*Richa Jain**

# BIG DATA AND COMPETITION LAW:
## NAVIGATING TRADE PRACTICES IN THE DIGITAL AGE

***Abstract***

According to International Data Cooperation, it is expected that the world data will grow at a compound annual rate of 61% that is from 33 Zettabytes in 2018 to 175 Zettabytes by 2025[1].

It is prudent to say that data, more specifically consumer data, can be termed as the new raw material for digital businesses. By skilfully leveraging big data (which is the collection of large and complex data sets), e-commerce companies are able to understand the current market trends and consumer purchasing behaviour. This gives them the potential to make near-accurate forecasts and enhance the user shopping experience by providing personalised products, implementing targeted advertising, optimising prices, and elevating customer services. Although the accumulation of big data gives companies a substantial competitive advantage yet, it's use is not free from anti-competitive concerns.

This paper aims to shed light on present and potential anti-competitive practices that data-driven businesses indulge in that can lead to market distortion. The author brings forth both sides of the discussion, one that argues how big data can lead to anti-competitive practices and the other that tries to disprove this notion. The debate around big data and its impact on competition law usually circles around three questions that shall be addressed in this paper. Firstly, could accumulating data could contribute to market power and anti-competitive actions? Secondly, what are the effects of big data on market transparency? Thirdly, could data be used as an instrument to do anti-competitive conduct and abuse of dominant position?

Apart from trying to find answers to these questions, this paper also examines some key elements of competition law, such as delineating 'relevant market' and assessing 'dominance', that are regarded as prerequisites in any antitrust inquiry across the globe. The author discusses these elements via an international comparative study of big data-related cases. This article concludes by arguing whether or not reliance on traditional antitrust tools makes the regulator's work difficult in assessing trade practices that involve big data. This study further proposes a few recommendations that may be of benefit to competition regulatory authorities in inquiries related to anti-competitive investigation by digital commerce companies using big data.

JEL CLASSIFICATION: K21; L41; L42; L44

**SUMMARY**



* Advocate, Telangana; Ph.D. Research Scholar, Rajiv Gandhi National University of Law, Punjab, India.

[1] Andy Patrizio, 'IDC: Expect 175 Zettabytes of Data Worldwide by 2025' (*Network World*, 2018) <https://www.networkworld.com/article/966746/idc-expect-175-zettabytes-of-data-worldwide-by-2025.html> accessed 10 June 2024.



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## 1 Introduction

Digitisation has completely overhauled the way businesses are done today. It has allowed a large number of companies to achieve huge profits hinged around business models that primarily focus upon the collection and commercial use of data. The role of data in developing business strategies has become a universally debated topic. Companies are now able to collect and analyse enormous amounts of customer data and achieve systematic conclusions from them in real-time.[2] The chairperson of America's Federal Trade Commission commented that "*data is today's currency*".[3] Data is viewed as an element so essential for trade practices in the digital age that it is being referred to as the "new oil".[4] Although the profits that are generated from data collection are dependent upon how it is used, yet clearly, the collection of data in itself has become a crucial intangible asset.[5]

Appropriate utilisation of data has become so crucial for the viability of a few digital markets, such as social networks, online advertising, search engine markets, and e-commerce, that they are now being referred to as 'data-driven markets'. Google, for instance, has become a prominent illustration of a data-driven business in the domain of online search engine markets. As one may be well aware, consumers can use Google and its services freely without any cost as a zero-priced product. However, the hidden reality is that these services are not free, and in fact, Google's business model primarily relies upon the aggregation of user data and its exploitation through sophisticated online advertising methodologies.[6] The data that any social media website, e-commerce company or search engine like Google generates "can be worth up to $5000 per person

[2] Bruno Lasserre and Andreas Mundt, 'Competition Law and Big Data: The Enforcer's View' (2017) 1 Italian Antitrust Review 87.

[3] Edward Wyatt, 'Edith Ramirez is raising the F.T.C.'s voice' (*New York Times*, December 2014) <https://www.nytimes.com/2014/12/22/business/federal-trade-commissionraises-its-voice-under-its-soft-spoken-chairwoman.html> accessed 10 June 2024.

[4] 'The World's Most Valuable Resource is No Longer Oil, but Data' (*The Economist*, 6 May 2017) <https://www.economist.com/leaders/2017/05/06/the-worlds-most-valuable-resource-is-no-longer-oil-but-data> accessed 10 June 2024.

[5] TP Priyadarsini, 'Big Data Analytics: A Cause of Concern for Competition?' (2020) 9(1) NLIU Law Review 65.

[6] The Competition and Markets Authority, 'Online Platforms and Digital Advertising Market Study' (2020) <https://www.gov.uk/cma-cases/online-platforms-and-digital-advertising-market-study> accessed 10 Jan 2025.

per year to advertisers"[7], highlighting how data has become the new raw material for businesses.

