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Use of Utility Models/Patents for the Encouragement of Local Innovations in Developing Countries: Lessons for Nigeria

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Patents are granted to new inventions in order to encourage innovation and technological advancements in the society. Nevertheless, the mere existence of these laws in developing countries has not necessarily translated to increased innovations and technological advancements in these countries. There is also the argument that the patent system favours the global North as evidenced in the fact that most of the patent applications made in many developing countries are from the developed world rather than from local inventors. Utility models (sometimes referred to as minor patents) are being used by some countries to encourage innovation among local inventors by providing a lesser protection to inventions which may find it difficult to meet the requirements of the patent system. This research examines the legal protection of utility models. It focuses, particularly, on the extant provisions available in selected jurisdictions which already have this law and examines whether the existence of this legislation has had significant effects in the promotion of local innovation. The Nigerian Patent Registry has recently been granting utility models, albeit in the absence of a clear legislative provision or backing. This study is essential to draw lessons for Nigeria, a developing country equally seeking to drive innovations and developments within its territory through utility models.

Keywords: Utility Model, Nigeria, Developing Country, Local Innovation, Utility Patent

Patents are granted to new inventions in order to encourage innovation and technological advancements in the society. It is believed that by granting exclusivity for the commercialisation of their invention for a limited period, the patent owner can recoup investments made as well as get sufficient reward to be incentivised to come up with more inventions for the benefit of the society.[1] In addition, the patent document is a rich source of scientific and technological information which can drive research and development as well as improvements to existing inventions.

Member states of the TRIPS Agreement have an obligation to grant patent protection to new inventions in their jurisdiction (apart from the least developed countries who have an exception until 2033).[2] Patents are granted for inventions in all fields of technology which are new, involve inventive activity and are capable of industrial application.[3] In this light, many developing countries have patent protection either because of their colonial history, as it is the case with Nigeria, or because they are members of the WTO.[4]

Nevertheless, the mere existence of these laws has not necessarily translated to increased innovations and technological advancements in the countries. Diverse reasons have been advanced for this including the argument that the patent system favours the global North as evidenced in the fact that most of the patent applications made in many developing countries are from the developed world than from local inventors.[5] The World Intellectual Property Indicators 2023 revealed that in selected offices of low- and middle-income countries, Non-resident patent filings were the primary contributor to total growth at all these offices except in Algeria, Colombia, the Syrian Arab Republic and Türkiye.[6]

Utility models (UM), sometimes referred to as minor patents, are being used by some countries, such as Ethiopia, China, Germany and Malaysia, to encourage innovation among local inventors by providing a lesser protection to inventions which may find it difficult to meet the requirements of the patent system. This paper examines the protection of UM in selected countries (OAPI and ARIPO member states, Ethiopia, India, Australia, China, Japan, Germany, Malaysia and the Netherlands) with a view to answering the question whether they indeed drive technological development particularly through local inventions. This is done with in order to draw lessons for Nigeria who has recently adopted the grant of utility models in order to encourage local innovation.[7]

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This study therefore gives an overview of UM and its protection of UM in Nigeria. It examines the grant of UM in selected jurisdictions in Africa (OAPI and ARIPO member states as well as Ethiopia) and outside Africa (India, Australia, China, Japan, Malaysia, Germany and Netherlands). Examining these jurisdictions including the developed economies selected will reveal whether utility model patents have indeed promoted technological developments in these countries. Furthermore, it highlights the challenges with UM in encouraging local innovations while drawing lessons from the legal analysis for Nigeria.

Utility Models (UM)

The term 'utility model' has no generally accepted definition due to the various names by which it is known in different jurisdictions, the requirements for registration and the resulting grant.[8] It is known as 'petty patents' or 'innovation patents' (Australia), 'utility certificates' (France), 'short term patent' (Belgium), 'utility model' (Kenya, Germany, China, Paris Convention), 'utility innovations' (Malaysia) and under Article 2 of the Patent Cooperation Treaty, it is referred to as 'utility models, utility certificates of addition, utility certificates.'

Simply stated, UM is a second tier or lesser form of patent right that provides lesser protection with less strict requirements for innovation and lesser duration of protection. Nevertheless, it is a registered right which protects technical inventions. These inventions are essentially enhancements and modifications of pre-existing products. UMs are similar to patents as there is a requirement that the invention must possess novelty and an inventive step although the level of inventiveness is lesser than that required for a patent. They are granted without prior search to establish novelty and inventive steps.[9] UMs can also be understood as a hybrid intellectual property right that can fall within the purview of patent and design laws. A grey area is the cross-referencing and interdependency of priority periods between UM, industrial designs and patents where the priority period can be derived for a patent, design or UM based on a prior application of patent, design or UM and vice versa.[10] The lack of consistency in the definition of the concept is compounded by the absence of uniformity in various national UM laws.[11]

The theoretical basis for the protection of UM flows from the fact that many inventions that benefit society are built upon existing knowledge and that a significant number of them do not meet the strict novelty and inventiveness standards required for patents.[10] These inventions are considered worthy of protection even though they fall short of the patent system's requirements. Therefore, the practical reason for protecting UM is to foster local innovation. A number of inventions (whether breakthrough or incremental) are made by indigenous small and medium-sized enterprises (SMEs) and these tend to have a lower standard of inventiveness.[12] Consequently, scholars have proposed that developing nations could gain advantages by adopting utility model regimes as a means to foster the development of technological enterprises.[13] UM prevents free riding of local innovations which would have otherwise been left unprotected in the absence of meeting patents requirements. UMs are also a faster route to protection than patents whose procedure for grant is lengthy and expensive.[14] The fact that they are easier, cheaper and faster to obtain makes them allow for early commercialisation of technologies particularly those with short lifecycle. UM is also suitable for small and medium enterprises (SMEs) and startups to quickly raise capital.

