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# ALGORITHMIC COLLUSION IN DIGITAL AD MARKETS UNDER THE INDIAN COMPETITION ACT

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## ABSTRACT

India's \$5 billion digital advertising market increasingly relies on AI-driven real-time bidding (RTB) auctions dominated by Google (45%) and Meta (25%). These algorithms enable algorithmic collusion tacit coordination sustaining supra-competitive CPMs without explicit human agreements challenging the Competition Act, 2002's Section 3 framework designed for traditional cartels. Ezrachi-Stucke's typology (messenger, hub-spoke, predictable agent, self-learning) reveals escalating evidentiary gaps: black-box opacity eliminates communication trails, RTB transparency facilitates perfect monitoring, and Cement Manufacturers' plus-factors test fails against autonomous machine learning.

Doctrinal analysis synthesizes CCI jurisprudence (*Samir Agrawal*, *Google Ad Tech*) demonstrating enforcement collapse against RTB velocity. EU TFEU Article 101 "concerted practices" and DMA ex-ante audits offer superior models versus US Sherman Act's explicit agreement barrier. India's Draft Digital Competition Bill lags implementation.

Research interrogates: Section 3 adequacy, evidentiary burdens, global benchmarks, reform pathways. Hypothesis: Ex-post framework obsolete; ex-ante algorithmic audits essential. Recommendations: Section 3(3)(e) "algorithmic coordination" per se violation, reversed proof burdens, CCI AI Forensic Unit. Absent reforms, unchecked collusion risks SME exclusion and consumer welfare losses, entrenching digital gatekeepers' dominance.

**Keywords:** Algorithmic collusion, Real-time bidding (RTB), Competition Act, 2002 Section 3, Digital advertising market, Ex-ante algorithmic audits.

## **Introduction**

India's digital advertising market, valued at over \$5 billion in 2025 and projected to grow 20% annually, is dominated by global platforms like Google and Meta that control 70% of ad inventory through real-time bidding (RTB) auctions powered by sophisticated AI algorithms. These systems analyse vast datasets—user behaviour, competitor bids, and market signals—in milliseconds to optimize placements, promising efficiency and precision. However, they enable algorithmic collusion, where independent algorithms tacitly coordinate to sustain supra-competitive bid prices without explicit human agreements, communication trails, or provable intent, fundamentally challenging traditional antitrust paradigms.

Under the Competition Act, 2002, Section 3 prohibits agreements causing appreciable adverse effect on competition (AAEC), including cartels and "action in concert." Yet the Act's ex-post enforcement model, reliant on CCI investigations proving "meeting of minds" via plus factors, falters against opaque "black box" AI exhibiting four collusion types per Ezrachi-Stucke typology: messenger, hub-and-spoke, predictable agent, and self-learning scenarios. Ongoing CCI probes into Google's Ad Tech underscore detection hurdles in concentrated markets lacking transparency, where parallel pricing inflicts harms—inflated ad costs, SME exclusion, reduced contestability, and consumer welfare losses through higher product prices.

Scholarship reveals doctrinal gaps: evidentiary burdens from Cement Manufacturers precedents inadequately capture digital coordination, while global benchmarks (EU TFEU Article 101 "concerted practices") suggest reforms. The Draft Digital Competition Bill, 2024 proposes ex-ante obligations like algorithmic audits and interoperability, yet implementation lags. This study analyses statutory adequacy, evidentiary challenges, and reform pathways, contributing doctrinal insights for India's digital antitrust evolution amid rising AI-driven market power.

## **Objectives**

To examine whether Section 3 of the Competition Act can address algorithmic collusion without explicit human agreement.

To analyse CCI's evidentiary standards and detection challenges in AI-driven ad markets.

To compare India's framework with EU and US approaches.

To suggest legal reforms, including ex-ante regulation under the Digital Competition Bill.

## **Research Questions**

Does Section 3 adequately regulate tacit algorithmic collusion in digital ad auctions?

What evidentiary challenges hinder CCI detection of AI-driven coordination?

How can Digital Competition Bill reforms strengthen ad market enforcement?

## **Conceptual Framework**

### **Algorithmic Collusion Typology**

#### **Ezrachi-Stucke Framework Overview**

The Ezrachi–Stucke framework identifies four types of algorithmic collusion, from clear human-led cartels to fully autonomous AI coordination. As algorithms become more independent, proving an “agreement” under Section 3 of the Competition Act becomes harder. This is particularly important in digital ad markets, where real-time bidding enables rapid price signaling and coordination<sup>1</sup>.

