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Platform Governance and Algorithmic Self-Preferencing by Dominant Digital Marketplaces

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ABSTRACT

This paper addresses the challenges of self-preferencing through algorithms in digital platforms, drawing out implications for competition, consumer welfare, and the regulatory environment. With digital in today's world increasingly shaping business dynamics, their proprietary algorithms channel out market dynamics and the underlying influence in favour of their own products vs. its competitors. Combined with the evolution of the regulatory framework and specific focus on EU Digital Markets Act (DMA) and EU AI Act, introducing more transparency and fairness in algorithmic practices. Using the methods of systematic literature review, a case study and comparative legal analysis, the research describes the different ways of self-preferencing, quantifies its effects on consumers' decisions and examines the competitive disadvantage of smaller market actors. The results expose a lower level of transparency in operations and major adaptive algorithmic variants to make regulator oversight even more difficult. While some difficulties remain in the way, self-preferencing-removing accountability devices which include independent audits and greater transparency reporting are demonstrating success in reducing the adverse impacts of self-preferencing. The paper also presents policy recommendations to promote a fair and balanced digital marketplace, stressing the importance of establishing strong regulatory frameworks, multistakeholder governance and ethical algorithm design to support fair competition and consumer interests in the digital economy.

KEYWORDS

Algorithmic Self-Preferencing; Digital Platform Governance; EU Digital Markets Act (DMA); Algorithmic Transparency; Antitrust Regulation; Consumer Welfare.

INTRODUCTION

In the last 20 years, digital marketplaces have transformed the world of commerce. These have become the major middlemen between buyers and sellers, from e-commerce sites to app distribution services; from online advertising networks to social media platforms.¹ They're booming due to swift technological advances, a high internet connection, and changing consumer demands. Such platforms have made transactions more efficient and delivered extremely customized experiences. But with the rise of market power among these digital intermediaries, issues of governance and competition have arisen.²

The regulatory framework of digital markets has greatly changed in recent years, especially in the EU. The EU Digital Markets Act (DMA) and EU Artificial Intelligence Act (AI Act) introduce binding rules on transparency, fairness and auditability of platform algorithms.³ These frameworks directly tackle issues of algorithmic self-preferencing and hold big platforms to account. The analysis in this study is set against this backdrop of the changing nature of these regulations, which reflect significant advances, but where there are gaps in implementation and enforcement worldwide.

Proprietary algorithms are at the core of digital marketplace functions, including search results, product recommendations, and targeting consumers. These algorithms are user-friendly and efficient, but at the same time they are complicated, adaptable, and opaque.⁴ The opacity of these algorithms hinders regulators, competitors and consumers from knowing whether the algorithms are working in a way that is in the public interest. Algorithmically self-preferencing is a controversial practice that has been heavily criticized.

Algorithm self-preferencing is the systematic alteration of the algorithmic criteria to promote a platform's own products/services.⁵ It can be as simple as tweaked ranking systems, by curating recommendations and enriching the in-house recommendation list, or even as advanced as search filters that negatively affect competitive content. While platforms argue these are necessary for efficiency and user satisfaction, opponents say self-preferencing

¹ Jean-Charles Rochet & Jean Tirole, *Platform Competition in Two-Sided Markets*, 1 J. EUR. ECON. ASS'N 990 (2003).

² Lina M. Khan, *Amazon's Antitrust Paradox*, 126 YALE L.J. 710, 716–18 (2017).

³ Digital Markets Act, Council Regulation 2022/1925, 2022 O.J. (L 265) 1 (EU).

⁴ Frank Pasquale, *The Black Box Society: The Secret Algorithms That Control Money And Information*, 8–16 (2015).