The international legal regime for the protection of UM is quite flexible and a lot is left to the national laws for determination. Article 1(2) Paris Convention for the Protection of Industrial Property, 1883 (Paris Convention) mentions UM as one of the protectable industrial property rights but gives no guidance on definition, scope or nature of the right. The Agreement on the Trade Related Aspects of Intellectual Property Rights, 1994 (TRIPS Agreement) recognises UM by virtue of the incorporation of the Paris Convention thereby disputes on it can be brought before the World Trade Organisation (WTO) Dispute settlement body. No further guidance on UM is given under the treaty. Therefore, each country is free to formulate its laws and policies on this subject to the fundamental principles of non-discrimination (national treatment principle) and reciprocal protection under the Paris Convention and the TRIPS Agreement.[15] This flexibility allows countries to adapt UM to their own technological needs unlike the traditional patents.

Depending on the jurisdiction, certain subject matters are often excluded from protection as UM. These include plants/plant varieties, pharmaceutical inventions, biological products, methods/processes and biotechnological inventions. Other areas of

differences from patents include a lesser requirement of novelty which could be national, relative or universal, less strict requirement of inventive step or none at all, lesser duration (6 years-France, - 10 years-Germany, South Korea, Spain, 15 years – Brazil) and often no prior examination are required.

Utility Models/Patents in Nigeria

The law regulating the registration of patents in Nigeria is the Patents and Designs Act 1970.[16] Inventions are patentable if they are new, results from an inventive activity and is capable of industrial application.[17] There is no provision under this law for the grant of UM.However, to promote local innovation and reward efforts of local innovators, the Patents Registry grants UM which is also called 'Lesser Patents'.[18]They are granted at the discretion of the Registrar. The requirements of newness and industrial application are not strict or quite low. Inventive step is not required.

There are two types of UM granted by the Registry which are utility patents and business methods. Utility patents are granted for adapting an existing technology to a particular circumstance, scenario or Nigerian environment or locally fabricating an existing technology abroad in Nigeria using local materials. The improvements made on the existing technology need not be so wide. An example is fabricating a car in Nigeria. Utility patents covers all technologies and the duration is 8 years.

Business methods are granted for new methods or ways of doing business, addition of value to business transactions, a software or app that has a technical effect in a particular way. They are usually granted for 'software inventions.' A software that has a technical effect in a particular way is registrable as a business method by the patent registry, otherwise it will be protectable under copyright law. A business method is protectable for 7 years.

By Section 4(2) of the PDA examination of an application for the grant of a patent is merely formal and not substantive. The Act permits the Registrar to only check the compliance of applications based on formalities and no further examination shall be made on questions whether the patent is new, inventive or capable of industrial application. The description and claims are not to be examined and the same applies to claims made to a foreign priority application. Indeed, the provisions of this Section undermines the effectiveness of the patent system in Nigeria and the quality of patents granted by the Registry. This position may have been based on the presumed lack of technical expertise of the Registrar and the staff at the time the law was formulated over five decades ago (1970). The situation is, however, not the same anymore as the Registrar and staff are now well trained and competent personnels in patent law and intellectual property law generally.

Nevertheless, Section 4(2) PDA may be argued to provide a leeway to support the grant of UM by the Patent Registry. It may be argued that the PDA supports "low-level" inventions as the Registry carries out only formality checks and not substantive examinations. Hence, patents granted under the extant law can as well be likened to UM in terms of quality.

Despite the provisions of Section 4(2) PDA, the Nigerian Patents Registry sometimes do not grant patents to applicants on the grounds that their specifications were not registrable, thus undertaking a substantive examination of patent applications.[19] The Registry may direct persons whose patent applications were unsuccessful after undergoing the Registry's substantive examination to file their patent applications as UMs – lesser patents or business methods.[20] Data from the WIPO IP Statistics Data Centre indicates that three (3) applications for the grant of a UM were filed in Nigeria in 2021.[21]

While the proactive efforts of the Registry are commendable in this regard, the lack of a legislation to support the examination being done for patent applications and the grant of UM make the acts of the registry not only ultra vires but also create a legal morass for the holders of UM in Nigeria. The position of the holders of UM is uncertain as there are no statutorily prescribed remedies for the infringement of UM purportedly granted by the Registry. Hence, without effective legal protection, prospective applicants would be discouraged from seeking UM and this would stifle innovation and technological progress. It must be noted that efforts are underway to address this legal conundrum through the Patents and Designs (Repeal and Re-Enactment) Bill, 2022 (The Bill) which was introduced to Nigeria's upper legislative body.[22]

Part II of the Bill relates to Utility Model Certificates. By Section 16, the provisions applicable to patents shall apply as well to UM certificates with such modifications as necessary. By Section 17, an invention qualifies for UM certificate if it is new and industrially applicable. Hence, there is no requirement

for inventive step. Provisions relating to substantive examination of a patent do not apply to UM certificate applications. UM certificate expires after 7 years from the date of grant with no possibility of renewal.[22] Despite the restrictions on substantive examination by the registry, the court can invalidate a UM certificate where it is not new or capable of industrial applicable, description, claims and drawings are not compliant.[22] By Section 18, an application for a patent may be converted to a UM certificate and vice versa.

