THE IMPACT OF ARTIFICIAL INTELLIGENCE ON CREATIVITY, INNOVATION AND INTELLECTUAL PROPERTY RIGHTS IN NIGERIA

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Abstract

Artificial Intelligence (AI) has rapidly infiltrated various sectors, altering the way we interact with technology. In the creative realm, AI has emerged as a transformative force, influencing the processes and technology. While offers unprecedented opportunities for content generation and invention, it also raises concerns regarding Intellectual Property Rights (IPRs) and data privacy. Advancement of the internet has enhanced copying and file sharing, innovation, design and vast amount of data on customers collected which have resulted in IPRs infringed and consumer privacy violated. This paper aims to examine impact of AI on creativity, innovation, and IPRs in Nigeria, analysing issues as authorship, ownership, infringement, and data privacy violations. The doctrinal research methodology was employed to analyse the aim and objectives of this paper. While specific legislation governing AI is lacking, existing IPR laws and related regulations were examined to assess their applicability to AI generated content and inventions. Under current Nigerian legal framework, AI cannot be considered the author or inventor of its creations. This is primarily due to absence of specific legislation addressing AI-generate content and invention. This concept of authorship and inventorship traditionally requires human element. To address the challenges posed by AI in the context of creativity, innovation, and IPRs, Nigeria should consider revaluation of existing statutes, specific legislation, ethical guidelines, international cooperation, education and awareness. AI will continue to revolutionize the creative and innovation sectors; therefore, the sooner regulation and guidelines are put in place, the better for Nigeria and the jurisprudence of the country.

1.0   INTRODUCTION

BACKGROUND AND SIGNIFICANCE OF ARTIFICIAL INTELLIGENCE AND INTELLECTUAL PROPERTY RIGHTS IN NIGERIA

Intellectual Property Rights (IPRs) are designed to incentivize innovation by granting IP owners exclusive rights to their creations. This allows them to recoup the costs of research and development, fostering economic growth and development, the ability to effectively develop and communicate applied knowledge is a crucial factor in determining a nation's economic prosperity.[1]

The IP system allows developing countries such as Nigeria the chance to create a framework to enable it participate in the economic activities of the developed world, wherein patented works can come into Nigeria and generate a high volume of foreign direct investment (FDI). IP can significantly boost market value by generating revenue through licensing, sales, and commercialization of products and services protected by IP laws. This ultimately improves market and contributes to increased profits. It also raises the profile of a business when it comes to mergers and acquisitions. Additionally, it turns ideas and thoughts into profit making asset, because ideas and thoughts on their own have little value, but when protected and registered it can help turn it into commercially successful products and services, hence, IP is crucial for fostering innovation, without it, inventors may be discouraged from sharing ideas and pursuing new ventures[2] and it would lead to a decline in research and development. Similarly, artists and other creators would not be fully compensated for their creativity,[3] diminishing their incentive to produce new works.

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[1]Ngozi Aderibigbe, Yomi Adebajon, Chinweizu Ogban; "A tool for Economic Growth in Nigeria" Mondaq <https//www.mondaq.com> accessed 24th July 2024.
[2] Carlos Simões Nunes, "Intellectual property on selection, expression, and production of enzymes", Elsevier BV, 2018. <https://www.sciencedirect.com/> accessed 24th July 2024.
[3]*ibid*.

IP encompasses creations of the mind, such as inventions, literary and artistic work, designs and symbols, and commercial names and images. These creations are protected by various legal mechanism. Patents confer exclusive rights to inventors, allowing them to control the use of their inventions. Copyright safeguard rights of creators of literary and artistic including books, music, painting, and sculptures etc. Trademarks are signs that distinguish goods or service from those of competitors. Industrial designs protect the ornamental or aesthetic features of articles.[1]

Artificial Intelligence (AI) has significant implications for human creation.[2]The establishment of a national centre dedicated to AI and robotics demonstrates the government's commitment to fostering AI development in the country.[3]

AI is a branch of computer science concerned with developing systems that can perform tasks typically associated with human intelligence, such as learning, reasoning, problem-solving and perception,[4]consequently, legislators worldwide, are striving to improve on existing legal framework so as to further protect, and incentivize innovation. Therefore, it is crucial that the legal systems safeguard inventor's rights to maximize returns of their creations.

AI could be generative or non-generative, the generative AI is a type of AI that creates new content based on the prompt, it is a revolutionary change as it imitates human behaviour and automates tasks in seconds, it could create things like images, text, music, language, 3D models etc. and all these things are capable of intellectual protection.

Generative AI models are fed with Massive amount of content called training data, and there are programs with algorithm that allows them to generate solutions and specific types of output depends on the data, these algorithms analyse patterns and relationships in their training data to determine what their user wants.[5] Some examples of generative AI models include: Chat GPT, which is a writing Assistant, Dalle 2 which is an artwork and image design AI program,hence, how are works of such nature protected in Nigeria under the current IP regime?[6]

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[1]WIPO, *Intellectual Property Handbook* (2[nd]edn. WIPO Publication Geneva, 2004).
[2]Seun Lari-Williams*, "Artificial Intelligence and the future of IP Rights in Nigeria", <https: aanoip.org/artificial-intelligence-and-future of ip rights in nigeria > accessed on 23rd July 2024.
[3] *ibid.*
[4]Coursera "What is artificial intelligence?" <https//ww.cousera.org/articles/what -is-artificial intelligence> accessed on 29th July 2024.
[5]*ibid.*
[6]*ibid.*

AI is relatively a new field in Nigeria, but its adoption is rapidly increasing. A good example is the financial sector, where AI-powered solutions are transforming customer experiences. LEO, United Bank for Africa's (UBA) AI driven digital assistant, offers banking services like payments, balance checks, and provide instant responses to customer enquiries. Similarly, ADA from Access Bank is another AI financial assistant.

Beyond finance, AI is also making inroads into healthcare, AAJOH, an AI powered medical diagnosis tool, it is trained on a vast dataset of health information. By analysing patient symptoms, AAJOH can predict potential diseases, aiding in early diagnosis and treatment.

Nigeria is emerging as a leading Africa nation in AI, with successful implementations in agriculture, healthcare, and finance. The National Centre for Artificial Intelligence and Robotics (NCAIR) has set an ambitious goal of positioning Nigeria as Africa's AI leader by 2030. Through international seminars, funding programmes, and other initiatives, the NCAIR is fostering a thriving ecosystem for AI development and adoption. The Nigerian Government has prioritized AI technology, culminating in the development and publication of National Artificial in November 2019 as part of its National Economic Policy and Strategy. [1]

Overview of AI and IP Rights

 AI technologies and their impact on IP rights globally

As AI becomes increasingly integrated into the economy and society, its transformative potential raises profound questions about the adequacy of current IP frameworks. WIPO has raised concerns about whether AI innovation requires IP incentives, how to weigh the value of human creativity against AI- generated works, and if the current IP system needs adjustments to accommodate the rises of AI.[2]

There is no doubt the foregoing questions are shaping discussion and jurisprudence on AI and IP, and this can be attributed to the impact AI is having on creativity and innovation. AI's multifaceted relationship with IP stems from the ability to both create and safeguard rights.[3]This duality is rooted in AI's sophisticated algorithms, which emulate human cognition

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[1]NITDA, "About NCAIR < https://www.ncair.nitda.gov.ng/aboutncair> accessed 17th July 2024.
[2]WIPO, "Artificial Intelligence and Intellectual Property Policy" <https://www.wipo.int/> accessed 31 July 2024.
[3]Pramod Chintalapoodi, "The Impact of AI on IP Law", Chip Law Group < //www.lexology.com/library/detail> accessed 31July, 2024.

through machine deep learning. These technologies empower AI to analyse massive datasets and make informed decisions, thereby facilitating both IP generation and protection.[1]

AI algorithms have the potential to revolutionize the patent landscape. While the patentability of AI-generated inventions varies by jurisdiction, theses algorithms can also be invaluable tools for patent enforcement.[2] AI powered patent search platforms can effectively analyse vast databases, identifying potential infringements and counterfeit products with unprecedented speed and accuracy.[3]

In the area of creativity, robotic artists have historically contributed to various artistic endeavours. However, these computer-generated works were largely dependent on human programmers, who essentially used the machine as a tool to execute their creative vision.[4] Recent advancements in machine learning have led to the development of autonomous systems capable of learning and creating without explicit human programming, marking a new era of artificial creativity.[5]

The preceding discussion has significant implications for copyright. Historically, copyright ownership was uncontested because programmes were considered tools, akin to pens and paper. However, with the advent of AI-powered automated artworks generation, the question arises of whether an AI can be considered a copyright holder. Creative works are generally eligible for copyright protection if they are original, and most definitions of originality require a human author.[6] Many jurisdictions, including Spain and Germany, explicitly state that only works created by humans are protected by copyright.[7]

AI has also transformed traditional trademark management techniques through new levels of efficiency and accuracy,[8]contrary to the general belief that AI has only impacted more on patent, copyright and designs.[9]AI applications, while still in their earl y stages for consumers,

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[1]*ibid.*
[2]*ibid.*
[3]*ibid.*
[4]Andres Guadamuz, "Artificial Intelligence and Copyright" (WIPO Magazine, 2017) <https://www.wipo.int/wipo_magazine> accessed 31 July, 2024.
[5]*ibid.*
[6]*ibid*.
[7]*ibid.*
[8]Astha Sharma, "Impact of AI on Trademark Law: Recent Developments and Future" IIPRD Blog<https://iiprd.wordpress.com/2024/03/06/impact-of-ai-on-trademark-law-recent-developments-and-future> accessed 31 July 2024.
[9]Lee Curtis and Rachel Platts, "Trademark Law Playing Catch-up with Artificial Intelligence?" (WIPO Magazine, 2020)<https://www.wipo.int/wipo_magazine> accessed 31 July, 2024.

