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Algorithmic Collusion under the Competition Act, 2002: Challenges for Antitrust Enforcement in Digital Markets

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ABSTRACT

The incorporation of algorithms and artificial intelligence into business operations has transformed market practices, increasing efficiencies and enabling dynamic pricing while presenting new dilemmas for competition law. Algorithmic collusion has emerged as a significant threat to market competition, because pricing and recommendation systems can communicate, learn from one another, and coordinate their conduct without any human-made plan. Such collusion may harm consumers, since it undermines competitive prices and narrows choice, while at the same time being harder to detect by the usual mechanisms because there is no proof of direct communication. Under sections 3 and 4 of the Competition Act, 2002, all agreements causing an appreciable adverse effect on competition are prohibited, and such agreements fall within the purview of the Competition Commission of India. These rules and doctrines, however, were designed for traditional cartels, in which clear evidence of an agreement or concerted practice was necessary before prosecution could take place.

Keywords: *algorithmic pricing, digital market, competition law, algorithmic collusion, cartel, Competition Commission of India (CCI).*

I. INTRODUCTION

Since the early 1990s, the use of the internet as a service has developed a new digital dimension for users. People around the globe began using the World Wide Web, which made information available at the fingertips of those seeking it. Following these developments, around 2008 people developed a habit of searching and surfing online. This was the first step in the shift toward online shopping and marketing. As the years passed, the digital market took a strong grip on the online shopping segment. As one commentator observes:

Now such days are gone when people travelled from one place to another in search of goods and services. The advent of the internet has not only changed

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*the traditional definition of the economy but also narrowed the world. From daily shopping to wars, the internet has revolutionized each and every aspect of our life, making a mouse click more powerful than the trigger of a gun. This unfettered technological advancement has led to the creation of a digital or internet economy where the algorithm is the cynosure of the market.*¹

As the digital market grows, the risk of market manipulation and market dominance on online platforms also increases. The rise of collusive practices that disrupt the algorithmic setup is prominent in today's digital market. Pre-existing market enterprises, dominantly in the e-commerce sector, create difficulties for new players seeking to enter the market, resulting in barriers to entry and reduced choice across price ranges. Algorithms play an increasingly important role in many markets.² In the E-commerce Sector Inquiry, the European Commission reported that a majority of online retailers track the online prices of their competitors³ and that, in doing so, two-thirds use automated software.⁴ Such practices disrupt the natural flow of the online market ecosystem and create barriers for new online platforms. Pre-existing market enterprises⁵ thus use their dominant position⁶ and abuse that position on the digital platform. Competition-law regulatory authorities around the globe are increasingly challenged by such unfair practices and the abuse of a dominant position.⁷ Enterprises⁸ seeking to abuse their position form groups known as cartels.⁹ These cartels¹⁰ are dangerous to healthy competition in the market. This paper examines the concept of the digital market and how such entities use algorithmic collusion to their advantage. It discusses the concept of digital-market entities, the practice of algorithmic collusion by cartels¹¹ against the law, the significance of competition law, and a comparison with similar laws around the globe.

II. ALGORITHMIC COLLUSION AND ITS CONCEPT

According to Vinay Sachdev:

¹ Sumit Bhadauria, *Algorithmic Pricing & Collusion: The Limits of Antitrust Enforcement*, 8(2) NIRMA U. L.J. (2019), <https://ssrn.com/abstract=3443009>.

² R. Nazzini & J. Henderson, *Overcoming the Current Knowledge Gap of Algorithmic "Collusion" and the Role of Computational Antitrust*, 4 STAN. COMPUTATIONAL ANTITRUST 1 (2024).

³ EUROPEAN COMMISSION, *Final Report on the E-commerce Sector Inquiry*, COM (2017) 229 final (2017).

⁴ *Id.*

⁵ The Competition Act, 2002, § 2(h), No. 12 of 2003, Acts of Parliament, 2003 (India).

⁶ The Competition Act, 2002, § 4, No. 12 of 2003, Acts of Parliament, 2003 (India).

⁷ *Id.*

⁸ The Competition Act, 2002, § 2(h) (India).

⁹ The Competition Act, 2002, § 2(c), No. 12 of 2003, Acts of Parliament, 2003 (India).

¹⁰ *Id.*

¹¹ The Competition Act, 2002, § 2(c) (India).

