# Product Liability vs. Regulatory Negligence: Which Legal Architecture Suits AI Safety in Indian Markets?

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**Abstract:**

The rapid proliferation of Artificial Intelligence (AI) technologies across diverse sectors in India—ranging from healthcare and finance to transport and governance—has exposed critical gaps in the country's legal preparedness for managing algorithmic harm. This review paper examines the suitability of competing legal architectures—strict product liability, negligence-based accountability, and regulatory enforcement frameworks—for ensuring AI safety in the Indian market. While product liability emphasises manufacturer responsibility for defective systems, negligence models depend on proving a duty of care and breach, both of which remain difficult to establish in autonomous decision-making environments. Regulatory enforcement, on the other hand, demands active state supervision and specialised agencies, which India presently lacks in the AI domain. Through a comparative review of global jurisprudence and domestic statutes, this paper identifies the limitations of India's existing Consumer Protection Act, Information Technology framework, and tort principles in addressing complex AI failures. It argues that a hybrid model combining regulatory oversight with adaptive liability principles is essential to balance innovation with accountability. The study concludes that India's legal ecosystem must evolve toward anticipatory regulation, algorithmic transparency, and sector-specific safety standards to ensure that technological advancement aligns with principles of justice and public welfare.

Keywords: Artificial Intelligence Liability, Product Liability Law, Regulatory Negligence, Algorithmic Accountability, AI Safety Frameworks, Indian Legal System

## Introduction

Advances in artificial intelligence (AI) are rapidly transforming Indian industry and public services, with applications ranging from autonomous vehicles and automated diagnostics to financial-risk modelling and algorithmic decision systems. As these technologies scale, the incidence of AI-related harms—from discriminatory algorithmic bias to unpredicted malfunction—looms increasingly large. Yet, India's current legal architecture remains anchored in traditional

liability frameworks built for physical artifacts and human decision-makers, leaving important gaps when it comes to AI safety. This paper addresses that gap by comparing the suitability of three legal architectures—strict product liability, negligence-based liability, and regulatory enforcement—for AI safety in Indian markets.

Under a strict product liability regime, the manufacturer or developer would be held responsible for defects in an AI system that cause harm irrespective of fault or negligence. This model emphasises consumer protection and shifts the risk cost to the originator of the technology. However, many AI systems are not discrete "products" in the conventional sense—they evolve, self-learn, and are updated over time. In such cases, attributing a static "defect" becomes challenging [1]. On the other hand, a negligence-based approach requires proof of duty, breach, causation, and damage—yet applying this to AI is fraught with difficulties when the "wrongful act" may be embedded in an opaque algorithm, and the "actor" may be a machine or distributed system [2]. Finally, a regulatory enforcement model puts emphasis on supervised oversight, certification, mandatory standards, and sectoral regulation. This architecture prioritises prevention and institutional compliance rather than after-the-fact remedial liability [3].

In the Indian context, none of these models is yet fully adapted for AI. The country lacks AI-specific liability statutes; existing legal instruments such as the Consumer Protection Act, 2019, the Information Technology Act, 2000, and general tort doctrines are being used by analogy to analyse AI harms [4]–[6]. For instance, autopilot failures in autonomous vehicles or misdiagnoses from AI-driven medical systems raise questions of producer accountability, system update liability, and regulatory oversight. Comparative legal research shows that while the European Union and other jurisdictions are moving toward risk-based regulatory liability schemes for AI-driven harms [7], India still relies heavily on conventional fault- and product-based liability models that struggle to suit AI's dynamic nature [8].

The comparative strengths and weaknesses of these architectures become evident in the Indian scenario. Strict product liability offers strong consumer protection by making developers directly responsible for harm but may slow innovation or prove unworkable given software updates and self-learning loops. Negligence paradigms align with Indian legal tradition and can cater to multi-actor ecosystems (developers, deployers, data suppliers), but are burdened by evidentiary challenges and opacity of algorithms [9]. Regulatory enforcement models offer flexibility and proactive oversight but require regulatory capacity, specialised bodies, and institutional readiness—currently nascent in India's AI landscape [10].

