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APPLICABILITY OF ARTIFICIAL INTELLIGENCE TO TRADEMARK DISPUTES IN NIGERIA

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Abstract: The applicability of Artificial Intelligence to trademark disputes in Nigeria is a matter of growing interest. Over the years, the trademark resolution process of infringement disputes in Nigeria is traditional, orthodox, and complex, with its multifaceted procedure that involves several steps, including human efforts that goes at snail pace. As a result of the emergence of artificial intelligent (AI) in our daily life and society, it is lucid that AI have not only outsmart the human intellect, but has become the world leading helper and now incorporated into basically all fields of life, including Medicine, Art, Engineering, and Law. This paper seeks to examine the Nigerian trademark dispute resolution framework, identify specific AI technologies utilized in resolving similar disputes and its cost-effectiveness. It further seeks to compare few jurisdictions that have integrated AI into their resolution processes. The methodology adopted is doctrinal method of legal research, having both primary and secondary data handy. Some challenges were observed as detrimental to incorporating AI to Trademark dispute resolutions in Nigeria ranging from not up-to-date legal framework, absence of quality data, cost, management and maintenance implications of the AI systems. It is recommended that in as much as integrating AI as problem solving technique has the potential to enhance a consistent, effective and efficient trademark disputes resolution mechanism, a successful implementation requires much more, which includes adequate training of man power, proper funding and creation of constant awareness of its presence to concerned stakeholders and the Nigerian public.

Keywords: *Applicability, Artificial Intelligence, Intellectual Property, Trademark, Dispute, Nigeria*

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Introduction

The advent of Artificial Intelligence (AI) has revolutionized various sectors globally, presenting transformative opportunities and formidable challenges.[1] Among the sectors witnessing significant AI integration is intellectual property law, particularly in the realm of trademark disputes. In Nigeria, a burgeoning hub of innovation and commerce, the applicability of AI to trademark disputes is an emerging field that warrants comprehensive scholarly examination. [2]

Trademark disputes, traditionally adjudicated through protracted legal processes, obviously and often suffer from subjectivity, inconsistency, and procedural delays. These issues are exacerbated by the increasing volume and complexity of trademark applications and disputes, driven by Nigeria's growing economy and digital landscape. AI, with its capabilities in data analysis, pattern recognition, and predictive analytics, presents a promising solution to these challenges. By automating routine tasks, providing data-driven insights, and offering predictive models, AI has the potential to streamline the trademark dispute resolution process, reducing the burden on legal practitioners and adjudicators while enhancing the overall quality of decisions.[3]

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[1] K Alhosani, SM Alhashmi, 'Opportunities, challenges, and benefits of AI innovation in government services: a review' < https://link.springer.com/article/10.1007/s44163-024-00111-w> accessed 23 March 2025.

[2] B Nwankwo, 'the Intersection between AI and IP' <https://www.mondaq.com/nigeria/new-technology/1348568/the-intersection-between-ai-and-ip > accessed 23 March 2025.

[3] P Mutubazi, 'How Artificial Intelligence (AI) Will Transform the Legal Profession' <https://www.linkedin.com/pulse/how-artificial-

Nigeria, as Africa's most populous country and one of its largest economies, stands at a critical juncture in integrating technology into various sectors, including its legal system.[4] The country's burgeoning digital economy and increasing entrepreneurial activities have led to a substantial rise in trademark registrations and disputes. However, the current framework for resolving these disputes is characterized by inefficiencies, delays, and inconsistencies that undermine the protection of IP rights and hinder economic growth.

This work undertakes to analyse the applicability of artificial intelligence to trademark disputes, making a critique on the strength and weaknesses of the legal framework by examining relevant statutory provisions and judicial pronouncements and examining the steps taken so far in correcting the lapses in the framework. Analysis will also be made of the legal framework of trademark in other jurisdictions, followed by recommendations and suggesting the way forward.

Conceptual Framework

Artificial intelligence (AI)

AI refers to computer systems capable of performing computer tasks that historically only a human can do, such as reasoning, making decisions, or solving problems.[5] AI may be described as the simulation of human intelligence processes by a machine, like computer system. Essentially it involves computer programs to reason on the same model as a human brain does, by focusing on three cognitive skills, comprising reasoning, learning and self-correction.[6] Essentiality of AI lies in its potential to change, work, and play, and has efficiently been used in business to automate tasks done by human beings including customer related service work, lead generation, fraud or crime detection as well as quality control.[7] AI is central and useful to successful companies in managing her business competitors, including the likes of Alphabet, Apple, Microsoft and Meta. [8]

There are four main types of AI as defined by Arend Hintze, researcher and professor of integrative biology at Michigan State University, functionality wise, they include; Reactive Machines, Limited memory machines, Theory of Mind, Self-awareness.[9] AI may be divided based on either its functionalities or capabilities.[10] There are three types of AI bases on capabilities and they include; Narrow AI, General AI, and Super AI.[11]

AI Technologies

Artificial Intelligence (AI) technologies refer to the spectrum of advanced computational techniques and systems designed to perform tasks that traditionally require human intelligence.[12] These technologies encompass a wide range of methods, algorithms, and applications that enable machines to sense, comprehend, act, and learn. AI technologies represent a convergence of computational prowess and human ingenuity, driving advancements across multiple domains.[13]

AI Application

AI Application can be defined as software system designed to perform tasks that typically require human intelligence by leveraging algorithms and computational models inspired by the human brain's cognitive functions.[14] These applications utilize data-driven techniques and machine learning (ML) methodologies to simulate various aspects of human reasoning, learning, perception, problem-solving, and decision-making, enabling them to execute complex tasks autonomously or with minimal human intervention.[15]

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intelligenceai-transform-legal-patrick-mutabazi-bajpe > accessed 23 March 2025.

