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Deceptive by Design: Regulating Algorithmic Monetization and Dark Patterns in Free-To-Play Gaming under Indian Consumer Law

ABSTRACT

*The rapid digital expansion of the Indian interactive entertainment industry has driven a structural transition from traditional upfront software purchases to continuous, post-installation micro-transactions within Free-to-Play (F2P) mobile video games. Central to this monetization model are algorithmic "loot boxes" – virtual containers yielding randomized digital rewards – and variable-ratio reinforcement schedules that exploit cognitive vulnerabilities. While the Central Consumer Protection Authority (CCPA) introduced the Guidelines for Prevention and Regulation of Dark Patterns in 2023, the regulatory framework remains anchored to static e-commerce transactions, leaving real-time, software-driven behavioral manipulation unaddressed. Simultaneously, the Ministry of Electronics and Information Technology's (MeitY) Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Amendment Rules, 2023 govern "online real money games," creating a jurisdictional vacuum for F2P platforms where digital items are non-cashable yet financially extractionary. This research evaluates whether embedded loot box mechanics constitute an "unfair trade practice" under Section 2(47) of the Consumer Protection Act, 2019. Utilizing a doctrinal and comparative methodology, this paper critically examines the applicability of the Indian Supreme Court's "skill versus chance" jurisprudence – established in *State of Bombay v. R.M.D. Chamarbaugwala* and *Dr. K.R. Lakshmanan v. State of Tamil Nadu* – to dual-layered digital environments where a skill-predominant video game hosts a chance-dominated micro-transaction loop. Comparative analysis reveals contrasting regulatory approaches: Belgium's statutory gambling prohibition, the Dutch judiciary's holistic game-assessment approach in the Electronic Arts FIFA litigation, and the United Kingdom's co-regulatory framework. This paper finds that treating loot boxes purely under anti-gambling statutes fails constitutional proportionality under Article 19(1)(g). Instead, it recommends statutory amendments to the CCPA Guidelines to define "dynamic algorithmic manipulation," mandate real-time drop-rate probability disclosures, enforce default zero-spending caps for minors, and establish independent algorithmic auditing protocols under a co-regulatory framework.*

KEYWORDS

Algorithmic Monetization, Consumer Protection, Dark Patterns, Free-to-Play Gaming, Loot Boxes.

I. INTRODUCTION

The monetization model of the global and Indian interactive software industries has undergone a structural shift over the past decade. Historically, video games operated as discrete consumer products sold through upfront retail purchases. However, the rise of mobile connectivity and digital app ecosystems has established the dominance of the Free-to-Play (F2P) framework. Under F2P, software is distributed at zero initial cost, with revenue generation deferred to post-installation micro-transactions.¹ While micro-transactions initially offered cosmetic items or expansion content, contemporary monetization architectures rely heavily on "loot boxes" – virtual containers containing randomized digital items ranging from aesthetic alterations to gameplay-enhancing mechanisms.²

Loot box mechanics operate on variable-ratio reinforcement schedules – a psychological mechanism identical to traditional slot machines, where rewards are distributed after an unpredictable number of interactions.³ To optimize revenue, developers integrate these probability loops with digital dark patterns, including hidden pricing currencies, artificial scarcity, and dynamic algorithmic adjustments tailored to user telemetry.⁴ In India, where mobile gaming downloads and digital wallet adoption have expanded rapidly, millions of consumers – particularly minors and young adults – are routinely exposed to these monetization systems.⁵

Despite the scale of this economic activity, Indian legal scholarship remains focused on traditional e-commerce deceptive practices or real-money gaming platforms. Current consumer protection rules address static user interfaces (UI) such as auto-renewing subscriptions or hidden add-on fees,⁶ but fail to capture dynamic, algorithmically personalized

¹ Mark D. Griffiths, "Is the Buying of Loot Boxes in Video Games a Form of Gambling or Gaming?" 22(1) Gaming Law Review: Regulation, Compliance, and Policy 52, 54 (2018).

² Ibid.

³ B.F. Skinner, *Science and Human Behavior* 67 (Macmillan, New York, 1953).

⁴ Daniel L. King and Paul H. Delfabbro, "Predatory Monetization Schemes in Video Games (e.g. 'Loot Boxes') and Internet Gaming Disorder," *Addiction* (2018).

⁵ FICCI and EY, #Reinvent: India's Media & Entertainment Sector is Innovating for the Future (March 2024).