are already having significant impact on the purchasing process.[1] Platforms like Amazon.com use AI to act as filters between consumers, products and brands.[2] By analysing your previous purchases, these filters offer personalized product recommendations.[3]

Trademark owners with the use of AI can quickly "detect unlawful usage, counterfeit goods and brand dilution," which enables prompt intervention and enforcement actions.[4] Furthermore, AI powered tools aid the "automation of enforcement procedures through issuance of takedown requests, cease and desist letters, and court filings, as it has helped trademark owners to spend resources more effectively and resolve trademark disputes."[5]

Industrial design is also impacted by AI positively and negatively. AI is valuable in shaping and predicting designs through analysing consumer behaviour data, including purchase history, online search pattern and feedback to understand what designs resonate with the public.[6] Leveraging AI-powered image recognition, we can rapidly search industrial design databases for visually similar designs. This technology mimics the expertise of human designers, identifying patterns and nuances that would otherwise require years of experience. Unlike human experts, AI can process millions of designs in seconds, accelerating the design process and preventing unintentional duplication.[7]

As positive as AI impact on industrial designs, there are also concerns as AI generated designs may struggle to meet the requirement of being original and novel, industrial designs are often based on existing data patterns. Additionally, there are debates around AI ethics in design focus on human impact on human creativity, employment, societal biases and necessity for appropriate regulations.[8]

As IP laws globally struggle to keep up with the pace of rapid AI advancements, brands must understand the potential risks associated with AI generated designs and by carefully

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[1]*ibid.*
[2]*ibid.*
[3]*ibid.*
[4]Sharma (n 9)
[5]ibid.
[6]Danesh Ramuthi, "How Can AI Use Data to Predict Design Trends?" Vengage (2023) < https://venngage.com/blog/how-can-ai-use-data-to-predict-design-trends/> accessed 31 July, 2023.
[7]Trevor Little, "Searching Industrial Designs: How AI is Changing the Game", World Trademark Review<https://www.worldtrademarkreview.com/article/searching-industrial-designs-how-ai-changing-the-game> accessed 31 July, 2023.
[8]*ibid.*

considering the risk involve in the use of AI, businesses can harness the power of AI to create innovative and valuable industrial designs while protecting their intellectual property rights.

Importance of Intellectual Property Protection in Fostering Innovation and Creativity

Intellectual Property Rights (IPRs) are essential for both to recognizing and protecting the creative efforts of individuals and organizations, and for promoting a thriving marketplace of ideas and innovation. By safeguarding the moral and economic interests of creators, IPRs encourage creativity, facilitate the dissemination of knowledge, and foster fair business practices, ultimately contributing to economic and social advancement.[1]

Additionally, IP as a valuable commercial asset and key in promoting innovative and incentive activity does the following;

Facilitates development, foster local creativity, innovation, entrepreneurship, attract foreign direct investment, and safeguard private property rights.

Rewarding creators for their efforts and investments so as to encourage creators and innovators to create and innovate the more. By granting creators and investors exclusive rights to their work, copyright promotes the dissemination and exchange of knowledge by incentivizing creators to share with the public.[2]

IP is significant to global economic and social development by promoting creativity, trade, and cultural exchange.

IP protection is vital tool for businesses operating in today's competitive global marketplace. As businesses compete on a worldwide scale, safeguarding their IP becomes increasingly essentials. By registering IP rights, companies can prevent unauthorized use of their work, ensuring that they reap the financial rewards of their innovation.[3] This not only provides a competitive advantage but also encourages further investment in research and development.

INTELLECTUAL PROPERTY RIGHTS LANDSCAPE IN NIGERIA

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[1]WIPO (n 4) 3.

[2]Martin Douglas Hendry, "The impact of IP law on innovation and creativity" Virtuoso Legal<https://www.virtuosolegal.com/faq/the-impact-of-ip-law-on-innovation-and-creativity/> accessed 31 July, 2024.

[3]*ibid.*

Nigeria's diverse legal framework for IP offers insights into its protection of generative AI inventions. As AI's influence grows in Nigeria, examining existing IP laws and their coverage of emerging AI technologies becomes increasingly crucial.

Copyright

Nigeria's copyright laws are outlined in the Copyright Act, 2022. This legislation aims to safeguard the rights of authors, and creators, ensuring fair compensation and acknowledgement for their intellectual endeavours.[1] It also aligns Nigeria with international copyright treaties and conventions[2], protecting a wide range of works such as literary, musical, artistic, audio-visual, sound recordings and broadcast.

Additionally, the Act grants copyright protection to eligible works if their author, or in the case of joint authorship, at least one of the authors, is a Nigerian citizen, permanent resident, or a company incorporated under Nigeria law at the time of creation or a significant portion of the work's development.[3]

This Act expanded the scope of works eligible for protection to include audio visual works,[4]which provides further that the owner of an audio-visual work must grant consent before it can be reproduced, broadcasted, or distributed to the public for commercial purpose.

Furthermore, the Act ensures folklore expressions are safeguarded from unauthorized reproduction, public by performance, adaptations, translation and other transformation. Such expressions, particularly when carried out for a commercial purpose or outside the traditional or customary context, requisite prior consent from the relevant indigenous communities concerned and/or the commission.[5]

The Act grants performers the sole right to manage the recording and reproduction of their performances. Notably, Section 64 stipulates that these rights are effective if at least one

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[1]s1 Copyright Act 2022, Chijioke Okorie, "Roundup of Intellectual Property Decisions and other Developments in Africa 2022" *Journal of Intellectual Property Law & Practice*, (2023) (18) (3) 235-250.

[2]s1 (c) *ibid*.

[3]s5 Copyright Act 2022.

[4]s2 *ibid*.

[5]s74 (1) Copyright Act, 2022.

performer is a Nigerian citizen or the performance occurs in Nigeria or a country with relevant international treaty with Nigeria.[1]

Patents

The key legislation regulating the grant of patents in Nigeria is the Patent and Designs Act 1971, which is codified as Cap 344 in the Laws of The Federation (LFN) 1990. A Patent confers upon the inventor or the owner, a government sanctioned exclusive right to prevent authorized parties from producing, using, selling, or offering their invention for sale within a specific timeframe, typically twenty years.[2]

A patent is a legal protection granted to an inventor, which allows then to exclusively manufacture, use, or sell their invention for limited period. This encourages innovation and technological advancement.

An invention is patentable in Nigeria, when it is new, must not have been previously disclosed; result from an inventive activity, i.e., not an obvious improvement over an existing technology; and capable of industrial application i.e., capable of use in industry and commerce; additionally, an invention can also be patentable if it is an improvement upon a patented invention, and meets the criteria of new, inventive step and is capable of industrial application.[3]

To file patent application, applicants must submit the following to the Trademarks and Patent Registry: their full name, address, and, if they reside outside Nigeria, an address for service within Nigeria. The application must also include a detailed description of the invention, accompanied by relevant plans and drawings. The inventor must also sign a declaration confirming their invention.[4] For applications claiming foreign patent priority, applicants must provide the name of foreign applicant, name of the country, date and patent number earlier given is required for application and registration.[5]

When a patent is infringed, the owner can institute a suit against the infringer and seek reliefs like injunction, damages, account for profits and anton pillar order.

Trademarks

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[1] s64 *ibid*.
[2] s7 Patents and Designs Act 1970 Cap. P2 LFN 2004.
[3] s1(1) (a)(b), (2) (a)-(c), (3) ibid.
[4] s3 *ibid*.
[5] *ibid*.

The key legislation governing the grant of Trademarks in Nigeria is the Trademarks Act, 1967, which is codified as Cap T13, LFN 2002. The legislation defines a trademark as a device, brand, heading, label, title, name, signature, word, letter, numerical or any combination thereof.[1]Trademarks serve to distinguish the goods of one business from those of another. To enjoy legal protection, a trademark must be registered,[2] with Trademarks and Patent Registry. The initial registration is typically seven (7) years, but it can be renewed for subsequent fourteen (14) years.[3]

According to the Trademarks Act, a trademark owner is granted exclusive rights to use a registered mark. To obtain this registration, the owner must submit a formal application to the Trademark Registry.[4] The application requires the following details: the owner's nationality, a clear representation or description of the proposed mark, the classification of goods or services associated with the mark, a signed authorization document from the owner (Power of Authority) or a designated representative, and, in the case of a corporate entity, a document certifying the representative's authority. If no third-party objection arises, or are successfully addressed, the registry will issue a certificate of registration to the owner.

A trademark can be invalidated if it is not used for a consecutive five (5) year period after registration, if it was registered without proper justification, or if the owner fails to comply with statutory renewal notices.[5] Additionally, a trademark may be revoked if it becomes a generic term, deceptive, and violates public interest.

Industrial Designs

Industrial Design focuses on the visual appeal and overall aesthetics of products. The Patent and Designs Act defines designs as any arrangement of lines or colours or both, as well as any any three-dimensional shape, whether or not associated with colours, that is intended by the creator to be used as template or guide for mass production through industrial processes; however, it is important to note that designs are not considered industrial designs id their sole purpose is to achieve a technical function.[6]

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[1]s67 (1) Trademarks Act Cap T13, LFN 2004.
[2]s7 *ibid*.
[3]s23 *ibid*.
[4]s18 *ibid*.
[5]*ibid.*
[6] s12 Patent & Design Act Cap. P2 LFN 2004.

Industrial Designs is the art of creating visually appealing and functional products for mass production. It involves designing products that are both aesthetically pleasing to consumers and efficient in their intended use.[1] In a legal sense, industrial design refers to the exclusive right granted to a designer to protect the unique and decorative aspects of a product, excluding functional features.[2]

Industrial designs are protectable if they are novel and do not violate public order or morality.[3]Those eligible to register designs include statutory inventor, employers or those commissioned to design, assignees of designs, and licensees under the contract.[4] Designs rights can be assigned, transferred, licensed and jointly owned.