[4] OM Atoyebi, 'the Impact of Technology on the Nigerian Legal System' < https://lawpavilion.com/blog/the-impact-of-technology-on-the-nigerian-legal-system/> accessed 24 March 2025.

[5] Coursera, 'What is Artificial Intelligence? Definition, Uses and Types'<https://www.coursera.org/articles/what-is-artificial-intelligence> accessed 26 March, 2025.

[6] Opendatasoft, 'Artificial Intelligence (AI)' <https://www.opendatasoft.com/en/glossary/artificial-intelligence-ai/#:~:text=Definition-,Artificial%20intelligence%20(AI)%20is%20the%20simulation%20of%20human%20intelligence%20processes,%2C%20learning%20and%20self%2Dcorrection> accessed 26 March, 2025.

[7] D Pandey, 'AI and its Impact on Human Intelligence' https://www.linkedin.com/pulse/ai-its-impact-human-intelligence-divyanshu-pandey#:~:text=AI%20is%20important%20for%20its,tasks%20much%20better%20than%20humans.> accessed 26 March, 2025.

[8] L Craig, N Laskowki and L Tucci, 'What is artificial intelligence (AI)? Everything you need to know' < https://www.techtarget.com/searchenterpriseai/definition/AI-Artificial-Intelligence> accessed 26 March, 2025.

[9] Coursera, '4 Types of AI: Getting to Know Artificial Intelligence' <https://www.coursera.org/articles/types-of-ai > accessed 26 March, 2025.

[10] Simplilearn, 'Types of Artificial Intelligence that you should know in 2025' <https://www.simplilearn.com/tutorials/artificial-intelligence-tutorial/types-of-artificial-intelligence> accessed 26 March, 2025.

[11] E Escott, 'What are the 3 types of AI? A guide to narrow, general, and super artificial intelligence' <https://codebots.com/artificial-intelligence/the-3-types-of-ai-is-the-third-even-possible > accessed 26 March, 2025.

[12] University of Illinois Chicago, 'What is (AI) Artificial Intelligence?' <https://meng.uic.edu/news-stories/ai-artificial-intelligence-what-is-the-definition-of-ai-and-how-does-ai-work/#:~:text=Artificial%20Intelligence%20(AI)%20works%20by,%2C%20perception%2C%20and%20language%20understanding.> accessed 26 March, 2025.

[13] M Elahi, 'A comprehensive literature review of the applications of AI techniques through the lifecycle of industrial equipment' < https://link.springer.com/article/10.1007/s44163-023-00089-x#citeas> accessed 26 March, 2025.

[14] Science Direct, 'Artificial Intelligence' < https://www.sciencedirect.com/topics/social-sciences/artificial-intelligence> accessed 26 March, 2025.

[15] B Arezoo and R Dastres, 'Artificial intelligence, machine learning and deep learning in advanced robotics, a review' < https://www.sciencedirect.com/science/article/pii/S2667241323000113> accessed 26 March, 2025.

Trademark

A trademark is a sign capable of distinguishing the goods or services of one enterprise from those of other enterprises and are protectable.[16] Section 67 of the Business Facilitation Miscellaneous Provisions Act 2022 have expanded the scope of the definition of 'trademarks' hitherto provided by section 67 of the Trademark Act 1965 (Cap T13 LFN, 2004), as:

> a mark used or proposed to be used in relation to goods or services for the purpose of indicating a connection between the goods or services and a person having the right either as a proprietor or as a registered user, to use the mark, whether with or without any indication of the identity of that person, and may include shape of goods, their packaging and combination of colours; and
> in relation to a certification trade mark, a mark registered or deemed to have been registered under section 43 of this Act.

Trademark Registration/Application

Trademark Registration/Application is a formalized legal process through which a distinctive sign, logo, name, symbol, or other identifying mark is officially recorded with a recognized governmental authority to secure exclusive rights for its use in commerce.[17] The registration of the trademark is the final step in trademarking of a logo.[18] It can also be referred to as the legal procedure for getting a certificate of registration from Trademarks, Patents, and Designs Registry.[19] Upon registration, exclusive ownership of a trademark is conferred on a proprietor which enables the proprietor to enjoy full benefits and protection provided under the law.[20]

Trademark Infringement

Trademark infringement is the unauthorized use of a trademark or service mark on or in connection with goods and/or services in a manner that is likely to cause confusion, deception, or mistake about the source of the goods and/or services.[21] It occurs when the exclusive right of a trademark owner are breached by another party's unauthorized use of a mark that is identical or significantly similar to the registered trademark.[22] This infringement can occur on various goods and services, particularly those that compete with or are related to the trademark owner's offerings.[23]

1.1 Dispute Resolution

Dispute resolution is the process of resolving a dispute or a conflict by meeting at least some of each side's needs and addressing their interests.[24] Dispute resolution encompasses both formal and informal mechanisms, ranging from negotiation, mediation, and arbitration to judicial processes, and emphasizes principles of fairness, efficiency, and effectiveness.[25] It can also be referred to as the process of resolving conflicts and disagreements between parties through various methods, aiming to reach a mutually acceptable agreement or settlement while minimizing the adversarial nature of the proceedings and often avoiding litigation.

Applicability of Artificial Intelligence to Trademark Disputes
Trademark as a crucial intellectual property

Trademarks serve as a cornerstone in the field of intellectual property (IP), embodying the essence of brand identity and consumer trust.[26] At their core, trademarks are distinctive signs, symbols, logos, or names used by businesses to differentiate their products or services from those of competitors.[27] This differentiation is not merely a matter of branding; it plays a crucial role in establishing and maintaining market presence, consumer loyalty, and competitive advantage. As such, trademarks are invaluable assets in the modern business landscape, underscoring their importance within the broader domain of IP.