Utilising data for businesses has a significant economic impact. Collecting and analysing data can increase the allocative, dynamic and static efficiencies by reducing the cost of production, improving the quality of goods and resources, and increasing transparency.[8] It also puts pressure on the new and existing entrants to innovate and develop new products.[9] E-commerce represents a major chunk of the digital universe that accumulates data in the form of customer's digital activity. Although traditional brick-and-mortar stores also possess information about consumer preferences and buying patterns yet, their knowledge is limited by geography and the volume of consumers that approach them.

By skilfully utilising big data, e-commerce companies are able to predict trends and enhance the user shopping experience by providing targeted advertising, personalised products, optimising selling prices and customer services. Consequently, data becomes an asset that has a crucial competitive benefit for the companies; however, the implications of accumulating big data on digital trade warrant further examinations and discussions.

This paper aims to contribute to the discourse by identifying key issues and variables relevant to assessing the interplay between big data collection, market power, and competitive practices. To execute this aim, the paper has been divided into six parts. In the first part, the impact of digitalisation on modern business practices has been introduced. The second part gives a brief overview of big data, its collection and analysis methodologies. Subsequently, the third part discusses the role of big data in competitive analysis. Various theories of harm that are typically associated with data collection and its exploitation within the digital markets that affect trade and competition are also discussed. The fourth part presents a balanced examination of the discussion surrounding big data, articulating one perspective that contends such data can foster anti-competitive practices while the opposing viewpoint that seeks to negate this assertion. The fifth part highlights the unique challenges and implications presented by big data in the digital trade to the regulatory authorities. The paper concludes by detailing several domains in which competition regulatory authorities face challenges and opines several recommendations for potential rectification.

[7] Nathan Newman, 'The Costs of Lost Privacy: Consumer Harm and Rising Economic Inequality in the Age of Google' (2014) 40(2) William Mitchell Law Review 849.

[8] Organisation for Economic Cooperation and Development, *Data Driven Innovation: Big Data for Growth and Well Being* (OECD Publishing, 2015) <https://www.oecd-ilibrary.org/science-and-technology/data-driven-innovation_9789264229358-en> accessed 10 June 2024.

[9] Organisation for Economic Cooperation and Development, *Protecting and Promoting Competition in Response to "Disruptive" Innovations in Legal Services* (OECD Publishing, 2016) <https://www.oecd-ilibrary.org/finance-and-investment/protecting-and-promoting-competition-in-response-to-disruptive-innovations-in-legal-services_ca47c852-en> accessed 10 June 2024.

## 2 Defining Big Data

To propound the debate around the interface of competition law and big data, it is pertinent to first understand what constitutes big data and how it is collected, analysed and used by companies in the digital marketplace. Although there is no specific definition of the term 'data', it, in a wider sense, refers to any information or its representation that is being stored in a computer. Personal data such as geo-locations, online shopping patterns, social media activity, as well as web browser histories can be categorised as data. The buzzword of discussion in this debate concerning anti-competitive practices in the digital age is not merely data but big data- which is not a well-defined concept.[10] The term 'big data' can be traced back to the 1980s wherein it was referred to as the variety of customer data lists used to increase the efficiency of advertisements.[11] At present, common aspects of big data are said to include large amounts of various kinds of data that are produced at a rapid speed from multiple sources, whose operation, management and analysis require powerful processors, latest algorithms and new storage and data transportation techniques.[12] The collection and management of big data sets present inherent complexities due to which they cannot be effectively dealt with using traditional database processing techniques.

It is often characterised by four "V Factors, i.e., velocity, volume, variety and value".[13] Wherein velocity refers to the speed at which new data can be generated, distributed and analysed even without the necessity to store it. For instance, it only takes milliseconds for a trading system to gather social media signals that trigger their responses to buy or sell shares.[14] Volume refers to the staggering amount of data that is continuously getting generated on the internet. The factor variety is connotated to the different types of data that are being generated, including social media posts, Google searches or even e-retail purchases. Value refers to the limit to which this inescapable and extensive data can be used to generate profits. For instance, e-commerce companies can gather customer search and preference data to do predictive analytics, which involves estimating demand, forecasting price changes, assessing risks, and predicting consumer preferences and behaviour. This can be extremely valuable to the company as it can help them do targeted advertising, reduce risks, improve performance and increase profits.

As far as collecting big data is concerned, there are various methods through which companies gather data. Customers typically disclose their private information in exchange

[10] Han Hu and Yonhhang Wen, 'Toward Scalable Systems for Big Data Analytics: A Technology Tutorial' (2014) 2 IEEE Access 652.
[11] Erik Larson, 'What Sort of Car-rt-sort Am I? Junk Mail and the Search of Self' (*Harper's Magazine*, July 1989) <https://harpers.org/archive/1989/07/what-sort-of-car-rt-sort-am-i-junk-mail-and-the-search-for-self/> accessed 10 Jan 2025.
[12] OECD-2015 (n 8).
[13] Organisation for Economic Cooperation and Development, *Supporting Investment in Knowledge Capital, Growth and Innovation* (OECD Publishing, 2013) <https://www.oecd-ilibrary.org/industry-and-services/supporting-investment-in-knowledge-capital-growth-and-innovation_9789264193307-en> accessed 10 June 2024.
[14] Priyadarsini (n 5).

