

Article Citation Format

Ogodo, A.D. (2021):
Ogodo Intellectual Property Rights (IPR) Generation, Exploitation and Technology
Transfer (TT): Policies and Strategic Concept of Actual Ownership and Legal
Considerations. Journal of Digital Innovations & Contemp Res. In Science.,
Engineering & Technology. Vol. 9, No. 1. Pp 1-18

Article Progress Time Stamps

Article Type: Research Article
Manuscript Received: 4th June, 2021
Review Type: Blind
Final Acceptance:: 16th July, 2021

Ogodo Intellectual Property Rights (IPR) Generation, Exploitation and Technology Transfer (TT): Policies and Strategic Concept of Actual Ownership and Legal Considerations

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ABSTRACT

This scientific research work shows that INTELLECTUAL PROPERTY RIGHTS (IPR) can generate breakthrough solution to Global Challenges and is an integral aspect of the Legal personality of OGODO INTERNATIONAL REFERENCE STANDARDS (OIRS) IN 154 INTERNATIONAL STANDARDS ORGANIZATION (ISO) COUNTRIES IN GENEVA, SWITZERLAND that meets the United States (US) Pharmacopoea Light Transmission Tests of OGODOMETRICS SUPERIOR MATERIALS in the range 2900-4500 Å in Songhai-Delta, Owore Community, Amukpe-Sapele, Delta State, Nigeria to generate Nigeria Vision 2030 Target for Global competitiveness of NIGERIA OFFICIALLY RECOGNIZED INTERNATIONAL REFERENCE STANDARDS for the PACKAGING CONTAINER LAW (PCL) using the PACKAGING ADDED VALUE (PAV322FPI 408) being regulated in Nigeria in collaboration with the 154 INTERNATIONAL STANDARDS ORGANIZATION (ISO) COUNTRIES plus 38 other Countries/Nations via Final Investment Decision (FID). The research dwells extensively and specifically on infringement of PATENT which is actionable and it is the persons vested with the right to Patent that has the right to sue to enforce it. By virtue of Section 10(1) and (2) of the Copyright Act, the first ownership in any literacy or Intellectual Property created by a University or Polytechnic employee belongs to him in the absence of any express assignment of the right by the employee to the University or Polytechnic. The research expresses the beliefs that INTELLECTUAL PROPERTY (IP) can be used as a tool to foster INNOVATION and must be vigorously pursued by Nigerian Institution Leaders to encourage generation and exploitation of Intellectual Property (IP). The research recommends funds which can be used to encourage Collaborative Research Pattern in an effective way for Intellectual Property Exploitation. Secondly, SNERGY is critical to success (Collaborative Interdisciplinary Research) rather than those that simply focus on a said field of research. Thirdly, with the presence and regulatory role of National Office for Technology Acquisition and Promotion (NOTAP), favourable bargains can be struck and properly documented through its Intellectual Property Technology Transfer Offices (IPPTOs). In conclusion, there is lack of Intellectual Property (IP) Policy to spell out the functions of Intellectual Property Technology Transfer Offices (IPPTOs) according to Institutions missions and poor awareness of the researchers about the functions of the Office of National Office for Technology Acquisition and Promotion (NOTAP).

Keywords: Ogodo International Reference Standards, Ogodometrics Superior Materials, United States (US) Light Transmission Tests, Packaging Added Value (PAV322FPI 408), Intellectual Property Rights (IPR), Patent.

1. INTRODUCTION

Knowledge-idea and the people who generate them are the new coin of currency. The innovative stage rewards new competencies and strengths ⁽¹⁾. We can transfer ideas into a new or improved product through entrepreneurship used in industry or commerce ⁽²⁾. Innovation is the application of knowledge in production through learning, research or experience. To innovate is to produce something that is novel in a given setting (Silica-based Packaging Materials) for International Reference Standard for Regulation in Nigeria. Innovation is the technical and commercial activity involved in the marking of a new improved product or the first commercial use of a new/improved process or equipment. A technological innovation cannot be said to have been fully implemented until it has been introduced on the market (product innovation). Innovations therefore involve a series of scientific, technological, organizational, financial and commercial activities ⁽²⁾.

Intellectual Property Rights (IPR) can generate breakthrough solutions to Global Challenges and is an integral aspect of the Legal personality of **OGODO INTERNATIONAL REFERENCE STANDARDS (OIRS) IN 154 INTERNATIONAL STANDARDS ORGANIZATION (ISO) COUNTRIES IN GENEVA, SWITZERLAND** that meets the United States (US) Pharmacopeia Light Transmission Tests of **OGODOMETRICS ADVANCED SUPERIOR MATERIALS** in range 2900-45000 Å in the Critical Ultra Region in Songhai-Delta, Owore Community, Amukpe-Sapele, Delta State, Nigeria to generate Nigeria Vision 2030 Target for Global Competitiveness of **NIGERIAN OFFICIALLY RECOGNIZED INTERNATIONAL REFERENCE STANDARDS** for the **PACKAGING CONTAINER LAW (PCL)** using the **PACKAGING ADDED VALUE (PAV322FPI⁴⁰⁸)** being regulated in Nigeria in collaboration with the 154 **INTERNATIONAL STANDARDS ORGANIZATION (ISO) COUNTRIES** plus 38 other Countries/Nations via Final Investment Decision (FID) ⁽¹⁾.

2. OGODO LAWS OF CHEMICAL ANALYSIS

First Law

Ogodo First Law of Chemical Analysis states that the Measurement of Parameters in packaged products including Total Oxidation values in order to ascertain the Shelf-life depend directly on the ability of the sensitive scattering particles of the materials to bounce back heat and improve the Shelf-life of Superior Pigmented Silica-based Packaging Containers from the adverse effects of Direct Sunlight in screening out the biologically harmful solar ultra-violet radiation than Clear Polyurethane Packaging Displayed in the Open Markets and in Consumer's Home ^(1,3).