The primary function of a trademark is to create and preserve brand identity.[28] By providing a unique identifier for goods or services, trademarks enable consumers to easily recognize

[16] WIPO, 'Trademarks' < https://www.wipo.int/trademarks/en/> accessed 26 March, 2025.
[17] Trusted, 'Procedure for the Registration of a Trademark in Nigeria' < https://trustedadvisorslaw.com/procedure-for-the-registration-of-a-trademark-in-nigeria/> accessed 26 March, 2025.
[18] Wale Marketer, 'How to Trademark a Logo in Nigeria' < https://walemarketer.com/how-to-trademark-a-logo-in-nigeria> accessed 27 March, 2025.
[19] *Ibid*
[20] SPA Ajibade & Co 'Registration of Trademarks and Its Benefits' < https://spaajibade.com/registration-of-trademark-and-its-benefits/#:~:text=Through%20the%20use%20of%20trademarks,one%20competitor%20from%20another%20competitor.&text=A%20registered%20trademark%20gives%20the%20proprietor%20an%20exclusive%20right%20of%20use.> accessed 27 March, 2025.
[21] United States Patent and Trademark Office, 'About Trademark Infringement' < https://www.uspto.gov/page/about-trademark-infringement> accessed 27 March, 2025.
[22] Trademark Factory, 'Trademark Infringement Definition and Types' < https://trademarkfactory.com/trademark-infringement-definition-and-types> accessed 27 March, 2025.
[23] *Ibid*
[24] Harvard Law School, 'What is Dispute Resolution?' < https://www.pon.harvard.edu/tag/dispute-resolution/> accessed 27 March, 2025.
[25] JA Faris, 'An Analysis of the Theory and Principles of Alternative Dispute Resolution' <https://core.ac.uk/download/pdf/43175988.pdf> accessed 27 March, 2025.
[26] Trademark Factory, 'The Role of Trademarks in Building a competitive advantage' < https://trademarkfactory.com/the-role-of-trademarks-in-building-a-competitive-advantage> accessed 1 April 2025.
[27] C Tardi, 'Trademark: Definition, What It Protects, Symbols & Examples' < https://www.investopedia.com/terms/t/trademark.asp#:~:text=A%20trademark%20is%20a%20recognizable,company's%20ownership%20of%20the%20brand.> accessed 1 March 2025.
[28] DJ Lawrence, 'The role of trademarks in protecting Brand Identity' <https://itsupplychain.com/the-role-of-trademarks-in-protecting-brand-identity/#:~:text=The%20core%20function%20of%20a,that%20the%20brand%20has%20established.> accessed 1 April 2025.

and distinguish between different offerings in the market place.[29] This recognition fosters consumer trust, as buyers often associate trademarks with certain qualities, reliability, and value. A strong trademark can become synonymous with high quality and exceptional service, influencing consumer choices and driving brand loyalty.[30] Thus, trademarks are not just legal tools; they are integral to the relationship between businesses and their customers.

Trademarks hold substantial economic value for businesses.[31] They represent a significant investment in branding and marketing strategies, contributing to the overall market value of a company. Successful trademarks can enhance a company's competitive edge, allowing it to command higher prices and achieve greater market share.[32] This economic impact extends beyond the immediate financial gains; a well-protected trademark can also serve as a valuable asset in business transactions, such as mergers, acquisitions, and licensing agreements.[33] As a result, trademarks are a fundamental element of a company's strategic planning and long-term success.

Trademarks also play an important role in shaping cultural and market trends.[34] Iconic brands often influence consumer behavior and preferences, setting standards and trends within various industries.[35] This cultural impact can extend globally, as successful trademarks transcend geographic boundaries and become symbols of particular lifestyles or values.

Examination of The Trademark Act of 2004 in the Digital age

The subsisting Nigerian Trademark Act represents a significant legal framework for the protection of trademarks, outlining the registration, use, and enforcement of trademark rights. This legislation is designed to safeguard brand identities, ensuring that businesses can maintain a distinct market presence without the risk of unauthorized use or infringement.[36] However, the rapid advancements in technology, particularly in artificial intelligence (AI), have introduced new dimensions to trademark disputes that the Act, in its current form, may not fully address. The digital age has transformed how trademarks are used and contested, necessitating a critical examination of the Act's applicability in this evolving landscape.

One of the primary challenges in applying the Act in the digital age is the complexity introduced by AI-driven platforms and tools. AI technologies, such as machine learning algorithms and natural language processing, are increasingly used to analyze, generate, and even mimic trademarked content. This raises questions about the Act's ability to address AI-related trademark infringement and counterfeit activities. For instance, AI systems that generate logos or brand names may inadvertently create marks similar to existing trademarks, leading to potential disputes that the traditional legal framework may struggle to resolve adequately.

Furthermore, the digital environment has facilitated the rapid spread and commercialization of trademarks through online platforms, making it easier for infringers to operate across borders.[37] The Act's mechanisms for enforcing trademark rights, such as litigation and administrative remedies, may face limitations when dealing with international infringement cases facilitated by digital platforms. The cross-jurisdictional nature of online trademark disputes calls for a reevaluation of the Act's enforcement provisions to ensure they are robust enough to address the challenges posed by the global digital marketplace.[38]

The Act's provisions regarding the registration and protection of trademarks also need to be scrutinized in light of technological advancements. The rise of AI in creating and managing trademarks necessitates an update to the registration process to accommodate new forms of digital evidence and AI-generated marks.[39] Additionally, the Act should consider integrating provisions that address the use of AI in detecting and preventing trademark violations, leveraging technology to enhance enforcement efforts and reduce the burden on traditional legal processes.

