
A STUDY ON EMERGING LEGAL ISSUES IN INDIA: THE INTERSECTION OF ARTIFICIAL INTELLIGENCE, INTELLECTUAL PROPERTY, AND E-COMMERCE

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ABSTRACT:

The convergence of Artificial Intelligence (AI), Intellectual Property (IP), and e-commerce in India has created a rapidly evolving legal environment shaped by technological innovation and the digital marketplace. While AI drives efficiency through predictive analytics, automated decision-making, and consumer profiling, it simultaneously disrupts traditional concepts of authorship, ownership, and liability under existing IP laws. The problem arises because India's Copyright Act, 1957 and Patents Act, 1970 assume human authorship and inventorship, leaving AI-generated works and inventions in a legal vacuum, while e-commerce platforms using AI face challenges of data protection, counterfeit detection, automated contracts, and consumer trust. Against this background, the purpose of this study is to critically analyze emerging legal issues at the intersection of AI, IP, and e-commerce in India, with comparative insights from the U.S., EU, and China, and to propose reforms for balancing innovation with rights protection. The research adopts a doctrinal methodology, relying on primary sources such as statutes, case law, international conventions, and policy documents, as well as secondary literature, to evaluate the adequacy of current frameworks and identify gaps. The findings indicate that Indian law does not adequately recognize AI-generated creativity, struggles with assigning liability in AI-driven platforms, and lacks comprehensive data protection mechanisms tailored for algorithmic decision-making, though global trends suggest clearer accountability and consumer safeguards. The study concludes that India requires a coherent AI-specific legal framework harmonized with international standards, reforms in copyright and patent regimes, stronger liability and consumer protection mechanisms, and capacity building for regulators, ensuring that technological growth is matched with robust legal safeguards.

Keywords: Artificial intelligence (AI), AI-generated creativity, Intellectual property (IP), E-commerce, Global trends.

2. OVERVIEW OF AI, IP, AND E-COMMERCE IN INDIA

The convergence of Artificial Intelligence (AI), Intellectual Property (IP), and e-commerce in India presents a dynamic and complex legal landscape that is rapidly evolving in response to technological innovation and the digital economy. AI, with its application in predictive analytics, automated decision-making, and personalized consumer experiences, has become a key driver of growth in India's burgeoning e-commerce sector, which itself is regulated through frameworks such as the Information Technology Act, 2000, Consumer Protection Act, 2019 (including the E-Commerce Rules, 2020), and sectoral guidelines from the Competition Commission of India. However, the integration of AI technologies in e-commerce raises significant challenges within the domain of Intellectual Property Rights (IPR), particularly concerning authorship, ownership, and liability for AI-generated works, potential copyright and patent infringement by autonomous systems, and misuse of trademarks in digital marketplaces. While India's existing IP regime, governed primarily by the Copyright Act, 1957, the Patents Act, 1970, and the Trade Marks Act, 1999, does not explicitly recognize non-human authorship or inventorship, judicial and legislative debates are intensifying on whether the law should adapt to accommodate AI-generated creativity and innovation. Simultaneously, issues such as algorithmic transparency, data protection under the Digital Personal Data Protection Act, 2023, intermediary liabilities of e-commerce platforms, and unfair trade practices highlight the interplay of technology regulation with consumer rights and competition law. Thus, the intersection of AI, IP, and e-commerce in India reflects an emerging field requiring a delicate balance between fostering innovation, safeguarding intellectual property, ensuring fair market practices, and protecting consumer interests in the digital marketplace.

3. BACKGROUND ON AI IN THE INDIAN LEGAL AND BUSINESS LANDSCAPE

Artificial Intelligence (AI) has rapidly emerged as a transformative force in India's legal and business ecosystems, raising significant regulatory, ethical, and jurisprudential considerations. The Government of India, through initiatives such as the National Strategy for Artificial Intelligence (NITI Aayog, 2018), has recognized AI as a "Stage 3" technology capable of driving economic growth, enhancing service delivery, and fostering innovation across sectors including healthcare, finance, agriculture, education, and e-commerce. Within the business domain, AI is increasingly employed in predictive analytics, automated decision-making,

supply chain optimization, and targeted digital marketing, thereby reshaping traditional commercial transactions and consumer relations. Concurrently, the legal sector has witnessed a gradual integration of AI-powered tools for case law research, contract review, and judicial data analysis, indicating a potential shift towards greater efficiency, though concerns remain regarding accountability, transparency, and data security. Despite these advancements, the Indian legal framework currently lacks a comprehensive legislative regime specifically governing AI, instead relying on existing statutes such as the Information Technology Act, 2000, the Copyright Act, 1957, the Patents Act, 1970, and the Consumer Protection Act, 2019 to address emerging concerns in an ad hoc manner. This regulatory gap underscores the pressing need for a coherent policy discourse on AI governance that balances innovation with safeguards for privacy, intellectual property, competition, and consumer rights, particularly in rapidly expanding domains such as e-commerce where algorithmic decision-making intersects with fundamental legal principles.

