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# Law, Innovation, and Ownership: Intellectual Property in the Era of Digital Disruption

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## ABSTRACT

*Innovation today is taking place in a technological world and Intellectual Property Rights are essential to protect it. Artificial and digital platforms, as well as blockchain, have challenged the existing framework of IPR from a traditional standpoint to adapt. This paper examines the effect of technology on IPR, particularly in the context of India's legal framework, enforcement challenges and policy recommendations. It aims to analyse the emerging concerns related to relevant IPR, assess the existing laws, identify the enforcement gaps, and suggest the mitigation measures to achieve an effective protection. The study also elaborates on the global implications of digital IPR issues and the significance of harmonizing laws in different jurisdictions. To achieve this balance between innovation and intellectual property protection in the increasingly digital landscape, issues related to strengthening IPR governance, ethical concerns with machines that produce IPR works, and adapting legal frameworks will be critical.*

**Keywords:** *Intellectual Property Right, digital innovation, legal framework, block chain, IPR governance.*

## I. INTRODUCTION

*"Intellectual property is the fuel of innovation and creativity, providing the legal framework that encourages individuals and businesses to invest in new ideas, while balancing the public's right to access knowledge and culture."*

IPR stands Intellectual Property Rights which provides the legal protection to the creators and inventors for their intangible creations, such as inventions, literary and artistic works, designs, trademarks and so on. These rights also have a dual function: they offer exclusive use to those who invest in new ideas as a way to induce their help, while also ensuring the public's access to knowledge and cultural products. The new advancement of information technology in globalization and international trade the way we protect the IP rights has become more broader

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and complex. As intellectual property increasingly is a source of legal and ethical challenges as well as a key driver of economic development, international trade and broader economic activity, today it is at the forefront of domestic and international economic, social and legal collaboration. Concerns regarding digital piracy, the bordering of jurisdictions, the impact of technology in use, such as the development of artificial intelligence, have added new urgency to the debate as to how to most effectively protect the intellectual property in the modern era. This paper examines the increasing nature of intellectual property rights, addressing the main challenges and opportunities in which it plays a key role in the modern world. This paper seeks to explore how intellectual property rights can be effectively balanced with the evolving demands of modern technological advancements within the framework of existing legal systems.<sup>3</sup>

## **II. UNDERSTANDING INTELLECTUAL PROPERTY AND ITS TYPES**

### **(A) Intellectual Property:**

Intellectual Property (IP) refers to creations of the human mind, such as inventions, literary and artistic works, designs, symbols, names, and images used in commerce.

### **(B) Intellectual Property Right:**

Intellectual Property Rights (IPR) are the legal rights granted to individuals or organizations over their creations of the mind. These rights give creators exclusive control over the use of their inventions, literary and artistic works, designs, symbols, names, and images, typically for a certain period of time.

#### **a. Types of Intellectual Property**

- **Patents:**

A patent is a legal document granted by government, giving the owner an exclusive rights to use, produce, and sell their intellectual property for a limited period. It also grants the owner the legal right to exclude others from producing, using, or selling the invention during this time.

- **Copyright:**

Copyright is a legal right granted to the creator of original literary, artistic, musical, or dramatic works. It provides the creator with exclusive rights to reproduce, distribute, perform, and display the work, for a specific duration. Copyright aims to protect the expression of ideas, encouraging creativity and safeguarding the interests of authors and artists.

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<sup>3</sup> Organisation for Economic Co-operation and Development, *The Economic Impact of Counterfeiting and Piracy* (2008), <https://www.oecd.org/industry/ind/38707619.pdf>.

- Trademark:

A trademark is a distinct symbol, name, logo, or combination used to identify and differentiate the products or services of one business from another. It plays a key role in safeguarding a brand's identity and ensuring that consumers are not misled, while giving the trademark owner exclusive legal rights to use the mark in trade or commerce.

- Industrial design:

Industrial design refers to the aesthetic aspect or visual features of a product, such as its shape, pattern, colour, or combination thereof, which make it appealing to the eye. In intellectual property law, it protects the unique appearance of a product, not its technical or functional aspects, encouraging creativity in product design and consumer appeal.

- Geographical Indications:

Geographical Indication is a type of intellectual property that identifies a product as originating from a specific geographical region, where its quality, reputation, or other characteristics are essentially linked to that location. It protects traditional knowledge and regional heritage, ensuring that only authorized users can use the name associated with the region.