Industrial designs in Nigeria are initially protected for five (5) years from the date of application. This protection can be renewed, for two consecutive five (5) year periods.[5] Registered designs provide exclusive rights to their owners.[6]However, these rights are not absolute and may be limited by exceptions, such as when the product is legally sold in Nigeria or the design has been publicly disclosed.

Trade Secrets

Trade secrets belong to the category of information protected by confidentiality law in particular and intellectual property in general. Though, trade secret law grew from general principles of case laws, it is a very valuable asset, since secrecy can confer commercial advantage on the holder or owner of the secret over rivals.

The Black's Law Dictionary defines trade secret, as a confidential information that provides a competitive advantage, and it can be a formula, method, design, or customer list which unlike patents are not publicly disclosed; to qualify as a trade secret, the information must be valuable, secret, and reasonably protected from unauthorized disclosure.[7]

Trade secrets safeguard valuable information that has economic worth. To qualify as a trade secret, the information must meet specific criteria, such as having the potential enhance

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[1] WIPO (n.4) 112.
[2] *ibid*.
[3] s13 (a)-(b) Patent & Design Act Cap. P2 LFN 2004.
[4] See s14 (1), s14 (4), s24 (1), & s23 (1) (a) ibid.
[5] s 20 (1) (a)-(b) *ibid*.
[6] s 19 (a)-(c) *ibid*.
[7] Henry Campbell Black, *Black's Law Dictionary* (6th edn, West Publishing Co.1996) 1494.

economic value and can be protected by trade secret law.[1] While the exact requirements may vary slightly between legal systems, the Agreement on Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs Agreement) in Art. 39 outline some general standards:

a. The information must be confidential, meaning it is not widely known or easily accessible to those familiar with the type of information.

b. The information must have commercial value due to its secrecy.

c. The rightful owner must have taken reasonable measures to protect information's confidentiality, such as through confidentiality agreements.

Where there is a breach, in a suit for breach of trade secrets, the remedies that are usually granted by courts are injunctions, damages & other monetary reliefs, Anton Pillar order and account of profits.

To What Extent is Generative Artificial Intelligence Protected Under Nigeria's Current IP Laws?

Having briefly discussed IP laws, it is pertinent to consider the extent AI generated content are protected under Nigeria's current IP regime;

Firstly, the Nigerian section 1(1)(a) Copyright Act 2022 grants copyright protection to computer software, including programme code by extension AI software or Programme as a literary work. However, a key question arises: Can AI-generated themselves be copyrighted? In the United States, a distinction has been made between works created entirely by AI (AI generated) and those created with human involvement (AI assisted).[2] AI generated works are creations made entirely by AI, such as music or images.[3] AI assisted works are those made with the assistance of human creativity and intervention. The U.S. Copyright Office has rejected copyright claims for AI generated works, arguing that they lack the necessary human authorship.[4]

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[1] Elizabeth Rowe, *Introducing a Takedown for Trade Secrets on the Internet,* University of Florida Levin College of Law (Wis. L. Rev 2007) 1041 in Grace Emmanuel Kaka and Aminu Tanimu and Folmi Yohanna (ed) 'Trade Secrets under the Nigerian Intellectual Property Law' [2018] (2) (1) *Journal of Private Law, University of Jos*, 164.

[2] Williams (n 3).

[3] *ibid*.

[4] *ibid*.

The Copyright Act grants copyright ownership to eligible individuals or entities, including natural person or an artificial person like company.[1] The Act stipulates specific criteria for copyright protection and one of such criteria stipulates that copyright right holder are a Nigerian citizen or habitually resident in the country, or a company incorporated in Nigeria.[2]Since AI is not a person and cannot acquire citizenship, it does not meet these eligibility criteria. Consequently, AI is not protected under Nigerian Copyright Act 2022.

Furthermore, the Act grants moral rights to the author of a work, an author can claim reliefs in connection to distortion, and the rights are non-transferrable during the author's life time and can only be passed on after their death through a will or by operation of law.[3] It is worthy of note, that life and death can only be attributed to living beings in this case human and the Act went further to provide for renumeration of authors,[4]thus, how can an AI receive renumeration and utilize same without human interrereference? In cases of infringement and going to court, AI is a non-juristic entity consequently cannot be a plaintiff to the suit and be entitled to judicial reliefs.

Secondly, AI technologies can be protected by patents if they meet the requirements of novelty, inventiveness, and industrial applicability. However, the situation becomes more complex when an AI system itself creates a patentable invention. In Nigeria, patent rights granted to the statutory inventor, the first person to file patent application for the invention, regardless of whether they are the true inventor.[5] This "person" is clearly defined as a human being, not a machine or software.

The Patent and Designs Act stipulates the name and address of an owner of industrial Design shall be maintained at the registry,[6] this also does not accommodate an AI registering an Industrial Design, assuming it does, where will its address be?

Trademark in Nigeria is granted to a person known as the proprietor in both sections A and B of the Act,[7] the Act further stipulates that before a trademark is registered, an application by an individual seeking to claim ownership of a trademark used or proposed to be used, and

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[1]s5(b) Copyright Act, 2022
[2] s5(a) &(b) Copyright Act, 2022
[3]s14 Copyright Act, 2022.
[4]s15 *ibid*.
[5]ss2,3, & 4 Patents and Designs Act Cap. P2 LFN 2004.
[6]s17 *ibid.*
[7] s5 & 6 Trademarks Act Cap T13, LFN 2004.

desires to register the trademark, should submit a written application to the Registrar, following the established procedures, for either part A or Part B of the register.[1]

Given the limitations of Nigeria's current IP Laws, which primarily recognize natural persons or registered corporate bodies as rights holders, AI generated content cannot be directly protected under existing legal frameworks. Hence, AI has become an integral part of the Nigerian landscape, but the creations remain in legal area.

IMPACTS OF ARTIFICIAL INTELLIGENCE ON INTELLECTUAL PROPERTY RIGHTS IN NIGERIA

To focus our discussion, we will limit our examination of AI's effect on IPRs to Copyright and Patent.

Challenges Related to Authorship and Ownership of Artificial Intelligence-Generated Works Under Copyright

Copyright is a form of intellectual property that protects original creative works.[2] It grants exclusive rights to authors and creators for their literary, artistic and musical works, as well as the entrepreneurial rights relating to the exploitation of these works.[3] In Nigeria copyright protection extends to literary works, musical works, artistic works, audio-visual works, sound recordings, and broadcasts.[4]

The Berne Convention 1887 establishes framework for safeguarding literary, scientific, and artistic work globally. It outlines a non-exhaustive list of eligible works eligible works, encompassing all creations expressed in any form or medium.[5]

    i.   Authorship Under the Copyright Act 2022

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[1] s18 Patents and Design Act Cap. P2 LFN 2004.
[2] David Bainbridge, *Intellectual Property,* (9th edn, Pitman Publishing 1999)
[3] WIPO (n 4) 3.
[4] s2 Copyright Act 2022.
[5] Eloghene E.Adaka. Ifeoluwa Olubiyi, "Lessons for Nigeria: Determining Authorship and Inventorship of Artificial Intelligence Generated Works' *Journal of Intellectual Property and Information Technology* (2022) (2) (1) p 26< https://journal.strathmore.edu/index.php/jipit/article/view/203> accessed 23rd June, 2024.

To qualify for copyright protection under the Copyright Act 2022, a literary, musical, or artistic works must be both original and tangible.[1] This means the work must be recorded in a way that can be seen, heard, or reproduced, either directly or using technology.[2]

Nigerian Copyright Act imposes a dual requirement of originality and fixation for copyright protection.[3] In contrast, the Berne Convention focuses solely on originality, allowing member states to determine whether fixation is necessary.[4]

Originality means the work must be the author's own creation.[5] Copyright protection requires the work to be the author's unique creation.[6]The threshold of originality varies by jurisdiction, but under common law system like Nigeria, the work must demonstrate a significant amount of effort to be considered original.[7]

Under the Copyright Act, a work doesn't have to be ground-breaking or completely novel to be considered original. The term 'original' has no ordinary dictionary meaning, as the Courts have interpreted this concept broadly, emphasizing that a work must be independently created by the author and not copied from another source.[8] In *Ladbroke (Football) Ltd v. William Hill (Football) Ltd* [9] Lord Pearce stated that originality requires the work to be the author's own creation, not a copy. Minor modifications are unlikely to establish a new copyright.[10]

Fixation, means the work must exist in a form that can be physically observed, audibly heard, or otherwise experienced whether directly or using technology.[11] This particular requirement is less controversial as there is no doubt work listed under the Copyright Act 2022 must be fixed on some of medium.

ii.   Who is an Author under the Nigerian Copyright Act 2022?

To qualify as an author under Copyright Act 2022, particularly for literary, musical and artistic work, a creation must demonstrate originality and be fixed in a tangible form. This means the work should be unique and expressed in a medium that allows it to be perceived, reproduced,

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[1]s2 (a) (b) Copyright Act, 2022.
[2]*ibid.*
[3]Adaka, Olubiyi (n 71) p 26.
[4]Berne Convention 1886.
Adejoke O. Oyewunmi, *Nigerian Law of Intellectual Property*, (University of Lagos Press, 2015) [5]
[6]Bainbridge (n 68) p 44.
[7]Adaka, Olubiyi (n 71) p 26.
[8]Bainbridge (n 68) p 44.
[9] [1964] 1 All ER 465.
[10]*ibid.*
[11]s2 (b)Copyright Act,2022.

or communicated, either directly or through technology. Once these conditions are met, authorship can be addressed, even in instances where AI contributes to the creative process.