4. RESEACH OBJECTIVES

- To examine the legal challenges of recognizing authorship and ownership in AI-generated works under Indian copyright and patent laws.
- To analyze the patentability of AI-generated inventions and assess whether the current Indian Patents Act sufficiently addresses non-human inventor ship.
- To study copyright issues in AI-created works and explore possible frameworks for assigning rights and liabilities between programmers, users, and deploying entities.
- To evaluate the role of AI in e-commerce, particularly in digital marketing, consumer profiling, automated contracts, and online transactions.
- To identify data protection and privacy concerns arising from AI-driven e-commerce platforms in light of the Digital Personal Data Protection Act, 2023.
- To investigate conflicts between intellectual property rights and e-commerce platforms using AI, including misuse of AI for counterfeiting and piracy.
- To explore jurisdictional challenges and cross-border disputes at the intersection of AI, IP, and e-commerce.

- To provide comparative and international perspectives by studying global legal trends (U.S., EU, China) and identifying lessons for India's evolving framework.

5. RESEARCH METHODOLOGY

The present research adopts a doctrinal methodology, relying primarily on the critical analysis of existing legal materials to examine the intersection of Artificial Intelligence, Intellectual Property, and E-Commerce in India. The study is based on primary sources such as statutes, constitutional provisions, judicial pronouncements, international conventions, and policy documents, alongside secondary sources including books, journal articles, reports, and credible online resources. By systematically interpreting and comparing these legal texts, the research aims to trace emerging challenges, evaluate the adequacy of the current legal framework, and explore comparative perspectives from other jurisdictions, thereby providing a structured understanding of how Indian law engages with the evolving dynamics of technology-driven commerce and intellectual property rights.

6. RELEVANCE OF IP RIGHTS AND E-COMMERCE IN THE DIGITAL ECONOMY

In the evolving landscape of the digital economy, the intersection of intellectual property (IP) rights and e-commerce assumes critical relevance, as the rapid digitization of trade and the proliferation of online platforms have transformed the creation, distribution, and consumption of goods and services. Intellectual property law, which traditionally functioned to safeguard innovation, creativity, and brand identity, has now become indispensable in regulating e-commerce activities that transcend territorial boundaries and operate in a borderless cyberspace. The protection of trademarks, patents, copyrights, and trade secrets is essential not only for ensuring consumer trust and preventing unfair competition, but also for enabling businesses to preserve their market value in the face of challenges such as counterfeiting, digital piracy, and unauthorized online reproduction of protected works. In India, the applicability of existing frameworks such as the Copyright Act, 1957, the Trade Marks Act, 1999, and the Information Technology Act, 2000 is being tested against complex issues arising in online marketplaces, including intermediary liability, data-driven innovation, and algorithmic use of protected content. Moreover, in the context of artificial intelligence technologies increasingly integrated within e-commerce platforms, the ownership and protection of AI-generated content, algorithm-driven branding strategies, and automated contractual processes present unresolved legal dilemmas. Thus, harmonizing IP protection with the fluid and borderless nature of e-

commerce in the digital economy is not merely a matter of enforcing existing rights but also of reimagining legal frameworks that can balance innovation, fair competition, and consumer protection in an increasingly technology-driven marketplace.

7. ARTIFICIAL INTELLIGENCE AND INTELLECTUAL PROPERTY

7.1.1 PATENTABILITY OF AI-GENERATED INVENTIONS IN INDIA

The question of patentability of AI-generated inventions in India represents one of the most pressing and complex legal debates at the convergence of intellectual property and emerging technologies. Under the Indian Patents Act, 1970, Sections 2(1)(j) and 2(1)(ja) define “invention” and “inventive step,” requiring novelty, inventive step, and industrial applicability, while Section 6 restricts the category of persons entitled to apply for a patent to a “true and first inventor” or their assignee. The statutory framework implicitly presumes human inventorship, as reflected in the definition of “inventor,” and Indian jurisprudence has yet to conclusively recognize non-human entities such as AI systems in this role. This position aligns with global trends, where patent offices in jurisdictions such as the United States (USPTO), the European Patent Office (EPO), and the UK Intellectual Property Office have consistently refused to recognize AI, such as the well-known case involving the AI system “DABUS,” as an inventor, holding instead that an inventor must be a natural person. In India, practical issues further challenge the prospect of granting patent rights to AI-generated inventions, particularly concerning questions of authorship, ownership, accountability, and enforceability, given that the Patents Act lacks a provision equivalent to the Indian Copyright Act’s concept of “computer-generated works,” where authorship is attributed to the person causing the work to be created. Moreover, assessing the inventive step for AI-generated inventions becomes problematic when AI has the potential to process enormous datasets and generate solutions that may surpass human capabilities, raising concerns of blurring the line between human input and autonomous machine creativity. While policy discussions in India have begun to acknowledge the transformative role of AI, the current legislative and judicial framework remains ill-equipped to address whether AI itself can be deemed an inventor or whether the entitlement to patent protection should rest with the human developer, programmer, or user of the AI system. Consequently, until Indian law undergoes explicit reform or judicial reinterpretation, AI-generated inventions remain in a gray area of patent protection, creating a critical need for legislative intervention to balance innovation policy, economic incentives, and ethical

considerations in the era of machine-created inventions.

