variables (table 1). Respondents demonstrated percentage scores of above 75 percent on knowledge about concept and meaning of IPR, 84 percent on types of IPR, and 67 percent on benefits associated with IPR. However, the participants indicated very low level knowledge about other aspects, including the procedure for filing application for IPR (52 percent). Specifically none of the researchers knew the procedure for filling application for trademarks; while only about 6.7 percent knew the procedure for applying for copyrights, 13 percent about farmers' rights, and 20 percent each for patents and breeders' right. Training programs can be used to educate existing personnel on the merits and procedures for licensing and commercializing technologies.

3.2. Attitude of Researchers towards IPR

The attitude of participants about the concept, different types and benefits of IPR was generally positive (table 2); while the majority (67 percent) expressed negative attitude about the procedure for accessing IPR in Nigeria. They perceived the IPR procedure as too cumbersome (6.67 percent), not clearly understood (33.33 percent) and rather too long for them to follow (20 percent). These findings portend that most NARIs are currently not well positioned to demand for the intellectual property rights behind their innovations, thus confirming an earlier assertion by ARCEN (2010) that they are not well positioned to commercialize technology. Despite positive opinion of researchers about the benefits associated with the different types of IPR, their lack of procedural knowledge of basic principles, policies and delivery systems are all impediments to commercialization. The traditional attitude of most researchers is to consider the process of knowledge generation complete as soon as knowledge has become public through publications, lectures, conferences and workshops; since the incentive systems are based on disciplinary achievement and peer recognition rather than use and implementation of scientific knowledge. These represent barriers to commercialization of innovations which can be removed through appropriate revision of incentive system and policies of NARIs. Thus, a shift from the institutional culture of non-proprietary technology coupled with necessary awareness creation and education of researchers about procedural principles, policies and delivery systems of IPR could stimulate individual researcher's interest and generate collective demand for IPR. Karlsson (2004) observed that less than half of the developed technologies in the United States are disclosed because most inventions require further research and development in a more applied direction than the original researcher may wish to engage in. The possibility of getting a share of licensing revenues and becoming engaged in well-paid consulting work could be an incentive for researchers to seek IPR; as it is in practised at Stanford University and the University of California where researchers receive one third and 35 percent of the net royalties from the licensing of their inventions respectively (Karlsson, 2004).

Types of knowledge	Percentage of Respondents			Percent score of Knowledge level
	Know	Uncertain	No idea	
Concept of IPR				
Legal status of IPR	53.33	20	26.67	75.56
IP as creations of the mind	60	20	20	82.22
IP laws grant owners certain exclusive Rights to their innovations	66.67	20	13.33	84.44
IPR grants exclusive rights for disclosure of inventions and creative works	60	20	20	82.22
IPR makes new discoveries to become property of the author	60	20	20	82.22
IPR assures the inventor the temporary enjoyment of his discovery	53.33	40	6.67	75.56
Average	58.89	23.33	17.78	80.37
Different types of IPR				
Different assets to which rights are granted: musical, literary and arts, inventions, words, phrases, symbols, and designs	80	13.33	6.67	91.11
Knowledge about copyright, trademarks, patents, industrial design rights	60	20	13.33	77.78
Average	70	16.67	10	84.44
Procedure for filing application for:				
Copyright	6.67	40	53.33	51.11
Trademarks	0	46.67	53.33	48.89

Patents	20	33.33	46.67	57.78
Breeders' right	20	26.67	53.33	55.56
Farmers' right	13.33	26.67	53.33	48.89
Average	12	34.67	52	52.44
Benefits of IPR:				
An incentive for inventors and authors to develop and disclose innovations	66.67	13.33	20	82.22

Table 1: Knowledge about IPR in the NARIs

Attitude about IPR	Strongly agree	Agree	Indifferent	Disagree	Strongly disagree
Concept of IPR					
IPR creates unfair encroachment on new ideas or innovations	6.67	13.33	13.33	26.67	40
IPR is necessary to encourage invention	46.67	33.33	20	0	0
IPR should be limited in time and scope	26.67	13.33	20	20	0
Potential benefits of IPR					
Society and the patentee/copyright owner are mutual beneficiaries	26.67	53.33	20	0	0
Creators will not have sufficient incentive to invent unless they are legally entitled to capture the full social value of their inventions	26.67	60	6.67	6.67	0
IP laws give protection to inventors in order to encourage innovation	40	40	20	0	0
IPR should be granted only when they are necessary to encourage invention	20	33.33	26.67	6.67	13.33
IPR provides financial incentive for the creation of an investment in intellectual property	33.33	33.33	33.33	0	0
IPR ensures payment of associated research and development costs	33.33	66.67	0	0	0
IPR gives statutory expression to the moral and economic rights of creators and the rights of the public in access to those creations	40	40	13.33	0	6.67
IPR promotes creativity and development of innovation	40	40	20	0	0
IPR promotes dissemination and adoption of innovations	26.67	33.33	20	13.33	6.67
IPR encourages commercialization of innovations thereby contributing to economic and social development	33.33	53.33	13.33	0	0
IP can be a disincentive to innovation when that innovation is drastic	0	26.67	53.33	0	0
There is positive correlation between the strengthening of the IP system and subsequent economic growth	20	40	40	0	0
Enforcement of IPR is critical to sustaining global economic growth across all industries	20	33.33	40	6.67	0
Different types of IPR					
Copyrights, patents and trademarks promote intellectual monopoly	0	66.67	26.67	0	6.67
IPR may infringe upon human right to food and health	26.67	40	0	20	13.33