Moreover, the Trademark Act of 1965 (codified in 2004) must adapt to the evolving nature of consumer behavior in the digital age. With the increasing reliance on digital platforms for brand interaction and purchasing decisions,[40] the Act should address issues related to online brand protection and digital reputation management. This includes updating provisions to cover domain name disputes, social media infringements, and other

[29] *Ibid.*

[30] TMBTQ, 'The Poer of Trademarks' < https://www.tmbtq.com/post/the-power-of-trademarks-how-they-influence-consumer-behavior#:~:text=Over%20time%2C%20successful%20trademarks%20become,loyalty%20and%20encourages%20repeat%20purchases.> accessed 1 April 2025.

[31] P Desai, 'The Value of Trademarks' < file:///C:/Users/DAVE/Downloads/TheValueOfTrademarks_preview.pdf> accessed 1 March 2025.

[32] Trademark Factory, 'The Role of Trademarks in Building a competitive advantage' < https://trademarkfactory.com/the-role-of-trademarks-in-building-a-competitive-advantage> accessed 1 March 2025

[33] WIPO, 'Valuing Intellectual Property Assets' < https://www.wipo.int/sme/en/ip-valuation.html> accessed 2 May 2025

[34] O Ajayi, 'Trademarks and Cultural Appropriation: What Is Really Unprotectable?' <https://www.olaniwunajayi.net/blog/wp-content/uploads/2021/11/TRADEMARKS-AND-CULTURAL-APPROPRIATION-WHAT-IS-REALLY-UNPROTECTABLE_.pdf> accessed 2 April 2025

[35] N Samuel, 'How Branding Affects Consumer Behaviour in 2022' < https://resources.latana.com/post/branding-affects-consumer-behavior/> accessed 2 April 2025

[36] Goldsmiths, 'Trademarks in Nigeria: Registration, Infringement and Enforcement' <https://goldsmithsllp.com/trademarks-in-nigeria-registration-infringement-and-enforcement/> accessed 2 May 2025

[37] MH Zakir, S Ali and R Amjid, 'Cross-Border Trademark Infringement in the Digital Age: Jurisdictional Challenges and Harmonization Efforts' *An International Journal of Islamic and Social Sciences* (2023) 3(2), 51.

[38] *Ibid.*

[39] IIRD Blog, 'Impact of AI on Trademark Law: Recent Developments and Future' <https://iiprd.wordpress.com/2025/03/06/impact-of-ai-on-trademark-law-recent-developments-and-future/> accessed 2 March 2025.

[40] BO Antczak, 'The influence of digital marketing and social media marketing on consumer buying behavior' *Journal of Modern Sciences* (2024) 56(2), 310.

digital contexts where trademark issues frequently arise. By aligning with contemporary digital practices, the Act can better serve the needs of businesses and consumers in a technology-driven environment.

Emergence of Artificial Intelligence in intellectual Property (IP)

The rise of AI has significantly impacted various sectors, including IP. AI's emergence has transformed how IP is managed, protected, and contested.[41] In the realm of trademarks, AI technologies are increasingly employed to address complex issues related to trademark disputes.[42] These technologies provide innovative solutions for detecting and resolving conflicts, analyzing trademark usage, and predicting potential infringements. In Nigeria, a country with a growing emphasis on IP rights, the integration of AI into trademark management offers a new paradigm for tackling disputes and ensuring more efficient and accurate resolution processes.

AI's role in trademark disputes is diverse, primarily focusing on enhancing trademark search and monitoring processes. Traditional methods of trademark searching involve manual inspection of databases and records, which can be time-consuming and prone to human error.[43] AI, through its capabilities in machine learning and natural language processing, automates and refines these processes by rapidly analyzing vast datasets, including textual and visual elements of trademarks. This advanced analysis enables more precise identification of potential conflicts, thus aiding legal professionals in preemptively addressing issues before they escalate into disputes.

Furthermore, AI's application extends to the analysis and classification of trademarks. Machine learning algorithms can categorize trademarks based on their visual similarities and semantic meanings, providing a more nuanced understanding of potential conflicts.[44] This is particularly beneficial in jurisdictions like Nigeria, where the diversity of trademarks and the complexity of local and international IP laws can complicate dispute resolution. AI-powered tools can assist in distinguishing between genuine infringements and trivial similarities, thereby facilitating more informed and equitable judgments.

AI also plays a crucial role in predictive analytics related to trademark disputes.[45] By analyzing historical data, AI can forecast potential areas of conflict and assess the likelihood of dispute occurrences. This proactive approach allows trademark holders and legal practitioners to strategize effectively and mitigate risks associated with trademark infringements. In Nigeria, where trademark disputes can be influenced by various socio-economic factors, AI-driven predictions offer valuable insights that contribute to more strategic and preventive measures.

Despite its potential, the integration of AI in trademark disputes raises several challenges. Issues related to data privacy, algorithmic bias, and the need for human oversight are critical considerations. Ensuring that AI systems operate within ethical and legal boundaries while maintaining transparency and fairness is essential.

Relevance/Implication of AI to Trademark

One of the primary implications of AI for trademark disputes is its ability to streamline the process of trademark search and monitoring.[46] AI-powered tools, such as machine learning algorithms and natural language processing systems, can analyze vast databases of existing trademarks and identify similarities with unprecedented accuracy.[47] This capability not only aids in the initial registration process but also helps in ongoing monitoring to prevent potential infringements. In Nigeria, where the trademark registry is often burdened by a backlog of cases, AI can alleviate the pressure on human resources and improve the overall efficiency of trademark management.

AI also plays a critical role in detecting and analyzing trademark infringements.[48] The traditional approach to identifying unauthorized use of trademarks involves manual inspections and legal investigations, which can be time-consuming and costly. AI technologies, particularly those based on image recognition and pattern analysis, can automatically scan digital platforms and other media to detect unauthorized uses of trademarks.[49] This capability is especially relevant in Nigeria, where the rapid growth of e-commerce and digital media has increased the risk of trademark violations. By automating the detection process, AI not only reduces the burden on legal teams but also enables more timely and effective enforcement of trademark rights.