The provisions of the Bill are laudable as they will give legal backing to various efforts of the Patents Registry to promote local innovations and drive technological development of the society. It is therefore hoped that the Bill will be passed into law speedily as there is a dire need for same.

Utility Models in Selected Jurisdictions

This Section shall examine the protection of UM in selected African and non-African countries in order to inquire whether UM, in these jurisdictions, has indeed promoted local innovation as intended.

African Countries

This part examines the UM protection in Africa using the laws of the two regional IP bodies in Africa – OAPI and ARIPO as well as Ethiopia, a country which does not belong to any of these organisations.

African Intellectual Property Organization (OAPI)

Created in March 1977 with the Bangui Agreement, the OAPI is an international organization consisting of former French colonies (French Speaking countries).[23] The Bangui Agreement operates as the national law of member states, thus, no additional ratification is required to bring the agreement into force. Applications made through the OAPI covers all member states, making it redundant for applicants to seek protection in individual countries.[24] The countries under the OAPI are; The Republic of Benin, Burkina Faso, Cameroon, The Central African Republic, Chad, The Congo, Côte d'Ivoire, The Gabonese Republic, Guinea, Guinea-Bissau, Mali, Mauritania, Niger, Senegal and The Togolese Republic.

The OAPI Agreement of 1999 contains more unique provisions with regards to UM. Article 1 of the Agreement defines UM as 'implements of work or objects to be utilized or parts of such implements or objects in so far as they are useful for the work or employment for which they are intended on account of a new configuration, a new arrangement or a new component device, and are industrially applicable.' The criteria for protection under the OAPI is novelty and industrial applicability. The Agreement is clear on what is considered novel and industrially applicable.

An innovation is new if as at the filing date, it has not been described in any publication, and it has not been publicly used on the territory of any member state.[25] In essence, not only must the innovation not have been publicly used in the applicant's state, it must also not have been publicly used on the territory of any member state of OAPI. Novelty is not defeated if, in the 12 months preceding the application, the object has been disclosed in what is an obvious violation against the applicant or the object has been displayed at an officially recognized international exhibition. A utility model is industrially applicable if it can be used in any kind of industry, including handicraft, agriculture, fishery and services. Excluded subject matter include UM that is contrary to public policy/morality, public health, national economy or national defence or UM that has been the subject of a prior patent or utility model application.

Over the course of 12 years from 2010 – 2021, OAPI only recorded 84 applications; 54 from residents and 9 from non-residents. The breakdown of the remaining 21 is currently unavailable.[26]

African Regional Intellectual Property Office (ARIPO)

ARIPO is an Inter-governmental Organization whose membership is open to countries that are member states of the Economic Commission for Africa (UNECA) or the African Union (AU).[27] The organization has 22 members in total, including, Ghana, Kenya, Uganda, Zambia, The Gambia, Namibia, Rwanda, Liberia, and Seychelles.The Harare Protocol on Patents and Industrial Design (1982), is the primary instrument empowering ARIPO to register utility models on behalf of all member states, excluding Somalia and Mauritius who are yet to sign the protocol.[28] The protocol however remains subject to the National laws of member states; hence, member states can reject the grant of a Utility Model Certificate on grounds that the Utility Model does not comply with its national laws.[29]

The Harare Protocol defines utility models thus:

"*any form, configuration or disposition of elements of some appliance, working tools and implements as articles of everyday use, electrical and electronic circuitry, instrument, handicraft, mechanism or other object or any part thereof in so*

far as they are capable of contributing some benefit or new effect or saving in time, energy and labour or allowing a better or different functioning, use, processing or manufacture of the subject matter or that gives utility advantages, environmental benefit, and includes micro-organism or other self-replicable material, products of genetic resources, herbal as well as nutritional formulations which give new effects".[30]

The criteria for protection for utility models under the Harare Protocol is that it is new and industrially applicable. A UM is new if it is not anticipated by the prior art within the jurisdiction of the member states; hence, newness is defined in relation to the national jurisdiction and not a worldwide interpretation found in traditional patent system. UM applications are generally examined formally except it is found not to be new or industrially applicable.[42] UM is valid for a period of 10 years from the filing date.