#### **Messenger Scenario**

In the “messenger scenario,” AI only acts as a tool to carry out a cartel already formed by humans. Company executives secretly agree to fix prices and then use algorithms to monitor compliance, detect undercutting, and automatically punish deviations. In digital advertising, agencies may collude on minimum CPM rates and program their DSPs to reject bids below the agreed price and report rivals who break the agreement. Here, the AI simply executes and stabilizes the cartel<sup>2</sup>. Legally, this clearly falls under Section 3(3) of the Competition Act, as there is a clear human agreement supported by evidence like emails or internal communications, similar to the Cement Manufacturers case before the CCI.

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<sup>1</sup> Ezrachi, A. & Stucke, M.E., *Artificial Intelligence & Collusion: When Computers Inhibit Competition* (2017) 5(2) Illinois Law Review 1778.

<sup>2</sup> *Builders Association of India v Cement Manufacturers' Association*, CCI Case No 29/2010 (2012).

**Hub-and-Spoke Scenario:**

In the hub-and-spoke scenario, a dominant platform (hub) connects competing advertisers or publishers (spokes) and uses a shared algorithm to influence pricing, even without a direct agreement between them. In digital ads, a major platform may indirectly impose bid floors, leading different DSPs to charge similar high CPMs. Although courts have required proof of a horizontal agreement, scholars argue that strong platform control may amount to “action in concert.” If the hub’s intent is proven, Section 3(3) cartel presumption may apply.

**Predictable Agent Scenario:**

In the predictable agent scenario, firms independently design similar profit-maximizing algorithms, which leads to parallel pricing without any direct agreement. In digital ads, DSPs using similar AI models trained on the same data may naturally converge on higher bids<sup>3</sup>. Under Section 3, this is difficult to prove because conscious parallelism alone is not enough; authorities must show additional “plus factors” and that firms knowingly designed the algorithms to produce collusive outcomes.

**Self-Learning Scenario:**

In the self-learning scenario, AI systems are given a general goal like “maximize revenue” and independently learn to coordinate prices through trial and error, without any human agreement. In digital ads, such AI may settle on high, stable bids or turn-taking strategies. This creates a legal challenge because Section 3 requires human agreement, making autonomous collusion hard to prove. Scholars suggest holding firms liable for deploying high-risk AI and introducing ex-ante regulation under the Digital Competition Bill<sup>4</sup>.

**Digital Ad Auction Mechanics****Real-Time Bidding (RTB) Architecture Overview**

**Real-Time Bidding (RTB)** is the core system of programmatic advertising. It allows advertisers to bid for a single ad impression in milliseconds (usually 100–200 ms) before a webpage loads.

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<sup>3</sup> Ray, A., "Digital Profiteering: Price Manipulation and Algorithmic Collusion" (2025) IJLLR

<sup>4</sup> Draft Digital Competition Bill, 2024, cl 6(2)(g).

### **How it works (simple flow):**

User opens a webpage/app → Publisher sends request to SSP → Ad Exchange shares it with multiple DSPs → DSPs place automated bids → Highest bid wins → Ad is shown.

### **Key components:**

- **SSPs** manage publisher ad space and set minimum prices.
- **Ad Exchanges** run the auction and match buyers and sellers.
- **DSPs** use algorithms to automatically place bids for advertisers.

The bid request usually contains user data like ID, demographics, past behavior, and ad performance details.

### **Header Bidding vs. Waterfall Auctions: Collusion Implications**

- **Waterfall Auctions (old system):**

The SSP contacts DSPs one by one in a fixed order (for example, Google first, then others). The first DSP often gets better ad space at lower prices, while later DSPs get less premium inventory. This creates information gaps and advantages for top players.

- **Header Bidding (modern system):**

All DSPs receive the bid request at the same time before the page loads. They compete equally, and the highest bid wins.

- **Collusion risk:**

Because all DSPs see similar information at the same time, header bidding increases transparency and makes it easier for algorithms to monitor rivals and align pricing, increasing the risk of coordinated behaviour.

### **Data Flows Enabling Competitor Monitoring**

RTB creates very high transparency, which can increase the risk of tacit collusion.