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[41] MA Ali and M Kamraju, 'Impact of Artificial Intelligence on Intellectual Property Rights: Challenges and Opportunities' <https://www.researchgate.net/publication/376751087_Impact_of_Artificial_Intelligence_on_Intellectual_Property_Rights_Challenges_and_Opportunities > accessed 3 April 2025.

[42] D Cain, 'Strategic Patenting: AI's Transformative Role in Trademark Law' < https://www.linkedin.com/pulse/ais-transformative-role-trademark-law-david-cain-hyyac#:~:text=In%20trademark%20law%2C%20AI's%20role,speed%20of%20legal%20decision%2Dmaking.> accessed 3 April 2025

[43] S Balsasubramanian, 'Ai-Powered Trademark Registration Systems: Streamlining Processes and Improving Accuracy' *International Journal of Intellectual Property Right* (2025) 14(1), 1.

[44] *Ibid*

[45] Herroro and Asociados, 'Artificial Intelligence in the IP Legal Sector' < https://www.hyaip.com/en/news/artificial-intelligence-in-the-ip-legal-sector/#:~:text=By%20utilizing%20machine%20learning%20algorithms,preventing%20dilution%20of%20trademark%20rights.> accessed 3 April 2025

[46] Herro and Criminals, 'Artificial Intelligence in the IP Legal Sector' < https://www.hyaip.com/en/news/artificial-intelligence-in-the-ip-legal-sector/#:~:text=By%20utilizing%20machine%20learning%20algorithms,preventing%20dilution%20of%20trademark%20rights.> accessed 3 April 2025

[47] S Balsasubramanian, *Ibid.*

[48] IIPRD Blog, 'Impact of AI on Trademark Law: Recent Developments and Future' < https://iiprd.wordpress.com/2025/03/06/impact-of-ai-on-trademark-law-recent-developments-and-future/> accessed 3 April 2025

[49] AJ Trappey, C Trappry and SCC Lin, 'Detecting Trademark Image Infringement Using Convolutional Neural Networks' < https://www.researchgate.net/publication/355617023_Detecting_Trademark_Image_Infringement_Using_Convolutional_Neural_Networks> accessed 3 April 2025

Moreover, AI can enhance the adjudication of trademark disputes by providing data-driven insights and predictive analysis. AI systems can analyze historical trademark cases, legal precedents, and judicial outcomes to offer predictions on the likely outcomes of current disputes.[50] This analytical capability can assist legal practitioners in formulating more informed strategies and anticipating potential challenges. In Nigeria's legal landscape, where the resolution of trademark disputes can be protracted,[51] AI's predictive tools can contribute to faster and more equitable adjudication, ultimately benefiting both rights holders and the broader business community.

The integration of AI into trademark dispute resolution also raises significant questions regarding the ethical use of technology and data privacy. While AI offers numerous advantages, concerns related to data security and the potential for bias in AI algorithms needs to be address.[52] Ensuring that AI systems are transparent, accountable, and free from biases is essential to maintaining trust in the dispute resolution process. In Nigeria, where regulatory frameworks for AI are still evolving, it is imperative for stakeholders to collaborate in developing guidelines that safeguard the ethical use of AI while harnessing its benefits for trademark protection.

Examination of Potential Application of AI to Trademark Process and Disputes

The advent of AI has revolutionized intellectual property, with particular reference to trademark processes and disputes.[53] In Nigeria, where trademark disputes are often complex and protracted, AI has the potential to transform both the management and adjudication of these disputes. AI technologies can enhance trademark search and examination processes by automating the identification of conflicting marks and analyzing vast databases with unprecedented speed and accuracy.[54] This could significantly reduce the time and cost associated with trademark registration and litigation, providing a more efficient mechanism for managing IP rights.

Apart from areas of trademark search and examination, AI plays a critical role in monitoring and enforcing trademark rights.[55] Trademark holders often face challenges in monitoring the marketplace for potential infringements due to the sheer volume of online and offline commerce.[56] AI-driven tools can continuously scan various platforms, including e-commerce sites and social media, to detect unauthorized use of trademarks.[57] These tools can analyze patterns, identify potential infringements, and generate alerts for further investigation. This proactive approach to enforcement can help trademark owners protect their rights more effectively and mitigate the impact of counterfeiting and brand dilution.

AI can also contribute significantly to the resolution process. Dispute resolution often involves complex legal arguments and evidence presentation, which can be challenging to manage.[58] AI systems equipped with advanced natural language processing capabilities can assist in analyzing legal texts, precedents, and case histories to provide insights and recommendations for resolving disputes. It can help streamline the adjudication process by offering data-driven insights and predictive analytics, thus supporting more informed and objective decision-making.

Challenges and Consideration of the Integration of AI to Trademark disputes/process

Data Quality and Availability

Data quality and availability represent significant challenges in the integration of AI into trademark dispute processes in Nigeria.[59] AI systems rely heavily on high-quality, comprehensive, and accurate data to deliver effective solutions, such as predicting dispute outcomes or analyzing trademark similarities.[60] However, the quality of data available in Nigeria's trademark database is often compromised by inconsistencies, incomplete records, and outdated information, which undermines the reliability of AI-driven insights. Additionally, the fragmented nature of trademark data, coupled with limited access to consolidated and standardized datasets, hampers the ability of AI systems to perform robust analyses.[61] Effective AI integration necessitates the establishment of rigorous data management protocols, including systematic data collection, regular updates, and standardization efforts. Addressing these issues is crucial to ensuring that AI tools can accurately interpret and apply trademark information, thereby enhancing the efficiency and fairness of the trademark dispute resolution process.