⁶ Central Consumer Protection Authority, Guidelines for Prevention and Regulation of Dark Patterns, 2023, Notification No. CCPA-1-1/2023 (Nov. 30, 2023).

software loops. This regulatory disconnect raises fundamental questions regarding consumer sovereignty, contractual capacity, and unfair trade practices under the Consumer Protection Act, 2019 (CPA 2019).⁷ This paper examines the legal challenges posed by algorithmic loot boxes, evaluates the suitability of traditional gambling jurisprudence, compares global regulatory models, and proposes statutory reforms suited to the Indian legal landscape.

II. LITERATURE REVIEW

Existing legal and behavioral scholarship on interactive digital software falls into three major categories, each leaving notable gaps regarding India's consumer law framework:

1. Psychological & Behavioral Mechanisms: Behavioral psychologists have established that loot boxes function as digital adaptations of variable-ratio reinforcement schedules.⁸ Studies demonstrate that the unpredictability of randomized virtual rewards triggers dopamine responses similar to traditional gambling devices, leading to compulsive engagement and excessive spending.⁹ However, these psychological findings are rarely translated into operational standards for Indian consumer protection law.

2. Traditional Gambling Jurisprudence: Indian legal commentary on digital gaming heavily emphasizes the historic "skill versus chance" distinction articulated in *State of Bombay v. R.M.D. Chamarbaugwala*¹⁰ and *Dr. K.R. Lakshmanan v. State of Tamil Nadu*.¹¹ Recent legal analyses focus primarily on real-money fantasy sports and online rummy, debating state-level prohibitions under List II, Entry 34 of the Seventh Schedule.¹² Consequently, scholarship overlooks dual-layered F2P games where a skill-predominant video game contains an isolated, chance-dominated micro-transaction mechanism.

3. Digital UI & Dark Patterns: Recent Indian academic literature examines dark patterns following the issuance of the Central Consumer Protection Authority's (CCPA) 2023 Guidelines.¹³ However, this literature primarily focuses on static web design elements in

⁷ Consumer Protection Act, 2019 (Act 35 of 2019), s. 2(47).

⁸ Aaron Drummond and James D. Sauer, "Video Game Loot Boxes Are Psychologically Akin to Gambling" 2 *Nature Human Behaviour* 530, 531 (2018).

⁹ *Ibid.*

¹⁰ *State of Bombay v. R.M.D. Chamarbaugwala*, AIR 1957 SC 699.

¹¹ *Dr. K.R. Lakshmanan v. State of Tamil Nadu*, (1996) 2 SCC 226.

¹² Constitution of India, sch. VII, list II, entry 34.

¹³ Central Consumer Protection Authority, *supra* note 6.

conventional e-commerce – such as "basket sneaking" or "drip pricing" on ticketing platforms.¹⁴ There is a complete absence of legal analysis addressing dynamic, algorithmically personalized dark patterns embedded directly into game loops.

This research bridges these distinct domains by evaluating how dynamic algorithmic monetization functions under Indian consumer protection statutes and contract law.

III. RESEARCH METHODOLOGY

This study employs a doctrinal and comparative legal research design to evaluate the regulatory gaps surrounding algorithmic loot boxes in India:

- **Primary Legal Authorities:** Analyzes the Consumer Protection Act, 2019; CCPA Guidelines for Prevention and Regulation of Dark Patterns, 2023; Information Technology Intermediary Guidelines and Digital Media Ethics Code Amendment Rules, 2023; and the Indian Contract Act, 1872.
- **Judicial Precedents:** Evaluates landmark decisions of the Supreme Court of India and High Courts concerning the "skill versus chance" doctrine and constitutional protections under Article 19(1)(g).
- **Comparative Frameworks:** Compares enforcement mechanisms across foreign jurisdictions, specifically Belgium (statutory gambling classification), the Netherlands (judicial interpretation of integrated software), and the United Kingdom (co-regulatory transparency standards).
- **Regulatory & Data Sources:** Incorporates empirical market data and regulatory reports from the Ministry of Electronics and Information Technology (MeitY), the Central Consumer Protection Authority (CCPA), NITI Aayog, and industry analytics from FICCI-EY and Sensor Tower.
- **Scope & Limitations:** The analysis is restricted to Free-to-Play (F2P) video games where randomized micro-transactions yield non-cashable digital items within closed ecosystems. It does not cover online real-money games involving direct cash withdrawals.