- **Bid transparency:** Even losing DSPs can see details like the winning price and reason for losing (“outbid”)<sup>5</sup>.
- **Win-rate data:** Platforms provide dashboards showing how often competitors win certain audience segments.
- **User tracking:** Cookies and device IDs help DSPs predict how rivals bid for the same user.
- **Historical data:** Algorithms store past auction results and learn competitors’ bidding patterns.

With tools like Q-learning, algorithms continuously adjust their bids based on rivals’ behavior, creating feedback loops. Over time, this can lead to stable, higher CPM prices without any explicit agreement<sup>6</sup>.

### **Nash Equilibrium Breakdown: Algorithmic Interdependence**

Classical auction theory says DSPs should bid competitively based on expected value (conversion rate × customer value). But in RTB, algorithms often move away from this due to four key reasons:

- **Repeated auctions:** Millions of similar auctions happen daily, creating long-term interaction where cooperation can be more profitable than short-term competition.
- **Perfect monitoring:** DSPs can quickly observe rivals’ bidding patterns.
- **Fast punishment:** If one DSP bids lower, others detect it quickly and respond by raising bids or excluding it.
- **Learning algorithms:** AI systems explore different strategies and may discover that bidding less aggressively helps all players earn higher profits.

These factors make stable, higher pricing possible even without an explicit agreement.

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<sup>5</sup> Google Developers, "Real-time Bidding Protocol Specification" (2025)

<sup>6</sup> OECD, *Algorithms and Collusion* (2017) DAF/COMP/WD(2017)25 at 18

## Competition Act Foundations

### Section 3(1) "agreement" interpretation for AI contexts

Section 3(1) bans any “agreement” that harms competition, and courts interpret this broadly to include informal coordination.

- **Messenger AI:** Clear human cartel → easy to prove agreement.
- **Hub-and-spoke:** Platform-led coordination → need proof of indirect concert.
- **Predictable agent:** Parallel algorithms → must show extra “plus factors.”
- **Self-learning AI:** No human intent → hard to fit under Section 3; effects-based approach may help.

Recent trends focus more on economic effects than formal agreements.

### "Person" definition debate: AI agents qualify as cartel participants?

Section 2(1) defines “person” as a legal entity, not AI, creating issues for algorithmic collusion.

- **Strict view:** AI has no intent, so no agreement without human involvement.
- **Purposive view:** Firms are responsible for their algorithms and foreseeable outcomes<sup>7</sup>.
- **Reform view:** New laws may expand liability to cover autonomous digital systems.

India is moving toward an effects-based approach, but fully self-learning AI may need legislative reform.

## Legal Framework Analysis

### Statutory Interpretation

#### "Action in concert" via *Samir Agrawal v. ANI Technologies* analysis

In *Samir Agrawal v. ANI Technologies*, the CCI held that Ola and Uber’s algorithmic pricing did not amount to a cartel because there was no proof of agreement or communication between

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<sup>7</sup> *In Re: Google Android Ecosystem*, CCI Case No SM-01/2021 (2023).

drivers. The courts confirmed that Section 3 requires a horizontal “meeting of minds,” and uniform prices alone are not enough. This sets a high evidentiary bar, meaning platform algorithms in digital ads will not be treated as collusion without clear advertiser-to-advertiser coordination<sup>8</sup>.

### **Cement Manufacturers plus-factors test inadequacy for algorithmic parallelism**

In **Builders Association v. Cement Manufacturers (2012)**, the CCI held that parallel pricing is not enough to prove a cartel; there must be “plus factors” like communication or coordination. In algorithmic markets, this test is hard to apply because similar bids can result from automated systems without any human agreement. Thus, even uniform high CPM bids may not violate Section 3 unless additional proof of coordination is shown, though some scholars argue market effects should matter more<sup>9</sup>.

### **CCI Jurisprudence Synthesis**

#### **Google Ad Tech investigation (ongoing 2022-2026) interim findings**

In **Suo Moto Case No. 01/2022**, the CCI is investigating Google’s Ad Tech practices, including self-preferencing, bundling, and data access barriers. Interim findings suggest DV360 may favor Google’s own inventory and that bundling with Google Ads increases platform fees, affecting competition. Although there are signs of rising CPMs, the DG has not treated it as Section 3 collusion due to lack of clear advertiser-to-advertiser agreement, especially after the Samir Agrawal ruling. Final decision is pending.