Second Law

Ogodo Second Law states that certain colours are effective in protecting the content of a packaged product from the effects of Sunlight by screening out some of the harmful rays (Ogodo, ^{(4), (5), (6), (7)}).

Third Law

Ogodo Third Law states that coloured glass will protect the contents of a bottle from light in varying degrees depend on the colour of the packaging glass materials ^{(6), (7)}.

The Measurement of Chemical Parameters is given a special name **OGODOMETRICS** and the analysis **OGODOSIS**. **OGODOMETRICS, OGODOSIS**, shall be terms that should be used for the measurement of Shelf – life of products packaged in the best superior pigmented Silica – based Packaging Materials in honour of the Scientist, Chemist and Technologist, **MR. OGODO AEMUREHIMEN DICKSON (Snr.)** who carried out so much research work in the study of packaging materials. The study recommends that **OGODOMETRICS, OGODOSIS** shall be terms that should be used for the Measurement of Shelf-life of Products Packaged in the best superior Pigmented Silica-based Packaging Materials ^{(4), (6), (7), (8)}.

International Standards Organization (ISO) Approval

ISO Approval

The Packaging Materials should be produced in a Plant awarded the ISO 9001:2008 for Quality Management System, ISO 14001:2004 for Environmental Management System and complies to ISO 9706 for Permanency of Packaging Materials.⁽⁸⁾

ISO Certifications

ISO Certifications requires that the manufacturing facilities are certified to ISO 13485: 2003 and ISO 9001: 2000 for the design, development, manufacturing, surface treatment, printing, assembly, sterilization by irradiation to customer specifications per ISO11137 and to meet the US Pharmacopoeia Light Transmission Test of Ogodometrics Superior Material produced in a Plant awarded the ISO 9001:2008 for Quality Management System, and ISO 14001:2004 for Environmental Management System and complies to ISO 9706 for permanency of Packaging Materials and closures meets the requirement of 21CFR177:1520 for Food and Beverage use. ⁽¹⁰⁾

2.1 Level of Generation and Exploitation of Intellectual Property by US Tertiary Institutions

Table 1: MIT's (TLO) Performance for 10 years

No	Item	Data
1.	No of M.I.T. Current Patents	1,500
2	No of M.I.T. Yearly Patents	150
3.	No of Active Licenses	600
4.	No of Yearly Active Licenses for lost 6 years	100
5.	The Gross Annual Revenue of the Office	US \$40 Million
6	Net Revenue after Patent Expenses, Personnel Expenses, and Distribution of a Portion of Royalties to Inventors	

Source: MITs (TLO) Annual Reports⁽¹¹⁾

Intellectual Property (IP) Exploitation Mechanisms Used by United States (US) by and Other Industrialized Countries.

There is a wide range of mechanisms that facilitate knowledge transfer between Universities and Industry as shown in the table below. Geiger (2010:11) provides a helpful table that summarizes the range of Corporate-University Research Relationships;

Table 2:

Individual Projects	Institutional Links	Personnel
Contract Research, Deliverables	Collaborative Research in Consortia	Internship for students
Unrestricted grants	Participation in Federal Centers	Programmes to support Faculty
Straight licensing	Partnerships or Alliances	Graduate student support
Sponsored research project	Satellite Laboratories	
Faculty Consulting		
Material Transfer Agreements		

However, new firm formation in the form of spin-out and start-up Companies, licensing and contract research between Firms and University Research, and Research mobility between academia and industry are the most common mechanisms for knowledge transfer. Spin-outs and start-ups are the University – Industry knowledge transfer mechanism that have attracted the most policy attention.

Since new technologies may not be easily patented and University may not be able to capture the full value of their technology through licensing agreements, Universities and Individual Researchers often seek more direct involvement in the Commercialization process by spinning-out a Company.¹¹

2.2 Intellectual Property Generated and Exploited In Nigerian Tertiary Institutions

Generation and Exploitation of Intellectual Property (IP) in the form of Copyrightable Materials

It is difficult to appraise the IP capacity of the Nigerian Tertiary institutions because statistics are limited. This is very true when it concerns invention and industrial designs. From data available in technical literature on the subject matter, Nigerian institutions have the highest number of Intellectual Property Rights (IPRs) in the form of Copyrights in published literary works in Africa. The same is applicable to abundant art works that are generated and even exported. However the main criteria for ranking “World Class Universities” are not so much the volume of teaching, student population, or publications only, but also in the quality of research output exploited in products and services for the benefit of the society.⁽⁶⁾

Generation and Exploitation of Patented Inventions in Nigeria

As far as inventiveness in Nigerian Tertiary Institutions (TIs) is concerned, very little attention has been given by the stakeholders over the years because of “publish or perish syndrome” necessary for promotion.