The first ARIPO UM was granted to a Kenyan SME in 2002.[31] Since 2018, there has been a continuous decline in yearly applications for UM.[32] 42 applications were filed in 2018, 23 in 2019, 14 in 2020, and 12 in 2021. In 2022, 21 applications were filed, representing a 75% increase in the number of applications compared to 2021.[33] The trend in the number of registrations of UM in the organisation is extremely low when compared with the number of applications made. Of the above figures, only 2 UMs were successfully registered in 2018, 12 in 2019, 3 in 2020, 9 in 2021 and 2 in 2022.[33]

Although, ARIPO declares that its mission is to 'foster creativity and innovation for economic growth of member states through an effective intellectual property system,'[34] the statistics do not reflect that the organisation has succeeded in achieving its mission. It has been suggested that the reason why the numbers do not reflect the manufacturing/innovative activity in member states is partly due to lack of awareness about utility models, as a lot of innovations in Africa are not properly documented or formally protected.[31]

We shall now examine UM applications in some member states of ARIPO. Ghana recorded 11 UM applications from 201 – 202 all of which were from residents.[26] As at 2022, the country's global ranking for utility model applications was 104th position. A similar situation exists in the Gambia where only 7 UM applications were filed between 2010 – 2021 all of which were by residents.[26]This shows that the system is used by residents although it has still not gained popularity. However, in Uganda, the total number of applications from 2010 – 2021 is 66, and all 66 applications were made by residents.[26]

As a member state, Kenya is one of the leading countries in terms of UM applications in Africa, with a steady, linear growth seen over the course of the 1 years from 20 – 2021. The total number of utility model applications within this period is 1,372. Of this figure, 1 were filed by residents and only 4 were filed by non-residents.[26] In 2022, 366 applications were filed in Kenya, representing an increase of 185.9% from the previous year, bringing Kenya up to the 27th position in the global ranking of Utility Model applications.[26] Despite this, it has been argued that UM was still inefficient in Kenya in driving innovation due to the grant of invalid UM Certificates which do not satisfy all laid down statutory requirements including novelty, industrial use and proper disclosure due to the cessation of substantive examination since 2014, and, the extremely low levels of utilization of the UM framework when compared with developed countries.[35]A comparison of the quality of UM Certificates granted during the regime of substantiative examination of UM Applications from 1993 – 20 and the regime after substantive examination of utility model applications was abolished after 20 showed that defective certificates were granted both during and after substantive examination.[35] However, there were more defective certificates after the discontinuance of substantive examination. This statistic shows that even though substantive examination should have greatly enhanced the quality of UM granted, human errors and carelessness of administrators still results in low quality UMs.[35]

Ethiopia

The Inventions, Minor Inventions and Industrial Designs, Proclamation, No. 123/ 1995 (The Proclamation) of Ethiopia sets out in details the criteria for protection as a utility model. Utility Models, referred to as 'Minor Inventions' gives rise to a right to protection evidenced by a Utility Model Certificate.[36] UM lasts for a duration of years renewable for another five years provided proof is furnished that the minor invention is being worked in Ethiopia. Requirements for protection are novelty and industrial applicability.

From 2012 to 2021, Ethiopia recorded 2,872 applications.[26] In 2022, 233 applications were received, representing a significant increase from the

previous year which recorded 0 applications. Ethiopia currently stands at the 33rd position in the global ranking for utility models, coming second to Kenya amongst the African countries examined in this paper.

It is observed that despite the availability of laws and industrial property offices in the African countries examined, the practical performance in terms of annual applications for utility model certificates has been drastically low. From 1995 – 2005, less than 12 utility model applications were filed per annum in the ARIPO and OAPI region,[37] a terrible figure compared to the statistics in Asia and other continents. A study of the annual applications in all the countries from 2010 – 2021 showed that onlycountries, Kenya and Ethiopia, recorded more than 1000 applications in 1 years. All others had significantly low figures of less than 100 applications in 1years. The results also confirmed that residents/locals utilised Utility Models more than non-residents/foreigners. While it is commendable that most of the applications have been from residents, the fact that the number of UM applied for so far is low in Africa may indicate that the system is not being used to promote local innovations as intended. Some of the reasons or challenges for this will be discussed subsequently in this paper.

Non -African Countries

Having examined the position of UM in selected African countries, this segment shall look beyond Africa to see the operation of UM in selected advanced jurisdictions in order to inquire if UM plays a role in the technological development of these countries. The countries to be examined are India, Australia, China, Japan, Germany, Malaysia and the Netherlands.

India

India's informal sector is a massive contributor to the country's Gross Domestic Product – roughly two-thirds of the GDP comes from the informal sector.[38] This sector, a fertile ground for resourceful problem solving, thrives on "bottom of the pyramid innovations" or "juggad", - modifications to existing inventions offering practical and affordable solutions to everyday challenges. In 2012, the Honeybee network documented over 140,000 of such ideas and innovations from the informal sector.[39] However, the current intellectual property regime in India does not provide protection for these minor inventions.

A brilliant example of Juggad is The 'Tata Nano' Car,[40] a remarkable invention of a 2000 dollar car which utilized cost effective engineering and design to produce an automobile that could be afforded by low income families.Another example is the MAC400, A hand-held electrocardiogram (ECG) created by General Electric's healthcare laboratory in Bangalore. A battery operated, portable and lightweight devise fully manufactured in India to address the unique healthcare challenges of electricity outages and shortage of healthcare professionals to increase access to healthcare in rural areas.[41] Sold for 800 dollars, the device costs one-third the price of ECGs imported from western countries.

Experts believe that India runs an elitist IP/Patent system which overlooks the value proposition of minor inventions and informal sector innovators.[42] Introducing Utility Models to the Intellectual Property Rights regime in India will be transformative for economic development. The economic value of minor innovations will be better realized when inventors are guaranteed protection and a return on their investments. By guaranteeing a return on investments, Small and Medium Scale Enterprises (SMSEs) and individual innovators will be more likely to develop and share their ideas.[38] Large corporations will also be encouraged to invest in research and development for minor inventions with commercial potential. Finally, A Utility Model regime will encourage more domestic patent filings and in turn enhance the economic value of IP in India.