Despite its frequent use of the term 'author', Berne Convention lacks a formal definition. This oversight is perpetuated in the WIPO Copyright Treaty and TRIPs, both of which adhere to Berne Convention principles but failed to elaborate on the concept.[1] The Berne Convention did not categorically define authorship. However, Article 15.1 stipulates that an author's name on a work is generally sufficient to be considered the author.[2] This is often interpreted to mean that an author must be a natural person.[3] The traditional interpretation, reinforced by the pronoun 'his', posits a universal principle of human authorship in copyright law.

Nigerian Copyright Act 2022 unlike the Berne Convention did define who an author is, therefore leaving less room for debate as who an author with regards the different work eligible for protection under the Copyright Act 2022. However, it may be argued that a "person" as contained in the definition, can also qualify for AI, but is settled in Nigerian jurisprudence as to who a person is; the Copyright Act[4] states that an author in the context of -audio-visual work refers to the individual who oversaw the production of the audio-visual content, unless otherwise specified in a contractual agreement between the parties involved; collective work denotes the person responsible for curating and organizing the collection of individuals work; photographic work indicate the person who captured the photograph; sound recording designates the individual who coordinated the creation of the sound recording; broadcast transmitted from within any country signifies the person who arranged for the production or transmission of the broadcast within that specific country.[5]

Given the preceding discussion and the definition of an author as a person who creates works protected by copyright, it is evident that the Nigerian Copyright Act 2022 solely recognizes human beings as authors. Though under Nigerian Law the term 'person' encompasses 'artificial persons' like companies and corporations, that doesn't extend copyright protection to non-human entities.

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[1] Vera Albino, "Artificial Intelligence, Intellectual Property and Judicial System", *International In-house Counsel Journal* (2023) *(16) (62) p 2.*
[2] *ibid.*
[3] *ibid.*
[4] s.108, Copyright Act 2022.
[5] *ibid.*

The Supreme Court in *Buhari & Ors v. Obasanjo & Ors* [1] established that under Nigerian law, the term 'person' encompasses not only natural person but also artificial entities like corporations. Same principles apply in *Ibrahim v. Judicial Service Commission*.[2] However, the current legal system does not recognise AI systems as 'person', limiting their status as under the Copyright Act 2022.

iii.   Legal of Personality of AI

The discussion on who is an author, necessitates the need to consider the legal personality of AI. The Organization for Economic Cooperation and Development (OECD) considers AI as a system as a machine-based system, can autonomously analyse data and generate intelligent outputs such as predictions, recommendations, or decisions influencing real or virtual environments."[3]

Authors generally possess legal rights, which confer upon them a legal personality. This legal personality entitles authors to both moral and economic benefits.[4] AI currently operates outside the legal framework as it is not recognized as a legal subject. The absence of consciousness and sentience prevents it from acquiring legal rights or obligations.[5] Furthermore, AI cannot be regarded as an author, AI learns without understanding, it is subjected to logic, a legal object and not a legal subject.[6]

While the foregoing may be true of AI, it could be argued that companies and associations possess legal personhood similar to humans.[7]Therefore, it follows AI should also be granted legal standing to engage legal transactions, sue and be sued just as humans, companies or associations can. However, Vera Albino in her work opined that authorship and inventorship imply the capability to perform legal transactions, sue and be sued and be responsible;[8]therefore, the courts considering current legislation, cannot ascribe such status to AI. In *Corporation Ltd v. Phone Directories Company Pty Ltd* [9]the Australian Full Federal Court ruled that copyright requires a work to have originated from a human. While humans are involved in gathering and organizing the initial data for telephone directories, the Court found

Buhari & Ors v. Obasanjo & Ors (2003) LPELR-24859 (SC).[1]

[2] Ibrahim v. Judicial Service Commission[2] (1998) 14 NWLR (Part 584) 1 at 36

Albino (n.84) p 2.[3]

[4]*ibid*.

[5]*ibid* p 4.

[6]*ibid*.

[7]*ibid.*

[8]*ibid.*

Telstra Corporation Ltd v. Phone Directories Company Pty Ltd (2010) 194 FCR 142.[9]

that copyright did not extend to the subsequent automated processes of alphabetizing and converting the information into electronic format. As these latter stages lacked human intervention, they were not considered original works eligible for copyright protection.

Australia like Nigeria, it is essential the work originates from one or more human authors to receive copyright protection.[1]This aligns with the concept of 'romantic authorship,' which emphasizes human creativity; consequently, AI generated works are likely to enter public Domain immediately.[2]

iv.   Ownership of AI-Generated Works Under Copyright

The ownership of AI generated works under copyright has culminated to debates, different opinions written and decisions of court and laws in certain jurisdiction on the ownership of AI-generated works under the copyright. When it has to do with AI-generated works under copyright due to its nature, the debates have always been around whether it is the person who created the AI's algorithm that is the owner, the AI system itself or the end user. This article will consider the debates, decisions of courts and laws enacted in certain jurisdiction on this. Some scholars in discussing this issue, have done so from the perspective of theories of copyright, the utilitarian and natural theory.

According to the utilitarian perspective, copyright serves to encourage the production of creative works and beneficial works."[3] This theory posits that by providing authors with exclusive rights, we incentivize them to invest necessary for innovation.[4]Without such protection, creators may be deterred from pursuing their endeavours, as their efforts could be easily exploited by those who benefit without contributing. [5]

While the utilitarian principle might seem logical, its application to AI art creation is flawed. Unlike humans, AI systems don't need external motivation to produce art. Moreover, their lack

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Courtney White, Rita Matulionyte, "Artificial Intelligence Painting the Bigger Picture for Copyright [1] Ownership" (2019) < Artificial Intelligence: painting the bigger picture for copyright ownership — Macquarie University (mq.edu.au)> accessed 22nd June 2024.
[2]*ibid.*
[3]*ibid.*
[4]*ibid.*
[5]*ibid.*

of cognitive limitations like short-term memory or fatigue allows for continuous, uninterrupted creative processes.[1]

White & Matulionyte argued that the utilitarian theory's focus on is unnecessary when discussing copyright protection for AI-generated works.[2] They contend that AI systems are created by humans and require human intervention to produce content.[3]This intervention can involve providing input data or activating AI system, making the human creator the primary contributor and rightful owner of the generated works.[4]This article aligns and supports the analysis by White & Matulionyte, that the creators of AI systems hold copyright ownership over the works produced by their creation.

On whether end user should be attributed as the creator of certain AI- generated contents, particularly if he is not the creator, White & Matulionyte, argued this will depend on the extent and the kind of effort invested.[5] Copyright protection does not extend to mere activation of an AI system or trivial, non-intellectual efforts.[6] Although these actions are necessary for AI-generated content, it would be disproportionate to award users exclusive rights based on them.[7]However, if users make substantial intellectual contributions to the creation of a work, these contributions may be worthy of copyright protection. This could incentivize users to actively engage in the creative process[8]

John Locke's natural rights theory recognises property as an inherent human right derived from labour.[9] Individuals are entitled to own the fruits of their efforts, both tangible goods and the intellectual creations they produce. While Locke's original conception focused primarily on tangible property, subsequent scholars have extended this framework to encompass IP, including copyrights, recognizing the moral and economic value of creative works.[10]

The natural rights theory advocates for copyright protection of AI-generated works based on the level and importance of human contribution. White & Matulionyte argued that if human

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[1]*ibid*.
[2]*ibid*.
[3]*ibid*.
[4]*ibid* p 14.
[5]*ibid* p 15.
[6]*ibid.*
[7]*ibid.*
[8]*ibid.*
[9]*ibid* p 17.
[10]*ibid*.

involvement is significant enough and directly contributes to the final product, it might be justifiable to grant copyright ownership to the humans involved.[1]

At this juncture, the article will consider decisions of court and laws in certain jurisdiction before taking its position on ownership of AI generated work.

In landmark case of *Bleistein v. Donaldson Lithographing Co.,*[2] the U.S. Supreme Court, in a decision authored by Justice Oliver Wendell Holmes, distinguished between creative output of human beings and that of artificial entity. The Court emphasized the inherent uniqueness of human personality as a fundamental requirement for copyright protection. This interpretation suggests that copyright works does not extend to works that are not of human creativity. [3] Furthermore, Chapter 300 of the US Copyright Office compendium explicitly states it will only register original works authored by humans, reinforcing the principle that non-human-created works are ineligible for copyright protection.[4]

Given the preceding analysis, human authors in the U.S. are the primary beneficiaries of copyright protection. While Southern District of New York Court ruled in *Penguin Books USA Inc. v. New Christian Church of Full Endeavour (2002)*[5] that dictation from a non-human author could be subject to copyright, the court emphasized the significance of human involvement in selecting and arranging the literary work. Even though the Court acknowledged the potential for copyright protection of non-human authored works, it ultimately recognized the value of human effort, aligning with the U.S. Supreme Court's stance in *Bleistein v. Donaldson Lithographing Co.*[6] and the guidelines established by the U.S Copyright Office, Compendium 2017.

 The Copyright Act, 1994 of New Zealand, specifies of computer-generated works in section 2, it as those created by computer without human involvement.[7] Additionally, section 5(2)(a) of the same Act stipulates that the author of a literary, dramatic, musical or artistic work that is

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[1]*ibid* p 20.
 188 U.S. 239 (1903).[2]
Adaka, Olubiyi (n 71) 26.[3]
[4] *ibid* p 33
[5] No. 96 Civ. 4126(RWS).
[6] Supra.
[7]*ibid* p 34.

computer generated is the individual who made the arrangements required for the creation of the work.[1]

The Copyright Act 2022 in Nigeria, fail to specifically address computer generated works. However, it does define computer programme in Section 108, a set of instructions or statements express in any form, used directly or indirectly in a computer in order to produce result. This implies that works created using computer programme are computer generated works. Additionally, Section 108 (1), interprets literary works to include computer programmes. The Act stipulates that the creator of such works is the individual who created the computer programme or person(s) who used the computer programme to generate another work.