[50] K Javed, 'Artificial intelligence in judicial adjudication: Semantic biasness classification and identification in legal judgement (SBCILJ)' < https://www.sciencedirect.com/science/article/pii/S2405844024062157> accessed 4 April 2025

[51] Nigeria High Commission London, 'Resolution of Commercial Disputes' < https://www.nigeriahc.org.uk/wp-content/uploads/2023/03/RESOLUTION-OF-COMMERCIAL-DISPUTES.doc> accessed 4 April 2025

[52] Z Chen, 'Ethics and discrimination in artificial intelligence-enabled recruitment practices' *Humanities and Social Communications* (2023) 10(2), 1.

[53] MH Zakir, SH Khan and AK Tanaoli, 'The Impact of Artificial Intelligence on Intellectual Property Rights' < https://www.researchgate.net/publication/376796618_The_Impact_of_Artificial_Intelligence_on_Intellectual_Property_Rights> accessed 4 April 2025

[54] S Balsasubramanian, *Ibid*

[55] D Cain, *Ibid*

[56] T Merebashvili, 'Intellectual Property Challenges in the Digital Marketplace: An Analytical Exploration of Trademark Rights in Contemporary E-Commerce Jurisprudence' *Eximia Journal* (2024) 13(1), 503.

[57] Cimphony, 'AI for Trademark Monitoring & Enforcement: Guide' < https://www.cimphony.ai/insights/ai-for-trademark-monitoring-and-enforcement-guide> accessed 4 April 2025.

[58] JA Faris, *Ibid.*

[59] CJ Gbaden, S Gambo and W Shem, 'Challenges and Prospects of Artificial Intelligence in Nigerian Journalism Practice: A Narrative Review' *Alysystech Journal of Education Technology* (2025) 2(2), 110.

[60] A Goldfard and LR Linday, 'Prediction and Judgment: Why Artificial Intelligence Increases the Importance of Humans in War '*International Security* (2022) 46(3), 7.

[61] E Salomi and I Nwankwo, 'Regulating the privacy aspects of artificial intelligence systems in Nigeria: A primer' *African Journal on Privacy & Data Protection* (2025) 1(1), 220.

Data Privacy and Security

In the integration of Artificial Intelligence (AI) into trademark dispute processes in Nigeria, data privacy and security present significant challenges and considerations. As AI technologies increasingly assume roles in trademark analysis, dispute resolution, and decision-making, they necessitate the handling of vast amounts of sensitive data, including proprietary business information and personal data of stakeholders.[62] Ensuring the privacy and security of this data becomes paramount to safeguard against potential breaches and unauthorized access, which could undermine the integrity of the dispute resolution process. The implementation of AI systems must adhere to robust data protection frameworks, integrating advanced encryption methods, secure data storage, and stringent access controls to protect against cyber threats and data leaks. Again, compliance with national and international data privacy regulations, such as Nigeria's Data Protection Act and the General Data Protection Regulation (GDPR) for entities interacting across borders, is crucial. This compliance not only mitigates legal risks but also fosters trust among stakeholders, ensuring that AI's integration into trademark disputes upholds the highest standards of confidentiality and security.

Bias and Fairness

AI systems, particularly those leveraging machine learning algorithms, are inherently influenced by the data they are trained on, which can perpetuate existing biases present in historical data.[63] In trademark disputes, this can lead to skewed outcomes if the AI models are trained on datasets that reflect historical inequities or partiality, potentially disadvantaging certain trademark holders or applicants. Moreover, the opaque nature of many AI algorithms complicates efforts to audit and ensure fairness in decision-making processes.[64] Ensuring that AI systems operate fairly requires rigorous data curation, transparent algorithmic processes, and ongoing oversight to mitigate biases. This involves developing comprehensive standards for training data, algorithmic transparency, and accountability mechanisms to uphold equitable treatment in trademark adjudication. Thus, addressing bias and ensuring fairness are crucial to the successful and just application of AI in resolving trademark disputes, ensuring that technological advancements do not inadvertently reinforce existing biases but rather contribute to a more equitable legal framework.

Complexity of Trademark Law

The complexity of trademark law presents significant challenges and considerations when integrating AI into trademark disputes and processes in Nigeria. Trademark law, characterized by its balancing of IP rights, brand protection, and consumer interests, involves complex legal doctrines such as distinctiveness, likelihood of confusion, and the protection of trade dress[65]. The increasing volume of trademark registrations and disputes, coupled with the evolving nature of global commerce, exacerbates the difficulty of manual oversight and decision-making. AI can offer transformative potential in streamlining trademark search, monitoring, and dispute resolution processes through advanced algorithms capable of analyzing vast datasets, identifying patterns, and predicting outcomes with higher accuracy. However, integrating AI into this domain raises concerns about the reliability of automated systems in interpreting complex legal standards and the potential for biases inherent in AI models. The challenge lies in ensuring that AI tools complement rather than replace human judgment. Therefore, careful consideration is required to design AI systems that enhance efficiency without compromising the nuanced application of trademark law.

Implementation and Integration

The integration of AI into trademark dispute processes necessitates aligning AI systems with Nigeria's existing IP laws, requires not only technical adjustments but also substantial legal reforms to accommodate AI's capabilities.[66] Ensuring that AI systems are accurately trained and validated to handle the complexities of trademark law is crucial; this involves developing sophisticated algorithms that can understand and apply nuanced legal principles and precedents. The integration process also raises concerns about data privacy and security, as AI systems require access to large datasets of trademark information, which must be handled in compliance with privacy regulations.