India currently lacks a Utility Model System.[43] The current regulatory regime for patents in India is the India Patent Act of 1970, which came into force in 1972 and has gone through several amendments in 1995, 1999, 2002 and 2005. None of the amendments to the Patents Act accommodated Utility Patents in their provisions.[44] The Patents Act is augmented by the Patents Rules, 2003. The rules have also been amended in 2016, 2019, and 2021.[43] So far, the only attempt made to introduce Utility Patents in India was through the draft of the National IP Policy released by the Department of Industrial Policy and Promotion on 19December 2014.[45] In the Draft Policy, a new law for "petty patents" was proposed, to provide for short periods (5-8 years) of exclusivity. The drafters intended that valuable minor innovations by MSMEs and other inventors could benefit from this new regime of protection. Unfortunately, The State of India missed a valuable opportunity to adopt Utility patents in its IPR regime. Following discussions and revisions, the final report of the National IP Policy adopted in 2016[46] failed to accommodate Utility models.

Adopting a utility model system holds immense potential for India. It would empower informal sector innovators, boost domestic innovation, and solidify India's position as a global leader in practical problem-solving.

Australia

Utility models are known in Australia as 'innovation patents.' Prior to the enactment of the Patents Amendment (Innovation Patents) Act 2000, innovation patents were hitherto known as 'petty patents' and coexisted with standard patents under the Patents Act 1990. The Patents Amendment (Innovation Patents) Act 2000 repealed the petty patent scheme and provided for innovation patents.[48] Australia introduced UM to encourage innovation among SMEs in the country.[49]

In May 2015, the Advisory Council on Intellectual Property (ACIP) released a statement recommending abolition of the innovation patent system.[50] This followed the review of the Innovation Patent System in Australia wherein ACIP was unable to make a recommendation regarding the retention or abolition of the innovation patent system in Australia due to lack of adequate empirical evidence to assess its effectiveness in stimulating innovation among Australian SMEs. After ACIP's report was published, Office of the Chief Economist of IP Australia utilised the newly available data capabilities of the Intellectual Property Government Open Data (IPGOD) introduced in 2014 to conduct a thorough economic analysis of the innovation patent system.[50]The findings from this economic analysis showed the following:

- The innovation patent system places a regulatory burden on SMEs and individuals, amounting to more than $10 million annually, which constitutes almost 95% of the total regulatory cost associated with the system.
- Most Australian SMEs and individuals derive minimal advantages from the innovation patent system.
- The infrequent utilization of the innovation patent system by SMEs indicates that it is not effectively achieving its intended objective of incentivizing Australian SMEs to innovate.
- The innovation patent system is probably a financial burden for most SMEs utilizing it, and it has imposed a total regulatory cost exceeding $100 million since its inception in 2001.

Consequently, the Australian Government enacted the Intellectual Property Laws Amendment (Productivity Commission Response Part 2 and Other Measures) Act 2020 which initiated the gradual elimination of the innovation patent system. Hence, applications for innovation patents were no longer accepted from 26 August 2021.[50]

Innovation patent applications increased in recent years, likely due to anticipation of the innovation patent's phase-out. Applications (new filings as well as standard patents converted to innovation patents) increased by 71% in 2021 compared to 2020, with 2020's level being 2.5 times that of 2019. 78% of the rise in applications in 2021 came from non-residents, mostly from China (+26%, reaching 3,318) and India (2,371, almost 4.5 times their level in 2020). Applications originating from China in 2020 totalled 2640 while those from India amounted to 527 applications for innovation patents.[50]

Based on data, Australia abolished the innovation patent system which was not necessarily promoting local innovation. More so, it was being used more by foreign applicants from China and India than by local innovators. Hence, it is essential for a country to carry out an analysis of the impact of UM in the promotion of local innovation as intended.

China

UM in China is governed by the Patent Law of the People's Republic of China (amended up to October 17, 2020). A UM is required to be novel, inventive and be of practical use.[51] UM applications are only subjected to preliminary examinations and lasts for 10 years.[52]Research has indicated that the adoption of utility models, especially in China, has led to an increase in labour productivity.[53] This has been particularly beneficial for individual inventors and SMEs, though larger companies have experienced some advantages through the learning opportunities enabled by UM.

China is the largest user of utility models in the world.[54] Studies indicate that a lenient legal system for granting utility models in China, along with specific tax incentives and subsidies for patents, has led to a rise in the number of utility models; however, this approach has had adverse consequences on their quality.[55]The quality of Chinese utility model patents is largely perceived to be poor. Despite this negative perception, the amount of utility models registered in China has soared from 876,217 utility models registered in 2015 to 2,377,000 registered in 2020, 2,852,219 registered in 2021 and a further 2,950,653 registered in 2022.[55] Perhaps the relatively low costs

associated in getting a utility model is a key factor in the rise of utility model registrations in China.[10] Unlike the position in Australia where UM was a financial burden to SMEs, the low cost of UM and incentives given helped to drive its popularity among SMEs. From the number of UM registered in China, applications for Utility Model Originated from Abroad by Origin in the year 2017, in 2021 and in 2022[56] shows that UM is mostly used by residents in China than by non-residents.