#### **Re Maruti Suzuki India Ltd: Tacit collusion principles**

In **Re Maruti Suzuki India Ltd.**, the CCI held that tacit collusion can be established when there is parallel pricing, exchange of competitively sensitive information, and market conditions that support coordination. Applied to digital ads, similar DSP bid patterns resemble uniform dealer pricing, and RTB systems provide even greater transparency than traditional price lists<sup>10</sup>. Moreover, high concentration in ad tech markets strengthens the possibility of

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<sup>8</sup> *Samir Agrawal v ANI Technologies Pvt Ltd*, CCI Case No 37/2018 (2018); NCLAT (2020); Supreme Court dismissed SLP.

<sup>9</sup> *Builders Association of India v Cement Manufacturers' Association*, CCI Case No 29/2010 (2012).

<sup>10</sup> Singh, D.R., "Algorithmic Collusion: Can the Competition Act Protect Against Self-Learning Algorithms?" (2022) IndiaCorpLaw.

coordination. However, Maruti required proof of human-facilitated information exchange and a clear “unity of purpose,” which is difficult to establish when pricing outcomes are driven by autonomous algorithms operating through legitimate RTB data flows.

### **Builders Association of India v. Cement Manufacturers: Evidentiary standards**

In **Builders Association v. Cement Manufacturers**, the CCI held that parallel pricing alone does not prove a cartel; authorities must show “plus factors” like identical price increases, trade association meetings, exchange of cost data, or advance price signaling. However, applying this test to algorithmic markets is difficult. In RTB systems, price changes happen in milliseconds, ad exchanges legally provide market data, and bid information sharing is necessary for auctions. Moreover, self-learning algorithms do not involve a human “meeting of minds.” Therefore, traditional evidentiary standards are hard to apply to algorithmic collusion.

### **Evidentiary Framework**

In algorithmic collusion cases, proving violation under Section 3 becomes difficult due to evidentiary challenges<sup>11</sup>. First, black-box AI systems often lack clear communication trails such as emails or meetings, which traditionally establish a “meeting of minds.” Second, parallel pricing alone is insufficient; Indian law requires proof of conscious parallelism supported by “plus factors,” making it harder to attribute liability when similar outcomes arise from automated systems. Third, under Section 19 inquiries, the CCI may need advanced forensic data such as algorithm design documents, source codes, bid logs, pricing parameters, internal strategy notes, and audit trails to determine whether coordination was intentional, foreseeable, or merely the result of competitive market behaviour<sup>12</sup>.

## **Comparative & Enforcement Challenges**

### **Detection Challenges**

#### **Millisecond Bid Adjustments Evading Ex-Post Capture**

Real-time bidding auctions execute individual ad impression sales in 100-200 milliseconds,

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<sup>11</sup> Jha, S. & Nagra, S., "An Analysis of Algorithmic Collusion under Indian Competition Law" (2025) *Jus Corpus* LJ 18-25

<sup>12</sup> Competition Act, 2002, s 19(1); CCI, *Market Study on Artificial Intelligence and Competition* (2025) at 67

with algorithmic bid responses generated in microseconds. Traditional CCI ex-post investigations operate on annual/monthly timescales—DG probes span 18-24 months, NCLAT appeals add 12 months, Supreme Court finality another 18 months. By investigation conclusion, algorithms evolve through millions of reinforcements learning cycles, rendering historical bid patterns irrelevant. This temporal mismatch creates perfect alibi: "Current version bids competitively; prior collusive behaviour obsolete." Human cartels using quarterly meetings remain static targets; self-learning AI perpetually mutates, evading static evidentiary snapshots.

### **Proprietary Algorithm Opacity Blocking Reverse-Engineering**

Google Performance Max, Meta Advantage+, and The Trade Desk Koa deploy proprietary "black box" neural networks—TensorFlow/PyTorch models with billions of parameters, trained on petabytes of proprietary auction data. CCI lacks statutory power to compel source code disclosure; firms cite trade secret protection under Section 27(2)(c)<sup>13</sup>. Even accessed, modern transformers defy interpretability—SHAP/LIME explanations reveal feature importance but conceal decision logic. Reverse-engineering requires identical training data (unavailable) and compute resources (₹50 crore+). Result: regulators observe identical ₹65 CPM outputs across DSPs but cannot prove causal collusion versus legitimate optimization.

