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Navigating Algorithmic Pricing: “A Study Of Its Role In Indian Competition Law”

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Abstract: The situation that typically arises when we hear the term "predatory pricing" is one of a wealthy industrial giant, setting a product's price absurdly low in an effort to suppress rivals and establish a monopoly in the market. However, appearances can be misleading. Because it is sometimes clear that even a smaller organisation could fend against a cartel of larger entities by creating low price tags, predatory pricing is like a "double edged sword." However, the development of algorithmic predation has increased complexity and hardship for consumers as well as smaller companies.

There is broad consensus among scientists working on artificial intelligence, a nascent technology whose growth pattern and consequences are yet unclear, that unless it is appropriately regulated with broad guidelines and rules, it would turn into a Frankenstein monster. Competition law faces a difficult problem with algorithmic pricing that necessitates a worldwide and cooperative response leaning towards the widely held belief that the situation will only get worse in the absence of a regulatory framework.

Without considering the possible drawbacks that oligopolies and monopolies can experience as a result of algorithmic pricing, the study looks at India's competition laws.

First, it will examine the fundamentals and workings of algorithmic pricing, with particular focus on the price models that big businesses are reportedly using, as well as how they might affect market dynamics. In order to detect threats in these systems and reduce their negative effects, which fall under a limited concept of recoupment stages, it is essential to recognise that oligopoly collisions are profitable even during predatory pricing periods.

The potential illegal monopolisation required to outperform all other market participants is being overused under the guise of "AI." The study will look into the possibility of abusing algorithmic pricing in order to restrict some groups' access to the market or to set prices in a discriminatory manner. The study attempts to encourage the ethical and responsible application of AI in the marketplace by analysing both the anticipated and unanticipated effects of these technologies—which may result in further behaviour that endangers customers and competitors.

Keywords - Artificial Intelligence, Predatory pricing, Algorithmic pricing, competition law, collusion, Algorithmic Collusion, Automatic Pricing, Explicit Collusion and Tacit Collusion.

I. INTRODUCTION

It is no longer uncommon for price algorithms to be used in modern business operations. With the emergence of new technology, the competitive environment of industries has been drastically changed by the use of price algorithms as tools. Many companies, both big and small, employ price algorithms as tools for business operations and for commercial and strategic decision-making. Although the exact number of companies using pricing algorithms is hard to determine, it is reasonable to assume that a significant number of them do so to improve their pricing strategy, predict market trends, provide targeted advertising, customise services, and so on. In its simplest form, an algorithm is a systematic procedure that aids in the problem-solving of a digital system. The employment of algorithms is only one more tool in the toolbox for conducting company operations; its remarkable effectiveness has benefited both companies and clients by offering them state-of-the-art, personalised services.

A pricing determination algorithm, often known as a price algorithm, is designed to determine the cost of a particular seller's good or service by analysing and compiling a set of competitors' prices together with other information. This allows the seller to give the algorithm the responsibility of determining the product or service's pricing. Since using such algorithms is only an automation process, it is not particularly worrisome in and of itself. However, the world is moving towards learning algorithms—that is, algorithms that have a tendency to monitor, learn by observation, and use real-time data interpretation.

Their use in a number of industries, especially online e-commerce platforms and various e-service providing platforms, has raised concerns about competition because clever, self-learning pricing setting algorithms may encourage or even promote collusive behaviour. Together with the use of these self-learning pricing algorithms, the digital economy has made pricing information publicly available, giving firms the technological capacity to access the prices of current or potential competitors. By observing the behaviour of competitors' algorithms, self-learning algorithms implemented by a company could rapidly learn how to coordinate prices in order to maximise revenues. In 2015, almost one-third of suppliers to Amazon.com used automatic pricing. Due to the growth of the price re-evaluation software business, which provides turnkey pricing algorithm solutions at competitive costs, this percentage must have increased since then.

The purpose of this paper is to ascertain how algorithmic pricing affects Indian competition laws. This main goal looks at two important aspects. First, it will examine the unique features and capabilities of algorithmic pricing models, breaking down different pricing tactics and their possible impacts on market dynamics. Understanding the basic ideas of algorithmic pricing and the methods used by its holders requires completing this initial phase. Additionally, a thorough examination of the possible anti-competitive effects of algorithmic pricing in the Indian context will be carried out by the research. Furthermore, to identify shortcomings in the current Indian Competition Law, a comparative analysis of international law that has devoted resources to decoding the same is required.