Japan

The Japanese UM system has been in existence for more than a century, dating back to1905.[57] UM in Japan is regulated by the Utility Model Act No. 123 of 13April 1959. Registration for UM may be sought for a device that relates to the shape or structure of an article or a combination of articles and is industrially applicable.[58] UM subsists for a period of years following the date of filing. UM applications in Japan are mostly filed by domestic applicants.[59] Before the UM Law was established in 1905, majority of patent applications filed were done by foreign business organisations and applications by Japanese businesses were often rejected.[60]

Despite a dearth of concrete and/or quantifiable evidence demonstrating a nexus between UM and Japan's technological and economic development, the increase in the frequency of utility applications since the enactment of the UM law up till the early 1980's suggests some potential connections.[59] It is worthy of note that during this period, Japan witnessed significant technological advancements, primarily driven by imported technologies. However, the situation has since evolved, and Japan now stands as a technology exporter.[59] Table 1 indicates a resulting dwindling number of UM applications and registrations in Japan. It reduced from 10,315 applications and 10,080 in 2007 to 6,480 applications and 6,297 registrations in 2016. Before this, UM served the important role of protecting local or petty innovations. They served the purpose of implementing technology transfer from more developed countries. This was made possible due to the somewhat lower standards of inventive steps, shorter protection periods, and more limited scope of protection when compared to patents. As a result, Japanese businesses were successful in utilizing utility models.[57]

In July 2003, the Patent System Subcommittee of the Industrial Structure Council Intellectual Property Committee formed the Utility Model System Working Group (the 'Working Group'). The Working Group discussed the "desirable utility model system" and completed a final report approved by the Subcommittee in January 2004. The Working Group recommended the retention of the utility model system albeit with certain recommendations of improvement of the system.[61] The retention was justified due to the continued need for safeguarding early commercialization techniques and the significant interest in efficiently utilizing this system, despite a decrease in application numbers.[62]The decision of the working group to retain UM in Japan may now be yielding some results (Fig. 1) where UM applications and registrations increased between 2022 and 2023. In 2022, there were 3786 applications and 3898 registration which increased in 2023 to 4143 applications and 4029 registrations.

Table 1 — Japan Patent Office statistics data in 2016[61]

Utility models	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Applications	10,315	9,452	9,507	8,679	7,984	8,112	7,622	7,095	6,860	6,480
Registrations	10,080	8,917	9,019	8,571	7,595	8,054	7,363	7,017	6,695	6,297
Requests for report of technical opinions on registrability of the Utility Models	905	746	677	633	491	519	437	401	422	341

Preliminary Statistical Data on Filing Applications and Requests From May 2023 through October 2023 (Created on December 19,2023)										
Year/Month	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	January to October 2023	2023/April to October Cum Sum of FY 2023	January to October 2022	April 2022 - March 2023 - Total of FY 2022
Utility Models (Number of Applications)	422 (13.1)	454 (15.8)	433 (22.3)	422 (5.5)	442 (16.3)	377 (11.5)	4143 (9.4)	2999 (12.7)	3786 (▲ 14.5)	4531 (▲ 8.9)
The percentages in the brackets ( ) indicate the increase/decrease from the previous year.										
Report of Utility Model Technical Opinion ()	17 (▲ 15.0)	18 (▲ 5.3)	17 (41.7)	20 (0.0)	18(125.0)	10(▲ 41.2)	166(▲ 11.7)	113(▲ 0.9)	188(▲ 13.8)	210(▲ 24.7)
The Number of Registrations	450 (9.8)	440 (10.6)	399 (▲ 6.3)	490 (21.6)	417 (13.3)	435 (23.6)	4029 (3.4)	2980 (10.6)	3898(▲ 16.4)	4461(▲ 16.0)

Fig. 1 — Japan Patent Office Statistics Data for October 2023 (as of December 19, 2023)[63]

Malaysia

The applicable law for UM (utility innovations) in Malaysia is the Patents Act 1983. Utility innovations are required to be novel and capable of industrial application and it is valid foryears from the date of application.[64] It is renewable for two further periods of years. This leads to a possibility of protecting UM for 20 years like a patent right. A certificate of utility innovation only confers rights to activities carried out for industrial or commercial objectives; it expressly excludes activities carried out simply for scientific study.

Utility innovations in Malaysia are targeted at Malaysian inventors, students and SMEs.[65] Statistical analysis of the data provided by the Intellectual Property Corporation of Malaysia shows that from the year 2003 to 2011, the total number of utility innovations filed by local entities from the year 2003 to 2011 was 329. On average, about 37.5 utility innovations were filed by local entities each year.[66] The maximum number of utility innovations filed by local entities in a year (2011) during this period was 61 while the lowest number of utility innovations filed by local entities in a year (2003) was 20.[66] Conversely, from 2003 to 2011, foreign entities filed a total of 412 utility innovations. The year 2009 had the lowest number of filings by foreign entities with just 32 filings, while the year 2008 saw the highest number with 66 filings. On average, foreign entities filed about 46 utility innovations per year. In terms of the overall share of utility innovation filings, foreign entities accounted for approximately 55.6% of the total filings during this period.