This has led to the fact that extremely few patented inventions were recorded before year 1999. Table 3 below shows patent applications for 1999 till October 2014:

Summary of R&D Results/Inventions Submitted To NOTAP

Table 3:

Year	Number Of Inventions Submitted To The Office	Number Of Patent Application Filed By The Office At Patent Registry	Number Of Patent Application Pending (Under Evaluation/Awaiting Response From Inventor)	Number Of Patent Application Granted/ Approved
1999	2	1	1	1
2000	32	12	20	1
2001	14	8	6	7
2002	17	2	15	6
2003	8	0	8	1
2004	27	11	16	4
2005	41	12	29	19
2006	24	13	11	18
2007	28	9	19	9
2008	47	6	41	2
2009	49	1	48	0
2010	32	16	16	5
2011	55	13	42	7
2012	75	9	66	6
2013	59	36	23	6
October 2014	27	10	17	32
Total	537	159	378	124

As shown in Table above, 553 patent applications were submitted to NOTAP from 1999 till October, 2014 for evaluation for patentability and assistance in patent registration at Patent Registry. It should be noted that the policy of assisting the TIS with patent applications is beginning to yield the desired results as from January to October 2014, the number of patents granted has improved significantly. The poor quality of patent applications submitted is still a major challenge. Tertiary institutions submitted only very small portion of the total patent applications while the rest were submitted by independent inventors and SMEs.⁽⁶⁾

3. POLICIES AND STRATEGIES TO IMPROVE INTELLECTUAL PROPERTY GENERATION AND EXPLOITATION IN NIGERIAN TERTIARY INSTITUTIONS

Three sets of factors help guide inter-organizational interactions and IP generation in a desirable way: institutional features, incentives structures and ancillary support structures to guide collaboration.

Institutional Features

Three critical components that make the institution a successful centre of innovation are:

- (1) Level and quality of human skills (amount and quality of researchers) available to train new man power, and to conduct research.
- (2) Laboratory Technology and Equipment to train students in difference fields of Science and Engineering as well as to conduct latest research.
- (3) Human interaction and co-ordination between researchers in various departments and institutions and good channels of dissemination of research results within Nigeria and abroad. Synergy is critical to success.

Incentive Structures

Poorly designed reward systems and collaboration incentives are perhaps the second most critical factor that affect institution performance, after lack of facilities and research funding. Different forms of performance-based incentives exist to encourage researchers. One common incentive is publications: to judge the quality of a researcher and his/her potential to carry on good work based on his/ her publications. This so-called publish or perish paradigm has been criticized for its lack of emphasis on collaborative research, within institutions. It has also become clear, that incentives that really work are those that focus on the quality and outcomes (collaborative. interdisciplinary research) rather than those that simply focus on a said field of research. Patent incentives to researchers is another incentive that is becoming increasingly common. In the USA, for instance, the Bayh-Doyle Act (1980) was introduced as a means to facilitate Technology Transfer from Universities to Industry.

The Act allowed Public Institutions to retain proprietary rights over invention that were achieved through Governmental Funding, subject to the condition that the revenues from commercialization of such inventions must be shared with the individual researchers who were the original inventors. This may be a useful incentive.⁽¹¹⁾

Funding Incentive

Funding can be used to encourage collaborative research patterns in an effective way for IP exploitation. The Japanese Government initiated several Research Development (R&D) Programmes for Biotechnology for example that had University-Industry linkages as a pre-condition for the selection/funding of research projects in the past two decades. Through these conditions, Inter-Organizational interactions were promoted. Collaboration and synergy between institutions can be further promoted through setting up of ancillary structures that guide these interactions. IPTTOs to facilitate Institution-Industry Technology alliances can be very useful in all disciplines and are being implemented in a variety of Developing Countries worldwide.

The ones promoted by NOTAP in this Country are not functioning well because of:

1. Poor funding and lack of full and committed support by the leaders of the Institutions,
2. Lack of Trained Staff,
3. Lack of Intellectual Property (IP) policy to spell out the functions of IPTTO according to institution mission and poor awareness of the researchers about the functions of the office.

Intellectual Property Policy and Administration

Lack of strong Governmental encouragement and sustained funding to develop Technology Transfer Offices (IPTTOs), as well as Intellectual Property (IP) policies (conflict of interest management, allocation of revenues, and so forth) retards generation and exploitation of institutional IP.⁽¹¹⁾

Collaboration with National and International Agencies

We have to think of ways to partner with International bodies to move what we are doing forward. We will take a look at foreign Technologies exhibited and compare with our own so as to enable us train the Young Scientist to the quality of the Foreign Scientists⁽¹²⁾. Many Countries will be attracted to establish their collaborative efforts with us having seen how possible it was with us. Our capacity building through Technology Transfer can compete to some extent with the imported ones and even better than the ones from Asia which are not as good as was taught. With time, our Technology Transfer will compete favourably with other parts of the world⁽¹³⁾.

We require exchange of Experience and input between communities, Agencies and Nation. The collaboration can be done at two levels.

1. Technical Support and Capacity Building.

This area of collaboration is accessed through Bilateral arrangements between Nigeria and other Countries/Agencies within the frame work of such arrangements.

2. **Collaboration in Programme Delivery.** Project delivery should be facilitated through a network of collaborative activities with local communities, local and state Governments, and Agencies⁽¹³⁾.

Collaborative Research and National Development

Collaborative Research, Development and Deployment (RDD) is positively influencing development in Nations of the World. A great number of nations have remarkably improved their socio-economics problems through huge investment in collaborative research where individuals in the state of harmony bring their expertise together to solve a typical problem beneficial to the society. Such synergy results in breaking down barriers in the way of Inventions, Discoveries or Innovations which otherwise would not have been possible when one individual is working on the project all alone. Instance bound where such an approach has worked wonders.⁽¹⁴⁾ Collaborative Research, is also yielding huge investments in India, China, Malaysia, Singapore. India has developed to the extent that her software exports were about Six Billion Dollars in 2000. India and the Philippines are home to call centres of Africa's largest Companies. Microsoft, American Express, IBM, Hewlet, etc.