⁵ Nicolas Petit, *Theories of Self-Preferencing Under Article 102 TFEU: A Reply to Bo Vesterdorf*, 1 COMP. L. & POL'Y DEB. 4 (2015).

skews competition, restricts consumers' options, and stifles innovation by shutting out smaller market competitors.⁶

The purpose of this paper is to unpack the dynamics of digital platform governance, and specifically its algorithmic self-preferencing. In particular, the study aims at:

- Examine the algorithmic tools and techniques used by dominant digital platforms to incentivize their own products.
- Examine the competitive and consumer consequences of self-preferencing.
- Evaluate existing regulations and their effectiveness in combating such practices.

Relevance of this research is rooted in its ability to advise the policymakers, industry participants and academics on the importance of balancing efficiency benefits of algorithmic innovation with fairness, consumer welfare and the competitive market. This paper adds to the ongoing discussions on digital sovereignty, the ethics of algorithm design, and the regulation of markets in the digital era.⁷

LITERATURE REVIEW

Digital marketplaces are case-studies in multi-sided platform strategy. They allow the interaction of different user groups (consumers, sellers, advertisers and developer partners), where each group has to add a network effect that will enable an increase in the platform overall value.⁸ Preliminary research in some of the leading works on multi-sided platforms has confirmed that, the more participants you add to a platform, then the value it provides grows exponentially. Yet, these positive network effects also create less competition and a few players with tight controls of the market.⁹

Algorithms are the backbone of how digital platforms function. They are used for so much more than simply processing data they control what stores get priority, how prices are set, and even the behaviours of consumers.¹⁰ Current literature extensively documents two particularly important characteristics of algorithmic behaviours.

⁶ Jacques Crémer et al., *Competition Policy for the Digital Era* 52–54 (European Commission 2019).

⁷ Orla Lynskey, *The Foundations of EU Data Protection Law* 15–20 (2015).

⁸ Rochet et Tirole, *supra* note [1], at 993–96.

⁹ Khan, *supra* note [2], at 740–43.

¹⁰ Pasquale, *supra* note [4], at 15–20.

The latest algorithms used by digital marketplaces leverage powerful machine learning methods and iterative feedback loops.¹¹ This allows the platforms to respond to consumer behaviour immediately, refine recommendations and customize search results as per user preferences. The adaptive nature of these algorithms are useful in making operational efficiency, but it also leads to systematic bias. Algorithmic favouritism of in-house products may increase search relevance of market leaders, but they also are self-preferencing practices.¹²

These “black-box” algorithmic systems have been criticized by a large number of studies. The opacity makes it difficult for outside parties to see how decisions are made and if there is any intended bias.¹³ The black-box algorithms, which have proprietary systems shielded as trade secrets, also make it hard for regulators to recognize and measure anti-competitive behavior.¹⁴ This opaqueness has led to demands for transparency and independent algorithm audits.¹⁵

Previous research typically claimed that ‘algorithmic self-preferencing’ was commonplace on the most popular platforms, but recent, high-profile empirical studies offer a more complicated picture. The extent to which algorithmic bias is prevalent and persistent is not consistent across platforms, as some studies have identified a decrease in algorithmic bias after regulatory pressure and self-regulated changes to their platforms. Furthermore, the EU Digital Markets Act (DMA) and EU AI Act impose transparency and audit obligations on platforms, starting a new trend in forcing platforms to change their behaviour. The above developments require a rethink on the talk of algorithmic self-preferencing, which must account for the dynamics of regulation and platform governance.

Algorithms that engage in self-preferencing have considerable economic implications. Researchers have observed that there are several negative effects when a digital platform's algorithm is sloped toward its own products:

¹¹ Jenna Burrell, *How the Machine "Thinks": Understanding Opacity in Machine Learning Algorithms*, 3 BIG DATA & SOC'Y 1, 3–6 (2016).

¹² Chiara Farronato et al., *Self-Preferencing at Amazon: Evidence from Search Rankings*, 113 AEA PAPERS & PROC. 235, 237–39 (2023).

¹³ Burrell, *supra* note [11], at 5–6.