- Trade secret:

Trade secret refers to confidential business information that provides a competitive advantage, such as formulas, practices, designs, processes, or methods. Protection of trade secrets relies on maintaining secrecy, and unlike other forms of intellectual property, it does not require registration. Unauthorized use or disclosure is considered unfair competition or a breach of confidentiality.<sup>4</sup>

### **III. HISTORICAL BACKGROUND OF INTELLECTUAL PROPERTY RIGHT IN INDIA**

India's approach to Intellectual Property Rights (IPR) has evolved over time, moving from traditional knowledge to colonial legal influences and finally to a modern system that follows global standards like TRIPS. Different phases such as ancient traditions, colonial rule, post-independence reforms, and the present framework have shaped how intellectual creations are protected. This history reflects India's effort to encourage innovation while maintaining accessibility and aligning with international norms. In this part will be focusing on the historical background of the Intellectual Property Right.<sup>5</sup>

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<sup>4</sup>World Intellectual Property Organization, WIPO Technology Trends 2022: Blockchain (2022), <https://www.wipo.int/publications/en/details.jsp?id=4590>

<sup>5</sup> Agreement on Trade-Related Aspects of Intellectual Property Rights art. 27, Apr. 15, 1994, Marrakesh Agreement

**(A) Early Signs of Intellectual Property in Ancient India:**

In ancient times, India had informal ways of recognizing ownership of ideas and creations. During the Indus Valley Civilization, artisans used unique symbols on pottery, which acted like early trademarks. Ancient texts like the Arthashastra also mentioned authorship and originality, showing an early awareness of intellectual property.

**(B) Colonial Influence on IPR Laws:**

The British introduced formal IPR laws in India. The Patent Act of 1856, based on British models, was the first official law protecting inventions. It was later replaced by the Indian Patents and Designs Act of 1911. Copyright laws were introduced with the Indian Copyright Act of 1914, also based on British regulations, while trademark protection began with the Trade Marks Act of 1940.

**(C) Post-Independence Reforms**

After gaining independence in 1947, India undertook significant reforms to its IPR framework. The Patents Act of 1970 replaced colonial-era legislation, emphasizing process patents to support the growth of domestic industries, particularly in the pharmaceutical sector. The Copyright Act of 1957 introduced broad protection for literary, musical, cinematic, and artistic works, while the Trade and Merchandise Marks Act of 1958 strengthened the legal safeguards for trademarks.

**(D) Modernization and Global Integration:**

With economic liberalization in 1991 and India becoming a member of the World Trade Organization in 1995, the country updated its IPR laws to meet the requirements of the TRIPS Agreement. Important changes included the introduction of product patents in 2005, allowing full protection for inventions. New laws like the Trade Marks Act of 1999, the Designs Act of 2000, and the Geographical Indications Act of 1999 were also introduced to improve protection in different areas of intellectual property.<sup>6</sup>

**(E) Recent Advances in IPR Protection**

In 2016, the Indian government launched the National IPR Policy to boost innovation and make the IPR framework more accessible and organized. One of its major initiatives was the development of the Traditional Knowledge Digital Library (TKDL), designed to safeguard

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Establishing the World Trade Organization, Annex 1C, 1869 U.N.T.S. 299.

<sup>6</sup> Agreement on Trade-Related Aspects of Intellectual Property Rights art. 27, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, 1869 U.N.T.S. 299.

traditional knowledge from exploitation. The policy also focused on improving digital infrastructure, easing the filing process for startups, and enhancing global partnerships, thereby strengthening India's position in the international IPR landscape.

#### **IV. CHALLENGES OF IPR IN THE DIGITAL ERA**

##### **(A) Impact of Digital Piracy on Intellectual Property:**

Nowadays, it's very easy to copy and share digital content like movies, music, books, or software. Because of this, many people get these things for free without paying the original creators. This hurts the income and motivation of those who put time and effort into making that content.<sup>7</sup>

##### **(B) Inconsistencies in International Legal Frameworks:**

Different countries have different rules about intellectual property rights (IPR). Some laws are strong, while others are weak or unclear. This creates confusion and makes it hard to take legal action when someone's rights are violated, especially across borders.

##### **(C) Emerging Technologies and IPR Challenges:**

New technologies like blockchain and artificial intelligence (AI) are changing how we create and protect ideas. While these technologies can help secure rights, they also bring new problems. For example, if an AI creates something, it's unclear who owns it — the developer, the user, or the AI itself.

##### **(D) Complexities in Cross-Border IPR Enforcement:**

Today's businesses operate globally. When a product or idea is shared across countries, it becomes harder to protect it from being copied or misused. If someone in another country steals or copies it, enforcing the law becomes more complicated due to different legal systems.

##### **(E) Navigating Fair Use and Creator Rights:**

Fair use" allows people to use small parts of copyrighted work for things like education or criticism. But it's hard to draw the line between fair use and copyright violation. Protecting creators' rights while also letting the public use knowledge fairly is a tough balance to maintain.<sup>8</sup>

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<sup>7</sup> Organisation for Economic Co-operation and Development, *The Economic Impact of Counterfeiting and Piracy* (2008), <https://www.oecd.org/industry/ind/38707619.pdf>.

