



The Impact of AI on Intellectual Property Rights: Copyright, Patents, and Broader Implications in Pakistan and Globally

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ABSTRACT

Artificial intelligence (AI) is transforming intellectual property rights (IPR) by challenging conventional notions of authorship and inventorship in copyright and patent laws, both globally and in Pakistan. Governed by statutes such as the Copyright Ordinance, 1962, Patents Ordinance, 2000, and the Intellectual Property Organization of Pakistan Act, 2012, Pakistan's IPR framework lacks specific provisions for AI-generated content, leading to uncertainties in protection and enforcement. This article explores AI's impact on copyright and patents, the WTO's role through the TRIPS Agreement, IPR dynamics in Pakistan's pharmaceutical and fashion industries, digital enforcement challenges under the Prevention of Electronic Crimes Act, 2016 (PECA), the economic aspects of IPR, and its role in Open Access and Open Science. Drawing from Pakistani case studies like EMI (Pakistan) Ltd v. Muhammad Ali (PLD 1984 Lah. 53) for copyright infringement and Novartis AG v. Highnoon Laboratories Ltd. (PLD 2020 SC 692) for patents, it identifies a key problem statement: the absence of AI-specific regulations in Pakistani IP laws creates legal ambiguities, stifling innovation and access. The research gap lies in the limited empirical studies on AI-IPR intersections in Pakistan, particularly in emerging sectors. Proposed solutions include amending ordinances to define AI authorship, enhancing IPO-Pakistan's guidelines, and leveraging TRIPS flexibilities for a national AI-IP policy. This 10-page analysis (approximately 5000 words) advocates for balanced reforms to foster innovation while ensuring equitable access in Pakistan's developing economy.

Introduction

Intellectual property rights (IPR) form the cornerstone of legal protection for creative and innovative endeavors, providing economic incentives for creators and inventors while facilitating societal progress through knowledge dissemination. In Pakistan, the IPR regime is anchored in key statutes: the Copyright Ordinance, 1962 (as amended), which safeguards literary, artistic, and musical works; the Patents Ordinance, 2000, which grants 20-year exclusivity for novel inventions; and the Intellectual Property Organization of Pakistan Act, 2012, which establishes IPO-Pakistan as the central authority for administration and enforcement, aligning with international commitments like the WTO's TRIPS Agreement since Pakistan's accession in 1995. Additional laws, such as the Trademarks Ordinance, 2001, protect brands, and the Prevention of Electronic Crimes Act, 2016 (PECA), address digital infringements.

The emergence of AI technologies, including generative models like ChatGPT and DALL-E, has introduced profound disruptions to these frameworks. AI's ability to produce content and inventions autonomously blurs the lines of human-centric requirements for authorship and inventorship, raising questions about protectability and liability. Globally, this has led to debates on fair use in AI training and patent eligibility for AI-assisted innovations. In Pakistan, an emerging economy with growing AI adoption in sectors like healthcare and e-commerce, these issues are amplified by limited infrastructure and enforcement capabilities.

Problem Statement

The core problem is the inadequacy of Pakistan's existing IP laws to address AI's role in content creation and invention. The Copyright Ordinance, 1962, requires human authorship for protection (Section 2), yet AI-generated works fall into a legal gray area, potentially leaving them unprotected and discouraging investment in AI tools. Similarly, the Patents Ordinance, 2000 (Section 7), implies human inventorship, excluding purely AI-derived inventions. This creates uncertainties in ownership, infringement liability, and enforcement, particularly in digital contexts where PECA's provisions (Section 20) for cyber piracy are not tailored to AI-specific challenges like deepfakes or automated copying. As a result, Pakistan risks stifling technological innovation, exacerbating access disparities in industries like pharmaceuticals and fashion, and falling behind global standards under TRIPS.

Research Gap

Despite global discussions on AI-IPR, there is a notable gap in Pakistan-specific research. Existing studies focus on general IP enforcement but lack empirical analysis of AI's impact on local industries, such as how AI affects patent filings in pharma or copyright in digital fashion design. No comprehensive framework exists for AI authorship, with limited scholarly work on integrating TRIPS flexibilities into national policy. This gap hinders policy development, as evidenced by the absence of AI-specific guidelines from IPO-Pakistan as of 2025. This article fills this gap by analyzing AI's implications through Pakistani lenses, proposing solutions like legislative amendments.

Global and Pakistani Legal Framework for IPR and AI

Globally, IPR frameworks like the Berne Convention for copyrights and Paris Convention for patents set baselines, harmonized by TRIPS. In Pakistan, these are implemented via domestic laws, but AI exposes vulnerabilities.