The large-scale off-shoring of Factories and Plants to places like China, Malaysia and Singapore is fast redefining the manufacturing sector of the American economy⁽¹⁵⁾. In 2004, about 2500 Americans' tax returns were prepared by Graduate Accountants in India⁽¹⁴⁾. Even our fathers of Science collaborated in their works to achieve greater results, impacted on the universe as a whole and won highly Prized Nobel Prizes. The Husband-and-Wife Team of Jean Frederic Joliot-Curie (1900-1958) and Irene Joliot Curie (1897-1956) won the Nobel Prize in Chemistry in 1935 for the discovery of new radioactive elements prepared artificially⁽¹⁶⁾. One could go on and on. The products of such collaborations are what we are enjoying today in the shade of modern life⁽¹⁴⁾. So, our Society will be much better as we develop interest in collaborative works, identify relevance areas and work as a team of experts to achieve a goal.

International Organizations (UNDP, UNESCO, UNICEF, Common Wealth, World Bank, etc) prefer giving grants to projects carried out as a team.

Patent

- What is a Patent? A Patent is a document that gives the Patentee/Assignee the right to exclude others from making, using, and selling what is claimed as the invention for a limited period time.
- What is useful? Something that benefits the society. Utility must be specific, substantial, and credible.
- **Patentable?** Patentable things include the following:
 - New and useful process
 - Manufacturing method
 - A machine
 - An unknown combination of known parts
 - New and useful improvement on a process, machine, etc
 - Patents are granted in many parts of the world on a 'first to file' basis. It is, however, granted on a 'first to invent' basis in the United States of America⁽⁷⁾.

4. BEYOND PATENTING

What Next?

The culture of Intellectual Property Right (IPR) is very low in Nigeria due to lack of awareness among the people. In view of this, most Researchers and Scientists in the Country especially in the Tertiary Institutions do not patent their Inventions, instead, they publish their valuable research results for academic purposes and thereby throw their Intellectual Property (IP) assets into the public domain with little or no reward for the effort, labor and capital invested in the Research works. However, with the efforts of the National Office for Technology Acquisition and Promotion (NOTAP) through the establishment of Intellectual Property and Technology Transfer Offices (IPTTOs) in some of the Tertiary Institution and Research Institutes in the Country and the provision of Patent support services; Researchers are becoming increasingly aware of the need Patent their Research Results and Inventions.

Through these processes, many Patents are being generated from the Tertiary Institutions and Research Institutions. This was increased to 16 in 2016 and was further increased to 58 making a total of 130 patents from 2015 till date. Although this is considerably low compared with other parts of the world where similar Institutions turn out Patents in thousands every year. Nonetheless, this heralds a ray of hope considering that Previously, institutions were rarely concerned about Patenting. Also, the annual rate of increase shows that the Institutions had risen up to the challenge and the country is on its way to becoming an Intellectual Property (IP) generating nation like many developed Countries as opposed to being an Intellectual Property (IP) consuming nation (Ojo, 2018^B).

Upon obtaining the Patents, many Researchers with the exception of few continue to glow in euphoria of becoming Patentees ie Patent owners without taking further steps to derive maximum benefits from the Patents by exploiting them. Sometimes, this is due to the fact that some of the Patentees lack the expertise on taking the Patents to the market while some that know what to do, lack the adequate finance to exploit the patents by commercializing them especially in a Country where there are no ventures Capitalists, specialized Financial Institutions or dedicated funds for establishment of start-ups. Most of the commercial banks are not providing loans for long term investments of this nature. Many Patentees too lack the requisite knowledge on other avenues that could be explored to exploit their Patents apart from self-exploitation. It is noteworthy that there are various ways by which Patents can be exploited in order to maximize benefits from them.

Patentees have to be enlightened on the various steps that could be taken to exploit their Patents to enable them derive benefits from them as a means of recouping part of their investment on the Patented inventions.

What is a Patent

According to the World Intellectual Property Organization (WIPO), a Patent is “a document issued, upon application by a Government office (or a Regional office acting for several Countries) which describes an invention and creates a legal situation in which the patented invention can only be exploited (manufactured, used, sold, imported) with the authorization of the owner of the Patent. (Ojo, 2018^B). In other words, Patent is an exclusive right granted by Government to the owner of an invention in a given territory for a limited period of 20 years to enable him prevent any unauthorized person from exploiting the Patents without his consent. It is worthy of note that is Patent is granted by Government to the owner of an Invention in exchange for the disclosure to the public for purpose of further research or exploitation for the benefit of mankind and to enable him recoup part of his investment on the invention. If therefore, a Patent is not exploited it will lapse after the 20 year period and falls into public domain. Thus, the efforts of the inventor over the invention will amount to a waste. Literally, this is like a property acquired through valuable investment but abandoned till an interested third party encroaches on it and take it over. The owner’s investment over the property therefore becomes a total loss to him ⁽¹⁷⁾.

NOTAP and IPR In the Universities

- This agency was established and entrusted with the responsibility of registering and regulating agreement in respect of all categories of Intellectual Property. It has branches in some Universities (Including the University of Benin) called Intellectual Property Technology Transfer Offices (IPTTOs) with the specific mandate of promoting and strengthening the relationship between the Organization and the University/Research Institutions and Industries.