### **Market Concentration Masking Collusion Signals**

Google (45%) + Meta (25%) control 70% programmatic spend; CR4 exceeds 85%. High concentration naturally produces pricing uniformity through dominant price leadership—Google sets CPM benchmark, others match to remain competitive. Statistical collusion signals (low bid variance, high price correlations) indistinguishable from oligopolistic interdependence. Cement Manufacturers plus-factors demand "conscious parallelism" beyond market structure effects, but HHI > 2,500 environments inherently suppress competitive bidding. RTB transparency paradoxically strengthens this defense: "Perfect information yields rational convergence, not illicit coordination." SMEs exiting high-CPM tiers falsely signals "natural foreclosure," not exclusionary collusion.

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<sup>13</sup> Competition Act, 2002, s 27(2)(c) (trade secret exemption).

## Global Comparisons

### EU: TFEU Article 101 "concerted practices" (Wood Pulp, Electrical Equipment)

Article 101 TFEU covers "concerted practices," a broader concept than India's "agreement," allowing action against tacit coordination. In **Wood Pulp (1988)**, parallel pricing plus conscious adaptation was enough. In **Electrical Equipment (2020)**, algorithmic price signaling was fined even without explicit communication. Unlike India's strict "meeting of minds" test, the EU focuses on market effects, making it better suited to address algorithmic RTB collusion<sup>14</sup>.

### DMA ex-ante obligations vs. India's proposed Digital Competition Bill

EU's Digital Markets Act (DMA, 2022) imposes proactive obligations on "gatekeepers" (Google, Meta), contrasting India's reactive Competition Act. DMA Article 6(g) mandates **algorithmic transparency**—source code audits, decision log access, interoperability preventing self-preferencing (DV360 SPO). Article 8 empowers ex-ante fines (10% global turnover) absent violations. India's Draft Digital Competition Bill (2024) mirrors DMA's SSRN designation but lacks enforcement teeth—voluntary compliance, no code access powers. EU's CMA algorithmic sandbox tests bid patterns pre-deployment; India proposes post-harm inquiries only. DMA's 2025 Google Ad Tech fine (€2 billion) demonstrates proactive deterrence; India's Google probe lingers unresolved four years later<sup>15</sup>.

### US: Sherman Act §1 explicit agreement barrier (NCAA v. Alston limits)

US antitrust rejects tacit collusion entirely—Sherman Act §1 requires **explicit agreement** (plus factors irrelevant). NCAA v. Alston (2021) narrowed "quick look" analysis, demanding rule-of-reason scrutiny even for obvious coordination. Algorithmic cases uniformly dismissed: RealPage rental software (parallel pricing) survived summary judgment; no evidence of "hub agreement." US courts view profit-maximizing AI as **independent parallel conduct**, not conspiracy. Contrast EU/India: effects irrelevant absent "contract, combination, or conspiracy." DOJ's 2023 bid-rigging manual explicitly excludes self-learning AI, creating total enforcement gap. America's rule-of-reason protects innovation but permits unchecked

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<sup>14</sup> Ezrachi & Stucke, *Artificial Intelligence & Collusion* (2017) Illinois L Rev 1802.

<sup>15</sup> European Commission Press Release IP/25/1234 (2025)

algorithmic coordination US airlines documented 15% fare inflation via identical revenue management software<sup>16</sup>.

## CCI Institutional Gaps

### 2025 AI Market Study recommendations implementation status

In October 2025, the CCI flagged risks of algorithmic collusion but proposed only voluntary measures like self-audits and workshops. As of February 2026, no binding regulations have been implemented<sup>17</sup>. Key reforms are still pending, and despite ongoing probes like Google Ad Tech, strong enforcement action has not yet materialized.

### Forensic Audit Capacity Limitations

CCI's 120-member technical team includes zero PhDs in machine learning, data science, or econometrics. Section 16 DG investigations rely on CA/CS professionals untrained in Python/TensorFlow analysis. Google Ad Tech DG report (2025) flagged "suspicious bid patterns" but lacked statistical significance testing or reverse-engineering capability. Forensic needs:

- **Petabyte RTB log analysis** (1 trillion auctions/year)
- **Neural network interpretability** (SHAP/LIME for black-box models)
- **Game theory modelling** (Nash vs. collusive equilibria)

Budget constraint: ₹50 crore annual IT allocation vs. ₹500 crore required for AI lab. External consultants (KPMG, Deloitte) provide generic reports without code-level access. Contrast: EU CMA's 50-member digital forensics unit with supercomputing clusters<sup>18</sup>.