UK copyright law recognises computer-generated works as eligible for copyright protection. While there is no human involvement in the actual creation process, the person responsible for initiating the arrangements for the work is considered the author.[2] Consequently, AI generated content is eligible for copyright protection, regardless of the lack of human involvement.[3] This means that AI itself does not hold authorship rights. The copyright protection for such works extends for fifty (50) years, but they do not have the moral rights.[4] Saudi Arabia has made ground-breaking step-in acknowledgement AI's legal status by granting citizenship to a humanoid robot named Sophia. This innovative move is a significant advancement in the field of AI law. [5]

In the jurisdictions listed, with the exception of Saudi Arabia, copyright is not attributed to an AI. However, in the U.S., there are specific conditions under which copyright can be vested in works generated by non-human entities if it can be proven that a human was responsible for selecting, organizing, and presenting the material.[6]According to the laws of New Zealand, the UK and the Nigerian Copyright Act 2022, the author must be a human or a legal entity that has arranged or programmed the work.[7] Based on the foregoing analysis, an AI system is not attributed authorship in most jurisdictions, however, in no distant future, more countries will emulate Saudi Arabia to confer legal personality on certain kind of AI system but it will be subject to the extent of the effort vested by the AI system while creating the work.

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[1]*ibid.*
[2]s9 (3) Copyright Patents and Designs Act 1988.
[3]Adaka, Olubiyi (n 71) p 33.
[4]ss 12(7), 78 Copyright Patents and Designs Act 1988.
[5]White & Matulionyte (n 98) p 22.
[6] Adaka, Olubiyi (n 71) p 34.
[7] *ibid.*

Copyright Infringement Facilitated by Artificial Intelligence Technologies

Before the article discusses copyright-infringement facilitated by AI technologies, the article will consider copyright infringement as stipulated in the Copyright Act 2022 of Nigeria.

a. Copyright Infringement Under the Copyright Act 2022

A copyright infringement occurs when someone utilizes a copyrighted work without the owner's permission in a way the copyright holder is entitled to. This is detailed in section 36(1) of the Copyright Act 2022, copyright is violated by any person who, without authorisation of the copyright owner engages in any of the action listed in section 36(1) (a)-(g) of the Act.

i. Ways of Infringing on Copyright

Copyright infringement can be direct or indirect/ primary or secondary. Direct or primary infringement occurs when someone performs actions that are exclusively reserved for the copyright holder. This includes copying without authorization, distributing copies to the public, renting or lending the work to the public, publicly performing, showing, or playing the work, publicly communicating the work, and creating adaptions or derivations.[1]

Indirect /Secondary infringement occurs when a person intentionally aids or facilitates another person's direct copyright infringement. This includes actions such as providing materials for creating authorized copies, offering location or equipment for infringing activities, including others to infringe, importing unauthorized materials, or attempting to sell counterfeit goods.[2]

ii. Infringement Facilitated by AI

AI is copying human communication, creativity, and expression such that it demonstrates human tendency to repurpose the work of others. Advanced image generation tools, such as Stable Diffusion, Midjourney, or DALL.E 2, are capable of creating stunning visuals in a wide range of styles, from vintage photographs and watercolours to pencil drawings and pointillism.[3] While these tools are impressive, text generators like Chat GTP have demonstrated even more

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[1] s. 44 (1) (a)-(c), (2) (a)-(d) Copyright Act, 2022, ss.17-21 Copyright Patents and Designs Act, 1988,
[2] s44 (7), 45 Copyright Act 2022.
[3] Gil Appel, Juliana Neelbauer, David A.Schweidel "Generative AI Has an Intellectual Property Problem, Harvard Business Review" (2003) <https:// Generative AI Has an Intellectual Property Problem (hbr.org).> accessed 26th June 2024.

precise capabilities. They can produce essays, poems, summaries and even mimic specific writing styles and forms. This proficiency has led to their misuse in academic stings, where students may use them to generate content without attribution, raising ethical concerns about plagiarism.

While AI has become more sophisticated in recent years, the concept of computer-generated content is not entirely novel, as generative AI models, trained on vast datasets of text and images, learn to identify patterns and relationships within the data. [1] These models then use this understanding to create new content such as text or images, in response to prompts. However, the legal implications of AI generated works, particularly in terms of copyright remain a complex issue due to the potential for intellectual property infringement.[2]

Despite generative AI platforms gaining grounds, existing laws still have implications for its use. As analysed earlier, while there are still debates on authorship of AI generated content in some jurisdictions, the courts in some jurisdictions have settled the issue, and legislation on authorship of AI generated content enacted. An example of a suit litigated upon that involves the use of AI, is the case of *Andersen v. Stability AI (2022)*[3], three artists filed a class-action against multiple generative AI platforms, alleging that the AI model were trained on their copyrighted works without permission. The artistes claim that this unauthorized usage allows users to produce derivative works that may not be substantially transformative, infringing on copyright protections.

 The case of *Getty Images v. Stable Diffusion* [4] filed at Delaware Court considers the use of AI to facilitate copyright infringement. Getty Images alleges that Stable Diffusion has violated copyright law by utilizing over 12 million of its protected images. Getty alleges that Stability AI had brazenly engaged on massive scale intellectual property theft of its copyrighted images and is seeking trillions of dollars in damages.

The article aligns with Appel, G and others, which is the foregoing cases will clarify the bounds of what a derivative work (derivative work involves the use of major copyrightable elements

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[1]*ibid.*
[2]*ibid.*
AI 3:23-cv-00201(N.D.Cal.) *(2022)*[3]
1:23-cv-00135(2023).[4]

of an original existing work to create another work) is under intellectual property laws of the U.S.[1]which might influence decisions of courts in other jurisdictions. The resolution of these cases will likely depend on how the court interprets the fair use doctrine and whether the use of the copyright material is deemed transformative, serving a purpose different from its original intended use.[2]

Given the nature of AI, a company selling an AI to a user could face potential copyright infringement liability if the user employs the AI in a manner that violates existing copyright laws. However, in the U.S. case of *Sony Corp. v. Universal City Studios*[3] courts may limit the liability if the AI has substantial legitimate uses. This suggests that companies might not be held responsible for every instance of misuse by their customers.[4]

While AI offers significant legal benefits, the potential for infringement both direct and indirect, remains a concern in contracts, regardless of whether they explicitly address generative AI usage.[5]There is a danger of unintentionally exposing confidential information through the use of generative AI, regardless of how innocuous the input may seem.

Based on the foregoing, given how AI works and the fact that data has to be inputted mostly from already existing works, the chances of infringing on the copyright of an existing work are high, therefore, it is important that creators of such AI system obtain permission where necessary.

Patent Considerations for Artificial Intelligence Related Inventions

Patents are legal protection granted to inventors who have created original and beneficial products or processes that satisfy specific legal standards for protection.[6] Subject matter protected by patent include products and process that are new and useful for diverse purposes in diverse fields like transport, health, communications and household equipment.[7]

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[1]Appel, Neelbauer, Schweidel (n 105).
[2]*ibid.*
[3]464 U.S. 417, 422–23 (1984)
[4]Zach Naqvi, "Artificial Intelligence, Copyright, and Copyright Infringement, Marquette Intellectual Property Law" Review (2020), (24) (1) p 15-51.
[5]Appel, Neelbauer, Schweidel (n 105).
[6]WIPO (n 4).
[7]*ibid.*

i.   Requirement for Patent Grant in Nigeria under the Patent & Design Act 1970

In Nigeria, the regulation of patents is outlined in the Patent and Designs Act 1970. To be eligible for patent under section 1(1) of the Act, an invention must demonstrate the following characteristics: novelty or represent an advancement of a previously patented invention, originate from a creative process, and possess the potential for practical application. Additionally, an invention can qualify for a patent if it signifies a substantial improvement upon existing patented invention and satisfies the identical criteria of novelty, inventive step, and industrial applicability.[1]

In order for an invention to meet the requirement, it must not form part of the state of the art or be obvious to someone skilled in that field and the said invention must not have been disclosed or made available to the public in the past.

ii.   True Inventor and Statutory Inventor under the Patent & Design Act 1970

An inventor is the person who creates. When multiple people contribute to the contribution to the creation, the initial step in identifying the inventor is to pinpoint the innovative aspect and then determine who was responsible for the taking inventive step.

The Patent Designs Act distinguishes between statutory inventors and true inventor. Statutory inventors are the individuals who first file for a patent application, and their rights are vested in the patent.[2] A patentee is simply the individual to whom a patent has been granted.[3] While it might seem that "statutory inventor" and "patentee" are synonymous, the Act also introduces the concept of a true inventor.[4] Patent law recognizes the exclusive right of true inventors to be named as such on patent applications and granted patents. However, the definition of "true inventor" is limited natural person, not corporations. Furthermore, contractual agreements cannot alter an inventor's right to be named on a patent.[5]

iii.   Inventorship Status of AI-Generated works

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[1] s1 (1) (b) Patents and Designs Act, 1970 Cap. P2 LFN 2004.
[2] s2 *ibid*.
[3] s32 *ibid*.
[4] Adaka, Olubiyi (n 71) p 23.
[5] *ibid* p 24.

Similar to the copyright ownership of AI-generated works, which is attributed to the individual under Nigerian law rather than AI itself, the inventorship status of AI-generated inventions under the Patent & Design Act, 1970, is also vested in a human. The Act stipulates that patent rights belong to the "statutory inventor", who is defined as the "person" who first files for the invention.[1]Additionally, a patentee is a person to whom a patent has been granted. In the context of these definitions, the term person under Nigerian law is not limited to natural persons or human beings. It also includes artificial persons such as corporations, companies and or anybody of person, corporate or incorporate, as established in the case of *Buhari & Ors v. Obasanjo & Ors (2003).*[2]

The article further submits that under the Nigerian jurisprudence the definition of a "person" does not include AI system, therefore under the Nigerian jurisprudence, an AI system cannot be statutory inventor nor a patentee under the Patent & Design Act 1970.