Plagiarism and IPR in Universities

- One area in which the relevance of Intellectual Property Rights can best be appreciated in the Universities is with respect to Plagiarism. Plagiarism is an act of infringement of Copyright. It is “the deliberate and knowing presentation of another person’s original ideas or creative expression as one’s own and therefore constitutes a serious Intellectual theft. ⁽¹¹⁾
- In the University of Benin, the existing Senior Staff Regulations make specific provision on plagiarism and the penalty for this vice. Whereas, the unauthorized copying and or reproduction of works of academic Staff of the University by his/her colleague’s is a basis for a civil claim for infringement of Copyright, it is first and foremost a misconduct which the University must deal with.
- The University of Ibadan evolved comprehensive policy guidelines on the authorship and ownership of Intellectual Property. The Guidelines focus on the benchmarks for determining authorship, co-authorship and other incidents of authorship and ownership of Copyright. Incidences of Plagiarism and other infringement by Article 14 is a serious research misconduct.
- The efforts of these Universities are commendable and ought to be emulated by other Universities and other academic and Research Institutions in the Country. ⁽¹⁶⁾

Conditions for Registration

- Registration of an invention as a Patent is not automatic, the Patentee or applicant must first of all establish a right to be so registered and therefore comply with the procedure for the registration of the Patent as laid down under the Act.
- A Patentee of an invention acquires some measure of monopoly in the manufacture, production, sale and marketing of products that result from such an invention. As it is with Copyright, infringement of Patent is actionable and it is the person vested with the right to Patent that has the right to sue to enforce it.

Copyright

- By virtue of **Section 10 (1) and (2)** of the copyright act, the first ownership in any literary or intellectual Property created by a University employee belongs to him in the absence of any express assignment of the right by the employee to the University. However, the University can rebut this presumption of author-owner by making such employees or students to expressly assign Copyright of the Intellectual Property Rights in the work to the University and this will not offence the Act (**S. 11(1)- (5 of the Act)** ⁽¹⁸⁾.

On the Way Forward, Science Governance is Important:

- ❖ The professional, intellectual apparatus and ideological commitment of policy makers and science administration are very crucial to the attainment of building and utilizing SETI capacity for national development.
- ❖ In Nigeria's economic management at the top echelon, no single scientist of note sits on any of the two bodies.
- ❖ There is need for correction here in order to facilitate the required synergy to realize the nexus between science and the national economy.
- ❖ The prevailing national dictum of buying & not making which export our jobs and competencies needs to change ⁽¹⁹⁾.

Intellectual Property Rights (IPR)

Intellectual Property Rights (IPR) enhances a Nation's development, business image and integrity. Such protections stimulate advances that imparts positively on the entire world be it technology, medicine, chemical or biochemical processes. The protection of IP right is crucial to a Nation's public Health and safety. Why in any case should IP right be entrenched in Nigeria? ⁽⁶⁾. At the close of the 20th Century and at the dawn of the 21st Century, Global Economic output was generated and maintained by services that are largely dependent and sustained on the wings of New and emerging technologies. An increase in GDP during the period was traceable to innovation deliberately and conscientiously pursued by those nations that had the ambition to lead others. The hope we all have for a better tomorrow and indeed for a better future depend on those inventors and innovators who have and are striving to make the world a better place through their creative energies and sustained hard work⁽²⁰⁾.

Among them are the following famous Inventors and Achievers:

- **Antoine Lavoisier**, the father of modern Chemistry
- **Francis Bacon**, the father of experimental Philosophy
- **Hippocrates**, the father of Medicine
- **Copernicus**, the father of modern Astronomy
- **Dr. Alfred Bernhard Nobel**, who invented the Dynamite
- **Roger Bacon**, who invented gun powder
- **Michael Faraday**, who invented the dynamo and Electric Transformer
- **Alexander Graham Bell**, who invented the telephone
- **Professor David Edward Hughes**, who invented the Microphone
- **James Watt**, who invented the Steam Engine
- **George Stephenson**, who invented the Locomotive
- **Orville and Wilbur Wright**, who invented the Aeroplane
- **Sir Charles Algernon Parsons**, who invented the Steam Engine⁽²⁰⁾.
- **Galileo Galilei**, who Invented the Thermometer and the Telescope and
- **Ogodo Aemurerhimen Dickson**, (Senior) Chartered Chemist, **Chief Research Scientist (CRS), Scientist For All Nations (SFAN), Ogodometrics^{WSSD+23}**, The Father of International Reference Standards of Silica-based Packaging Materials for **STANDARDIZATION FOR REGULATION IN NIGERIA** ⁽¹⁾.

5. INNOVATIONS, INTELLECTUAL PROPERTY, ITS VALUE AND ITS USES

A new kind of society is taking shape in the modern world, one that is based on knowledge and information and one that is oriented toward not so much on the creation of information as its management. The wealth of nations is also changing. While prior centuries were dominated by nations with superior industrial or agricultural capabilities, the innovation stage rewards new competencies and strengths⁽²⁾. Knowledge – ideas and the people who generate them– is the new coin of the realm. Innovation capacity will be the key driver of future economic prosperity with emerging technologies, such as standardization of Silica - based packaging materials using International Standards Organization (ISO) Standards

Intellectual Property Right as an Aid to Wealth Creation and Economic Development

Intellectual Property covers various categories of inventive and creative works such as Inventions, Signs, Marks, Symbols, Designs, Geographical Indications, Books, Novels, Poems, Drawings, Paintings, Photographs, Films, Phonograms etc. The owners of the various works are conferred with Exclusive Rights over their works known as Intellectual Property Right (IPR) has become widely recognized as a vital tool for economic growth and national development especially with the shift from natural resource based economy to knowledge based economy. Thus many advanced nations with strong Intellectual Property (IP) regime had utilized various aspects of Intellectual Property Rights for the development of their national economy.

For instance, Intellectual Property Rights (IPR) accounted for 10.6% growth in labour productivity in UK between 1990 and 2008 (IPO, UK, 2011). Similarly, in 2008, Intellectual Property (IP) - Centered Companies in the Manufacturing and Non Manufacturing Sectors generated nearly \$7.7 Trillion in Gross Output, accounting for 33.1% of the total U.S. Gross Output (NDP Consulting, 2011) in (Ojo, 2018^A).