The low number of Utility Innovation (UI) applications in Malaysia can be attributed to several factors.[67] First is the examination Process. UI applications undergo a similar examination process to patent applications, despite the exclusion of the inventive step requirement. As applications are examined in the order they are received, UI applications often have to wait in line. Given that the processing time for UI applications is the same as that for patent applications, many applicants prefer to apply for patents. Another factor is the scope of protection offered by UIs which is typically narrower and more specific than that of patents. UI applications require a single claim that encompasses all innovative features. This requirement simplifies the task for others to make modifications or improvements for further exploitation. In terms of duration, applicants often prefer the automatic full protection period of 20 years (subject to annual renewal fees) offered by patents. In contrast, UIs require evidence of usage after the first 10 years, which can be an additional hurdle for applicants. In summary, the similar examination process, the narrower protection scope, and the shorter automatic protection period of UIs compared to patents could explain the lower number of UI applications in Malaysia.

Germany

Germany pioneered the utility model system and is regarded as having one of the more advanced systems in place.[68] In Germany, the applicable law is the Utility Model Law (UML), as last amended on 10 August 2021 (BGB1 No.3490).

Inventions that are novel, involve an inventive step, and are capable of industrial application are protected by the utility model under Article 1(1) of the UML. UM lasts for years and maintenance fees are paid from the 4th year from the date of filing.[69] Protection for the utility model lapses when the person listed as the proprietor gives written notice waiving the UM or fails to pay the maintenance fee when due.

The primary purpose of the UM system was to give SMEs access to quick, affordable, and practical protection for less significant ideas.[70] Available statistics indicates that this purpose was fulfilled as from 1891 to 1895, there were a total of 55,UMs registered, with Germany contributing 51,202 of them.[66]A study conducted in Germany investigated the connection between innovation in business organisations and the country's patent regime.[71] It evaluated the value of intellectual property rights in relation to the size of the businesses. The results revealed that UM protection ranked third, after patents and trademarks, in the priority of industrial property rights in Germany. Further examination revealed that UM played a vital role, especially for SME industries with an annual turnover of up to 5 million Euros. The reasons cited include cost, time, and administrative savings, making UM valuable not only for large industries but even more so for smaller ones.

It is important to note that from 2004 to 2010, there was a steady decrease in the number of applications for UM. In 2004, there were 20,286 applications, which fell to 17,005 by 2010.[70] By 2021, the number of utility models filed in Germany was 10, 576 and this dropped to 9,469 in 2022, representing a fall of 10.% (Table 2).[6] In 2010, the majority of applications for utility models (80%) were filed by domestic applicants.[70] The remaining 20% were filed by foreign

Table 2 — Statistical data for Utility Models in Germany[72]

Year	Utility models in force	New applications	Applications from Germany
2022	70,253	9,469	5,520
2021	72,738	10,575	7,028

applicants, with Taiwan (6.5%), Austria (2.4%), Switzerland (1.9%), the USA (1.3%), and other countries (7.3%) being the primary contributors.[66] This decline may be due to the increased technological development of the society. As societies become more innovative, they may prefer the more secured protection offered by patents than lesser protection offered by UM.

Netherlands

Prior to 2008, the Netherlands had a two-tier patent system which was regulated by the Patent Act 1995. The Dutch short-term patent system, also known as the "*zesjarigeoctrooi*" or six-year patent, was implemented from 1April 1995, to 5June 2008, lasting slightly over 13 years.[73] Its purpose was to SMEs an accessible, cost-effective, and rapid way to protect their inventions during the reform of the Dutch patent system in 1995.[66] For the 6-year patent, a novelty search, which examined existing prior art, was not mandatory.[74] The grant procedure time was reduced to 18 months from the date of filing or first date of priority, whichever applied. The patent was subsequently published after this same deadline.

Between 1995 and 2005, the Netherlands granted approximately 500-700 short-term patents and around 1,500-2,000 20-year patents.[75] In 2006, an evaluation of the Dutch patent system revealed that the short-term patent system created significant legal uncertainty and only a specific category of applicants utilised it. Consequently, the short-term patent system was abolished by the Netherlands Patent Act of 5June 2008 which entered into force on June 3, 2009. In 2015, a research study revealed that the abolition of the six-years patent did not affect the level of domestic patent applications thus implying that there was already a shift to the 20-year patent.[57]

Challenges of Utility Models

UM faces certain challenges which affects its effectiveness which shall be examined in this Section. Lack of substantive examination increases the likelihood of UM being abused.[66] For instance, there can be slavish imitation of foreign inventions and this can be used to prevent foreign patents from being registered. It has been claimed with regards to China's industrial property law regime, that the UM system in place is weaponised against foreign firms. Some observers have noted that Chinese firms have used UM as a way of stifling foreign competition.[66] This sentiment played out in the case of *Chint* v *Schneider*.[76] Chint claimed that five models of Schneider products had infringed the scope of protection for its UM which was granted for its circuit breaker technology in March 1999.[77] Schneider countered this claim, asserting that Chint's UM was invalid as Schneider had invented the products and had obtained French patents for the technology in the early 1990s. One can certainly infer a weaponisation of the UM system in China from this case, in fact, intellectual property lawyers globally alerted their clients on the threats of the Chinese UM system following this decision.[6] Some observers also allged that the case showed that Chinese courts unfairly applied intellectual property laws in order to further Chinese interests.[78]

A lack of substantive examination increases the tendency of having low quality UMs as the standard of novelty or inventive steps has either been lowered or obviated. This leads to a stultification of innovative activity thus amounting to a counterintuitive legal measure.[79] Lack of substantive examination also makes the UM liable to be revoked upon successful opposition proceedings by third parties.[80] In cases where the opposition proceedings take place after the grant, the holder of the UM faces a difficult situation as fees would have already been paid for the registration of the UM which is still liable to being revoked.