¹⁴ Ibid.

IV. DISCUSSION & ANALYSIS

1. Anatomy of Algorithmic Loot Boxes and Deceptive Monetization

Free-to-Play (F2P) video games have shifted industry revenue models from upfront software purchases to continuous, post-installation micro-transactions. At the core of this financial architecture is the "loot box" – a virtual container yielding randomized digital items ranging from cosmetic character alterations to gameplay-enhancing advantages. The player pays real-world currency (or in-game currency bought with fiat money) to unlock the container, without knowing the specific contents until the opening animation completes.

From a structural standpoint, loot boxes rely on a Variable Ratio Reinforcement Schedule (VRRS)—a psychological condition where rewards are distributed after an unpredictable number of responses.¹⁵ This behavioral mechanism triggers dopamine release identical to traditional slot machines. To maximize engagement, developers combine VRRS with digital dark patterns:

- **Variable Value Rewards:** Algorithms use pseudo-random distribution rates where ultra-rare items have acquisition odds as low as 0.01%, forcing repeated purchases.
- **Obfuscated Pricing Currencies:** Transactions convert real-world money into intermediate virtual currencies (e.g., "Gems" or "Coins"), severing the player's cognitive connection to actual expenditures.¹⁶
- **Drip Pricing & Loss Aversion:** Time-limited event banners create artificial scarcity, exploiting "fear of missing out" (FOMO) to drive impulsive spending before the offer expires.

Unlike static dark patterns on e-commerce platforms—such as pre-checked add-on boxes—loot box monetization is dynamic and personalized. Algorithms adapt drop rates or present customized store bundles based on player spending telemetry. This creates an asymmetric relationship where the game engine exploits individual psychological vulnerabilities, transforming interactive entertainment into financial extraction loops aimed particularly at young adults and minors.

2. Critical Assessment of the Indian Legal and Regulatory Framework

The current Indian statutory regime struggles to address algorithmic micro-transactions due to jurisdictional fragmentation between

¹⁵ Skinner, *supra* note 3.

¹⁶ King and Delfabbro, *supra* note 4.

consumer protection, digital media regulation, and contract law:

1. **Consumer Protection Act, 2019 & CCPA Dark Pattern Guidelines, 2023:** Section 2(47) of the CPA 2019 prohibits "unfair trade practices."¹⁷ On November 30, 2023, the Central Consumer Protection Authority (CCPA) issued Guidelines for Prevention and Regulation of Dark Patterns.¹⁸ While these guidelines regulate deceptive user interfaces like Basket Sneaking, Bait and Switch, and Drip Pricing, their Annexure 1 focuses on traditional e-commerce web layouts. They contain no explicit provisions governing dynamic, algorithmically generated loot box mechanics or probability obfuscation within interactive game environments.
2. **MeitY IT Intermediary Guidelines Amendment Rules, 2023:** The Ministry of Electronics and Information Technology (MeitY) introduced a regulatory structure for "online gaming."¹⁹ However, these rules specifically target "online real money games" – defined as games where a user deposits cash or kind with the expectation of earning winnings in cash or kind.²⁰ F2P loot box games routinely evade this definition because virtual items (skins, cards) are retained within the closed game ecosystem and cannot be directly cashed out through the developer, leaving them outside MeitY's oversight.
3. **Indian Contract Act, 1872 (Minor Capacity):** Under Section 11 of the Contract Act, 1872, agreements entered into by minors are void ab initio (*Mohori Bibee v. Dharmodas Ghose*).²¹ Yet, mobile platforms bypass this statutory shield by framing in-app purchases under broad, click-wrap Terms of Service accepted by default or funded via linked parental payment methods, leaving minors exposed to unregulated micro-transactions.

3. Analogous Judicial Analysis: Bridging the Skill vs. Chance Doctrine

Because Indian courts have not yet directly adjudicated a loot box dispute, any legal challenge must rely on the Supreme Court's long-standing jurisprudence under Entry 34, List II of the Seventh Schedule

¹⁷ Consumer Protection Act, 2019, s. 2(47).

¹⁸ Central Consumer Protection Authority, *supra* note 6.

¹⁹ Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Amendment Rules, 2023, Ministry of Electronics and Information Technology (Notified Apr. 6, 2023).

²⁰ *Ibid.*, r. 2(1)(qa).