*Algorithm collusion refers to the coordination between algorithms that are intended to work independently but end up working together to produce a result that is harmful or unfair. This can occur when algorithms are designed to make decisions that are influenced by each other's behaviour, resulting in outcomes that are not in line with their original purpose. One example of algorithm collusion is when two algorithms that were designed to compete with each other end up working together to manipulate the market. This can lead to price fixing, reduced competition, and other harmful outcomes.*¹²

According to the Corporate Finance Institute:

*Collusion is primarily an illegal secretive agreement or cooperation between two parties intending to disrupt market stability. Generally, individuals or companies who normally compete against each other decide to work together and influence the market to achieve competitive market advantage. An example is when colluding businesses conspire to control the supply of a good and set a specific price that will enable them to maximize their returns at the cost of other competitors.*¹³

In other words, a large market player creates a situation in which the survival of small enterprises is challenged and they often do not even get a chance to enter the market ecosystem. This not only disrupts competition but also deprives consumers of the ability to choose between different products.

As Madhavi Singh notes, there are many different ways in which algorithms may be used for collusion.¹⁴ Although there are various direct and indirect forms of algorithmic collusion, the following are some of the prominent practices in use.

Predatory pricing.¹⁵ This refers to “the sale of goods or provision of services, at a price which is below the cost, as may be determined by regulations, of production of the goods or provision of services, with a view to reduce competition or eliminate the competitors.”¹⁶

¹² Vinay Sachdev, *Changing Dynamics of Algorithmic Collusion: An Analytical Study*, SCC ONLINE (May 18, 2023), <https://www.scconline.com/blog/post/2023/05/18/changing-dynamics-of-algorithmic-collusion-an-analytical-study/>.

¹³ CORPORATE FINANCE INSTITUTE, *Collusion*, <https://corporatefinanceinstitute.com/resources/economics/collusion/>.

¹⁴ Madhavi Singh, *Algorithmic Collusion in Flight Pricing in India*, LAW SCHOOL POLICY REVIEW (Nov. 29, 2018), <https://lawschoolpolicyreview.com/2018/11/29/algorithmic-collusion-in-flight-pricing-in-india/>.

¹⁵ The Competition Act, 2002, § 4 expl. (b), No. 12 of 2003, Acts of Parliament, 2003 (India).

¹⁶ *Id.*

Tacit collusion.¹⁷ This occurs when market players allow price changes to be set by a dominant company. The leading company exerts an influence that determines the pricing of goods and services in the industry, setting relatively high prices that allow smaller, cost-inefficient companies in the market to earn profits.

Formal collusion. This “involves groups of rival companies that agree to collude in setting prices rather than compete usually within a cartel. A cartel arrangement allows the companies to set an industry price that enables them to all achieve a level of profitability.”¹⁸

There are further ways in which collusion is practised within an ecosystem. As explained in Vinay Sachdev’s Changing Dynamics of Algorithmic Collusion:¹⁹

Messenger scenario: In the messenger scenario, the market participants employ computers or a single algorithm as a means of collusion. Hub-and-spoke conspiracy: This type of conspiracy refers to an agreement formed by vertical or horizontal players (spokes) via the use of a platform (hub), which is similar to an indirect agreement. Predictable agent: In this type, there is no agreement between rivals. Each company unilaterally implements its own pricing algorithm, and as predictable agents, they keep an eye on and adjust to each other’s prices. Autonomous machine: It involves self-learning algorithms that cooperate despite not being designed to do so, in response to market data or price changes.

Although there is both direct and indirect evidence of the effects of algorithmic collusion on the digital market, it is necessary to study those effects in the light of existing law. The Indian Competition Act, 2002 expressly addresses how such practices limit market flow and establish non-essential dominance. Sections 3 and 4 of the Act²⁰ set out several effects of such agreements²¹ and collusion:

(a) directly or indirectly determines purchase or sale prices; (b) limits or controls production, supply, markets, technical development, investment or provision of services; (c) shares the market or source of production or provision of services by way of allocation of geographical area of market, or type of goods or services, or number of customers in the market or any other similar way; (d)

¹⁷ Corporate Finance Institute, *supra* note 13.

¹⁸ *Id.*

¹⁹ Vinay Sachdev, *supra* note 12.

²⁰ The Competition Act, 2002, No. 12 of 2003, Acts of Parliament, 2003 (India).

²¹ *Id.* § 2(b).