IPR may infringe upon human right to cultural participation and scientific benefits	20	40	6.67	13.33	13.33
Procedure for accessing IPR					
The procedure for application for IPR is not clear to me	33.33	33.33	13.33	6.67	6.67
The timeframe for application is too long	20	33.33	20	20	6.67
Application procedure is too cumbersome	6.67	6.67	33.33	46.67	6.67

Table 2: Attitude of Researchers towards IPR

Source: Survey of Knowledge, Attitude and Practice of Researchers in the National Agricultural Research Institutes of Nigeria, July 2013

3.3. Practice of Researchers in fulfilling IPR

None of the respondents has been involved in filing application for any of the different forms of IPR, including copyright, trademarks, patents, breeders' right and farmers' right; due to poor awareness and lack of knowledge about the procedure. Only two out of the fifteen research institutes had an IPR office and desk officers, but even these were not functional. Only one technology (a fish smoking kiln) developed about fifteen years ago has been patented by National Institute for Oceanography and Marine Research (NIOMR), which is due for re-patenting due to recent modifications on the technology. Also, the National Institute for Oil-palm Research (NIFOR) has patented a few engineering technologies, but not breeders' rights. Cocoa Research Institute of Nigeria (CRIN) is currently undergoing registration of 21 products with trademarks and National Agency for Food and Drug Administration (NAFDAC); and the National Animal Product Research Institute (NAPRI) is undergoing the patenting of one technology, the "Shika Brown" poultry chicks.

Comparatively, evidence from other developing countries have shown more progress in this regard. Malaysia Technology Development Corporation (MTDC), which was established in 1992 as a Government-industry venture for the commercialization of research projects of Malaysian universities and research institutions has facilitated the successful commercialization of 12 technologies through technology licensing to private sector companies (Boehlje, 2004; Gulbrandsen and Rasmussen, 2008). In Indonesia, the number of patent applied for and licensed by public R&D institutes increased from 24 and 2 patents respectively in 2000 to 65 and 21 patents in 2004 (Aiman et.al., 2007); indicating an increasing trend in the demand for IPR and subsequent increase in number of research results utilized by industry. Similarly, in China, trademark law (1983), Patent Act (passed in 1984 and effective in 1985), the Plant Breeder Rights legislation, special courts for IPR issues (late 1980s), and a clause in the 1994 law against business fraud on trade secret laws; have culminated in the filling of some 50,000 applications per year (Jin et.al., 1998).

In the United States, Europe, Canada and Japan, legislative changes provide the research institutions incentives to support and build infrastructure for the commercialization of research such as the establishment of Technology Transfer Offices (TTOs) in most universities. Legislation promoting Cooperative Research and Development Agreements (CRADAs) between federal institutions and private industry give the performing company the right to retain title of inventions and require that all federal laboratories establish an office of technology transfer. Statistics show that about 3000 active agreements currently exist in the United States, and that the number of patents granted to United States universities has increased from 589 in 1985 to more than 3300 out of 16 000 patent applications reported by 155 universities in 2006 (ARCN, 2010). Kalaitzandonakes (1997) reported that academic institutions across the United States (mostly Stanford University, Michigan Institute of Technology, Columbia University and the University of California) have established a strong national technology licensing infrastructure, with over 200 technology transfer offices and 2200 firms, created between 250,000 and 300,000 jobs and added 30.40 billion dollars annually to the United States economy. These, he largely ascribed to the government's policy of granting intellectual property rights to the performing institution, conferring on them the right to commercialize the results and share the benefits with the inventors. Appropriate policy for promoting intellectual property rights in Nigerian agriculture would likely promote the development, dissemination and commercialization of agricultural innovations in Nigerian.

4. Conclusion and Recommendations

The evaluation study of the Intellectual Property Rights (IPR) regime in the Nigeria agriculture was premised on the notion that the absence of IPR in Nigeria agriculture could be due to gap in knowledge, attitude and practice of researchers and institutions that have the mandate to generate the demand for IPR. Specifically, an assessment of the knowledge, attitude and practice of researchers in the National Agricultural Research Institutes (NARIs) was conducted with respect to IPR.

The results of the study revealed a wide gap in the knowledge of researchers in respect of the legal and procedural framework for getting access to IPR. The perception of respondents about the legal framework for delivering agricultural IPR in Nigeria was considered inadequate and in need of review particularly regarding rights of breeders to patent on process only excluding the plant variety itself, as well as the meagre sum payable as penalty for violating such rights. These results suggest that the existing low demand for agricultural IPR in Nigeria could be attributed to knowledge and capacity gap. Therefore, the conclusion was that a more efficient IPR system could be achieved for Nigeria if the knowledge capacity of researchers and institutional capacity of IPR agencies are further enhanced, and the legal framework reviewed. For a well-rounded intellectual property system to be operative in, and

beneficial to Nigeria, government needs to put in place, appropriate structures for the administration of IPR and for ensuring that stakeholders are well informed and educated about the system and procedures for effectively accessing IPR in agriculture.

Based on the above conclusion, the following recommendations were suggested.

- Capacity building; including training of research officers on IPR, provision of a manual on IPR and procedures for obtaining patent and copyrights, as well as inclusion of IPR in the enlarged national focal point on multilateral trade matters.
- Institution building; including establishment of IPR desk offices and training an IPR desk officer in each of the research institutions, development of agricultural IPR policy for institutes (harmonized policy under the agency of ARCN), as well as harmonization and streamlining the roles of the government ministries and agencies involved in the process of IP registration.
- Advocacy and brokering; including advocacy to introduce IPR in the curriculum of undergraduate programme to build early awareness, sustained sensitization to improve knowledge on the value and procedure of acquisition of IPR for heads of technical departments and researchers of NARIs, as well as liaisons between relevant agencies responsible for IPR and NARIs.

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