²¹ *Mohori Bibee v. Dharmodas Ghose*, (1903) 30 IA 114 (PC); Indian Contract Act, 1872 (Act 9 of 1872), s. 11.

(Betting and Gambling):

- **The Predominance Test:** In *State of Bombay v. R.M.D. Chamarbaugwala*,²² a Constitution Bench established that competitions where success depends to a substantial degree upon skill are legitimate businesses, whereas chance-dominated activities constitute gambling (*extra-commercium*). This was affirmed in *Dr. K.R. Lakshmanan v. State of Tamil Nadu*,²³ which held that a game is legal if skill is the predominant factor.
- **The Dual-Layer Gaming Dilemma:** Applying *Lakshmanan* to modern F2P gaming exposes an analytical conflict. A mobile video game (e.g., a tactical shooter or sports game) is predominantly a game of skill. However, the embedded loot box mechanism within that game operates on a pure pseudo-random number generator (PRNG) – the player exercises no skill in opening a box.
- **Legal Qualification:** In *Junglee Games India Pvt. Ltd. v. State of Tamil Nadu*,²⁴ the Madras High Court struck down a complete ban on online games played for stakes, confirming that skill-based platforms enjoy constitutional protection under Article 19(1)(g). Therefore, attempting to ban F2P video games under state gambling laws would fail the test of constitutional proportionality. The legal issue is not whether the game itself is gambling, but whether the isolated micro-transaction mechanism constitutes an "Unfair Trade Practice" under Section 2(47) of the CPA, 2019 due to deceptive algorithmic design and age-inappropriate exploitation.

4. Comparative Legal Frameworks: Enforcement and Regulatory Alternatives

Global responses to loot box regulation highlight distinct approaches to consumer protection:

- **Belgium (Statutory Prohibition Framework):** In 2018, the Belgian Gaming Commission determined that paid loot boxes meet all statutory elements of a "game of chance".²⁵ In *LS v. Apple Distribution International Ltd.*, the Enterprise Court Antwerp found that loot boxes in the game constituted a game of chance under Belgian law, but stayed the question of app-store operator

²² *Chamarbaugwala*, AIR 1957 SC 699.

²³ *Lakshmanan*, (1996) 2 SCC 226.

²⁴ *Junglee Games India Pvt. Ltd. v. State of Tamil Nadu*, 2021 SCC OnLine Mad 2762.

²⁵ Belgian Gaming Commission, Report on Loot Boxes (April 2018).

liability, referring it to the Court of Justice of the European Union (Case C-47/25) – a ruling on Apple's liability is still pending.²⁶

- **Netherlands (The Holistic Reversal):** Initially, the Dutch Gaming Authority fined developers under gambling laws. However, on March 9, 2022, the Administrative Jurisdiction Division of the Council of State overturned the penalty against Electronic Arts.²⁷ The Court held that loot boxes must be evaluated as part of the overarching video game. Because FIFA as a whole is a skill-based game, the embedded loot box did not make the game a standalone illegal "game of chance".²⁸
- **United Kingdom (Co-Regulation Approach):** Following its 2022 review, the UK DCMS chose not to amend the Gambling Act 2005.²⁹ Instead, in July 2023, the DCMS Technical Working Group published 11 Principles requiring developers to implement default £0 spending limits for under-18s, probability disclosures, and parental consent controls.³⁰

Comparative Overview: Global Regulatory Models

Jurisdiction	Primary Legal Basis	Regulatory Classification	Platform Liability Status
Belgium	Gambling Act 1999	Prohibited (loot boxes classified as gambling); app-store platform liability question pending before CJEU (Case C-47/25)	Under Judicial Review
Netherlands	Betting and Gaming Act	Permissible (if integrated into skill-based title; EA FIFA precedent)	Exempt
United Kingdom	Consumer Protection / DCMS Principles	Regulated (Co-regulatory framework; self-regulation with £0 default caps for minors)	Industry Enforced

²⁶ LS v. Apple Distribution International Ltd., Request for a preliminary ruling from the Ondernemingsrechtbank Antwerpen, afdeling Gent (Belgium), Case C-47/25, OJ C/2025/1842 (lodged 24 Jan. 2025).

²⁷ Electronic Arts Swiss Sarl v. Kansspelautoriteit, Afdeling bestuursrechtspraak van de Raad van State (Netherlands), ECLI:NL:RVS:2022:690 (9 March 2022).