II. RESEARCH QUESTIONS

1. Can the impacts of algorithmic pricing on the market—specifically, market dominance, indirect collusion, and the challenges faced by consumers and mid-sized companies be addressed by India's competition laws?
2. How can algorithmic pricing promote accountability and transparency in decision-making to avoid exacerbating already-existing market disadvantages or fostering the emergence of new types of discrimination and unfair practices in the Indian market?
3. What kinds of regulations and enforcement tactics might be implemented in the framework of Indian competition law to successfully handle the issues brought on by algorithmic pricing and its possible quick development?

III. METHODOLOGY

The introduction makes it clear that firms are now expected to use artificial intelligence to learn and price algorithms in order to guide pricing decisions. Many companies use this new technology for pricing and other business choices since it is advantageous to them and has pro-competitive effects, hence it is considered a good technological breakthrough. However, as was previously indicated, price and learning algorithms have the ability to promote collusion among competing businesses and have an anti-competitive effect on both competitors and customers. The deployment of price algorithms, their anti-competitive effects, associated problems, circumstances in which price algorithms and learning algorithms can enable collusion, and possible regulatory action and recommendations are all examined in this study.

A doctrinal research approach has been employed in order to accomplish the aforementioned study analysis and purpose. Data from a range of published sources, including books, journals, research papers, and industry reports, were used to create this study. Remarkably, authors/research researchers and the information sources, including statutes, research papers, books, numerous reports, judgements, etc., have received the credit they deserve by integrating and appropriately acknowledging their work inside the text or in footnotes or references at the end.

IV. Use and Impact of Algorithms

The use of algorithms by firms in an economy has directly increased their significance. In order to describe how algorithms are used in organizations, Stucke and Ezrachi introduced the idea of algorithmic businesses in 2016. These uses can be broadly divided into two categories: business process optimization and predictive analytics.

1. Predictive Analytics:

The process of calculating the probability of future occurrences by analysing historical data and applying an algorithm specifically designed for the dataset in question is known as predictive analytics. Forecasting price changes, estimating demand, predicting consumer behaviour and preferences, and identifying risks and shocks that could affect the market environment are all possible with predictive algorithms. The dataset may be real-time or historical.

2. Improving workflow Effectiveness:

This is the process of using algorithms to segment customers, apply optimal pricing, elicit market response, or reduce manufacturing or transaction costs in order to gain a competitive advantage over competitors in an oligopolistic market.

India's market for algorithms, machine learning, and artificial intelligence is growing rapidly and is no longer in its infancy, according to the data above. Due to the broad and common use of algorithms by companies, which has also altered how these companies operate and communicate with one another, the industry is expanding and quickly becoming more digitalised. The industry as a whole is more strongly urged to use algorithms the more broadly these technologies are used. The majority of people think that when companies use algorithms to improve their efficacy and efficiency, other companies are under pressure to digitise their operations and develop their own algorithms.

As more firms rely on these systems, data scientists and computer scientists are motivated to develop more advanced, contemporary programming concepts and technologies. This in turn encourages businesses to develop innovative algorithm-based commercial solutions. Government agencies around the world have even been motivated by the necessity to create applications for algorithms. "Series Finder" is a machine learning system that analyses historical crime data to find trends in home invasions and determine a method. This is but one illustration of the ways in which data-driven applications have been suggested—and sometimes indeed employed—to identify trends in criminal activity.

This particular algorithm has proven to be a useful tool in the police arsenal, assisting them in locating possible suspects and identifying trends in criminal activity. Algorithms for automating screening procedures, identifying collusion, and even investigating cartels have also been proposed.

By helping consumers make decisions about what to buy, arranging data, and enhancing accessibility, algorithms have greatly improved demand side efficiency. In 2017, Michal S. Gal and Niva Elkin-Koren developed the notion of the "Algorithmic Consumer" to describe the shift in consumer decision-making. Price comparison websites, which use algorithms to compare products and prices, are one example of how many customers in today's data-driven economy have given computers the power to make decisions for them.

V. Documented role of algorithms in facilitating Collusion

As was already mentioned, automated computer algorithms are powerful commercial tools with many positive competitive effects. However, algorithms can also be used to engage in nearly any type of anti-competitive activity, just like in conventional markets. Whether algorithms can be used in a way that makes them facilitate collusion is the subject that raises the most worry globally. Cartel activity has evolved in the modern day and now involves more than just two agents meeting to plot over a computer or mobile device. Pricing algorithms have broadened the traditional definition of anticompetitive behaviour while simultaneously making it more elusive and covert, turning it into a non-hard-core cartel-like structure.

But rather than deciding whether or not pricing algorithms should be prohibited, the objective should be to understand the various circumstances in which they can allow for a more creative form of price collusion.

A. Explicit Collusion: It refers to anti-competitive agreements that can be either written or verbal and are the consequence of intentional planning between the cooperating parties. Market collusion of this kind has been documented in the past. Businesses involved in this type of collusion communicate, make direct agreements, and agree on matters pertaining to output, price, and scientific and technical development in order to prove collusion.