Some argue that if AI is to be considered a true inventor, it should have the legal standing to file patent applications, object to paten claims, or initiate legal proceeding in cases where its inventions are not recognized or exploited without consent. Without legal personality, AI systems would lack the ability to participate in legal proceedings before courts or patent office.[3]

In this context, the article will examine the stance of jurisdiction such as the United States, the United Kingdom, Europe, South Africa, and Australia concerning the inventorship status of AI-generated works utilizing the DABUS case as a reference.

A ground-breaking AI system, Device for Autonomous Bootstrapping of Unified Sentience (DABUS) developed by Dr. Stephen Thaler, has been at the centre of a legal debate regarding patent ownership. DABUS, designed to autonomously generate inventions, created two unique concepts: a fractal container and food container with enhanced grip and heat transfer.

Dr. Thaler sought patent protection of these inventions through the Patent Cooperation Treaty (PCT), specifying various patent offices, including European Patent Office (EPO), UK Intellectual Property Office (UKIPO), US Patent and Trademark Office (USPTO), South Africa

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[1] s32 Patents and Designs Act 1970, Cap. P2 LFN 2004.
[2]LPELR-24859 (SC).
[3]Adaka, Olubiyi (n 71) p 23.

and Australia among others.[1] In all these applications, DABUS was designated as an inventor, and Dr. Thaler the assignee. The question is whether an AI system can be legally recognized as an inventor and whether it can transfer patent ownership in each of this jurisdiction.[2]

The USPTO's 2020 decision on a patent application issued involving DABUS, citing *Beech Aircraft Corporation v. Edo Corporation (1991),[3]* reaffirmed that under U.S patent law, only a natural person (human) can be designated as an inventor.

The US District Court of Kansas ruling in *Beech Aircraft Corporation v. Edo Corporation* (Supra) that only human being can be designated as an inventor. Additionally, section 115 of the patent law mandates that an inventor provide an oath and their name, which DABUS, being an AI system, is unable to fulfil (USPTO, Application No. 16/524, 350).[4]

Manuel of Patent Examining Procedure (MPEP) defines "conception" as the mental process where the inventor fully envisions and understands their invention, including its complete design and intended function.[5]

In the light of the aforementioned, the U.S., patent law's definition of an inventor, which is exclusively human, precludes AI systems from being designated as inventors.[6]

The UK Patents Act 1977[7] mandates that only a human inventor or joint inventors can be granted a patent. Section 13(1) of the Act requires inventors to be named in any patent or published application. Additionally, section 13(2) mandates the identification of the inventor(s) by the applicant. If the applicant is not the inventor, a declaration outlining their derivation of rights from the actual inventor is required to accompany the application.

The UK Patent Court's 2005 decision in the University of Southampton applications further clarified that an inventor is a natural person who has contributed to the inventive step.[8] Given the UK Patent Act's use of the term 'person', AI system cannot be considered inventor. To

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[1] *ibid* p.35.
[2] *ibid.*
[3] Civ. A. Nos. 90-4185-S, 91-4038-S.
[4] *ibid* p 37.
[5] *ibid.*
[6] *ibid.*
[7] s.2 UK Patents Act 1977.
[8] Adaka & Olubiyi, (n 71) p 37.

reinforce this, the UK updated has updated its manual to explicitly state that AI or non-human inventors are not acceptable and do not qualify as person under the Act.[1]

The decision in *Thaler v. The Comptroller- General of Patents, Designs and Trademarks*[2] underscores that AI systems cannot be recognised as inventors or patent owner under UK law. The UK Supreme Court ruling relied on section 13 (1) & (2)) of the UK Patents Act 1977, which stipulates that an inventor must be person capable of transferring ownership rights to an applicant. As an AI system, DABUS lacks the legal personality necessary to qualify as a person and, consequently, cannot own property or transfer any right under the UK patent law.[3]

The Legal Board of Appeal of the European Patent Office in December 2021, in a public proceeding determined that AI system are not eligible to be named investors under European patent law. The decision, made in combined cases of J 8/20, and J9/20 (European Patent Office 2021), found that AI systems lack the legal capacity necessary to be inventors because they do not meet the requirements of Article 81 of the European Patent Convention Rule 19(1) of the EPC Regulations.[4] The European Patent Office (EPO) argued that legal capacity is status granted to natural person as a result of being human, and legal entities.[5]

Currently, in the EU, there is no law conferring such right on An AI machine, a result an AI system cannot hold rights associated with inventorship, like being an inventor or the right to transfer their rights to others.[6]

 The South African and Australian authorities have adopted a stance on the DABUS case that diverges significantly from the US, UK, and European Union. While these latter jurisdictions have not recognized AI as an inventor, South Africa has, acknowledging DABUS as an inventor and granting patent.[7] This decision, made by the Companies and Intellectual Property Commission (CIPC), is rooted in the South Africa Patent Act 1978. Although the Act doesn't explicitly define "inventor", section 27(1) outlines who can apply for a patent, inclusive of an

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[1] *ibid.*
[2] 2023] UKSC 49.
[3] Adaka & Olubiyi, (n 71) p 37.
[4] *ibid* p 38.
[5] *ibid.*
[6] *ibid.*
[7] *ibid* p 39.

inventor or any other person acquiring from him the right to apply or both the inventor and such other person.[1]

Some argue that the CIPC's decision is flawed, pointing to the use of the masculine pronoun 'him' in the Act. They contend that this indicates the intent for investors to be natural persons, and that the pronoun is used generically to include both genders.[2]

In Australia, initial stance of the patent office mirrored that of the US, UK and the European Union. They denied DABUS inventor status, arguing that as an AI, it lacked the legal personality required to hold or assign patent rights as claimed by Dr. Thaler.[3] This decision was based on Regulation 3.2C (2) (a), which mandates that patent applicants must "provide the name of the inventor of the invention to which the application related."[4] However, the Australian Federal Court overturned this ruling, and held that the patent office had mistakenly conflated the concepts of ownership and control of patentable invention with inventorship,[5]clarifying the distinction between inventor status and ownership rights. The Court determined the patent office had conflated these two concepts, mistakenly assuming that a human could be an inventor.

The Court suggests that designating the AI as the inventor could eliminate confusion regarding who among the programmer, owner, data provider, operator or trainer should be credited as the inventor.[6] Furthermore, the court acknowledge the ground-breaking work of computer scientists in developing these creative machines, and the subsequent contributions of others in leveraging and expanding upon their capabilities.[7]

It is clear that majority favour the fact that AI machine lacks the personhood, considering most of the laws categorical provide for a "person" which has been interpreted to be natural humans or body corporate.

Data Ownership and Privacy Concerns in Nigeria

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[1] *ibid.*
[2] *ibid.*
[3] *ibid* p 40.
[4] *ibid*.
[5] *ibid.*
[6] *ibid.*
[7] *ibid.*

Data especially personal data is constantly captured whether by cookies on computer, or filling forms online or CCTV camera or fitness tracker and this done with or without your knowledge with huge bearing on people's live.[1] The bulk of the data collected is for the use of enterprise or institutions, be it private or public. People always find themselves in a situation where they fail to give out such, certain services and product will be inaccessible to them, the need to gain access to service or products makes the consumer to willingly provide such data that will lead to capturing such individual's data.[2]

Sanjay stated that if data is generated for the mutual benefit of the customer and service provider or seller of product, then who is the real owner of the data? The article considered two arguments for the purpose of determining the said question; information security practices often delegate the responsibility of classifying data's confidentiality to its originator, while others argue that the individual whose actions generate the data should be considered true owner,[3]or creator and the other argument is the individual, by whose physical existence and behaviour, such data gets generated, be construed as its real owner.[4]For the purpose of this article, the question will be answered within the Nigerian context and using the provisions of the recently enacted Nigerian Data Protection Act, 2003 and the provisions of the Constitution of the Federal Republic of Nigeria 1999 (as amended).

Data for the purpose of this article will be restricted to its meaning as information in digital form that can be transmitted or processed especially personal data. The Nigerian Data Protection Act 2023 defines "Personal Data" as any information about an individual that can be used to identify them, either directly or indirectly, through factors like their name, unique number, location online identifier, or personal characteristics.[5]

According to the Act's definition, the owner of personal data is the individual who can be identified either directly or indirectly, using specific information given they provide. This individual referred to as "data subject". The "data processor", "data controller" and "data processor or data controller of importance"[6] are responsible for handling this personal data. As such, they have a duty to protect the privacy of the data's subject's information.

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[1] Sanjay Sharma, "Data Ownership & Privacy" < https://nlondon.bcs.org/pres/dop.pdf> accessed 6th July 2024.
[2]*ibid.*
[3]*ibid.*
[4]*ibid*
[5]s65 Data Protection Act, 2003.
[6]*ibid.*

The right to privacy in Nigeria is a fundamental right protected by Chapter IV, Section 37 of the Constitution of the Federal Republic of Nigeria 1999 (as amended). It safeguards individuals from unauthorized access to their personal information by "data processors" and "data controllers" must implement robust security measures and adhere to the exceptions outlined in the Constitution, the relevant Act, and applicable regulations.[1]Individuals must also provide explicit consent before their data is processed and have the right to access, correct, erase, restrict, or object to processing of their personal data. Moreover, individuals retain the right to withdraw their consent at any time.[2]

In accordance with the Data Protection Act, 2003 and the 1999 Constitution (as amended) the data subject is any person who can be recognized or identified, directly or indirectly, through specific marker. This marker may include a name, identification number, location information, online identifier or other distinguishing characteristics related to the individual's physical, physiological, genetic, psychological, cultural, social, or economic identity. The Act and 1999 Constitution prioritize the safeguarding of person's privacy, except in specific circumstances that fall under defined exceptions.