Therefore, this paper undertakes a critical comparative review of these three liability models with respect to their viability in Indian markets. It explores questions such as: Which legal architecture best balances consumer safety with innovation? How can law account

for the multi-actor, evolving nature of AI systems in India? What reform strategies can bridge the gap between existing regimes and AI-specific harms? By doing so, it highlights policy imperatives, regulatory design, and statutory reform pathways suited to India's AI ecosystem.

In sum, as India navigates its digital transformation, the legal framework for AI safety must evolve accordingly. AI is not merely another kind of product—it presents distinct features of autonomy, opacity, and evolution that challenge traditional liability paradigms. The review offered in this paper argues that a hybrid model—incorporating elements of strict product liability, negligence standards adapted for algorithmic systems, and robust regulatory oversight—may provide the most effective legal architecture for AI safety in India.

**Literature Survey**

The growing discourse on artificial intelligence (AI) regulation has prompted diverse approaches to liability frameworks worldwide, yet India's context remains comparatively underexplored. A growing body of scholarship underscores that the law's existing fault-based and product-centric mechanisms are inadequate for addressing harms arising from autonomous systems [11]. The traditional principles of tort law—duty, breach, causation, and damage—struggle to accommodate the distributed, evolving, and opaque nature of AI decision-making. Scholars have consequently debated whether strict product liability, negligence, or regulatory models are better suited to the Indian context.

Early studies on AI-related liability frameworks focused primarily on European Union and U.S. jurisdictions, where regulators are experimenting with hybrid models that integrate product liability doctrines with pre-market regulatory oversight [12]. The EU's proposed AI Liability Directive (2022) emphasises a fault-based standard of care for high-risk AI systems while encouraging risk-based compliance schemes. Indian scholars, however, caution that direct transplantation of such frameworks into India's legal environment may be problematic, given its underdeveloped institutional infrastructure and absence of sectoral regulators for AI [13].

A central challenge highlighted across the literature is attribution of liability in autonomous decision-making. Since AI systems can act independently of human intent, traditional liability doctrines struggle to identify a responsible party. Bhattacharya (2024) argues that strict product liability—though protective for consumers—risks overburdening developers and deterring innovation, particularly when algorithms evolve dynamically after deployment [14]. Conversely, negligence-based frameworks, as explored by Pathak (2024), permit a more context-sensitive analysis but are hindered by evidentiary limitations and the "black box" problem, where causation between algorithmic

processes and outcomes is nearly impossible to prove [15].

A complementary stream of research addresses regulatory enforcement as a preventive model. Scholars such as Krishnan and Menon (2023) propose a regulatory liability framework that mandates algorithmic auditing, certification, and real-time supervision of high-risk systems [16]. This model aligns with India's broader movement toward "responsible AI" under NITI Aayog's National Strategy for Artificial Intelligence, which advocates risk-tiered regulation and accountability. However, critics argue that India's regulatory ecosystem lacks the technical and institutional capacity to oversee AI effectively, making purely regulatory approaches premature [17].

From a comparative perspective, hybrid frameworks have gained prominence in recent academic debates. These models combine elements of product liability with mandatory regulatory oversight to ensure that safety standards evolve with the technology itself [18]. For instance, the U.K.'s Centre for Data Ethics and Innovation (CDEI) advocates such hybrid architectures, balancing innovation incentives with public accountability. Applying this model to India, several scholars propose that statutory reforms—possibly an "AI Safety Code"—could integrate liability rules within the Consumer Protection Act, 2019, and Information Technology Act, 2000, while introducing adaptive oversight mechanisms for AI developers and service providers.