It is widely believed that UMs are preferred to patents by SMEs and individuals because they are cheaper and quicker to obtain. However, the overall cost of UMs may not be so inexpensive. As was seen above in the case of Australia where UM was a substantial financial burden to SMEs. Other than lower filing fees, a Patent Attorney is still required to design the specifications, which may offset any cost savings.[57]

Other challenges with the UM system include the heterogenous nature of international UM Laws thus leading to an absence of a harmonised UM protection system at the international level.[66] There is also the perception of UMs being inferior to patents thus making it unattractive to would-be applicants. In addition, UM can be used for evergreening and blocking other patents if patent owners just keep modifying so little and use UM to get protection.

Lastly, a lack of awareness or understanding of UM leads to reluctance in taking advantage of it. This is a major challenge in Nigeria where there is still no law expressly backing the registration of UM and the awareness among the populace of its existence is abysmally low. Also, there is a lack of empirical literature on the usage and effects of UM at the national level combined with regards to the economic and technological dimensions.[66] Germany, the pioneer for UM, was noted as lacking a study that had comprehensively examined the economic impact and use of UMs.

Individuals, business organisations and stakeholders who are not aware of the significant benefits and drawbacks of UM system tend to use UM improperly or not at all, which could have a detrimental impact on innovative activities in a country.

Lessons for Nigeria

From the analysis above, UM has not made significant impact in many African countries. However, it did make significant contributions to technological development to countries in Asia and Germany. Researches conducted particularly based on Asian countries show that the use of UM was essential in encouraging local innovation through some form of imitation and reverse engineering. It was also useful as the country tried to catch up technologically and transform from an imitation economy to innovative one. However, as technological and innovation advancement came, level of strictness or standard required with UM became higher and gradually more people tilted towards the traditional patents. As a country becomes more technologically savvy, UM seems to have lesser impact in driving technological development and applicants would rather prefer the more secured protection offered by patent protection. Hence, some jurisdictions such as Australia and Netherlands have opted to abolish UM.

It has been demonstrated that utility models helped the local industries in developing countries grow by rewarding incremental enhancements to already-in-use cutting-edge technologies from developed nations.[66] Nigeria seeks to encourage the creation of innovations and to enrich the nation's economy and the owners of intellectual property (IP) through its National Science, Technology and Innovation Policy.[81] A *suis generis*Utility Model Law can set Nigeria on the path to indigenous technological breakthroughs and advancement if properly formulated and implemented. Hence, there is an urgent need to legitimise the UM legal regime in Nigeria by passing into law the Patents and Designs Bill 2022 which provides the legal backing for the grant of a UM in Nigeria.

Based on the examination of UM in the selected jurisdictions examined, the following recommendations are made with respect to the formulation and implementation of UM protection in Nigeria. The threshold of novelty must be reduced or be restricted to national basis. The scope of inventiveness should also be reduced and excluded subject matter specified. The cost of registration must also be low and incentives given to SMEs to register and maintain UM as it is done in China. Where UM is almost as expensive as a patent, it loses its edge over patents.

It is also essential that the duration of UM is lower than that of patent as evidence as shown from the situation in Malaysia, for instance, that where it is same or like patents, then innovators would rather go for patent protection. Another lesson that can be learnt from the analysis above is that in Asia where UM has been commonly used to drive technological development, the duration is 10 years. It may be deduced that this period is long enough to encourage filing for a UM Certificate but not too long as to make it compete with patents in terms of preference by SMEs. Nigeria may therefore consider having a similar term rather than the proposed 8 years under the Patents and Designs Bill, 2022.

In addition, legal measures must be put in place to ensure effective enforcement of the rights conferred by a UM Certificate.[57]Awareness and sensitisation of SMEs in this regard is key. Where there is ignorance on the part of SMEs and practitioners on the existence of UM as an alternative to patent right, the system cannot be maximised by SMEs. There is, therefore, a need for an awareness and sensitisation of SMEs, practitioners and relevant stakeholders in this regard. Analysis and review of the UM system should also be undertaken from time to time to be able to adapt it to the innovation needs in the country and ensure it serves the purpose of encouraging local innovations.

Conclusion

The global patent system, while designed to foster innovation and protect inventors, often reveals disparities when examined in the context of

developing countries. It is often dominated by developed economies as evident in the sheer volume of patent applications in many developing countries that come from business entities domiciled in developed countries, thereby sidelining local inventors.

A potential solution to this imbalance exists in the form of utility models or a second-tier patent system. Such legal measures offer a less rigorous protective mechanism than traditional patents and can be a game-changer for local innovators. By providing a more accessible route for protection, they can serve as catalysts for local innovation in developing countries like Nigeria.

The onus now lies on policymakers and legislators in Nigeria to recognize this potential and enact or incorporate statutory provisions that encourage and protect local innovation through a UM system that meets the needs of local inventors by stimulating and protecting local innovations.

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