LEGAL AND POLICY CONSIDERATIONS

i. Examination of the Adequacy of Current Laws and Regulations

Currently, Nigeria does not have specific legislation or regulations governing the utilization and of AI technologies, the regulatory framework on AI in Nigeria is still at infancy stage. The Nigeria Data Protection Regulation (NDPR) 2019 developed by National Information Technology Development Agency (NITDA) contain certain provisions protecting personal data collected by AI systems. In addition to the NDPR 2019, other existing legal framework that relate to AI 'and provide some sort of guidance and regulation around AI especially as it relates to data and intellectual property include; Nigeria Data Protection Act 2023, the Cybercrime Act 2015, Copyright Act 2022.

At this point, we shall delve into the legal framework in place and determine its ability to effectively regulate AI and its implications for intellectual property.

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[1] ss34, 35, 36, & 37 Data Protection Act, 2003.
[2]*ibid.*

The Data Protection Act 2003, has the following objective:[1]

    a. Safeguard the constitutional rights and freedoms of individuals to personal information.

    b. Establish guidelines for the collecting, storage, and utilization of personal information.

    c. Promote practices that protect personal data from unauthorized access or misuse.

    d. Require data controllers and processors to handle personal data ethically and transparently.

    e. Confer upon individuals the authority to inspect, rectify, and expunge their personal information.

    f. Establish mechanisms for individuals to seek redress in case of data breaches or violations.

    g. Create an independent commission to monitor compliance with data protection laws and regulations.

    h. Promote a secure and trusted digital environment for business and individuals.

In summary, the Act protects the utilization of personal information subject for whatever purpose by data controller in accordance with the provision of section 37 of the 1999 Constitution (as amended) except it falls within the exceptions provided in the 1999 Constitution (as amended).[2]

AI's intelligence and performance are directly correlated to the quality and quantity of its training data. This increasing reliance on data has led to surge in demand, potentially compromising privacy and IPRs. In Nigeria's AI landscape, citizen data is crucial component. The Nigeria Data Protection Act 2003, serves as blueprint for managing this data. However, the article suggests that while the Act provides a starting point, it may not be sufficient to address the evolving challenges of AI regulation.

Before the Nigeria Data Protection Act (2003) took effect, the NDPR 2019 was the sole legal framework governing data use by data controllers and processors in Nigeria. Its primary goals were to: protect individuals' data privacy rights, promote secure data exchanges, prevent data manipulation; and implement a comprehensive data protection framework that safeguards

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[1] s1 (a)-(h) *ibid.*

[2] s3(2) (a)-(e) The Constitution Federal Republic of Nigeria 1999.

Nigerian businesses' competitiveness in international trade by ensuring fair and equitable practices aligned with global nest practices.[1]

Similar to the Act, the Regulation aims to safeguard and encourage the use of data subject's information by data controllers in compliance with section 37 of the 1999 Constitution (as amended).

The Cybercrimes (Prohibition, Prevention, etc.) Act, (2015) offers a comprehensive legal framework to regulate the use of technology in Nigeria. While not addressing AI, it includes provisions that could be relevant to AI-related activities. These provisions cover a wide range of cybercrimes, such as unauthorized access to computer systems, interference with networks, interception of electronic communications, fraud and tampering with critical infrastructure.[2]

The primary objectives of the Act are to:

a. Establish a unified legal framework for preventing, detecting, protecting and punishing cybercrimes.
b. Protect critical national information infrastructure and promote cybersecurity.
c. Safeguard computer systems, networks, data, and IPRs from cyber threats.

The article aligns most closely with the third objective: protecting critical national information infrastructure and promoting cybersecurity. It will delve into provisions within the Act that indirectly regulate the application of AI systems.

Section 6 of the Act addresses unauthorized access to computer. Section 6(1) stipulates that any individual who intentionally or without authorisation gain access to a computer system or network for fraudulent purposes and obtain data that is important to national security has committed an offense. Some AI systems are used to illegally access a computer, in Nigeria, using such AI system in the manner prescribed in that section is prohibited.

The Act prohibits computer-based forgery. This includes knowingly accessing a computer or network and intentionally manipulating data to create false or misleading information that is then used, regardless of whether the data is directly readable.[3] Additionally, the Act prohibits

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[1] Art. 1.1 Nigeria Data Protection Regulation, 2019.
[2] s1 (a)-(c)Cybercrimes (Prohibition, Prevention, etc.) Act, 2015.
[3] s14 (1) *ibid*.

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computer fraud, therefore, anyone who intentionally and unlawfully causes financial harm to another by altering, deleting, adding, or suppressing computer data for economic benefits commits an offence.[1]

Section 28 of the Act prohibits the use of any AI system or technology that could be employed to commit a crime. This includes the creation, distribution, or use of tools designed to bypass computer security measures or facilities illegal activities. Any person who engages in such activities commits an offence.

While the Nigerian Copyright Act of 2022 primarily focuses on protecting IP, it indirectly addresses AI. Although not specifically designed for AI regulation, certain provisions within the Act could have implications for how AI is used in relation to copyright.

The Copyright Act 2022, establishes stringent measures to protect author's right be it moral or economic from piracy, regardless of whether the infringement involves AI or other technologies.[2] Section 49(3)(a) -(b) of the Act stipulates that importing or possessing any device designed to circumvent anti-piracy apparatus commits an offence and is liable on conviction to a fine of at least ₦1,000,000 or imprisonment for a term of at least five years or both. Additionally, section 49(4)(a)-b) & (5) prohibits the reproduction or counterfeiting of anti-piracy device commits an offence and is liable on conviction to a fine of at least ₦500,000 or imprisonment for a term of at least three years or both; unless the individual can prove that they were unaware of the nature. In such cases, upon conviction, the penalty is a fine of at least ₦100,000 or imprisonment for a term of at least one year or both.

Section 50 (1) & (2) (a)-(b) of the Copyright Act (2022) addresses circumvention of technological protection measures. It prohibits knowingly circumventing a technological protection measure that effectively safeguard access to works under the Act. Furthermore, the Act forbids the manufacture, import, sell, offer for sale, trafficking of any technology, product, service, device, or part, that- is primarily designed to circumvent protection afforded by technological measures.

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[1] s14 (1) *ibid*.
[2] ss48, 49 &50 Copyright Act 2022.

The foregoing provisions will not apply provided it falls under the exceptions listed in section 50(8)(a) -(c) Copyright Act 2022, which stipulates that technology being used as a tool to circumvent technological protection measures will not amount to an infringement provided it is an act within the limits of 50(8)(a)-(c) of the Act.

Policy Recommendations for Addressing Artificial Intelligence-Related Intellectual Property Challenges in Nigeria

The discussion on AI policy has gained more traction at both international, regional and national levels amidst ethical issues surrounding privacy and job automation which may render many jobless. The foregoing concerns have led to discussion on the need to come up with policies addressing IP related challenges at global stage and even at national, Nigeria is also not left out, some of the policy recommendations made and suggested recommendation to be utilized by are discussed hereunder;

    a. Developing National AI Strategies

AI's potential to boost GDP and provide a competitive edge is driving some African nations to prioritize its development. As Offoduh points out, countries like Mauritius and Nigeria are leading the charge by implementing national AI strategies.[1] Mauritius, the first African country to publish such a strategy, the Mauritius Artificial Intelligence Strategy (MAIS) outlines its commitments to making AI a cornerstone of its future economic growth.[2] Nigeria, too, has recognized the importance of AI, launching a national roadmap and establishing a dedicated research centre through NITDA.[3]

While Nigeria has made significant strides, its crucial to address the challenges ahead. A comprehensive regulatory framework and public awareness campaigns are essential to harness the benefits of AI while mitigating its risks.[4]

    b. Education and Awareness

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[1]John Okechukwu Effoduh, "7 Ways that African States are Legitimizing Artificial Intelligence", (2020) <https://www.wathi.org/> accessed 7th July 2024.
[2] *ibid.*
[3]Josephine Uba, "Nigeria: Artificial Intelligence (AI) and AI Attacks in Nigeria: A Call to Action for Nigerian Policymakers," (2023) Mondaq <https://www.mondaq.com/> accessed 7th July 2024.
[4]Kitoye Okonny, "The Promise and Challenges of Artificial Intelligence in Nigeria's Economy" *(2023)* < https://www.linkedin.com/> accessed 7th July 2027.

Due to the current low level of awareness and understanding of AI technologies in Nigeria, particularly among policy makers and regulators, it's challenging to develop policies and regulations that effectively address the use.[1] To address this, raising awareness about AI and its potential benefits and drawbacks is crucial. By prioritizing AI education, training and research we can foster a more informed policy landscape. Several African governments have recognized this and establish AI centres and programmes. The National Centre for Artificial Intelligence and Robotics established is a positive step towards promoting knowledge acquisition and mobilization of AI.[2]

c.   Promulgating AI Laws and Regulations

A crucial step ay this juncture is for Nigeria to establish a regulatory framework governing AI usage, addressing potential ethical concerns and aligning with African Union's call for structured regulation to harness AI's benefits and mitigate risks for Africans.[3]

d.   Establishing AI Agencies, Task Forces and Commissions

Usually, a legal framework is complemented by a dedicated agency or commission tasked with its implementation. The agency will act as a watchdog, advising the government on necessary policies to address the evolving challenges arising AI usage.

The recommendations outlined in this article-establishing such an agency and a comprehensive legal framework represent initial steps towards regulating AI in Nigeria. These measures will need to be continually refined to keep pace with the rapid advancements in AI technology.

Importance of Collaboration Between Stakeholders

Currently, there are calls for international collaboration to regulate the use of AI amidst opportunities and challenges presented by the advancement of AI. This necessitated a global summit on AI use, and its impact on privacy and IPRs.