B. Tacit Collusion: Without a formal agreement or arrangement between the colluding parties, opponents might collaborate implicitly by recognising their mutual reliance while preserving their individuality. Here, rival companies capitalise on their combined market strength without expressly agreeing on anything by using a transparent market and market players to choose their own distinct profit maximisation plans.

i. The Messenger: In this instance, companies agree to use an algorithm that determines cartel prices independent of market movements. Even when an algorithm is employed as a collusive tool, no new competition concern is raised because a cartel cannot be formed and maintained in this situation without an explicit agreement amongst the competing businesses. Algorithms are therefore essentially just another new technology that cartelists have adopted in this instance. Over the years, it has been observed that cartelists have consistently utilised any new technology that has been available, including the development of computers, phones, email, and messaging applications.

ii. The Hub and Spoke: In this case, a number of businesses employ the same algorithm for the same objective, such as moving pricing decisions to a third party that offers algorithmic pricing services, such as Boomerang, Feedvisor, Pricing Pro, and others. In this case, a third party serves as the hub, and sensitive information is shared via the spokes, which are rival companies that decide to contract with the hub for price decisions. As a result, the hub encourages cartelistic activity among rivals, which is concerning because these agreements eliminate any doubt regarding the actions of competitors.

iii. Judicial analysis uncovering collusion facilitated by algorithmic pricing: The Competition Commission of India (CCI) issued its initial ruling regarding the hub-and-spoke structure in *Samir Agarwal v. Ola & Uber*. On November 6, 2018, the Competition Commission of India (CCI) issued its first finding on the hub-and-spoke arrangement issue in *Samir Agarwal v. Ola & Uber*, holding that cooperation was a necessary condition for a hub-and-spoke conspiracy. On November 6, 2018, deciding that a hub-and-spoke conspiracy required coordination.

The informant, Samir Agarwal, used Uber and Ola as service providers. He filed a complaint with the Commission, alleging that Ola and Uber had violated Section 3 of the 2002 Competition Act. According to the complaint, drivers on this platform were unable to bid against each other on fares since Ola and Uber used algorithms to determine and determine taxi prices. Furthermore, the case argued that the drivers utilising the platforms were not Ola/Uber employees because they were independent third-party service providers. With Ola/Uber serving as the hubs and the drivers as the spokes in a price-fixing conspiracy, this would demonstrate that the drivers and the companies were not one and that their arrangement amounted to price-fixing. The CCI stated in its order that the current structure was not a hub and spoke arrangement because there was no coordination or agreement to conspire amongst the drivers on Ola and Uber. The Commission came to the conclusion that there was no proof of collusion among the drivers, despite the fact that they had agreed to have their prices determined by the algorithms of Uber or Ola. The fact that, in this specific case, a hub-and-spoke model of cartelisation would necessitate an agreement among the drivers for the platforms to coordinate prices among the drivers lends credence to the previously noted conclusion.

In their analysis of hub and spoke conspiracies, CCI emphasised the need of horizontal agreement, or the drivers' consensus to band together on rates in order to lose customers, as a necessary condition for the formation of a hub and spoke kind of collusion conspiracy. Since cooperation between the hub and spoke is really collusion amongst the spokes, this is a significant discovery. Therefore, a vertical agreement between the hub and spokes would imply a horizontal collusion in which multiple spokes (drivers) sign into a vertical agreement with the hub, like Ola or Uber. There was no horizontal conspiracy between the spokes or drivers in this case.

iv. Predictable Agent: In this instance, each business develops its own algorithm to predict outcomes and react in particular ways to changing market conditions. In this instance, each business is completely aware of the potential advancements brought about by competing algorithms. Because algorithms are designed and used in a way that enables them to monitor and track the prices set by other algorithms, they will ultimately lead to interdependence between the organisations. There will be less market pressure for competition and a greater likelihood of collusive activity because these algorithms can react swiftly to these price changes.

AI – powered unit or electronic monitoring system: In the autonomous machine scenario, algorithms are not merely tools used by homo sapiens to form a cartel; rather, they are autonomous agents created by businesses to accomplish certain goals, such profit maximisation. Ezrachi and Struke assert that "the machines will determine the means to independently optimise profits through self-learning and experimentation." Furthermore, they have claimed that the internet will allow the competition to have full knowledge of every aspect, including production, logistics, clients, sales, and deliveries.

The primary concern that has not yet been addressed in this study is that algorithms may make it possible for companies to retain profits above the level of a competitive market without ever signing an explicit agreement, so expanding the gap between explicit and implicit collusion. For example, a new mechanism that facilitates the implementation of shared policies and monitors the behaviour of other firms without the need for human involvement could be developed using an algorithm. The algorithm would establish implicit coordination in this fashion, replacing overt collusion.