²⁸ Ibid.

²⁹ LS v. Apple Distribution International Ltd., supra note 26.

³⁰ UK Department for Culture, Media and Sport (DCMS), Government Response to the Call for Evidence on Loot Boxes in Video Games (July 2022); UK DCMS Technical Working Group, Implementation of Industry-Led Guidance on Loot Boxes in Video Games (July 2023).

India (Proposed)	Consumer Protection Act, 2019 (S. 2(47))	Regulated Unfair Trade Practice (Dynamic dark patterns, mandatory drop-rate disclosure)	Joint Platform & Developer Oversight
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Strategic Application for India: Banning video games under gambling law (the Belgian model) faces constitutional barriers under Article 19(1)(g) and the Jungle Games precedent. Instead, India should adapt the UK's targeted transparency model combined with enforceable consumer protection mandates under the CPA, 2019.

V. FINDINGS

- **Regulatory Vacuum in F2P Monetization:** Current Indian regulations create an operational gap. MeitY's 2023 IT Rules focus exclusively on "online real money games" involving cash rewards, while the CCPA's 2023 Dark Pattern Guidelines target static e-commerce interfaces. Algorithmic, in-game monetization loops fall between these statutory definitions.
- **Failure of Contractual Age Shields:** The protections for minors under Section 11 of the Indian Contract Act, 1872 are effectively bypassed in digital software environments. Click-wrap agreements and linked digital wallets transfer financial liability to parents while exposing minors to variable-ratio spending mechanics.
- **Inapplicability of Blanket Gambling Bans:** Attempting to regulate F2P loot boxes under traditional state gambling legislation violates constitutional proportionality under Article 19(1)(g). As demonstrated in Jungle Games and the Dutch EA FIFA FIFA decision, video games are predominantly skill-based platforms, making outright bans legally fragile.
- **Sufficiency of Unfair Trade Practice Framework:** Section 2(47) of the Consumer Protection Act, 2019 provides an adequate statutory foundation to address algorithmic manipulation, provided specific guidelines are enacted to regulate software architecture and probability transparency.

VI. RECOMMENDATIONS

- **Amend CCPA Dark Pattern Guidelines (2023):** The Central Consumer Protection Authority should issue a targeted addendum to Annexure 1, explicitly defining "Dynamic Algorithmic Dark Patterns" within interactive software. This must prohibit algorithmic probability manipulation tailored to

individual user telemetry and ban obfuscated dual-currency pricing loops.

- **Mandatory Probability Disclosures:** Regulations should require developers to display the exact probability drop rates for all loot box rewards in clear, percentage-based terms at the point of purchase, moving away from vague rarity labels (e.g., "Epic" or "Rare").
- **In-Game Currency Transparency:** Platforms operating in India should be mandated to display the equivalent real-world fiat currency value (INR) alongside any virtual currency cost, ensuring consumers maintain clear visibility over their financial expenditures.
- **Mandatory Minor Protection & Default Spending Caps:** Adapting the UK DCMS framework, app stores and developers operating in India must enforce a default zero-spending limit on accounts belonging to individuals under 18 years of age. Any adjustment to this cap should require explicit, verified parental consent through secure authentication mechanisms.
- **Co-Regulatory Oversight Body:** MeitY and the CCPA should authorize a Self-Regulatory Organization (SRO) for interactive software to conduct periodic technical audits of pseudo-random number generator (PRNG) code, verifying that published drop rates match actual software performance.

VII. CONCLUSION

The evolution of Free-to-Play mobile gaming has introduced complex forms of algorithmic monetization that challenge traditional consumer protection frameworks in India. By deploying variable-ratio reinforcement schedules and digital dark patterns within interactive software environments, developers extract financial value while operating in a statutory gray zone between gambling legislation and static e-commerce regulations.

Addressing this issue does not require prohibiting video games or misapplying century-old gambling statutes to modern interactive software. Blanket bans conflict with established constitutional protections under Article 19(1)(g) and fail to acknowledge the skill-predominant nature of video games. Instead, the solution lies in modernization of consumer protection law. By expanding the CCPA's Dark Pattern Guidelines, enforcing algorithmic transparency, mandating clear pricing disclosures, and establishing default financial shields for minors, India can establish a balanced regulatory framework that protects consumer sovereignty while encouraging digital innovation.