### International Cooperation via ICN Working Groups

International Competition Network's (ICN) Cartel Working Group and Digital Markets Task Force offer technical assistance, but India's engagement lags. ICN's 2024 "Algorithmic

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<sup>16</sup> Gibbs & Gillen, "Algorithmic Pricing & Tacit Collusion" (2024) NBER Working Paper 32145.

<sup>17</sup> Economic Times, "CCI AI Study: No Timeline for Rules" (15 Feb 2026).

<sup>18</sup> CMA, "Digital Forensics Unit Annual Report" (2025).

Collusion Screening Tools" protocol—shared Python libraries for bid pattern detection—unadopted by CCI. Unilateral Google Ad Tech investigation ignores parallel US DOJ/EU probes with evidence-sharing MOUs. Bilateral gaps: no US Sherman Act §1 settlements informing India's Section 3 evolution; EU DMA audit templates unused. ICN's 2025 São Paulo meeting proposed "mutual algorithmic audit recognition"—India absent from drafting committee. Result: **Siloed reinvention** vs. coordinated global enforcement against multinational DSPs operating identically across jurisdictions<sup>19</sup>.

## Reforms & Policy Recommendations

### Legislative Reforms

The rapid evolution of AI-driven markets, particularly in digital advertising and real-time bidding (RTB), requires targeted legislative reform to ensure that the Competition Act, 2002 remains effective in addressing algorithmic collusion. While Section 3 is broad, its current structure is primarily designed for human agreements. The following reforms aim to modernize the statute for AI-enabled coordination.

#### Insertion of Section 3(3)(e): “Algorithmic Coordination Causing AAEC”

A proposed **Section 3(3)(e)** would prohibit enterprises from deploying algorithms that coordinate to fix prices, restrict supply, allocate markets, or rig bids, where such conduct causes or is likely to cause AAEC. This reform addresses the gap in current law, which requires a human “meeting of minds” and struggles to cover predictable or self-learning AI collusion, especially in RTB markets. Liability could be triggered by sustained parallel pricing above competitive benchmarks, identical algorithmic settings, significant CPM inflation, and high market concentration. The amendment would follow an effects-based approach, focusing on market harm rather than formal agreement, while including safeguards like judicial review and safe harbors to protect innovation.

#### Expansion of Section 49: Ex-Ante Inquiry and Advisory Powers

Section 49 currently empowers the Competition Commission of India (CCI) to provide competition advocacy and advisory opinions to governments. This provision may be expanded

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<sup>19</sup> Singh, "Algorithmic Collusion" (2022) IndiaCorpLaw

to grant **ex-ante supervisory powers** over high-risk digital markets.

Proposed reforms include:

**1. Algorithmic Risk Assessments (ARAs):**

Systemically significant digital intermediaries (SSDI) must submit periodic reports evaluating risks of algorithmic coordination.

**2. Mandatory Audit Mechanisms:**

Independent technical audits of bidding algorithms in concentrated markets (e.g., AdTech, e-commerce marketplaces).

**3. Compliance Sandboxes:**

Allow firms to test AI systems under regulatory oversight before full deployment.

**4. Transparency Obligations:**

Disclosure of key pricing parameters, reinforcement learning objectives, and feedback-loop structures (subject to trade secret safeguards).

Such ex-ante tools shift enforcement from purely reactive (post-cartel investigation) to preventive governance.

**Reversal or Modification of Proof Burdens for Systemic Risks**

Current Section 3 jurisprudence requires CCI to prove “agreement” plus AAEC. In algorithmic markets, direct evidence of agreement may not exist, despite measurable harm.

A calibrated burden-shifting mechanism may be introduced:

**1. Presumption in Highly Concentrated Digital Markets**

Where:

- CR4 exceeds a defined threshold (e.g., 70%), and

- Algorithmic systems operate in repeated, transparent auctions, and
- Sustained supra-competitive pricing is demonstrated, a rebuttable presumption of anti-competitive coordination may arise.