7.1.2 COPYRIGHT ISSUES IN AI-CREATED WORKS

The emergence of Artificial Intelligence (AI) as an autonomous creator of literary, artistic, and musical works poses complex challenges to the traditional framework of copyright law, particularly in India, where the Copyright Act, 1957, has not yet been comprehensively updated to address machine-generated outputs. The core issue arises from the fundamental principle that copyright protection is premised upon the notion of “originality” and “authorship,” both traditionally linked to human creativity and intellectual labor. While Section 2(d) of the Copyright Act defines “author” in relation to different types of works, it is silent on whether a non-human entity can be an author, thus raising a question of legal vacuum when AI independently produces creative content without substantial human input. Further complications arise in attributing rights and liabilities—whether the copyright, if any, should vest with the programmer, the user providing prompts or inputs, the entity deploying the AI system, or whether such works should be excluded from protection altogether and fall within the public domain. Comparative jurisprudence also illustrates divergences across jurisdictions: while the U.S. Copyright Office has categorically denied protection to works lacking human authorship, the U.K. Copyright, Designs and Patents Act, 1988 acknowledges computer-generated works by attributing authorship to the person “making the arrangements necessary.” India, however, remains undecided, as there is no express statutory provision or judicial precedent conclusively resolving the ownership of AI-generated works. This lacuna has significant implications for industries increasingly reliant on generative AI, raising concerns about incentivizing innovation, preventing misuse, and ensuring clarity in commercial exploitation. Moreover, questions of infringement also become intricate, as AI systems often “learn” from vast copyrighted datasets, blurring the lines between permissible fair use and impermissible reproduction or adaptation. In the context of e-commerce, where AI-driven platforms generate marketing content, product descriptions, or designs, the uncertainty surrounding copyright ownership could directly affect licensing structures, contractual negotiations, and dispute resolution mechanisms. Therefore, addressing the copyright ability and ownership of AI-generated works becomes essential to safeguard both the creative ecosystem and the commercial viability of AI integration in India’s rapidly evolving digital economy.

7.1.3 OWNERSHIP AND AUTHORSHIP CONCERNS

One of the most pressing legal challenges at the intersection of artificial intelligence, intellectual property, and e-commerce in India is the determination of ownership and authorship in relation to AI-generated works, as the existing framework under the Copyright Act, 1957 and the Patents Act, 1970 presupposes human ingenuity and creativity as the cornerstone of intellectual property protection. The law traditionally recognizes the “author” or “inventor” as a natural or juristic person, thereby raising a legal vacuum when the creative or inventive act is attributable, either wholly or substantially, to an autonomous AI system without direct human intervention. This issue becomes particularly significant in e-commerce ecosystems where AI curates product designs, generates marketing content, or develops algorithms for consumer targeting, thereby producing commercially valuable intangible assets whose ownership is contested between the programmer, the deployer, and, in some arguments, the AI itself. Indian jurisprudence, though nascent in this regard, still aligns with global practices that deny legal personality to AI, thereby vesting authorship either in the programmer as the creator of the underlying algorithm, the user as the initiator of the creative process, or the entity commissioning such works under the framework of “work for hire.” However, this fragmented attribution test raises practical concerns—whether the mere input of instructions constitutes sufficient intellectual contribution to claim ownership, and how liability and benefit sharing are to be allocated when AI operates without granular human control. In patent law, the controversy is further accentuated in cases where AI systems independently generate technical solutions, given that the requirement of an “inventor” being a natural person poses barriers to patent applications, creating uncertainty for businesses relying on AI-driven innovations in e-commerce. The absence of statutory clarity in India, coupled with the increasing reliance on autonomous AI for content creation, product design, and consumer engagement, emphasizes the urgent need for a policy response that delineates authorship and ownership principles, striking a balance between incentivizing technological advancement and maintaining coherence in intellectual property jurisprudence, while also mitigating the potential for exploitation or misappropriation in digitally driven commercial platforms.

7.1.4 COMPARATIVE PERSPECTIVE: INDIA AND GLOBAL TRENDS

From a comparative perspective, the regulatory trajectory of India in addressing the intersection of artificial intelligence (AI), intellectual property (IP), and e-commerce reflects both parallel

developments and notable divergences from global policy frameworks. In India, the lack of a dedicated legislation on AI necessitates reliance on existing laws, particularly the Information Technology Act, 2000, the Patents Act, 1970, and the Copyright Act, 1957, supplemented by judicial interpretation and policy reports such as NITI Aayog's "National Strategy for Artificial Intelligence." While these instruments aim to establish a foundational governance structure, they remain fragmented compared to jurisdictions like the European Union and the United States, where more structured frameworks are evolving. The European Union, through instruments like the Artificial Intelligence Act and the Digital Services Act, adopts a risk-based regulatory model, prioritizing ethical deployment and accountability mechanisms for AI technologies alongside robust consumer protection in digital commerce. By contrast, the United States has historically relied on sector-specific guidance and soft-law mechanisms, emphasizing innovation incentives and market-driven regulation, although recent policy shifts indicate greater attention to algorithmic accountability and data governance.