*directly or indirectly results in bid rigging or collusive bidding, shall be presumed to have an appreciable adverse effect on competition; (e) directly or indirectly, imposes unfair or discriminatory (i) condition in purchase or sale of goods or service; or (ii) price in purchase or sale (including predatory price) of goods or service.*²²²³

III. THE INDIAN REGULATORY APPROACH TOWARDS ALGORITHMIC COLLUSION

Among the many problems that dominant market players create for new e-commerce entrants in India, the remedy lies in the Competition Act, 2002.²⁴ The Act governs anti-competitive practices²⁵ and also keeps a check on e-commerce against the abuse of a dominant position.²⁶ The regulatory and adjudicatory body that exists under the Act to address algorithmic collusion is the Competition Commission of India,²⁷ also known as the CCI.²⁸ The Commission²⁹ acts as a regulatory body, keeping a close watch on activities within the digital market:

*The Competition Commission of India (CCI) is responsible for enforcing the Act, which aims to promote competition and protect consumers from anti-competitive practices. The CCI has the power to investigate and take action against companies that engage in anti-competitive behaviour, including algorithmic collusion. However, algorithmic collusion can be difficult to detect and prosecute in India, as it can occur in complex and interconnected systems and can be difficult to understand and prove. The rapid pace of technological change in digital markets also means that new forms of algorithmic collusion can emerge quickly, making it challenging for the CCI and competition authorities to keep up.*³⁰

The Commission's first significant encounter with such practices arose in the airlines matter. The CCI investigated allegations of cartelisation among the major domestic airlines, including IndiGo, SpiceJet, and Air India, but ultimately found no evidence of a cartel: it held that the final pricing decisions were taken by each airline's revenue-management team and that the

²² *Id.* § 3.

²³ *Id.* § 4.

²⁴ The Competition Act, 2002, *supra* note 20.

²⁵ The Competition Act, 2002, § 3 (India).

²⁶ The Competition Act, 2002, § 4 (India).

²⁷ The Competition Act, 2002, § 7(1) (India).

²⁸ Competition Commission of India.

²⁹ The Competition Act, 2002, § 2(e), No. 12 of 2003, Acts of Parliament, 2003 (India).

³⁰ Vinay Sachdev, *supra* note 12.

pricing software merely assisted in determining fares, and it accordingly closed the case.³¹ As AZB & Partners observed:

With the technological advancement and unprecedented growth of air travel over the last couple of decades, airlines have implemented third party software(s) that helps them determine, implement and dynamically change the fares offered to consumers, on a real time basis. Each such software is based on an increasingly complex set of algorithms that take into consideration factors such as demand conditions, actual booking, price of competitors, seasonality, etc., to determine the airfares.

This illustrates how digital-market entities use sophisticated software both to set prices and, potentially, to escape regulatory scrutiny.

A. Section 3 of the Act

Section 3³² deals with practices that are anti-competitive in nature, which are prohibited from use by enterprises in the market ecosystem. The provision states that agreements having an appreciable adverse effect on competition in connection with the sale or purchase of goods or services shall be void. Whether an enterprise's activity has an appreciable adverse effect on competition is dealt with further under section 19 of the Competition Act, 2002, which provides that:

*the Commission shall, while determining whether an agreement has an appreciable adverse effect on competition under section 3, have due regard to all or any of the following factors, namely, (a) creation of barriers to new entrants in the market; (b) driving existing competitors out of the market; (c) foreclosure of competition by hindering entry into the market; (d) accrual of benefits to consumers; (e) improvements in production or distribution of goods or provision of services; or (f) promotion of technical, scientific and economic development by means of production or distribution of goods or provision of services.*³³

³¹ Alleged Cartelisation in the Airlines Industry, In re, 2021 SCC OnLine CCI 3; AZB & Partners, *Pricing Algorithms: CCI's First Major Encounter with Assessing New-Age Collusions* (2021), <https://www.azbpartners.com/bank/pricing-algorithms-ccis-first-major-encounter-with-assessing-new-age-collusions/>.

³² The Competition Act, 2002, § 3 (India).

³³ The Competition Act, 2002, § 19 (India).