China also owes a large degree of its economic development in the last two decades to the high value it places on the development of Intellectual Property Rights. Some developed Countries like Malaysia, India and Korea in Asia as well as South Africa in Africa are already emulating the developed Countries in developing strong Intellectual Property Rights regime for the development of their economies. It is therefore expected that Nigeria will also utilize the opportunities offered by Intellectual Property Rights to enhance its economic growth and national development. Therefore efforts need to be intensified to ensure adequate protection, promotion, management and enforcement of Intellectual Property System in the Country as it is done and is still being done in the developed Countries. Focus is made on some strategies that can be adopted in utilizing Intellectual Property Right as a tool for wealth creation and economic development in Nigeria has been made (Ojo, 2018^A).

Intellectual Property Right (IPR)

Intellectual Property Right (IPR) is an exclusive right conferred by statute on the owner of a creative or inventive work in a given territory for a limited period. According to World Intellectual Property Organization (WIPO) convention, “Intellectual Property is reserved for types of property that result from creations of the human mind”. (Ojo, 2018^A).

Table 4: Intellectual Property Right (IPR)

Intellectual Property Right	Object of Protection	How Obtained	Duration	Rights conferred
Copyright	Expression of creative works	Exist upon the Creation	Literary -70Yrs	Prevention of Copying by a Third Party
Patent	Inventions	By Registration	20Yrs	Prevention of Commercial Exploitation
Trademark	Signs, Words, Letters, etc.	By Registration or by use	7Yrs renewable from time to time	Prevention of unauthorized use or use of identical marks on similar goods
Industrial designs	Lines, contours, colors shape etc.	By Registration or by use	5Yrs renewable for 2 Terms	Prevention from Reproduction
Geographical indication	Qualities, Characteristics or Reputation identifying a product as originating from a specific geographical location	By Registration or by use	Lifetime subject to 10Yrs renewal in some countries	Protection against any form of usurpation or imitation
Trade Secrets	Valuable commercial information not known to the public	8Yrs keeping it in secret	As long as the owner keeps it secret	No specific right

Branches of Intellectual Property Right

Intellectual Property Rights have two main branches namely, Copyright and Industrial Property. Copyright covers Literary, Musical, Photographic Works such as Books, Arts, Films, and neighboring or related works like the performance of performing Artists, Phonograms, Broadcasts, etc. It also covers the protection of Databases and Computer Programmers. Industrial Property on the other hand consists of Patent, Utility Model, Trademarks, Industrial Designs, Geographical Indications, Appellation of Origin, etc.

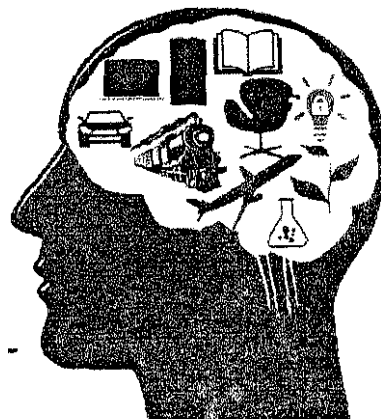


Figure 1: Diagram of Intellectual Property

Franchise

Franchise though not an Intellectual Property Right encompasses many Proprietary Rights in its business method packages. Franchise is a business arrangement in which the owner of proven business, a Franchisor, grants to another person, a Franchisee, the right to operate the business under similar conditions in return for payment of royalty. Usually, a franchise grant includes the right to use the Trademarks, Trade Secrets, Designs, Patents and the associated know-how in the course of operating the business. It also includes the provision of all relevant brochures, Advertising or Copyright works related to the manufacture, sales of goods or the rendering of services to customers. It is a complete business package. It is recognized as a business method in some jurisdictions

The Role of Intellectual Property Right as a Tool for Economic Development

The role of Intellectual Property Right cannot be over emphasized. It cuts across many technological fields of endeavor in Science, Medicine, Pharmaceutical, Biodiversity, Food, Agriculture, etc. It also extends to the fields of Arts, such as Literature, Music Broadcasting, etc. The role of Intellectual Property Rights includes the following:

- Promotes research and development
- Stimulates Transfer of Technology;
- Spurs industrialization;
- Preserves and promotes the development of cultural heritage;
- Generates wealth for the owners through the payment of royalties when such works are licensed to interested users;
- Contributes to the gross domestic and national product and generates foreign exchange when such works are exported;
- Creates employment for the owners and/or users when such works are exploited, etc.

Examples of Countries Where Intellectual Property (IP) is Used for Wealth Creation and Economic Development

Intellectual Property (IP) helps to generate wealth and contributes to economic development in the following Countries, particularly in the sectors/areas indicated:

- **United States**
Biotech Industry
Health Services
Investment and Technology Transfer
- **United Kingdom**
Technology Transfer
Information and Computer Technology (ICT)
Manufacturing and Non-Manufacturing Sectors
Growth of SMEs
Development of Agriculture etc.
- **India**
Agricultural produce
Strengthening education and healthcare systems
Leveraging information Technology and communication and;
Bio- diversity for healthcare and other service etc.

Strategies for Using Intellectual Property Rights for Wealth Creation and Economic Development

For Wealth Creation

Copyrights

- Writing of Poems, Articles and publishing of bestselling books
- Engaging in art works such as Drawings, Paintings, Sculptures, hands and wood craft sales at tourist centers and for export
- Waxing of Records
- Acting and/or producing films e.g Nollywood production

Industrial Property Rights

(i) Industrial Designs

- Developing Designs useful for prints in Textile Companies

(ii) Trademarks

- Developing indigenous vibrant brand names and/or logs, Signs, Marks that can be used by SMEs, for a fee
- Assisting Companies to develop marks or names that can be used in Trademarks and/or domain names.