In terms of intellectual property, India adheres to the traditional doctrine that legal personhood and authorship cannot be conferred upon non-human agents, thereby excluding AI-generated works from protection, whereas several advanced jurisdictions are currently engaging in nuanced debates. For instance, the U.S. Copyright Office has reaffirmed that copyright subsists only in works of human authorship, while the UK Copyright, Designs and Patents Act explicitly recognizes "computer-generated works" with authorship attributed to the person making necessary arrangements. Similarly, the debate over patent inventorship presents global fault lines: India requires human inventorship under its Patents Act, aligning with the U.S., whereas countries like South Africa have controversially accepted AI systems as inventors in isolated cases, signaling future normative conflicts at the intersection of innovation policy and IP law.

The e-commerce landscape further underscores the comparative asymmetry: India's regulatory regime, led by the Consumer Protection (E-Commerce) Rules, 2020, and proposed amendments under the draft Digital India Act, reflects a consumer-centric approach that emphasizes transparency, liability, and protection against unfair trade practices by marketplace operators. Comparatively, the European Union has advanced a harmonized digital single market strategy, buttressed by the Digital Markets Act, to ensure fairness in platform economy dynamics, while China's E-commerce Law imposes direct liability on platforms for counterfeit transactions, a model that places stronger compliance burdens on intermediaries. India remains at a transitional stage, attempting to balance facilitation of digital trade growth with consumer

trust and data protection imperatives, an endeavor that often borrows normative cues from global best practices but faces distinct challenges owing to its unique market size, socio-economic diversity, and enforcement capacities.

Collectively, this cross-jurisdictional mapping suggests that while India demonstrates an incremental and adaptive regulatory evolution, global trends underscore a more proactive codification of AI-specific governance standards, IP recalibrations, and e-commerce accountability regimes. The comparative lens highlights the pressing need for India not only to harmonize with international developments in line with its TRIPS obligations and emerging data governance mandates but also to evolve an indigenous, context-sensitive approach that addresses its domestic technological growth while fortifying its global digital competitiveness.

8.5 ARTIFICIAL INTELLIGENCE AND E-COMMERCE

8.5.1 AI IN DIGITAL MARKETING, ALGORITHMS, AND CONSUMER PROFILING

The deployment of Artificial Intelligence in digital marketing has transformed the manner in which businesses in India interact with consumers, with algorithms playing a decisive role in influencing consumer decision-making through predictive analytics, targeted advertising, and consumer profiling. AI systems capable of gathering and processing vast datasets—such as browsing histories, purchase patterns, online behavioral footprints, and demographic indicators—enable firms to engage in highly personalized marketing strategies, raising critical questions within the legal landscape. From a regulatory standpoint, consumer profiling in India presently operates in a grey area due to the absence of a dedicated data protection law, although the Digital Personal Data Protection Act, 2023 (DPDP Act) seeks to establish a framework regarding lawful processing, consent requirements, and rights of data principals. Nevertheless, challenges persist in balancing commercial interests with individual autonomy, informed consent, and transparency in algorithmic decision-making. The use of opaque "black box" algorithms further raises accountability concerns, especially when automated profiling leads to discriminatory practices, infringement of privacy rights under Article 21 of the Constitution, or manipulative advertising that may contravene principles under the Consumer Protection Act, 2019 relating to unfair trade practices. Additionally, the increasing reliance on AI-driven marketing tools implicates intellectual property rights, as questions arise surrounding the ownership of AI-generated promotional content and algorithmic models employed for consumer engagement, potentially conflicting with existing copyright and trademark regimes.

The intersection of e-commerce regulation with algorithmic profiling also merits attention, particularly under the Consumer Protection (E-Commerce) Rules, 2020, which emphasize fair disclosure, transparency, and the prevention of biased trade practices. Therefore, while AI enhances efficiency and economic value in digital commerce, the lack of sufficient checks on profiling practices poses significant legal risks, necessitating a robust regulatory framework mandating algorithmic transparency, consumer consent, and accountability mechanisms in order to strike a just balance between innovation and consumer rights in India's evolving digital marketplace.