<sup>8</sup> David Nimmer, 'Fairest of Them All' and Other Fairy Tales of Fair Use, 66 *Law & Contemp. Probs.* 263 (2003).

## **V. LEGAL FRAMEWORK OF IPR IN INDIA**

Intellectual Property (IP) is becoming a valuable asset in today's knowledge-focused economy. Apart from its usual role of protecting creativity and innovation, IP is now seen as something that can be used for financial purposes, like securing loans. In India, the laws not only handle the creation and enforcement of IP rights but also allow for things like assigning, licensing, or using IP as security for loans in some cases. Laws such as the Patents Act, Trade Marks Act, Copyright Act, and Designs Act include rules (either directly or indirectly) about using IP as collateral. This means different types of IP can be used in financial transactions, with legal procedures in place to support such arrangements.

### **(A) Patents Act, 1970:**

This allows patents to be used as security through assignment, mortgage, or license and requiring this to be registered with the Controller ensures transparency and a clear record of ownership. This formal registration helps prevent disputes or unauthorized use, as anyone can verify the legal status of the patent.<sup>9</sup>

### **(B) Trade Marks Act, 1999:**

While trademarks can be used as loan collateral, they must be part of the original agreement. This safeguards trademarks from being exploited by borrowers after defaulting. This limitation indirectly protects trademarks, ensuring they are not mishandled or transferred without proper procedures.<sup>10</sup>

### **(C) Copyright Act, 1957:**

Though copyrights aren't usually preferred as collateral, when registered, they can be used as security. This encourages creators to register their copyrights, which adds a layer of legal protection and makes it easier to prove ownership in case of infringement.<sup>11</sup>

### **(D) Designs Act, 2000:**

Allowing registered designs to be mortgaged or licensed as security ensures that their ownership and financial interests are officially recorded. The requirement to register the transaction with the Controller further strengthens the protection of the design by creating a legal trail.<sup>12</sup>

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<sup>9</sup> The Patents Act, No. 39 of 1970, India Code (1970), <https://www.indiacode.nic.in>.

<sup>10</sup> The Copyright Act, No. 14 of 1957, India Code (1957), <https://www.indiacode.nic.in>.

<sup>11</sup> The Trade Marks Act, No. 47 of 1999, India Code (1999), <https://www.indiacode.nic.in>.

<sup>12</sup> The Designs Act, No. 16 of 2000, India Code (2000), <https://www.indiacode.nic.in>.

## **VI. OPPORTUNITIES OF IPR IN THE DIGITAL AGE**

### **(A) Blockchain for Secure Ownership and Transparency**

Blockchain technology allows creators to register their intellectual property in a secure and decentralized system. Once something is registered on the blockchain, it creates an unchangeable and transparent record of ownership. This helps in reducing disputes over who owns what and makes it easier to prove rights in case of misuse or infringement. Since blockchain records cannot be altered, it creates a trustworthy platform that enhances security and builds confidence among IP owners.

### **(B) New Digital Business Models for Creators**

The rise of the digital economy has introduced fresh ways for creators to earn money. Platforms like digital marketplaces (Amazon, Etsy), crowdfunding websites (Kickstarter), and subscription-based services (Patreon, Spotify) offer creators multiple ways to reach their audience and generate income. These models go beyond traditional copyright enforcement, giving artists, writers, and inventors more freedom and flexibility to monetize their work directly through their fan base or customers.

### **(C) Collaboration and Open Innovation in the Digital Space**

Digital platforms have made it easier for people from different parts of the world to work together. Researchers, companies, and independent creators can now collaborate through open innovation and crowdsourcing. These approaches encourage the sharing of ideas and collective problem-solving, which leads to faster and better innovations. Even though ideas are shared openly, systems are in place to ensure that the original contributors are recognized and their IP rights are protected.

### **(D) Smart Technology for IP Protection and Enforcement**

Technology plays a key role in monitoring and protecting intellectual property in the digital space. Tools like AI-powered monitoring systems, Digital Rights Management (DRM), Technical Protection Measures (TPM), digital watermarks, and electronic signatures help track and control how content is used. These technologies detect unauthorized use, prevent piracy, and make enforcement of rights more efficient. As a result, they give creators better control over their content and how it is shared or reproduced.