B. Section 4 of the Act

Section 4 deals with the prohibition on the abuse of a dominant position. In every market there are dominant players, who are prohibited from abusing their position. The conduct of an enterprise is considered an abuse of dominant position where the enterprise “directly or indirectly, imposes unfair or discriminatory (i) condition in purchase or sale of goods or service; or (ii) price in purchase or sale (including predatory price) of goods or service.”³⁴ The provision also clarifies the meaning of a dominant position. Under explanation (a) to section 4:

dominant position means a position of strength, enjoyed by an enterprise, in the relevant market, in India, which enables it to (i) operate independently of competitive forces prevailing in the relevant market; or (ii) affect its competitors or consumers or the relevant market in its favour.

IV. ANTITRUST TRENDS AROUND THE GLOBE

Algorithmic collusion is a growing concern in the United States and the United Kingdom, as it can lead to anti-competitive outcomes in digital markets.³⁵ This section analyses the different regulatory approaches adopted in different parts of the world, namely the United States and the United Kingdom.

A. The United States of America

In the United States, competition authorities such as the Federal Trade Commission (FTC) and the Department of Justice have a role to play in addressing this issue.³⁶ The FTC is responsible for maintaining fair market practices and ensuring that no entity or group of entities misuses its position or engages in unfair trade practices, and it enforces its laws strictly to that end. Like the Competition Act, 2002 of India, the FTC operates under its own statute, the FTC Act,³⁷ section 5 of which prohibits and declares unlawful unfair methods of competition. Unlike Indian competition law, the FTC Act does not depend on concrete or partial proof of an agreement or collusion; where regulators have a reasonable doubt about such unlawful activity, they may act directly.

B. The United Kingdom

The United Kingdom has its own competition regulatory and adjudicatory authority, the Competition and Markets Authority (CMA). The CMA derives its powers and functions from

³⁴ The Competition Act, 2002, § 4 (India).

³⁵ Vinay Sachdev, *supra* note 12.

³⁶ *Id.*

³⁷ Federal Trade Commission Act of 1914, 15 U.S.C. §§ 41-58.

the UK Competition Act 1998.³⁸ The CMA has addressed several significant cases in the digital market and has been an early adopter of technological capacity, creating the Data, Technology and Analytics (DaTA) unit in February 2019.³⁹

Both the United States and the United Kingdom have taken a proactive approach to addressing algorithmic collusion in digital markets, including through investigations, enforcement actions, and policy guidance. In recent years, there have been several high-profile cases in both jurisdictions involving allegations of algorithmic collusion.⁴⁰

V. CONCLUSION

This paper has examined what is meant by algorithmic collusion, considered some prominent examples of it, and explained how it disrupts market regularity. It has also discussed the Indian law governing competition in the market and how that law addresses the algorithmic collusion practised by market enterprises, and it has surveyed the laws and policies applied in the United States and the United Kingdom. Algorithmic collusion is practised in almost all parts of the globe. It has now taken new forms in the digital market, and regulatory authorities are sometimes unable to detect such unlawful practices at an early stage. The position is, however, slowly changing. Authorities around the globe are experimenting with new methods and enhancing their use of technology to detect collusive practices in the digital market. For example, the Danish Competition and Consumer Authority has “developed Bid Viewer, also designed to detect bid rigging and unusual patterns in public procurement.”⁴¹ The CMA has adopted similar measures to safeguard competition in the digital market, and in the United States the FTC has likewise adopted significant counter-measures against collusion in the digital space. In addition, in 2021 the CCI signed a memorandum of cooperation with the Japanese competition authority to help curb collusive practices. As has been observed, such “international co-operation agreements benefit both competition authorities and the entities subject to antitrust scrutiny. They reduce multiplicity of work and save human and financial resources for regulatory agencies. Such arrangements also significantly reduce the risk of substantive or procedural conflicts in parallel investigations for companies.”⁴²

³⁸ Competition Act 1998, c. 41 (UK).

³⁹ Nazzini & Henderson, *supra* note 2.

⁴⁰ Madhavi Singh, *supra* note 14.

⁴¹ OECD, *Data Screening Tools in Competition Investigations*, DAF/COMP/WP3(2022)5 (2022).

⁴² Manas Kumar Chaudhuri, Armaan Gupta et al., *CCI Enters Memorandum on Cooperation with Japanese Antitrust Regulator*, KHAITAN & CO. (July 12, 2021), <https://www.khaitanco.com/thought-leaderships/CCI-enters-memorandum-on-Co-Operation-with-Japanese-Antitrust-Regulator>.