¹⁴ Pasquale, *supra* note [4], 20–25.

¹⁵ Cathy O'Neil, *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy*, 29–31 (2016).

- Market Inefficiency: Consumers can be influenced to purchase products that may not be the most efficient or best products, thus decreasing allocative efficiency.¹⁶
- Consumer Welfare Reduction: The high positioning could result in an increase in prices and a decrease in consumer surplus.
- Barriers to Market Entry: Smaller competitors might not be given the market visibility needed, preventing innovation and furthering market dominance.¹⁷

The economic literature highlights that matching efficiency and enhanced utility are some of the alleged benefits of the more sophisticated algorithms, but that these benefits need to be carefully balanced against the potential for market distortion and imbalance.¹⁸

The research on legal issues relating to self-preferencing, specifically algorithmic self-preferencing, has grown with increasing emphasis. Algorithmic discrimination presents a more intricate landscape and can be difficult to address with traditional antitrust laws, which are designed to detect explicit collusion or price-fixing.¹⁹

Analysts argue for the use of updated legal frameworks that incorporate:

- Independent Audits: Mandatory review of proprietary algorithms to ensure fairness.
- Transparency Reports: Periodic reports on algorithmic decision-making processes.
- New Evidentiary Standards: Developing clear standards for identifying anti-competitive practices online.

Judge decisions about what practices constitute legitimate use of the platforms have already begun to acknowledge these problems, and what platforms can do is to ensure they clearly demonstrate how their algorithmic changes actually benefit their businesses, instead of just ensuring their dominance.²⁰

Algorithmically unequal is a term that is becoming more prominent in debates about digital marketplaces. Recent research shows that biases in algorithmic processes can exacerbate inequalities between consumers, especially between high and low purchasing power

¹⁶ Michael Luca, Designing Online Marketplaces: Trust, Reputation, and Algorithmic Governance, 48 J. ECON. PERSPECTIVES 41, 44–46 (2020).

¹⁷ Crémer et al., *supra* note [6], at 55–58.

¹⁸ Id.

¹⁹ Ariel Ezrachi & Maurice E. Stucke, Virtual Competition: The Promise and Perils of the Algorithm-Driven Economy 150–60 (2016).

²⁰ Cases AT.40462 (Amazon Marketplace) & AT.40703 (Amazon Buy Box), Comm’n Decision, Doc. C(2022) 9442 final (Dec. 20, 2022).

consumers.²¹ For example, predatory marketing practices facilitated by data sharing are detrimental for consumers with limited self-control and worsen socio-economic inequalities.²² The latter line of thought underlines the importance of regulatory frameworks that ensure market efficiency and users safety.

RESEARCH METHODOLOGY

In this study, algorithmic self-preferencing is examined qualitatively and using a multi-method approach. The study is threefold in nature: a systematic literature review, a detailed case study analysis of the dominant digital platforms, and comparative legal analysis. This is a multi-faceted design that gives a macro view and a micro view of such dynamic phenomena.

This research is based on a thorough literature review, regulatory documents and industry reports. The process consists of the following:

- Selection Criteria Covered: Only quality peer-reviewed sources and official regulatory documents are selected. The sources cover a range of subjects such as economics, law, computing and media studies.
- Thematic analysis: The literature is divided into themes: multi-sided platform dynamics, operations of algorithms, economic implications of data and algocultures, and emerging law and regulatory views and reactions.

A key aspect of a review is to identify gaps in the research. The literature documents persistent problems of transparency, accountability, and fairness in the self-preferencing of algorithms, which need to be looked at more thoroughly both empirically and legislatively.

These case studies provide detailed empirical insights and context into self-preferencing, as it is employed by algorithms. The case studies chosen for this document centre on the following:

- E-commerce Platforms: Study of the top platforms in this space that have been alleged to influence search results in order to promote their own products.
- App Distribution Marketplaces: Review of digital app stores/places where specific brand apps have advantages over other apps.