Comparative Analysis of AI Application to Trademark Disputes in selected Jurisdictions

United States of America

In the United States, the application of AI to trademark disputes is deeply intertwined with a well-established legal framework that supports both innovation and IP protection. The U.S legal system has a long history of integrating technological advancements into its judicial processes, which provides a robust foundation for the integration of AI into trademark dispute resolution. The U.S. Trademark Act (Lanham Act) of 1946, codified at 15 U.S.C. § 1051 et seq., offers a comprehensive statutory framework that governs trademark registration,[67] protection,[68] and enforcement.[69] This Act sets out the statutory provisions related to trademark disputes, including the grounds for opposition and cancellation,[70]

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[62] V Dabriwal, 'Exploring the Impact of Artificial Intelligence on Trade Mark and Copyright: Challenges And Opportunities' *Indian Journal of Integrated Research in Law* (2002) 4(3).

[63] G Benneh Mensah, 'Artificial Intelligence and Ethics: A Comprehensive Review of Bias Mitigation, Transparency, and Accountability in AI Systems' < https://www.researchgate.net/publication/375744287_Artificial_Intelligence_and_Ethics_A_Comprehensive_Review_of_Bias_Mitigation_Transparency_and_Accountability_in_AI_Systems> accessed 4 April 2025.

[64] F Osasona and Ors, 'Reviewing the Ethical Implications of AI In Decision Making Processes' *International Journal of Management and Entrepreneurship (*2024) 6(2), 322.

[65] RG Bone, 'Taking the Confusion Out Of "Likelihood of Confusion": Toward A More Sensible Approach to Trademark Infringement' *Northwestern University Law Review* (2012) 106(3), 1307.

[66] D Ekanem, 'Artificial Intelligence and Copyright Protection in Nigeria, Legal Impact and Challenges' < https://www.mondaq.com/nigeria/copyright/1473138/artificial-intelligence-and-copyright-protection-in-nigeria-legal-impact-and-challenges#authors> accessed 6 September, 2025.

[67] Lanham Act 1946, s13, s1.

[68] *Ibid* s7.

[69] *Ibid* s35.

[70] *Ibid* s14.

as well as remedies for infringement.[71] As AI technologies have advanced, they have been increasingly utilized to enhance the efficiency and accuracy of trademark dispute resolution within this established framework.

One notable application of AI in the U.S. trademark system is the use of AI-driven tools for trademark search and analysis.[72] For instance, AI systems can analyze vast amounts of trademark data to identify potential conflicts and assess the likelihood of confusion between marks, which is a critical consideration under the Lanham Act. The U.S. Patent and Trademark Office (USPTO) has begun incorporating AI tools to streamline the examination process and improve the accuracy of trademark searches.[73] The use of AI in this context helps address the challenges of manual search processes, which can be time-consuming and prone to human error. This integration reflects a broader trend in the U.S. towards leveraging technology to enhance the efficiency and effectiveness of IP management.

In addition to search and analysis, AI technologies are also being used to automate and streamline various aspects of trademark dispute resolution, including the handling of opposition and cancellation proceedings.[74] The U.S. Trademark Trial and Appeal Board (TTAB), which adjudicates trademark disputes, has increasingly adopted digital tools and AI to assist in case management and decision-making. AI systems can assist in organizing case files, identifying relevant precedents, and generating recommendations for decision-makers. This use of AI aligns with the principles of administrative efficiency and fairness, as outlined in the Administrative Procedure Act (APA), 5 U.S.C. § 551 et seq., which governs the procedures for federal agency rulemaking and adjudication.

In re *Booking.com B.V. v U.S Patent and Trademark Office*[75], the Fourth Circuit Court of Appeals addressed the issue of whether a domain name consisting of a generic term combined with a top-level domain (e.g. ".com") could be trademarked. The case highlighted the evolving nature of trademark law in the digital age, where AI-driven tools play a role in assessing the distinctiveness and registrability of marks. The court's decision underscored the need for an adaptable legal framework that accommodates technological advancements, including AI.

Despite these advancements, the integration of AI into trademark dispute resolution in the U.S. is not without challenges. One significant concern is ensuring the transparency and accountability of AI systems used in legal processes.[76] The use must comply with ethical standards and legal principles to ensure fair outcomes. The U.S. has developed guidelines and best practices for AI applications in various domains, but continuous scrutiny and oversight are required to address potential issues related to algorithmic fairness and decision-making transparency.

United Kingdom

In the United Kingdom, the approach to integrating AI into trademark disputes is supported by a developed legal framework that anticipates technological advancements. The UK operates under the Trade Marks Act 1994, which implements the EU Trade Marks Directive and aligns with broader European Union IP regulations. This statutory framework, while not specifically tailored to AI, provides a robust foundation for incorporating technological innovations. The UK's legal system is more adept at integrating AI tools due to its progressive approach to technological advancements in legal processes.[77] Notably, the UK Intellectual Property Office (UKIPO) has shown a proactive stance in exploring the use of AI for trademark

Notably, the UK benefits from a conducive environment for AI integration due to its advanced technological infrastructure and supportive legal framework.[78] The UK's emphasis on technology-driven innovations in IP law has facilitated a smoother transition to AI-assisted trademark dispute resolution.[79] The presence of specialized institutions and a well-established framework for the adoption of technological tools in legal processes underscores the UK's readiness to harness AI effectively.

The comparative analysis of Nigeria and the UK highlights significant differences in the applicability of AI to trademark disputes. While the UK's legal framework and infrastructure support the integration of AI into trademark dispute resolution, Nigeria faces challenges related to legal adaptation, infrastructural constraints, and the need for comprehensive reforms. Addressing these challenges requires a concerted effort to update legal frameworks, invest in technological infrastructure, and foster collaboration between legal professionals and technology experts to enhance the effectiveness of AI in trademark dispute resolution.

[71] *Ibid* s15

[72] GS Rawat, 'Navigating the Future: AI Trademark Search Revolutionizing Intellectual Property Administration' < https://sagaciousresearch.com/blog/ai-trademark-search-revolutionizing-ip-administration/> accessed 10 May, 2025.