Finally, a small but growing literature interrogates the ethical dimension of liability, arguing that beyond consumer protection, the law must also address distributive justice and algorithmic fairness. AI harms often manifest as structural biases rather than discrete physical injuries. Therefore, the liability framework must evolve from product-centric fault analysis to systemic accountability, embedding fairness, transparency, and explainability into the legal definition of negligence itself [19].

In synthesis, the reviewed scholarship reveals that while Indian legal research recognises the inadequacy of current tort and product liability frameworks, consensus remains elusive on a unified solution. The literature converges on the view that a hybrid model, blending aspects of product liability, negligence standards adapted to algorithmic contexts, and proactive regulatory enforcement, may be most viable for India. However, it also identifies urgent needs: capacity building among regulators, statutory definitions of "AI harm," and procedural innovation for proving causation in algorithmic contexts.

**Legal Framework:**

The legal regulation of artificial intelligence (AI) in India currently operates through a patchwork of existing statutes rather than a dedicated AI liability law. The Consumer Protection Act, 2019, the Information Technology Act, 2000, and traditional tort principles together provide the primary foundations for redress in cases of AI-related harm [20]. However, these frameworks were

conceived for human actors and tangible products, rendering them insufficient to address issues of autonomy, opacity, and self-learning inherent in AI systems.

Under the Consumer Protection Act, defective AI products may attract liability if harm results from manufacturing or design defects. Yet, since AI systems evolve post-sale through machine learning, determining whether the "defect" existed at the point of supply is complex [21]. Similarly, while the Information Technology Act, 2000 governs cyber incidents and intermediary liability, it does not explicitly address autonomous algorithmic actions or evolving data-driven harms. The IT (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021 provide limited compliance obligations but lack mechanisms for algorithmic accountability.

Indian courts have yet to pronounce definitive rulings on AI liability. However, judicial reasoning in data protection and negligence cases demonstrates a gradual openness to applying traditional doctrines to digital harms. For example, principles under Donoghue v. Stevenson have been invoked in data breach contexts to expand the duty of care [22]. The extension of such reasoning to AI would require reconceptualising the "manufacturer" and "reasonable foreseeability" to include developers, data trainers, and deployers.

At the international level, comparative models influence India's policy discourse. The European Union's AI Act (2024) and Proposed AI Liability Directive (2022) introduce a risk-tiered framework that mandates pre-market conformity assessments and post-market monitoring [23]. These models blend regulatory supervision with fault-based liability, offering a blueprint for India's legislative reform. In contrast, the United States relies on sectoral regulation and litigation-driven precedent under tort law, underscoring a decentralized yet innovation-friendly approach [24].

Indian policy think tanks, such as NITI Aayog and the Nasscom Data Security Council of India, advocate a hybrid regime integrating regulatory oversight, strict liability for high-risk AI, and adaptive compliance for low-risk systems [25]. This evolving discourse suggests that India's future AI liability framework must balance innovation incentives with public accountability, institutional readiness, and fundamental rights under the Constitution.

**Analysis and Discussion:**

The comparative assessment of liability models—strict product liability, negligence-based liability, and regulatory enforcement—reveals complex challenges in applying traditional doctrines to AI-generated harms. The Indian legal framework, while comprehensive in addressing human negligence and defective goods, remains ill-equipped to govern autonomous, self-learning technologies whose decision-making processes are opaque and dynamic [26].

A strict product liability model, although beneficial for consumer protection, may be too rigid in the Indian context. As Bal and Nappinai (2024) argue, such a regime would impose

disproportionate burdens on developers and small-scale AI innovators who may have limited control over post-deployment learning behaviours [27]. Additionally, the requirement of a "defect" under the Consumer Protection Act, 2019 assumes static products, not evolving algorithms. Thus, product liability may be effective only for pre-programmed or hardware-driven AI but fails for adaptive systems.