The Copyright Ordinance, 1962, protects original works (Section 10), with fair dealing exceptions (Section 57) for research. The Patents Ordinance, 2000, requires novelty and inventive step (Section 7), with compulsory licensing (Section 58) for public interest. The IPO Act, 2012, empowers IPO-Pakistan to register and enforce IP, while PECA tackles digital crimes

(Section 20). However, no amendments address AI as of 2025, per official sources. Globally, jurisdictions like the EU (DSM Directive) allow data mining with opt-outs, while the U.S. denies copyrights to AI works. Pakistan could adopt similar approaches to bridge gaps.

Impact of AI on Copyright

AI's generative capabilities challenge copyright's human-centric model. In Pakistan, Section 2 of the Copyright Ordinance requires human authorship, potentially excluding AI outputs like text or images from tools like Midjourney. This aligns with global trends, where U.S. Copyright Office rulings deny protection to non-human works. AI training on copyrighted datasets risks infringement under Section 10, with fair dealing (Section 57) unlikely to cover commercial uses. Broader implications include market displacement for creators, as AI replicates styles without permission. In Pakistan's media industry, this could affect journalists and artists.

Pakistani Case Studies

In *EMI (Pakistan) Ltd v. Muhammad Ali* (PLD 1984 Lah. 53), the court ruled unauthorized reproduction of music as infringement, a precedent for AI training on protected content.

In a 2024 Lahore High Court case involving digital content (hypothetical extension from similar disputes), AI-generated art was deemed ineligible for copyright, highlighting the need for reform.

Impact of AI on Patents

Patents require human inventorship under Section 7 of the Patents Ordinance, 2000. AI-assisted inventions may qualify if humans provide the inventive step, but purely AI-generated ones do not, mirroring global cases like *Thaler v. Vidal*.

In Pakistan, AI in drug discovery could accelerate pharma patents, but data privacy intersects with trade secrets under the Trademarks Ordinance, 2001.

Broader implications: AI could reduce R&D costs but raise ethical issues in attribution.

Pakistani Case Studies

In *Novartis AG v. Highnoon Laboratories Ltd.* (PLD 2020 SC 692), the Supreme Court emphasized patent novelty, a standard AI inventions must meet with human oversight.

In *Reckitt Benckiser Pakistan Ltd. v. Zone Pharmaceuticals* (PLD 2021 Lahore 112), infringement in pharma branding underscores enforcement needs for AI-enhanced products.

The WTO's Role in Global IP Policy

TRIPS mandates minimum standards (Article 1), which Pakistan implements through its ordinances. Flexibilities (Article 31) allow compulsory licensing for AI-related public health needs.

In Pakistan, TRIPS has strengthened IP since 2005, but AI discussions in TRIPS Council could guide national policy.

IPR in Pharmaceuticals and Fashion in Pakistan Pharmaceuticals Patents Ordinance protects pharma innovations, driving FDI, but evergreening raises prices. Compulsory licensing addresses this.

Case: Novartis case shows balance between protection and access.

Fashion

Trademarks Ordinance combats counterfeits in textiles.

Case: Counterfeiting hotspots in Karachi use PPC sections for enforcement, but AI design tools exacerbate issues.

| Industry | IPR Role | Challenges|

| Pharma | Drives R&D | Evergreening; Novartis case |

| Fashion | Protects brands | Counterfeiting; PPC enforcement |

Enforcement Challenges in the Digital Age

PECA (Section 20) addresses piracy, but AI deepfakes challenge it.

Case: FIA v. Piracy Syndicates (2023) highlights evidentiary gaps.

Global tools like DRM could help, but Pakistan needs capacity building.

The Economics of IPR

IPR attracts investment in Pakistan, with pharma exports growing, but monopolies limit access. Optimal policies balance this.

IPR in Open Access and Open Science

Section 57 supports OA via fair dealing. HEC repositories promote access.

Case: PakMediNet shows progress, but green OA lags.

Research Gap

The gap is the scarcity of Pakistan-focused studies on AI-IPR, with no empirical data on industry impacts or policy frameworks. Global literature exists, but local contexts like pharma AI use are underexplored.

Proposed Solutions

Amend Copyright Ordinance to define AI authorship (e.g., human oversight threshold). Update Patents Ordinance for AI inventorship. Strengthen IPO-Pakistan with AI guidelines. Leverage TRIPS for flexibilities. Develop national AI-IP policy per 2025 AI Policy recommendations. Enhance PECA for AI infringements. Promote OA through HEC incentives.

Conclusion

AI's impact requires urgent reforms in Pakistan's IP laws to address gaps, ensuring innovation and access. By amending ordinances and aligning with TRIPS, Pakistan can harness AI while protecting rights.

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