[73] UPSTO, 'Latest updates on artificial intelligence and intellectual property' < https://www.uspto.gov/blog/latest-updates-on-artificial-intelligence> accessed 10 April, 2025.

[74] MS Shaheen, 'The Role of AI in Enhancing ADR: How AI is transforming dispute resolution processes?' < https://www.researchgate.net/publication/375692668_The_Role_of_AI_in_Enhancing_ADR_How_AI_is_transforming_dispute_resolution_processes' > accessed 10 April, 2025.

[75] 915 F.3d 171 (4th Cir. 2019

[76] R Rodrigues, 'Legal and human rights issues of AI: Gaps, challenges and vulnerabilities' *Journal of Responsible Technology* (2020) 4(1), 1.

[77] VN Enebeli, 'Artificial Intelligence and The Future of Legal Education: Lessons from The United Kingdom and South Africa' < https://www.researchgate.net/publication/378469555_Artificial_Intelligence_and_The_Future_of_Legal_Education_Lessons_from_The_United_Kingdom_and_South_Africa> accessed 15 April, 2025.

[78] J Tobin, 'Artificial intelligence: Development, risks and regulation' < https://lordslibrary.parliament.uk/artificial-intelligence-development-risks-and-regulation/> accessed 15 May, 2025.

[79] Gov.UK, 'Artificial Intelligence and Intellectual Property: copyright and patents' < https://www.gov.uk/government/consultations/artificial-intelligence-and-ip-copyright-and-patents/artificial-intelligence-and-intellectual-property-copyright-and-patents> accessed 11 April, 2025.

Conclusion and Recommendations

Conclusion

The applicability of AI to trademark disputes in Nigeria offers a transformative potential to streamline processes, enhance accuracy, and improve efficiency in managing IP rights. With AI-powered tools like machine learning and natural language processing, the complexities of trademark search, monitoring, and dispute resolution can be significantly reduced. These technologies provide faster, more precise trademark analysis, helping legal professionals address potential conflicts early and ensuring better protection for trademarks in a rapidly evolving digital landscape. The integration of AI into Nigeria's IP framework is not only necessary but also timely, considering the increasing digitalization of commerce and the global nature of trademark infringement issues.

However, challenges such as data quality, privacy concerns, and the need for regulatory adaptation remain critical considerations for the effective deployment of AI in trademark disputes. While AI holds the promise of advancing Nigeria's trademark enforcement mechanisms, it is crucial to establish robust data management protocols and ensure compliance with both national and international data protection standards. Addressing these issues will foster a fair, transparent, and efficient legal system that leverages AI's capabilities while safeguarding the rights of all stakeholders involved in trademark disputes.

Recommendations

- **a.** Development of AI-Enhanced Trademark Search Tools: The Nigerian IP Registry should adopt AI-driven technologies to automate the trademark search process. This would significantly improve the accuracy and speed of trademark examinations by identifying potential conflicts with existing marks more efficiently, thus reducing human error.
- **b.** Improvement of Trademark Monitoring Systems: AI-powered systems should be implemented to continuously monitor digital and online platforms for potential infringements. These tools can scan websites, social media, and e-commerce platforms to detect unauthorized uses of registered trademarks, providing real-time alerts to trademark holders.
- **c.** Integration of AI in Trademark Registration Processes: Through strategic amendment of the Act, AI technologies should be employed to streamline the trademark registration process by automating the identification of conflicting marks and improving the examination of applications. This can reduce the administrative burden and enhance the overall efficiency of the system.
- **d.** Creation of Predictive Analytics for Dispute Resolution: AI can be utilized to analyze historical trademark cases and offer predictive insights into the likely outcomes of ongoing disputes. This data-driven approach would allow legal practitioners and businesses to strategize more effectively and resolve disputes faster, contributing to a more equitable legal process.
- **e.** Collaboration with Global AI IP Systems: Nigeria should collaborate with global organizations that specialize in AI-driven IP tools, facilitating the integration of international standards in trademark disputes. This would allow Nigeria to tap into a broader pool of resources and best practices for handling cross-jurisdictional disputes.
- **f.** Strengthening Data Quality and Accessibility: To ensure AI's effectiveness, the Nigerian government must invest in upgrading the trademark registry's database. Data should be consolidated, regularly updated, and standardized to provide AI systems with comprehensive and accurate datasets, thereby improving the reliability of automated trademark analysis.
- **g.** Addressing Data Privacy and Security in AI Applications: Robust data privacy protocols must be established to protect sensitive information during AI-driven trademark processes. Compliance with national data protection laws, like Nigeria's Data Protection Act, and international regulations such as the General Data Protection Regulation (GDPR) will be essential for safeguarding proprietary business and personal data.
- **h.** Implementation of AI in Counterfeit Detection: AI-based image recognition technologies can assist in detecting counterfeit products, which often infringe on trademarks. By scanning both digital and physical marketplaces, AI can help protect brand owners from the increasing threats of counterfeiting and brand dilution in Nigeria's growing e-commerce sector.
- **i.** Enhancing Judicial Decision-Making with AI Tools: Courts handling trademark disputes could leverage AI-driven legal research tools to access case precedents, analyze complex legal arguments, and provide data-driven recommendations. This would support judges in making more informed decisions, particularly in highly technical or intricate trademark cases.
- **j.** Ethical AI Frameworks for Trademark Processes: An ethical framework for AI in trademark disputes should be established, addressing potential issues such as algorithmic bias, transparency, and fairness. This would ensure that AI systems operate with integrity, providing equitable outcomes in trademark disputes and maintaining public trust in the legal system.
- **k.** Training Legal Practitioners on AI Applications: A concerted effort must be made to educate legal professionals in Nigeria on the use of AI technologies in IP law. This includes providing training programs on how to interpret AI-driven insights, use AI tools for legal analysis, and apply these technologies in the management and resolution of trademark disputes.