8.5.2 MAIN LEGAL ISSUES IN AUTOMATED CONTRACTS AND ONLINE TRANSACTIONS

Legal issues in automated contracts and online transactions present a complex and evolving area of law in India, especially at the intersection of traditional contract principles and emerging technologies like block chain, artificial intelligence (AI), and smart contracts. The followings are the Main Legal Issues in Automated Contracts and Online Transactions

1. Legal Recognition and Enforceability

Automated contracts, including e-contracts and smart contracts, must satisfy the foundational contract elements under the Indian Contract Act, 1872, such as offer, acceptance, consideration, and intention to create legal relations. The Information Technology Act, 2000 provides legal recognition to electronic records and digital signatures, validating contracts executed through electronic means under Section 10A. However, while digital contracts enjoy statutory recognition, smart contracts pose novel legal questions due to their self-executing, code-driven nature, which is not explicitly covered by Indian statutes, leading to a legal gray area regarding enforceability and judicial intervention in case of errors or bugs in the code.

2. Challenges of Consent, Authentication, and Jurisdiction

E-contracts and automated contracts often face issues related to meaningful consent and authentication, as parties may not physically sign or even fully comprehend automated terms embedded in software or AI algorithms. The challenge extends to jurisdictional concerns, as online transactions typically transcend geographical boundaries, creating complexities in determining the appropriate legal forum and applicable law. The decentralized nature of

blockchain-based contracts further complicates jurisdiction, raising questions about Indian courts' authority over disputes involving parties in multiple jurisdictions.

3. Data Privacy and Consumer Protection

Automated contracts often require processing substantial personal and transactional data, which triggers obligations under India's Digital Personal Data Protection Act, 2023. Compliance with data privacy norms in the context of blockchain's immutable records and automated execution is a contentious legal issue. Consumer protection laws, such as the Consumer Protection Act, 2019, provide recourse for unfair trade practices and defective services, but applying these norms to decentralized automated contracts raises enforcement challenges due to the anonymous or pseudonymous nature of blockchain participants and the lack of identifiable service providers.

4. Evidence and Dispute Resolution

The admissibility of electronic evidence, including smart contract code, is governed by the Indian Evidence Act, 1872. (Now referred to as the Bharatiya Sakshya Adhiniyam 2024.) However, courts must grapple with technical complexities in authenticating and interpreting contract code, often necessitating expert testimony and forensic audits. Dispute resolution mechanisms for e-contracts, especially automated contracts, are still evolving, with limited judicial precedents in India addressing the nuances of blockchain disputes, AI-driven contract terms, and automated execution errors.

5. Liability and Regulatory Gaps

Determining liability in cases of automated contract failure, such as bugs or fraud in smart contracts, remains uncertain. The decentralized and autonomous nature of many digital transactions obscures accountability, especially with technologies like Decentralized Autonomous Organizations (DAOs) that lack a clear legal personality under Indian law. The absence of specific regulations or guidelines from regulatory bodies like the Reserve Bank of India (RBI) and Securities and Exchange Board of India (SEBI) on these emerging contract forms further accentuates the legal uncertainties.

8.5.3 CONSUMER PROTECTION AND LIABILITY OF AI-DRIVEN PLATFORMS

The advent of AI-driven platforms in India's e-commerce ecosystem raises complex questions

regarding consumer protection and liability allocation, as traditional legal doctrines are often insufficient to address harms caused by autonomous decision-making systems. Under the Consumer Protection Act, 2019, e-commerce entities are obligated to ensure transparency, fair trade practices, and accountability for goods and services offered; however, where AI algorithms independently determine pricing, recommendations, or contractual terms, identifying the liable party—whether the developer, operator, or intermediary—poses a significant challenge. The principle of “product liability” under Chapter VI of the Act, which holds manufacturers and service providers accountable for defects or deficiencies, may require reinterpretation to cover algorithmic malfunctions, biased outcomes, or misinformation generated by AI. Moreover, the Information Technology Act, 2000, and proposed Digital India Act, by recognizing platform liability in cases of negligent data handling or algorithmic opacity, create overlapping obligations that necessitate harmonization with consumer law to prevent regulatory gaps. Comparative approaches, such as the EU’s proposed AI Liability Directive, suggest the need for India to define a clear framework that balances technological innovation with consumer rights, possibly through a hybrid standard of “strict liability” for AI developers and “due diligence” obligations for platform operators. Ultimately, establishing a transparent accountability matrix is indispensable for ensuring consumer trust in AI-driven e-commerce while safeguarding against unprecedented harms arising at the intersection of artificial intelligence and consumer law.

8.5.4 DATA PROTECTION AND PRIVACY CHALLENGES

The rapid integration of Artificial Intelligence (AI) into e-commerce platforms in India has foregrounded complex issues pertaining to data protection and privacy, particularly in the absence of a fully harmonized regulatory framework. With AI-driven algorithms relying heavily on the collection, processing, and profiling of consumer data, including sensitive personal information, the risk of misuse, unauthorized sharing, and surveillance is profound. Although the Digital Personal Data Protection Act, 2023 provides a statutory framework to regulate consent-based data processing and imposes obligations on data fiduciaries, its effective implementation in AI-driven environments remains contested due to concerns over adequacy of consent, algorithmic opacity, and cross-border data transfers in globalized e-commerce transactions. Moreover, the lack of explicit statutory guidelines addressing AI’s capacity for automated decision-making, data mining, and predictive analytics creates an interpretive vacuum when balancing innovation with the Right to Privacy recognized as a

fundamental right under Article 21 of the Constitution in Justice K.S. Puttaswamy v. Union of India (2017). This legal tension underscores the pressing need to reconcile data protection principles of purpose limitation, proportionality, and accountability with the commercial imperatives of digital marketplaces, thereby demanding a nuanced regulatory approach that safeguards individual autonomy without stifling technological growth.