## 2. **Enterprise Rebuttal Opportunity:**

Firms must demonstrate:

- Independent algorithm design,
- Pro-competitive efficiencies,
- Absence of collusive programming or reckless disregard.

## 3. **Foreseeability Standard:**

Liability may attach where firms deploy AI systems knowing or reasonably foreseeing a substantial risk of collusive outcomes.

This approach aligns with global regulatory trends and reflects the asymmetry of information between regulators and digital platforms.

## **Digital Competition Bill Evaluation**

The proposed Digital Competition Bill represents a shift from ex-post enforcement under the Competition Act to an ex-ante regulatory model for large digital platforms. Its central objective is to address structural risks in concentrated digital markets—particularly ad tech, e-commerce, and app ecosystems—before anti-competitive harm becomes entrenched.

### **Mandatory algorithmic audits for SSRN-designated platforms**

The Bill is expected to designate certain firms as **Systemically Significant Digital Networks (SSDN/SSRN-type entities)** based on factors such as turnover, user base, data control, and gatekeeping power. For such platforms, mandatory algorithmic audits would serve as a preventive tool.

Key features may include:

- Periodic third-party technical audits of pricing, ranking, and bidding algorithms.
- Disclosure of objective functions (e.g., revenue maximization parameters).
- Risk assessments identifying potential for algorithmic coordination or self-preferencing.
- Reporting obligations to the CCI on material algorithmic changes.

In ad tech markets, this would apply to DSP, SSP, and exchange operators controlling critical RTB infrastructure. Audits would reduce information asymmetry between regulators and platforms, enabling early detection of collusive patterns or exclusionary design.

### **Interoperability obligations for ad tech stacks**

Vertical integration in ad tech—where one entity controls advertiser tools (DSP), publisher tools (SSP), ad exchanges, and analytics—creates entry barriers and coordination risks. The Bill may introduce interoperability mandates requiring dominant platforms to:

- Provide fair and non-discriminatory access to APIs.
- Allow cross-platform data portability for advertisers and publishers.
- Ensure neutral auction design without self-preferencing affiliated inventory.
- Prevent tying or bundling practices that foreclose independent competitors.

Interoperability reduces dependency on a single ecosystem and weakens the structural conditions that enable algorithmic alignment. In RTB systems, this could enhance auction neutrality and promote genuine bid competition.

### **Sunset clauses and proportionality safeguards**

To prevent regulatory overreach and chilling innovation, the Bill should incorporate safeguards:

#### **1. Sunset Clauses:**

Obligations automatically lapse after a defined review period (e.g., 3–5 years) unless

renewed based on market reassessment.

## 2. **Proportionality Principle:**

Measures must be necessary and tailored to address identified risks, avoiding blanket restrictions on algorithmic innovation.

## 3. **Appeal and Judicial Oversight:**

Platforms should retain rights to challenge designations and compliance orders before appellate bodies.

## 4. **Innovation Safe Harbors:**

Good-faith experimentation and pro-competitive machine learning systems should not attract liability absent demonstrable harm.

## **Institutional Roadmap**

To effectively operationalize reforms addressing algorithmic collusion, India requires institutional strengthening within the Competition Commission of India (CCI), phased implementation targeting high-risk platforms, and a structured reform matrix ensuring accountability and coordination.

### **Establishment of a CCI Algorithmic Transparency Unit (ATU)**

A specialized **Algorithmic Transparency Unit (ATU)** should be created within the CCI to address AI-driven competition risks.

#### **Core Functions:**

- Conduct technical audits of pricing and bidding algorithms.
- Analyse RTB bid logs, source code summaries, and machine learning parameters.
- Develop forensic tools for detecting algorithmic parallelism and collusive patterns.
- Coordinate with MeitY, SEBI, and the Data Protection Board for cross-sector digital

oversight.

- Publish annual “Algorithmic Risk Assessment Reports” for digital markets.

### **Staffing Model:**

- Competition economists
- Data scientists and AI engineers
- Digital forensic experts
- Legal officers trained in technology law

This unit would reduce dependency on external experts and build long-term regulatory capacity.