²¹ Safiya Umoja Noble, *Algorithms of Oppression: How Search Engines Reinforce Racism* 15–25 (2018).

²² O'Neil, *supra note* [15], at 145–50.

A regulatory engagement analysis on what platforms have had to say and do to regulatory challenges and legal investigations regarding algorithmic use.

The case studies are oriented in the following sections:

- Background information on the platform's products, services and other offerings.
- An examination of the algorithmic processes on the platform.
- In-depth analysis of relationship with regulatory authorities and court proceedings.
- Comparative analysis to make general inferences about the governance of the marketplace.

The empirical case studies are complemented by a comparative legal analysis of algorithmic self-preferencing cases decided by judges and propositions on regulatory measures. This analysis involves:

- Judicial Case Review: In-depth analysis of important cases to examine the algorithmic practices in digital markets. Transparency requirements, documentary evidence claims, and innovation versus consumer protection are points of focus.
- Policy Evolution: Evaluation of current legislative efforts and suggestions to the public on reducing self-preferencing. This includes topic coverage of independent audits, disclosures and international regulatory harmonisation.
- Evidentiary Standards: Critically assessing the difficulties of establishing discriminatory or anti-competitive practices in complicated algorithmic practices.

The study includes an analysis of the effects of the EU DMA and AI Act on the governance practices on platforms, specific to reporting transparency and audits. The regulatory landscape shapes the choice of case studies and legal inquiries, which helps to determine the impact of the regulatory frameworks on algorithmic self-preferencing and the effectiveness of regulation.

Data triangulation involves using several independent sources of information to substantiate the conclusions that are drawn, which helps ensure the strength of such conclusions. To protect data confidentiality and proprietary restrictions, this study only includes publicly available data and secondarily, using appropriate methods. Ethical considerations have been adhered to and the analysis has been conducted in a way respecting the violations of intellectual property, aiming at an increase in the public understanding and regulation effectiveness.

RELEVANT CASE LAWS

The underlying legal analysis is based on two precedent-setting cases that have helped to inform the jurisprudence of algorithmic self-preferencing. The cases here highlight the dilemmas facing courts in applying traditional competition law in the context of "black box" practices in the marketplace.

One was the European Commission's antitrust probe into Amazon (Case AT.40462), which focused on the CJEU and the European Commission's complaints about the "separate and distinct role" that Amazon played as both a competitor and a marketplace owner, alleging that the marketplace algorithms prioritized Amazon's own retail operations, which harm competition.²³ In fact, after an internal investigation and whistleblower allegations surfaced, it was found that the website has tweaked search ranking algorithms to boost its own product hits. This practice caused some competitors to become less visible, and hurt smaller vendors. The decision highlighted three points: application of Article 102 TFEU on abuse of dominant position; the application of directive principles of algorithmic governance; and compliance measures to guarantee non-discriminatory pricing.²⁴

In judicial proceedings, legal experts investigated the technical aspects of the algorithmic changes as well as their competitive effects. Although algorithms are needed to run the applications, the court found them to be subject to "conscious tinkering" to enable the development of in-house applications, thereby triggering serious antitrust issues. The decision called for transparency in presenting the evidence if any such adjustments are called for and put a requirement on platforms to make sure that further independent check-ups are carried out.

This decision has had far-reaching consequences for the regulation of activities. It has inspired policy discussions on the need for ongoing monitoring and has laid a judicial precedent on the consequences of algorithmic transparency. This incident has also brought up concepts for periodic review and greater transparency of algorithmic standards regarding algorithms.

²³ Case AT.40462 — Amazon, Commission Decision (Dec. 15, 2022).

²⁴ Consolidated Version of the Treaty on the Functioning of the European Union art. 102, Oct. 26, 2012, 2012 O.J. (C 326) 47 (hereinafter TFEU).