(iii) Patents

- Development of Inventions and Innovations for SMEs in various fields of Technology
- Conducting Patent search for people
- Exploiting Patent that are in public domain and writing of Feasibility Reports for the exploitation

(iv) Geographical Indication (Subject to Protection in Nigeria)

Branding of indigenous goods originating from specific localities into goods covered by appellation of origin such as the "Jalingo, Bwarri and Bendel yams", Adire (Tye & Dye) from Oshogbo "Ijebu Garri", "Red Goat Sokoto", etc.

(v) Developing Franchising Business (Not protected by Intellectual Property (IP) law but recognized under the Common law Principles of Tort, Contract etc).

Conceptualizing some local foods into franchise businesses e.g.

- "Asun"- a local delicacy from Ondo Town, Banga soup-the Urhobo soup delicacy.
- "Dabo nama" house hold delicacy from major cities in the northern part of the country which are fast gaining ground in all major Cities in the Northern part of the Country which are fast gaining ground in all major cities of the Country.
- "Edy kan Ikong" the famous Calabar and Ibibio soup delicacy
- "Killichì", a special meat in the Northern part of the Country.
- "Oba akan" (crab pepper soup) delicacy from Lagos.
- "Ofada rice" a special meet in the Northern part of the Country.
- "Suya", a special meat in the Northern part of the Country.
- "White Soup/Oha" the popular and irresistible ibo delicacies

For Economic Development

Intellectual Property contribute to economic development in the following ways:

- (i) **Foreign Direct Investment (FDI)**
Intellectual Property Right (IPR) encourages the inflow of foreign direct investments especially where strong Intellectual Property Regime is put in place. This in turn helps to contribute to economic growth.
- (ii) **Technology Transfer (TT)**
With effective protection and enforcement of Intellectual Property Rights, Foreign Licensors are encouraged to Transfer their Technology to License in other Countries which helps to boost production and economic activities particularly in the Foreign Multi-National Companies
- (iii) **International Trade (IT)**
Intellectual Property Right (IPR) encourages the inflow of knowledge intensive goods across national boundaries. This in effect creates competitions and improve the welfare of Citizens.
- (iv) **Research and Development (R & D)**
Intellectual Property Rights research and development as a result of the rewards system it provides for right holders to recoup part of the investment made in their works over the years. Such research works in turn bring about innovative ideas for improving the production system
- (v) **Development of IP based SMEs**
Through effective Intellectual Property (IP) system, research results emanating from the Tertiary and Research Institutions will be channeled towards Technologies that can help to increase competitiveness and also improve the productivity of Small and Medium enterprises in the Country. The multiplier effects of all the above will impact positively on the economic development of a nation.

Creating an enabling environment for Strong Intellectual Property (IP) Regime in Nigeria

Creating an enabling environment for a strong Intellectual Property (IP) regime is very crucial for optimizing the various opportunities offered by the Intellectual Property system. Towards this end, the following is recommended for consideration:

6. CONCLUSION

1. There is lack of Intellectual Property (IP) Policy to spell out the functions of Intellectual Property Technology Transfer Offices (IPTTOs) according to Institution missions.
2. ISO Certifications requires that the manufacturing facilities are certified for the Design, Development, Manufacturing, Assembly, Sterilization by Irradiation and meets the US Pharmacopoea Light Transmission Test of Ogodometrics Advanced Superior Materials produced in a Plant awarded ISO Quality Management System and Environmental System and complied to ISO for permanency of material.
3. Adequate Funds should be made available to provide the necessary systematic Technology Transfer to Nigeria on new Challenges of Vision 20:2030 Agenda.
4. Expand, Collaborate with other countries with appropriate human and material resource through PROJECT OGODOMETRICS INTERNATIONAL for Vision 20:2030 Agenda of Technology Transfer Arrangement/Agreement. The scope of the Intellectual Property Rights (IPR) should be via synergy with Harvard University, USA; International Standards Organization Geneva and American Oil Chemist's Society, USA etc. United State of America (USA), South African Government, National Office for Technology Acquisition and Promotion (NOTAP) and NIGERIAN RESEARCHERS SHOULD TEAM UP TO DEVELOP THE NEW REVENUE FORMULA FOR NIGERIA WEALTH CREATION ⁽²²⁾.

5. Intellectual Property (IP) “can be a strategic tool to promote Innovation and give a boost to SMEs, generate income for our Artisans and Performers, Protect Traditional Knowledge, healing practices and cultural heritage from misappropriation, help increase food production, bring benefit from geographical indicators, expand Innovative and Non-Traditional ways of learning, facilitate investment and transfer for technology and generate wealth..... Thus, using Intellectual Property (IP) for development is not an option, but a necessity. (Debapriya Bhattacharya). To achieve these, efforts must be geared towards creating an enabling environment to build a strong Intellectual Property (IP) regime in the Country⁽²¹⁾.
6. Intellectual Property and the protection of the rights of owners of the variant forms of Intellectual Property have taken a centre stage in recent times. Nigerian Universities as the citadel of learning and research are ably positioned to take benefit of the immense potentials inherent in Intellectual Property.
7. Nigerian Universities must evolve internal control and regulatory mechanism for the protection of Intellectual Property within and outside the frontiers of the University in order to take the benefit of the growing market for Intellectual Property in the Country⁽²²⁾.
8. ISO Certifications requires that the manufacturing facilities are certified for the Design, Development, Manufacturing, Assembly, Sterilization by Irradiation and meets the US Pharmacopoeia Light Transmission Test of Ogodometrics Superior Material produced in a Plant awarded ISO Quality Management System and Environmental System and complied to ISO for permanency of material.
9. Adequate Funds should be made available to provide the necessary systematic Technology Transfer to Nigeria on new challenges of Vision 20:2030 Agenda.
10. Expand, Collaborate with other countries with appropriate human and material resource through PROJECT OGODOMETRICS INTERNATIONAL for Vision 20:2030 Agenda of Technology Transfer Arrangement/ Agreement. The scope of the Intellectual Property Rights (IPR) should be Via synergy with Harvard University, USA; International Standards Organization Geneva and American OilChemist’s Society, USA etc. United States of America (USA), South African Government, National Office for Technology Acquisition and Promotion (NOTAP) and NIGERIAN RESEARCHERS SHOULD TEAM UP TO DEVELOP THE NEW REVENUE FORMULA FOR NIGERIA WEALTH CREATION ⁽²¹⁾