### **(E) Global Cooperation for Better IP Protection**

Since the internet connects users globally, intellectual property issues often cross national borders. To handle this, countries are working together through international agreements and



cooperative efforts. By aligning laws and sharing enforcement strategies, nations can make it easier to protect IP rights across borders. This kind of global harmonization helps build a stronger and more effective system for all creators, regardless of where they are located.<sup>13</sup>

#### **(F) Big Data for Smarter IP Management**

Big data analytics helps in understanding how and where IP is being used or misused. By analyzing large sets of information, creators and IP managers can identify trends, spot patterns of infringement, and plan targeted enforcement strategies. It also helps in understanding consumer behavior and market needs. However, while using big data, it is important to be mindful of privacy laws and to ensure that the data being used is accurate and responsibly handled.

#### **(G) Modernizing Laws to Meet Digital Challenges**

The digital world has introduced many new challenges such as online piracy, AI-generated content, and digital transactions. These issues cannot always be addressed by old legal systems. Hence, there is a need for modern and flexible IP laws that can adapt to changing technologies. Licensing models like Creative Commons also help by letting creators choose how they want to share and protect their work. Additionally, setting up specialized tribunals or digital-focused legal mechanisms ensures faster and fairer resolution of digital IP disputes.

### **VII. RECOMMENDATIONS TO BALANCE IPR AND LAW IN THE DIGITAL AGE**

#### **(A) Recalibrating Legal Frameworks for Emerging Technologies:**

There is a pressing need to revisit and reshape existing intellectual property laws to keep pace with rapidly evolving technologies such as artificial intelligence and blockchain. The legal vacuum surrounding issues like AI-generated content or decentralized digital assets must be addressed through clear statutory definitions and ownership norms, ensuring that innovation is not stifled by outdated legal doctrines.

#### **(B) Establishing Digital IPR Adjudicatory Bodies:**

To handle the nuanced nature of infringement in online environments, dedicated digital IPR tribunals or benches should be constituted. These bodies would offer specialized adjudication on matters involving virtual piracy, cross-border digital conflicts, and algorithmically generated works, ensuring timely and context-aware legal remedies.

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<sup>13</sup> Ministry of Commerce & Industry, National Intellectual Property Rights Policy (2016), [https://dpiit.gov.in/sites/default/files/National\\_IPR\\_Policy\\_English.pdf](https://dpiit.gov.in/sites/default/files/National_IPR_Policy_English.pdf).

**(C) Leveraging Blockchain for Transparent IP Registries:**

Blockchain technology presents a unique opportunity to secure digital intellectual property through tamper-resistant registries. A decentralized system of recording ownership and licensing could enhance both legal certainty and evidentiary reliability, especially in disputes concerning digital content and transnational transactions.

**(D) Fostering International Synergy in Enforcement:**

Since digital infringement often transcends national boundaries, it is imperative for countries to enhance cross-border legal cooperation. Formalized treaties, data-sharing protocols, and harmonized enforcement mechanisms will be vital in mitigating jurisdictional loopholes and enabling effective remedies for rights holders worldwide.

**(E) Elevating Public Engagement and Digital IP Awareness:**

A robust IP system cannot succeed without public comprehension and participation. Governments and academic institutions must invest in targeted outreach programs, integrating IP education into digital literacy initiatives, particularly for startups, students, and content creators navigating the online economy.

**(F) Encouraging the Use of AI for IP Monitoring and Enforcement:**

The very technologies that disrupt IP frameworks can also fortify them. Policymakers should incentivize the development and deployment of AI-driven monitoring tools capable of detecting unauthorized use of protected works in real-time, thereby enhancing compliance and reducing enforcement costs.

**VIII. CONCLUSION**

To conclude that as technology continues to reshape the contours of creation, communication, and commerce, the traditional framework of intellectual property rights is undergoing a profound transformation. In the digital age, intellectual property is no longer confined to tangible inventions or printed works; it spans across dynamic, algorithm-driven outputs, globalized content ecosystems, and decentralized ownership structures. This evolving landscape demands not only legal vigilance but also intellectual agility.

India, like many other nations, stands at a pivotal juncture where the challenge is twofold: to uphold the sanctity of original thought while fostering an environment that welcomes innovation and global cooperation. While existing statutes have made commendable strides in modernizing protections especially in response to international obligations under TRIPS and beyond the pace of technological disruption requires a more anticipatory legal and policy

approach.

The protection of IPR in the digital realm cannot rely solely on static law; it must also integrate adaptive enforcement mechanisms, ethical stewardship of emerging technologies, and robust international collaboration. Equally important is cultivating awareness and accessibility, ensuring that creators across socio-economic and technological divides can participate in and benefit from an equitable IP ecosystem.

In moving forward, a holistic recalibration of IPR governance is essential one that is informed by technology, grounded in justice, and responsive to the fluid nature of digital innovation. Only then can we hope to achieve a sustainable balance between the rights of creators, the needs of users, and the relentless march of progress.

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