9. OVERLAPPING CONCERNS AT THE INTERSECTION

9.6.1 CONFLICTS BETWEEN IP RIGHTS AND E-COMMERCE PLATFORMS USING AI

The increasing reliance of e-commerce platforms on artificial intelligence (AI) technologies for product recommendations, automated content generation, dynamic pricing, and counterfeit detection has intensified complex conflicts with intellectual property (IP) rights in India, raising significant legal and policy concerns. On one hand, AI-driven algorithms deployed by online marketplaces enhance consumer experience and operational efficiency, yet they also blur traditional notions of authorship, ownership, and liability under existing IP regimes. For instance, AI-powered product listings and generative advertising content may inadvertently reproduce copyrighted material, trademarks, or designs belonging to third parties, leading to potential infringement disputes wherein determining the accountability—whether that of the AI developer, the platform operator, or the vendor—remains unsettled under current law. Similarly, trademark owners often confront challenges when AI algorithms display counterfeit or deceptively similar products, as automated recommendation systems can perpetuate brand dilution or consumer confusion, thereby undermining the legal protections afforded under the Trade Marks Act, 1999. Furthermore, the Copyright Act, 1957 does not recognize non-human creators, creating ambiguity over works generated autonomously by AI for e-commerce purposes, such as product descriptions, digital images, or marketing content, leaving a lacuna in protection and enforcement. The use of AI to detect infringing goods on these platforms also introduces tensions, since over-reliance on AI-driven takedown mechanisms can result in over blocking, implicating the right to trade and fair use exceptions. Courts in India, while grappling with intermediary liability under the Information Technology Act, 2000, have yet to evolve a clear jurisprudential framework reconciling the safe harbor provisions with the proactive monitoring expectations imposed on AI-enabled e-commerce intermediaries, thereby intensifying the conflict between innovation-driven commerce and IP rights enforcement. This

intersection thus underscores the pressing need for comprehensive regulatory reforms and judicial clarity in India to balance the competing interests of intellectual property protection, technological advancement, and the growth of AI-driven e-commerce.

9.6.2 MISUSE OF AI FOR COUNTERFEITING AND PIRACY IN ONLINE MARKETPLACES

The proliferation of Artificial Intelligence (AI) technologies has introduced novel challenges for intellectual property (IP) enforcement in India, particularly in the domain of counterfeiting and piracy within online marketplaces, where AI-enabled tools are increasingly exploited to replicate, reproduce, and distribute infringing goods and content at an unprecedented scale. Sophisticated generative AI systems, including deep learning models for text, image, audio, and video generation, can be misused by counterfeiters to create deceptive product listings, replicate brand logos, and even fabricate authenticity certificates, thereby blurring the distinction between genuine and infringing goods. Similarly, in the digital content domain, AI-based cloning and generative techniques facilitate large-scale piracy of copyrighted works such as films, music, books, and software, which are then disseminated across e-commerce platforms, streaming sites, and peer-to-peer networks, undermining the rights of creators and rightful owners. This emerging misuse also complicates traditional enforcement mechanisms available under the Copyright Act, 1957, the Trade Marks Act, 1999, and customs regulations, as infringers employ AI-driven algorithms for automated listing manipulations, rapid reproduction of pirated content, and obfuscation of source identities, making detection and takedown extremely difficult. Also, India's ongoing regulatory framework under the Information Technology Act, 2000 and the proposed Digital India Act places obligations on intermediaries to exercise due diligence; however, the advent of AI-enabled piracy and counterfeiting raises critical questions about the extent of intermediary liability, the adequacy of existing safe-harbor provisions, and the threshold of "knowledge" in cases where infringing activities are algorithmically concealed. The automation of infringement through AI not only escalates the volume and sophistication of counterfeit and pirated products but also severely impacts consumer trust, brand equity, and India's growing e-commerce ecosystem, thereby necessitating a re-examination of statutory provisions, judicial approaches, and technological enforcement tools to ensure that the balance between innovation and protection of IP rights is maintained in the digital economy.