In contrast, negligence-based liability accommodates a more flexible standard, focusing on whether the developer or deployer exercised due care in training, testing, and updating the AI system. However, as Pathak (2024) observes, proving causation in algorithmic harms is often infeasible because the chain of reasoning within AI systems lacks transparency [28]. The "black-box problem" impedes courts from establishing foreseeability or breach—cornerstones of negligence law.

A regulatory enforcement model, inspired by the EU's AI Act and similar initiatives, may offer India the most viable architecture for AI safety. It prioritises ex-ante compliance, risk classification, and third-party auditing over post-harm compensation [29]. Yet, such a framework requires institutional expertise and coordination across regulators—an area where India's governance capacity remains nascent [30].

A growing consensus among scholars supports a hybrid legal model for India, integrating elements of all three frameworks. This approach would entail (i) strict liability for high-risk AI systems (e.g., autonomous vehicles, medical diagnostics), (ii) negligence principles for low-risk, human-supervised systems, and (iii) regulatory oversight through certification and monitoring [31]. Such a layered architecture ensures accountability without stifling innovation—reflecting the balance India must strike between fostering technological advancement and safeguarding fundamental rights.

**Findings and Suggestions:**

The comparative analysis of liability models in the Indian AI ecosystem reveals that none of the traditional frameworks—strict product liability, negligence, or regulatory enforcement—adequately address the evolving nature of artificial intelligence. AI's autonomous, adaptive, and opaque functioning challenges foundational principles of fault, causation, and control that underpin conventional legal doctrines [32].

**Findings:**

First, India's current statutes such as the Consumer Protection Act, 2019, the Information Technology Act, 2000, and general tort law remain reactive rather than preventive, responding only after harm occurs [33]. This creates delays and uncertainty in accountability, particularly when AI harms arise from autonomous decision-making. Second, product liability frameworks cannot be uniformly applied because AI systems continuously learn and modify outputs beyond the manufacturer's foresight. Third, negligence doctrines struggle with evidentiary burdens—identifying the

"actor" and establishing breach of duty is complex in multi-actor AI ecosystems [34]. Finally, regulatory institutions in India lack the technical expertise and enforcement capacity to monitor AI risks effectively [35].

**Suggestions:**

To bridge these gaps, India should pursue a hybrid liability framework that integrates elements of all three models. First, introduce AI-specific liability legislation, clearly defining "high-risk AI systems" and assigning corresponding accountability tiers to developers, deployers, and regulators [36]. Second, adopt mandatory transparency and audit requirements, ensuring traceability of AI decisions to aid courts in assessing fault and causation. Third, establish a dedicated AI Safety Authority, modelled after the EU's risk-based approach, to certify algorithms, enforce safety standards, and coordinate with existing regulatory bodies. Fourth, incorporate sandbox regulatory environments, allowing innovation while maintaining oversight. Finally, India's judiciary should adopt dynamic interpretative approaches, using principles of constitutional proportionality and human dignity to adapt traditional liability doctrines to AI's unique risks [37].

Such a balanced, multi-tiered approach will ensure that AI innovation in India remains ethically grounded, consumer-oriented, and legally accountable—building public trust while advancing responsible technological progress.

**Conclusion**

In conclusion, the rapid integration of artificial intelligence into India's socio-economic landscape demands a re-evaluation of existing liability frameworks. The current reliance on traditional models such as product liability and negligence fails to adequately address the unique characteristics of AI, including autonomy, opacity, and continuous learning. Without legal clarity, accountability gaps will persist, potentially undermining public trust and innovation.

A forward-looking legal architecture for AI in India must therefore blend elements of strict liability, adaptive negligence principles, and robust regulatory mechanisms. This balanced approach will ensure both technological progress and the protection of consumer interests. By fostering collaboration between lawmakers, technologists, and regulators, India can establish a resilient framework capable of addressing future AI challenges. Such proactive reform is essential to align India's legal system with the ethical and safety imperatives of an increasingly AI-driven world.

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