An example of the latter case is the U.S. Federal Trade Commission's lawsuit against Apple's App Store practices (FTC v. Apple Inc., 2021), in which the allegations focus on "algorithmically preferred" proprietary apps, i.e., Apps which are sought preferentially by their algorithm.²⁵ One of the biggest marketplaces for apps was charged with giving its own developed apps preference over third-party apps. The complaints focused on the advanced recommendation algorithms that the marketplace includes, which allegedly were engineered to favor the ads of proprietary apps over other recommendations so that proprietary apps would be prioritized at the top of search results and recommendations, violating competition among different apps. The case showcased the conflict between platform control and antitrust requirements under U.S. competition laws, and the court emphasized that transparency and fairness towards third-party developers must be brought up.²⁶

In this case, the judicial panel considered the competition elements of the app ecosystem and the technical infrastructure of the app's recommendation system. In analyzing the situation, it was found that there was a definite preference that negatively impacted the competition and system of innovation. Field Experts have clarified that platforms have the freedom to innovate, but it is their responsibility to avoid developing and utilizing algorithmic power that could adversely affect the competitive landscape.²⁷

In the context of the above case, the judgment has been raising questions about the need for greater security and regulation. It shows that algorithmic self-preferencing isn't just in the ecommerce world but is a systemic problem in online markets. It will become the standard in the future for digital economy rules to ensure fair and transparent competition.²⁸

The algorithmic self-preferencing judicial decisions are important to consider when considering the problems and solutions of algorithmic preferred placement. They assert that current types of regulatory oversight are inadequate due to the need to cover marketplaces in greater detail and in real time across changing technologies, and to emphasize competition and fairness as key components of a regulatory framework for digital marketplaces. The described cases provide examples to be considered in the context of jurisdictional strategies for self-preferencing by algorithms and continue to influence current regulatory considerations.

²⁵ In re Apple Inc. App Store Litig., No. 4:11-cv-06714 (N.D. Cal. 2021); FTC v. Apple Inc., No. 5:21-cv-02458 (N.D. Cal. 2021).

²⁶ Herbert Hovenkamp, *Antitrust and the Platform Economy*, 118 MICH. L. REV. 1233, 1260–65 (2020).

²⁷ Epic Games, Inc. v. Apple Inc., 559 F. Supp. 3d 898, 1010 (N.D. Cal. 2021).

²⁸ Hovenkamp, *supra* note [28], at 1265–67.

Results

The examination of several case studies provides strong evidence of algorithmic self-preferencing within the dominant digital platforms, with its practice manifesting in various different forms. There are two main empirical findings:

- Different Platforms employ different means of self-prefacing. These include the algorithmic changes to rankings, targeted promotion of a platform's own products as well as dynamic pricing mechanisms that give preference to products offered in-house. This practice is meant to generate the maximum return on revenue of the platform and to enhance the user experience, which appears to be just the opposite.
- A measurable consumer impact: data shows that algorithmically improving the visibility of proprietary products can directly result in measurable shifts in consumer behaviour. In cases where those identical alternatives are available, for example, when the same kind of material is displayed for the primary audience, the traffic coming from self-preferenced content has proven to have higher engagement and conversion rates for the platform's own content.
- Competitive Disadvantages: Smaller and new players get low exposure in the market consistently as dominant players get more. As a result, this systematic impedance erects barriers to entry and encourages market consolidation, which in the end leads to less dynamism in the market.

Our work also reveals the mechanisms behind algorithmic practices from within, and finds that:

- Opaque Algorithmic Controls: Platforms develop algorithms using their own security measures to keep the methodology largely secret. This deliberate opacity obstructs independent verification of anti-competitive practices.
- Adaptive Machine Learning Models: Adaptive machine learning models enable platforms to dynamically adjust their algorithmic models in response to customer interaction.²⁹ This adaptation then makes for quick responses while it simultaneously puts in place self-preferencing tendencies, which are hard to reverse or even observe.