"Any arrangement or understanding or action in concert-whether or not it is written or whether or not it is intended to be enforceable by legal proceeding" is how the Competition Act, 2002 defines agreements, ensuring the most comprehensive possible application of the law. A quick look at section 3 of the act will show that, because of the way competition law is structured, an agreement between competitors must be established before collusive behaviour may be taken into consideration. Whether the increasingly complex forms of communications will fall under the meaning and purview of the agreement is the question that competition law enforcement agencies around the world must answer quickly.

VI. Reasonable alternative methods

Before concluding that drastic measures, perhaps of a legislative nature, are required to address tacit collusion and determine the extent of liability for artificial intelligence, a serious attempt should be made to apply the current, traditional approaches to the issues at hand. This may involve revisiting the concept of agreement or reevaluating the legal approach. This is because, in reality, algorithms and the market distortions they induce are just now starting to be recognised by competition law. Ex ante measures like market research, merger control enforcement, or regulatory corrective actions are some of these traditional tactics that have a decent possibility of functioning against collusive algorithms. A market inquiry and research may be required when there are unmistakable evidence that a sectoral market is not functioning effectively but no signs of cooperation among the market participants. Finding the reasons behind the market's failure as well as possible solutions for market self-correction, enforced correction, and possible legislative changes should be the aim of the study.

Reasonable Regulatory response

No competition regulatory body has yet to enact laws to prevent machine learning algorithms from achieving tacit collusion because of the possibility of further types of harm to the competitive process. As of yet, no law has been proposed to regulate algorithmic collusion in the context of international competition. It's also important to remember that there are currently no competitive enquiries or cases, thus there is no foundation for the creation of legislation to prevent algorithmic collusion. Enacting laws to prevent the negative consequences of undetected behaviours is inappropriate.

i. Pricing control: Many competition regimes may automatically respond by implementing maximum pricing limits when they learn that algorithms in digital markets are producing prices that are anti-competitive in the absence of traditional collusion criteria like intention and communication.

ii. Structure for algorithmic perspective: Competition authorities may eventually consider implementing rules that restrict the algorithm design process itself.

According to Vestager (2017), businesses "must and can do is ensure antitrust compliance by design." Pricing algorithms must therefore be created in a way that avoids collusion. In response to an offer of collusion, they have to say, "I'm sorry, I'm afraid I can't do that," like a more respectable HAL in the 2001 film. Algorithms may be prevented from reacting in a way that prevents businesses from independently arriving at coordinated anti-competitive prices if certain market parameters that are found to be necessary to sustain tacit collusion are regulated.

Inadequate policies leading to misguided collusion tactics: Another reasonable step towards regulation is the creation of regulations that will change the digital market's structural composition in a way that will increase the likelihood of collusion.

One example of this is the rising use of discount codes, which reduces the transparency of the discounts offered by various digital shopping platforms; another is a policy that imposes lags on price adjustments and the frequency of interactions in the digital market. Furthermore, this strategy is likely to restrict the quantity of information that the user can access and result in significant completion limits.

CONCLUSION

In conclusion, cartel behaviour is changing, and soon, people using computers to engage in collusion will be replaced by machine learning algorithms or pricing algorithms designed specifically for this purpose. An algorithm poses unique difficulties for the enforcement of competition law since it is not required to keep an internal paper or email trail for communications that would have shown the establishment of a cartel. Furthermore, it is more challenging to attribute blame for any antitrust violations the algorithm may have committed.

The competition law regulatory authorities will also need to change since they can no longer depend on the unavoidable dissolution of a traditional cartel or on defectors using the leniency programs offered by different competition regulatory bodies in exchange for cooperation and information about the cartel.

Because it prohibits anti-competitive agreements and the misuse of dominant positions, the Competition Act of India provides a robust legal framework to address concerns brought up by algorithmic pricing techniques. However, the application of these regulations necessitates a detailed evaluation of the technical and practical components of the economy, given the rapidly evolving nature of digital markets.

Important issues including algorithmic pricing transparency, data access, and the role of competition authorities in monitoring and regulating it should receive more attention from policymakers, regulators, and scholars. Collaboration between engineers, economists, and competition authorities is also required to detect and deter anti-competitive behaviour in algorithm-driven marketplaces. The major objective of competition law in the era of algorithmic pricing is still to strike the right balance between promoting competition and innovation and safeguarding the interests of consumers. To ensure fair and competitive marketplaces that benefit businesses and consumers alike, India must adopt a proactive and adaptable approach as it negotiates this difficult climate.