7. RECOMMENDATIONS

1. The research recommends that Intellectual Property (IP) should be used as a tool to foster innovation and should be vigorously pursued by Nigerian Institution leaders to encourage generation and exploitation of Intellectual Property (IP).
2. The study recommends among others that the most Superior Pigmented Silica-Based Packaging Materials should be Accepted, Recommended, Approved and Implemented as the best Officially Recognized Packaging Materials by ISO for International Collaboration, Partnership and Co-operation after signing a Global Memorandum of Understanding (GMOU) with SON, NAFDAC, FMST etc. Finally the research recommends that a Co-ordinating Office under the Presidency/A Science/Technical Adviser is the only option for Nigeria using Science Governance. Our National within a short time could be counted among the top 20 Great Nations in year 2030 if we can take the pain to seriously embark on standardization of Silica-based Materials using Innovative Chemical Research for Ogodo (Nigeria) International Reference Standards through Commercialization of Research Results from Laboratories to the Market / World Trade Centre ⁽³⁾.
3. Development of National Intellectual Property (IP) Policy (Presently the Intellectual Property (IP) Policy is incorporated into the Science Technology Innovation (STI) policy. The policy should be forwarded to the Nigerian Copyright Commission, Trademarks, Patents and Designs Registry and Other Stakeholders for their inputs and review further to which it should be adopted as the National Intellectual Property (IP) Policy.
4. Incorporating Intellectual Property (IP) into the Curriculum of Tertiary Institutions of Intellectual Property (IP) laws in line with International Conventions.

5. Ensuring adequate protection and enforcement of Intellectual Property (IP) in Nigeria Engaging in effective Intellectual Property (IP) Management
6. Strengthening awareness creation on Intellectual Property (IP) /Promoting the Development of Intellectual Property (IP) Culture (currently being handled by NOTAP through the Organization of Workshops and Press Briefing on Intellectual Property (IP) Matters, Sensitization of Secondary Schools on Intellectual Property (IP).
7. Establishment of Intellectual Property Technology Transfer Offices (IPTTOs), etc.
8. Building capacity and capabilities of Intellectual Property (IP) Professionals and Managers in the Country.
9. Focusing on the areas of competitiveness under the Intellectual Property (IP) System ⁽²¹⁾.
10. The recruitment of quality of human skills (amount and quality of researchers) available to train new man power, and to conduct research is very poor compared to what is happening in Industrialized Countries like the United States of America.
11. Retrain the existing Staff on conducting novelty Patent and market searches on any inventive concept to avoid reinventing the wheel and losing the market. They should also be trained in writing bankable research proposals to attract research funding.
12. Public Sector Institutions should have explicit Intellectual Property (IP) policies and demonstrated institutional capacity to implement best practices in Intellectual Property (IP) management.
13. Encouraging Partnership and Collaboration with National and International Agencies and Intellectual Property Rights (IPRs) Organisations such as World Intellectual Property Organizations (WIPO), African Regional Intellectual Property Organization (ARIPO), United States Patent and Trademark Office (USPTO), State Intellectual Property Office (SIPO), Japan Patent Office (JPO), Nigerian Franchise Association, National Office for Technology Acquisition and Promotion (NOTAP), World Innovation Council (WIC), National Agency for Food Administration and Control (NAFDAC), Standards Organization of Nigeria (SON), Harvard University, (USA), etc.⁽²²⁾.
14. Any licensor, public or private, is more willing to give licenses to institutions that proactively protect Third-Party Property which leads to confidence building and a higher degree of motivation to proceed with more licensing and Technology Transfer arrangements ⁽²²⁾.
15. Government policies and laws regarding Technology Transfer ought to be flexible so that each Institution can shape its approach according to its own culture, mission, and context.
16. Intellectual Property (IP) is a tool to foster innovation. Whether viewed 'as a legal concept, a social construct a business asset, or an instrument to achieve humanitarian objectives, the value of intellectual property cannot be disputed and must be vigorously be pursued by Nigerian institutions.
17. Leaders of Institutions must be clear about the attendant Organization and cultural changes the institutions need, to encourage generation and exploitation of Intellectual Properties (IPs) and should understand that this requires clear leadership and a commitment of resources from Senior Administrators and Policymakers and therefore support them.
18. A Co-ordinating Office under a Presidential Scientific or Technical/Adviser is the only option for Nigeria using Science Governance.
19. There should be effective Global Technical Partnership/Collaboration/Synergy for National Development through Technical and Commercial Scientific Licensing with Proposed Member Countries to generate Nigeria Vision :2030 target for Global Competitiveness.
20. There should be no Sole Concession/Patent /Franchise Rights in Proposed Member Countries without Ogodo (Nigeria) Standards International (OSI) Permission except as Permitted by Law through Technology Transferred Agreement of Intellectual Property Rights (IPR)⁽¹⁾

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