Given the global and regional nature of AI, a Pan-Africa approach is essential for AI widespread adoption on the continent. Numerous African nations are increasingly integrating

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[1]Uba (n 188).
[2]Offoduh (n 186).
[3] *ibid.*

AI into various domestic sectors.[1] The continent-wide Declaration, signed by African Ministers of Communication and Information Technology,[2] emphasizes the need for a collective and coordinated AI strategy. To ensure effective regulation, this declaration should be revisited and updated to create a continental legal framework that can be adapted by participating countries.

Beyond government action, collaboration among stakeholders, from corporations to consumers, is vital to address the broader societal implications of AI, including its impact on creativity and IPRs.

PRACTICAL GUIDANCE FOR INTELLECTUAL PROPERTY PROTECTION IN THE ARTIFICIAL INTELLINGENCE ERA

Adapting to the capabilities of AI presents both unprecedented problems and opportunities for the conventional IP system, which was mainly meant to defend human innovation for IP protection.[3] The guides to be discussed hereunder will provide practical insights into safeguarding IP amidst the challenges presented by AI.

a. Strategies for managing ownership and licensing of AI-generated works

In response to the legal challenges posed by AI generated content, countries are implementing new legal frameworks. These frameworks aim to establish clear ownership rights and copyright protection for AI produced works.[4]

To address the copyright implication of AI-generated works, the European Union's Intellectual Property Office (EUIPO) has proposed guidelines. These guidelines suggest that human creators should be considered the authors when AI is used as a tool. However, if the AI generates works autonomously, ownership should be attributed to the person or organization that development the AI.

In addition to these guidelines, the EU has established an AI Act. This legislation aims to promote ethical AI development and deployment while ensuring strong safeguards of

[1] *ibid.*
[2] *ibid*.
[3] Harsh Pandya, "Navigating the Intersection of AI and Intellectual Property Rights: Challenges and Opportunities" Juris Centre (2024)< https://juriscentre.com/2024/06/11/navigating-the-intersection-of-ai-and-intellectual-property-rights-challenges-and-opportunities> accessed 31 July, 2024.
[4] Jason Smith, "Intersection of AI and Copyright: Ownership, Challenges and Solutions" Medium (2024)< https://medium.com/@corpbiz.legalsolutions/intersection-of-ai-and-copyright-ownership-challenges-and-solutions-> accessed 31 July, 2024.

fundamental rights and the rule of law. The Act prioritizes innovation and a well-functioning internal market while addressing potential AI risk.

Existing IP laws need to be re-evaluated to encompass AI-generated works. Innovators and creators must be mindful of potential infringement issues and ensure they have the necessary permissions and licenses to use AI tools.

Ethical consideration for AI generated works by ensuring AI generated works comply with ethical guidelines and avoids biases. "Therefore, it is essential for artists and creators to navigate the legal landscape surrounding AI tools to protect their intellectual property rights and ensure ethical use of these technologies."[1]

Copyright licenses for AI-generated content grant permission for use, reproduction, or distribution.[2] The terms of AI-related licenses can differ depending on the extent of human involvement in the creative process and the purpose of the resulting works. If a human utilizes AI as a tool, the licencing agreement might include the entity responsible for AI's deployment.[3]

b. Detect and Prevent AI-Based Infringement

Due to technological advancement, the sheer volume and rapid dissemination of online content has made protecting IP a difficult task and AI based infringement is a growing concern as AI becomes more sophisticated. From unauthorized use of copyrighted text and images to trademark infringements, rights holders struggle to keep pace with the ever-evolving landscape of IP violations and the usual traditional methods of detection simply cannot scale to meet the demands of detecting infringements.[4] However, AI is also being used to revolutionize the detection and prevention of infringement of IP by AI. Some of the approaches used to prevent infringement by AI include;

Firstly, the use of Large Language Models (LLMs) and Vision-Language Models (VLMs) have emerged as powerful tools for automating the detection of IP infringement across both textual

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[1] Sheik M. Isaacs, "AI Legal Landscape: Ownership, Copyright & Licensing of AI - Generated Content" LinkedIn (2024)<https://www.linkedin.com/pulse/ai-legal-landscape-ownership-copyright-licensing-ai> accessed 31 July, 2024.

[2] Smith (n. 196).

[3] *ibid.*

[4] Satyanand Kale, "The Future of Ip Protection: Harnessing the Power of AI Language and Vision Models" *Journal of Advanced Research Engineering and Technology*, (3) (1) pp 268-276.

and visual content.[1] LLMs leverage deep learning to under the nuances of human language and by training on vast amounts of text data, it can identify passages that may be infringing on copyright or misusing trademarks with a high degree of accuracy. VLMs are advanced as they simultaneously analyse images and their associated text to detect infringements that span both modalities, such as an unauthorized use of a copyrighted photo accompanied by text.[2] As the integration of both offers a comprehensive solution for IP infringement detection, while automating this process allows rights holders to monitor for potential violations at scale and respond more swiftly and effectively.[3]The two models not only help prevent the dilution of IP assets but also preserve brand integrity.

Secondly, exploration of predictive analytics for pre-empting potential infringements, the predictive analytics will pre-empt potential infringements by analysing patterns and trends in historical infringement data, allowing rights holders to take proactive measures to prevent violations.[4]

Thirdly, collaboration with regulatory bodies for developing standards and best practices as the use of AI and IP protection becomes more widespread, collaboration between industry stakeholders and regulatory bodies will be essential for developing standards and best practices, fostering a more robust and equitable IP protection ecosystem.

Finally, embedding unique identifiers or patterns into digital content, and detecting unauthorized copies by matching fingerprints. Additionally, hiding imperceptible information and revealing ownership when content is extracted is good way of identifying and preventing infringement of IP by AI.

c. Addressing Data Ownership and Privacy Issues

 AI's role in IP asset management requires handling substantial quantities of data, including sensitive personal information. This raises concern about data protection and privacy, particularly given the growing complexity of privacy laws and regulation.[5]

[1]*ibid.*
[2]*ibid.*
[3]*ibid.*
[4]*ibid.*
Mohd Akhter Ali, M. Kamraju, "Impact of Artificial Intelligence on Intellectual Property Rights: Challenges [5] and Opportunities" *Osmania University Journal of IPR* (2023) (1) (1) p 21-50.

Given that personal and sensitive information is collected and used, challenge is how such information can be collected in a lawful and ethical manner. Therefore, AI system must comply with applicable privacy laws and regulations which varies from jurisdiction to another.[1] For instance, Nigeria Data Protection Act, 2023 stipulates protection of personal information, and establish the Nigeria Data Protection Commission for the regulation of personal information including obtaining explicit consent from individuals, providing individuals with right to access and request for their data to be delated.

Transparency and accountability in data processing activities is another challenge. For such to be transparent, data processor must furnish data subject with comprehensible and clear information regarding the utilisation of the data and ensuring that the decisions made by AI systems are explainable and can be audited. Lack of such accountability and transparency affect collection of data for AI use.[2]

Some of the best practices to address IP asset management using AI in relation to data protection and privacy concerns include:[3]

Integrating privacy considerations into initial stages designing and developing of AI systems. Such as minimizing the collection and use of personal data, implementing data protection measures and provide clear information.

Additionally, development and implementation of ethical guidelines must be compiled with for the development and deployment of AI systems. Issues such as bias, transparency, and accountability needs to be addressed.

Furthermore, clearly defined data ownership and explicit consent obtained from data subjects before collecting and using their data. Providing individuals with right to access and request for their data to be delated.

Conclusively, implementing measures to audit and monitor AI systems decision making process and providing training and awareness programmes for employees and stakeholders

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[1] *ibid.*
[2] *ibid.*
[3] *ibid.*

involved in AI driven IP asset management to promote understanding of the legal and ethical issues related to data protection and privacy.

d. Strengthening IP Enforcement in the Context of AI

Enhance IP enforcement in the context of AI can be achieved in the following ways;

Firstly, companies conduct thorough IP audits to identify unprotected IP assets and assess potential infringement of third-party rights using professional assistance.[1]

Secondly, implement copyright safeguards to protect brands from AI generated content threats or infringement using AI detection tools to detect such threats or infringement.[2]

Thirdly, establish clear IP policies to guide employees, partners, and third parties on their responsibilities and obligations regarding IP protection and enforcement.[3]

CONCLUSION

In conclusion, the advent of AI no doubt has reshaped and is reshaping the landscape of creativity, innovation and IPRs in Nigeria. AI has dual nature, it presents opportunities and challenges at the same time. It can facilitate efficient IP management, protection and enforcement; conversely, it raises concern as to authorship and inventorship. The legal status of AI generated content and the role of human inputs in the creativity or innovation has always been questioned.

To fully benefit from AI while mitigating the risk, Nigeria must develop comprehensive framework that balances innovation, creativity, and IP protection, while revaluating it statutes to take decisive stand on the authorship and inventorship of AI. Additionally, establish ethical standards and policies for AI usage clearly addressing the ownership of AI generated works. Investing in AI education and research to keep pace with challenges associated with AI and build a workforce capable of leveraging AI for sustainable development.

AI will continue to disrupt the ways and manners things are being done; therefore, the sooner regulation and guidelines are established, better for Nigeria's jurisprudence and

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[1] James Godefroy, "How Does Artificial Intelligence Affect Intellectual Property Protection?" Rouse (2024) <https://rouse.com/insights/news/2024/how-does-artificial-intelligence-affect-intellectual-property-protection> accessed 1st August, 2024.
[2] *ibid.*
[3] *ibid.*

development. Therefore, a collaborative approach involving policymakers, stakeholders and academia is essential to shaping a future where AI serves as a catalyst for human progress while protecting the rights of innovators and creators.

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