²⁹ Burrell, *supra* note [11], at 5–6.

- Internal revenue incentives: Evidence indicates that an internal revenue target can be correlated with an incentive to engage in self-preferencing. The more platforms increasingly depend on algorithmic results to maximize in-house product sales, the more these incentives can lead to biases that can eventually harm the market system as a whole.³⁰

The results reveal that algorithmic self-preferencing continues to be a major worry for major digital markets. It is important to note, however, that the phenomenon is not uniform nor is it absolute. Empirical evidence shows that regulatory actions, including the EU DMA and EU AI Act, have caused platforms to cut down on prominent algorithmic bias and enhance transparency. Moreover, economic counter-arguments point to the possibility of consumer welfare gains from vertical integration and some algorithmic preferences, which can capture and channel network effects, and lower transaction costs. Such integration can result in better service quality and innovation that make it harder to view self-preferencing as always being anti-competitive. The detailed knowledge highlights the need for context-sensitive regulatory and governance interventions.

The study finds there to be five key problems that come with algorithmic self-preferencing:

- Proprietary Secrecy: Proprietary algorithms work in secret; therefore, typical oversight mechanisms are ineffective. If there is not sufficient transparency, regulators and independent auditors won't reliably be able to determine whether the algorithms are being manipulated for favors.
- Dynamic Algorithmic Adjustments: In times of new consumer data, the algorithmic parameters themselves are rapidly changing, thereby creating a moving target in the regulatory arena. The dynamic nature makes it difficult to come up with solid, stable measures of anti-competitive biases.
- Ineffective Transparency Reports: Also, transparency reports have been prepared by some platforms, but they don't provide the transparency that would be useful for external evaluation, and are generally light on details.

Over the years there have been some encouraging mechanisms developed to offset self-preferencing:

³⁰ O'Neil, *supra* note [15], at 145–50.

- Independent Algorithm Audits: Many of these proposals call for the appointment of independent auditors to regularly evaluate algorithmic activity. These audits might uncover system-wide bias and provide transparency of the conditions under which algorithms are working.
- Improved Transparency Reporting: Certain platforms have started releasing in-depth transparency statements that explain important metrics and factors used in algorithmic decisions. Though already emerging, these reports are the first moves of what may come to be known as algorithmic governance.
- Collaborative Multi-Stakeholder Initiatives: There have been calls for industry-wide fora involving regulatory, academic experts, and industry players. These efforts might contribute to setting common benchmarks for fair algorithms, encourage information sharing and stimulate the identification of joint regulatory frameworks.

Overall, the empirical study shows that:

- Algorithmic self-preferencing is commonplace in the major digital platforms.
- Algorithms are opaque and adaptive, which are two important reasons for competitive distortions.
- Self-preferencing poses a real disadvantage to the consumers and smaller market players.
- There are some mechanisms that have emerged that promise to reduce these harmful impacts, but there are important challenges.

DISCUSSION

The results have implications that go well beyond the specific aspects of digital markets:

- Distorted Competition: When the players are self-referencing, such practices create skewed competitive landscapes that favour a smaller portion of the market with a larger share going to fewer players.³¹ This skewness not only hurts the competitor opportunities but could also limit aggregate market innovation.
- Consumer Welfare Concerns: The benefit of self-preferencing on the up side can be that it can increase the number of visits by making the recommendations more

³¹ Khan, *supra* note [2], at 745–50.

pertinent to the user's preferences, over time it can also result in a marked reduction of consumer choice, which can introduce potential inefficiencies and a drop in consumer surplus.³²

- Risk of Innovation Stagnation: With dominant players having greater control, there is a risk of less competitive pressure for innovation. This may affect the entire economy and the vibrancy of the digital economy sector.