9.6.3 JURISDICTIONAL CHALLENGES AND CROSS-BORDER DISPUTES

The rapid convergence of artificial intelligence, intellectual property, and e-commerce in India raises complex jurisdictional challenges, particularly in cases involving cross-border transactions, data flows, and intellectual property infringements occurring on digital platforms. Traditional principles of private international law, such as *lex loci protectionis* and *lex loci delicti*, struggle to address disputes where the locus of infringement, data processing, or contractual obligations is dispersed across multiple jurisdictions. The issue is further compounded by the extraterritorial application of laws such as the European Union's General Data Protection Regulation (GDPR) and the U.S.'s Digital Millennium Copyright Act (DMCA), which frequently come into conflict with India's evolving data protection and intellectual property regimes. Indian courts grapple with questions of *forum conveniens* and the enforceability of foreign judgments and arbitral awards, especially where e-commerce platforms deploy automated algorithms or AI-driven processes that blur the boundary between local and foreign operations. Consequently, resolving cross-border disputes in this domain necessitates the development of harmonized international legal standards, enhanced mutual recognition of judicial and arbitral decisions, and adaptive domestic legislation capable of addressing the multi-jurisdictional complexities inherent in the digital economy.

9.6.4 ROLE OF REGULATORY AUTHORITIES IN BALANCING INNOVATION AND RIGHTS

The role of regulatory authorities in India assumes critical importance in the fast-evolving landscape where artificial intelligence, intellectual property, and e-commerce intersect, as these institutions are not merely tasked with enforcing compliance but are entrusted with the delicate responsibility of striking a balance between encouraging innovation and safeguarding rights. Bodies such as the Ministry of Electronics and Information Technology (MeitY), the Telecom Regulatory Authority of India (TRAI), the Competition Commission of India (CCI), and the Controller General of Patents, Designs and Trade Marks (CGPDTM), alongside sectoral regulators, collectively shape the policy ecosystem that determines the trajectory of digital growth while ensuring accountability. On one hand, regulatory authorities are expected to serve as facilitators of innovation by creating an enabling environment for investment, technological development, and entrepreneurship, particularly through frameworks that promote research, data sharing, intellectual property protection, and fair competition in the e-commerce sector.

On the other hand, these authorities carry the constitutional and statutory obligation to uphold individual rights, including data privacy, consumer protection, and equitable access, which often come into tension with the profit-driven imperatives of private enterprises. For instance, the challenge of granting AI-generated works intellectual property protection without undermining the human creativity requirement illustrates how regulators must carefully calibrate rights recognition in a manner that does not stifle innovation. Similarly, in the e-commerce domain, regulators must ensure that digital marketplaces do not engage in anti-competitive practices while also avoiding excessive interference that could slow technological adoption. Thus, regulatory intervention must be proportionate, transparent, and guided by principles of constitutional morality, technical adaptability, and global best practices to effectively address the dual imperatives of fostering innovation and protecting rights. In shaping this balance, Indian regulatory authorities stand not only as legal arbiters but also as architects of trust in the digital economy, whose decisions will profoundly influence the future of AI governance, intellectual property regimes, and consumer welfare in e-commerce.

10. COMPARATIVE & INTERNATIONAL PERSPECTIVES

ASPECT	INDIA	UNITED STATES	EUROPEAN UNION (EU)	CHINA
AI Regulation	No dedicated AI law; policy focus through NITI Aayog's "AI for All" strategy; sectoral guidelines emerging.	No comprehensive AI law; sectoral regulations (FTC for consumer protection, AI Bill of Rights framework).	Comprehensive AI Act (2024) regulating high-risk AI, transparency, liability.	Released AI Governance Principles; heavy state control; draft rules on generative AI.
Intellectual Property & AI-generated Works	Copyright law silent on AI authorship; authorship tied to human creators; patent law excludes AI inventors.	Courts reject AI as inventor (Thaler v. USPTO); copyright tied to human creativity.	Similar to US; EUIPO clarifies no IP rights for AI as author/inventor.	Strong emphasis on state IP strategy; AI inventor ship rejected; growing debate on data rights.
E-Commerce Regulation	Governed by Consumer Protection (E-commerce) Rules 2020; draft Digital India Bill in pipeline; focus on consumer rights and data protection.	Section 230 immunity (for platforms), FTC oversight; antitrust scrutiny of big tech (Amazon, Google).	Digital Services Act & Digital Markets Act (2022) impose obligations on platforms; strict consumer and data protection.	E-commerce Law (2019) governs platforms, data, and consumer protection; tighter state oversight.
Data Protection & Privacy	Digital Personal Data Protection Act (2023)	No single federal law; fragmented	GDPR (2018)—gold standard, strong on	Personal Information

	introduces consent-based framework; overlaps with e-commerce/AI issues.	sectoral approach (CCPA in California, HIPAA, etc.).	user rights, extraterritorial reach.	Protection Law (2021)—stringent data localization and cross-border transfer rules.
Consumer Protection in AI-driven E-Commerce	Liability mostly on sellers/platforms under Consumer Protection Act; guidelines for dark patterns and deceptive ads emerging.	FTC enforces against unfair/deceptive AI-driven practices; product liability laws apply.	DSA mandates risk management, algorithmic transparency, consumer redress.	Strict rules on algorithmic recommendations; real-name registration for online sellers.
Judicial/Enforcement Trends	Courts cautious; cases mostly around intermediary liability, privacy, and consumer disputes.	Active litigation on AI bias, antitrust in e-commerce, and IP disputes.	Proactive judicial interpretations aligning with GDPR and AI ethics.	Courts closely aligned with state directives; enforcement strict on platforms.