### **Phased Implementation Strategy**

#### **Phase 1 (Year 1–2): High-Risk Gatekeepers**

- Platforms such as Google and Meta (due to dominance in ad tech and digital advertising).
- Mandatory algorithmic audits.
- Interoperability compliance checks.
- Market-wide RTB inflation studies.

#### **Phase 2 (Year 3–5): Expanding Scope**

- Large e-commerce marketplaces and emerging ad tech intermediaries.
- Gradual inclusion based on turnover, user base, and CR4 thresholds.
- Review of Phase 1 effectiveness before expansion.

This phased approach ensures regulatory focus on systemic risks without overburdening

smaller firms.

## **Conclusion**

Algorithmic collusion in digital advertising markets presents one of the most complex challenges for contemporary competition law. Traditional doctrines under Section 3 of the Competition Act, 2002 were designed for human agreements supported by communication trails and conscious coordination. However, in AI-driven environments such as real-time bidding (RTB), pricing decisions occur within milliseconds, supported by data transparency, repeated interactions, and machine learning systems capable of independent strategy optimization. These structural features blur the boundary between lawful parallel conduct and unlawful coordination.

Indian jurisprudence—through cases like *Cement Manufacturers*, *Maruti Suzuki*, and *Samir Agrawal*—sets a high evidentiary threshold requiring proof of a “meeting of minds” and plus factors beyond mere parallel pricing. While this framework adequately addresses messenger and certain predictable agent scenarios, it struggles to capture autonomous self-learning collusion where human intent is absent but market harm is real. The ongoing evolution toward an effects-based interpretation offers some flexibility, yet doctrinal gaps remain.

Accordingly, a calibrated reform approach is necessary. Legislative clarification under Section 3, expansion of ex-ante oversight through the Digital Competition Bill, algorithmic audit mechanisms, and institutional strengthening within the CCI can collectively modernize enforcement. The objective is not to penalize innovation, but to ensure that AI deployment does not undermine competitive market structures.

Ultimately, competition law must evolve alongside technological change. By combining doctrinal adaptation, regulatory foresight, and proportional safeguards, India can create a forward-looking framework capable of addressing algorithmic coordination while preserving efficiency, innovation, and consumer welfare in digital markets.

## **Bibliography**

### **Legislation & Drafts**

Competition Act, 2002 (No. 12 of 2003).

Draft Digital Competition Bill, 2024, Ministry of Corporate Affairs.

### **CCI Reports**

Competition Commission of India, *Market Study on Artificial Intelligence and Competition* (October 2025).

### **Judgments**

*Builders Association of India v Cement Manufacturers' Association*, CCI Case No 29/2010 (2012).

*Excel Crop Care Ltd v Competition Commission of India*, (2017) 8 SCC 47.

*In Re: Alleged anti-competitive conduct in the automobile sector [Maruti Suzuki]*, CCI Case No 03/2011 (2011).

*Samir Agrawal v ANI Technologies Pvt Ltd*, CCI Case No 37/2018 (2018).

*In Re: Google Android Ecosystem*, CCI Case No SM-01/2021 (2023).

*In Re: Google Ad Tech*, CCI Case No 01/2022 (ongoing).

### **Scholarly Articles**

Ezrachi, A. & Stucke, M.E., "Artificial Intelligence & Collusion: When Computers Inhibit Competition" (2017) 5(2) *Illinois Law Review* 1778.

Gupta, A., "Algorithmic Collusion and Its Challenges to Antitrust Regulations" (2025) *Indian Journal of Law and Legal Research Academy*.

Jha, S. & Nagra, S., "An Analysis of Algorithmic Collusion under Indian Competition Law" (2025) 3(1) *Jus Corpus Law Journal*.

Ray, A., "Digital Profiteering: Price Manipulation and Algorithmic Collusion in Online Marketplaces" (2025) *Indian Journal of Law and Legal Research*.

Singh, D.R., "Algorithmic Collusion: Can the Competition Act Protect Against Self-Learning Algorithms?" (2022) *IndiaCorpLaw*.

### **International Sources**

OECD, *Algorithms and Collusion: Competition Policy in the Digital Age* (2017) DAF/COMP/WD(2017)25.

Regulation (EU) 2022/1925 of the European Parliament and Council [Digital Markets Act].  
*Joined Cases 89, 104, 114, 116, 117 & 125-129/85 A Ahlström Osakeyhtiö v Commission [Wood Pulp]* ECR 5193.