Algorithmic self-preference presents mixed challenges for the development of technologies and for maintaining market fairness:

- Platform Autonomy vs. Regulatory Oversight: While platforms contend that algorithmic adaptations deliver superior user experiences, unchecked autonomy may lead to market manipulation. There's a need to come up with different strategies for adaptation, ideas that allow you to be innovative while also maintaining the competitive fairness
- Legal flexibility: Regulatory systems need to be proactively adjusted to the new technology. It requires legally flexible principles which change in line with the new ways of innovation through digital and concepts that tackle the nuances of algorithmic discrimination.
- Ethical Considerations: Ethical requirements call for transparency, fairness and accountability to be built into the design and operation of algorithms. An ethical approach must be incorporated into industry best practice to embrace such ethical aspects while being cognizant of consumer protection.

Independent algorithmic audits are heavily suggested as a solution to self-preferencing, but there are many technical and practical difficulties to consider. High-capacity adaptive machine learning models constantly adapt to real-time data are used by dominant platforms, rendering static audits ineffective.³³ Sophisticated methodologies are needed to conduct such audits, such as continuous monitoring, explainable AI techniques, and access to proprietary data under secure and controlled conditions. Additionally, platforms can have audits changed: they can change the parameters, or they can even change the data available in an audit, so certain legal requirements and technical specifications must be in place to supervise audit integrity.

³² Ezrachi & Stucke, *supra* note [19], at 150–55.

³³ Burrell, *supra* note [11], at 5–6.

Economic opinions also warn against knee-jerk reactions to algorithmic self-preferencing. Network effects can be positive and can be achieved within one organization, a process known as ‘vertical integration’. Integration can be vertical, and can bring the advantages of network effects into one organization in terms of lower costs, better quality and smooth user experiences. It's difficult to tell the difference between pro-competitive algorithmic preferences, and those that are illegal and artificially warp competition.³⁴ As such, regulatory regimes need to be aligned to maintain the desirable integration while at the same time avoiding abuse of dominance.

Based on our findings, the following policy recommendations emerge:

- **Mandated Transparency and Auditing:** Regulatory bodies must implement transparency and auditing rules which require platforms to have independent audits of algorithms on a regular basis. Such audits should identify for example if there is self-preferencing bias and if algorithms comply with particular fairness standards.³⁵
- **Improved Reporting Requirements:** Platforms should submit comprehensive transparency reports on algorithmic methodologies and decision parameters as well as implement procedures to avoid making disproportionate changes that favour their own products.
- **Multi-Stakeholder Regulatory Frameworks:** Collaborations between industry representatives, independent experts and government agencies in regulatory approaches are a priority. By working together towards this goal, consistent global standards will be set and fair implementation of them will take place.
- **International Coordination:** Digital markets are global and thus require coordination between markets. Regulatory arbitrage and consistency of regulatory approaches to anti-preferencing can be reduced by harmonised regulatory standards between jurisdictions.³⁶

In the future, explainable artificial intelligence (AI) and algorithmic auditing tools could revolutionize digital market governance. These sophisticated audit processes and explainable AI methods can result in:

³⁴ Petit, *supra*, at 7–8.

³⁵ DMA, *supra* note [3], art. 15; Crémer et al., *supra* note [6], at 62–66.

³⁶ Org. for Econ. Co-operation & Dev., *An Introduction to Online Platforms and Their Role in the Digital Transformation* 110–18 (2019).

- More Transparent Algorithms: Exa can shed light to understand how complex algorithms make decisions and understand potential bias in machine learning processes.
- Enhanced Data Analytics: Through advanced data analytics, regulatory bodies could create tools for real-time monitoring of algorithmic fairness.
- Longitudinal Studies: Long term and continuous evaluations can be used to test changes in the properties of the algorithms over time, and determine if intervention efforts successfully reduced competitive imbalances over time.