11. KEY SUGGESTIONS

1. Formulation of a Comprehensive AI-Specific Legal Framework

India requires a dedicated statutory framework that addresses the distinct challenges posed by artificial intelligence, rather than relying solely on fragmented provisions under the Information Technology Act, 2000 and general intellectual property statutes. Such a framework should set out clear definitions, scope, and accountability mechanisms specific to AI-generated outputs and decision-making practices.

2. Recognition of AI-Generated Works under Intellectual Property Regimes

The copyright and patent laws must be revisited to account for the originality and inventor ship issues raised by AI systems. Legislators should clarify whether AI can be recognized as an inventor or author, and in cases where AI cannot hold rights, guidelines must determine rightful ownership, potentially locating it with the developer, user, or corporate entity controlling the system.

3. Development of Guidelines for Data Ownership and Usage in E-Commerce

Since AI in e-commerce heavily depends on consumer data, privacy and data ownership disputes are inevitable. India should mandate transparent consent structures, codify consumer

rights over their data, and introduce regulatory safeguards to prevent exploitation or misuse of personal information, thereby balancing commercial interests with individual protections.

4. Strengthening Liability and Accountability Mechanisms for AI-Driven Actions

Legal ambiguity persists concerning liability when AI-enabled platforms cause harm—whether through algorithmic discrimination, erroneous recommendations, or breach of consumer trust. A statutory framework establishing shared responsibility between developers, deployers, and e-commerce operators could resolve overlapping accountability concerns.

5. Adoption of Ethical and Bias-Monitoring Standards in AI Application

A legally enforceable code of practice is essential to minimize algorithmic bias and promote ethical AI deployment, particularly in e-commerce contexts where consumer decision-making is influenced by automated recommendations. Regulatory authorities should periodically review AI systems to ensure fairness, non-discrimination, and alignment with constitutional values.

6. Harmonization of IP Laws with International Developments in AI

Given the borderless nature of e-commerce and rapid global shifts in AI governance, India's legal framework should align with developments under WIPO treaties, TRIPS, and comparative jurisprudence. This would enable India to remain competitive in the global digital economy while protecting indigenous innovations from external exploitation.

7. Introduction of Specialized Dispute Resolution Mechanisms for Digital Conflicts

The growing complexity of AI and e-commerce disputes necessitates specialized tribunals or fast-track digital courts. Such forums could adopt techno-legal expertise, ensuring faster adjudication of disputes related to AI-driven contracts, algorithmic discrimination, or intellectual property violations in the online marketplace.

8. Strengthening Consumer Protection Laws for AI-Enabled E-Commerce

The Consumer Protection Act, 2019 requires targeted amendments to cover issues arising from AI-mediated decision-making processes. Clearer disclosure obligations, accountability for

deceptive algorithmic practices, and remedies for consumers harmed by automated errors should be expressly codified to enhance consumer trust.

9. Encouragement of Public–Private Collaboration for Regulatory Evolution

Given the dynamic nature of AI and e-commerce, a collaborative regulatory model is preferable. The government, in partnership with industry stakeholders, academia, and civil society, should create a consultative mechanism to continuously refine laws, ensuring they evolve in tandem with technological developments.

10. Capacity-Building and Awareness Initiatives for Judges, Lawyers, and Regulators

Finally, the effective implementation of AI-related legal frameworks requires techno-legal literacy among key stakeholders. Specialized training programs and awareness modules should be introduced to equip legal practitioners, judges, and regulators with the expertise to adjudicate and regulate the complex intersection of AI, intellectual property, and e-commerce.

12. CONCLUSION

In conclusion, the study reveals that while India's existing legal framework provides a foundation for regulating artificial intelligence, intellectual property, and e-commerce, it remains fragmented and inadequate to address the complex challenges posed by AI-generated works, algorithmic decision-making, and cross-border digital trade. The Copyright Act, 1957 and Patents Act, 1970 continue to presume human authorship and inventorship, leaving AI-driven creativity and innovation in a legal vacuum, while issues of liability, data protection, and consumer trust further complicate the e-commerce landscape. Comparative perspectives from jurisdictions such as the EU, U.S., and China highlight the need for India to harmonize its laws with global best practices while also developing context-specific solutions. Therefore, the path forward requires the formulation of a comprehensive AI-specific framework, reform of intellectual property laws to address non-human authorship, robust data protection and consumer safeguards, and capacity-building among regulators and judicial bodies, ensuring that India can balance technological innovation with accountability, fairness, and the protection of rights in its rapidly evolving digital economy.

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