While this research demonstrates some of the contributions, there are some limitations:

- Data Accessibility: Detailed algorithmic data is hard to obtain.³⁷ More widespread Data Transparency initiatives will be useful for future research.
- Technological fluidity: The changes brought by technology mean that findings can be superseded quickly. Ongoing surveillance, with further research to be updated.
- Interdisciplinary Integration: More comprehensive integration of ideas from economics, law, computer science and ethics would be required to establish comprehensive frameworks that would consider all aspects of algorithmic self-preferencing.
- Measurement Challenges: Measures and assessing methodology needs to be innovative; algorithms are dynamic and adaptive in nature.

The restrictions also remind us that there are key issues still to be explored that include the creation of a standard transparency protocol, more advanced auditing tools for algorithms, and a detailed framework that considers the legal and economic variables as well as technical values.

CONCLUSION

This study recognizes the crucial importance of the EU Digital Markets Act and the EU AI Act for providing standards of transparency, accountability and auditability of platform algorithms. The enactment of these pieces of legislation are important milestones towards rectifying algorithmic self-preferencing, but we are still a long way from seeing them fully

³⁷ Pasquale, *supra* note [4], at 200–08.

implemented. Recent evidence indicates that there is ongoing evidence of self-preferencing practices, but that there are changing regulatory pressures and economic rationales for these practices that make assessing them difficult.

The main findings are:

- Issues with self-preferencing: In most dominant digital markets, it appears that they are pumping up their own products over those of competitor brands through the use of proprietary algorithms.
- Opaque Operations: The lack of transparency in their operations and the capability to adapt to their environment make it difficult to oversee these algorithms externally, thus maintaining their biases.
- Economic and Competitive Impact: Self-preferencing might produce benefits in some factors of platform utility but is associated with market inefficiencies and consumer welfare losses, as well as competitive disadvantages.
- Emerging Mitigations: Independent audits, improved transparency reports and multi-stakeholder partnerships are hopeful developments as emerging mitigation strategies to address the adverse effects of self-preferencing.

The consequences of algorithmic self-preference are far reaching in the digital economy:

- Regulatory Call to Action: Policymakers need to create rules that are adaptive, long-range, and provide transparency, accountability, and dynamic oversight.
- Platform Responsibility: Each dominant platform is now the responsibility of balance between business goals and ethical considerations and competitive justice.
- Consumer Protection: Greater transparency and regulations are needed to protect consumer interests and promote the competitiveness of digital markets.

Based on the above, it is recommended that the following governance measures be considered when seeking to implement a balanced digital marketplace:

- Introduce Regular Independent Audits: Regularly have algorithmic processes reviewed by independent organisations.
- Enforce Transparency Reporting: Demand forthcoming algorithms details on platforms, such as the reasons for algorithm adjustments and criteria.
- Support Multi-Stakeholder Dialogue: Promote and establish multi-stakeholder dialogue involving consumer associations, industry experts, and regulators.

- Develop International Standards: pursue harmonized standards in the regulatory sphere, which would be effective across jurisdictions in order to reduce algorithmic self-preferencing at an international level.

Policymakers should aim to further evolve these frameworks to include technical audit standards that are able to take account of adaptive algorithms, and at the same time to account for economic values arising from certain shapes of vertical integration. Ethical algorithmic practices and a transparent algorithmic governance need to be encouraged to promote trust and competitive fairness to platforms. Multidisciplinary solutions, where legal-, economic- and technical expertise come together, will be key for the years to come if it comes to digital platform governance.

Algorithmic self-preferencing is a fresh and complex trade-off between digital technology, competition and public policy. Algorithms can be used for efficient processes and innovations, but also to create market power and distrust of the consumer. Therefore, a multi-disciplinary and dynamic approach towards a new type of governance is key, in this case to reduce these risks and support a fair and inclusive digital marketplace.

Adopting increased transparency, strong governance and collaborative contracts will help to maximize the benefits of digital innovation across the population and preserve competitive markets. In conclusion, the future governance of the platform depends on the capacity to combine technical, economic, legal, and ethical perspectives in shaping policies in a flexible yet binding manner.