for products and services that are often offered at no cost and are financed through advertising.[15] For instance, personal data is often furnished by consumers when creating social media accounts. As a result, organisations acquire not only essential details such as addresses, email contacts, date of birth, and payment information but also gather insights into shopping preferences or, in some cases, access to photos and videos of consumers. By tracking consumer web history and analysing cookies, digital companies can gain a deeper insight into consumer's interests and preferences. Digital companies have the capacity to deduce new information using pre-existing data, such as inferring gender or age, by evaluating consumer shopping behaviours. Big data collected through these methods are commonly referred to as 'first-party data' as they involve companies directly engaging in data collection related to their own consumers. Additionally, companies may utilise the services of external entities that share or sell data to gather 'third-party data'. Such third-party data may include big data sets that are stitched together after being collected from various non-private sources such as public, academic, or government sources.

Organisations across the globe have made observations signifying the important role data plays in competition between enterprises. The Organisation for Economic Cooperation and Development ('OECD') categorised big data as a core economic asset that could create significant competitive benefits for firms.[16] Data was metaphorized as "the new oil" at the World Economic Forum.[17] In the *Matrimony.com Case,* the Competition Commission of India also recognised the increasing value of data for business and reinforced the metaphor by stating, "It would not be out of place to equate data in this century to what oil was to the last one."[18] Furthermore, the European Commission, in the *Google (Shopping) Case,* emphasised how the ability to collect and process large amounts of data bestows a competitive advantage on a firm, having the potential to create an exclusionary effect on rivals.[19] The Competition and Markets Authority of the UK also highlighted how the ability to control and analyse user data entrenches a company's market position.[20] Furthermore, in a consultation paper, even the Competition Bureau of Canada highlighted how enterprises' competitive performance, especially in the digital age, is increasingly driven by their ability to harness and use data.[21] Data undoubtedly has

[15] OECD-2015 (n 8).
[16] OECD-2013 (n 13).
[17] K Schwab, A Marcus and JR Oyola, 'Personal Data: The Emergence of a New Asset Class' (*World Economic Forum*, 2011) <https://www.mdpi.com/1999-5903/15/2/71#B1-futureinternet-15-00071>accessed 10 Jan 2025.
[18] Case COMP 7/30, *Matrimony.com limited v Google LLC* [2012].
[19] Case COMP/AT. 39740, *Google Search (Shopping)* [2017] OJ L 248/1.
[20] Competition and Markets Authority (n 6).
[21] Competition Bureau Canada, 'Big Data and Innovation: Implications for Competition Policy in Canada' (2024) <https://competition-bureau.canada.ca/how-we-foster-competition/consultations/big-data-and-innovation-implications-competition-policy-canada> accessed 10 June 2024.

competitive significance in the digital age. However, whether it raises competition concerns is dependent upon who controls the data and how it is used.

## 3 Role of Data in Competitive Analysis

The digital economy's technological advancements have revolutionised how businesses gather, analyse, and apply data in almost every sector. This gives firms crucial economic benefits and creates pro-competitive effects. However, in some situations, the method of collection and analysis of data can also contribute to raising antitrust concerns. The debate around big data and its impact on competition law usually revolves around three questions.[22] Firstly, whether accumulating data could contribute to market power? Secondly, what are the effects of big data on market transparency? Thirdly, could data be used as an instrument to do anti-competitive conduct and abuse of dominant position?

### 3.1 Data as a Source of Market Power

The first question that arises is whether accumulating data could contribute to market power. According to the OECD, the economics of big data favour market dominance.[23] To enunciate, digital enterprises that have a significantly higher market share also tend to have access to larger big data sets, holding key information of their customers. According to the first argument, holding a larger quantity of data allows digital companies to provide qualitative, tailor-made services to the consumers, which in turn attracts more consumers and, consequently- more data (snowball effect). Furthermore, higher revenues generated by larger companies fuel higher investments that allow them to use better algorithms, new functionalities, and entry into other markets, accumulating even more data.

According to the counter-argument, this trend of gathering vast amounts of big data harms the competition by "*converging towards a monopolisation of data-related markets.*"[24] In markets where data is a prerequisite to business, access to data is particularly important for new entrants to compete effectively. In such situations, 'data monopolisation' creates challenges for new entrants to access or collect the same volume of data, creating significant barriers to entry. For instance, Google in the online search engine market and Amazon in the e-commerce market have such a vast consumer base that they can collect huge amounts of big data sets by analysing user activity and transactions. They can also buy or receive data from third-party companies. This phenomenon, coupled with network effects, which represent demand-side economies of

[22] Lasserre and Mundt (n 2).
[23] Organisation for Economic Cooperation and Development, *Data-Driven Innovation for Growth and Well-Being: Interim Synthesis Report* (OECD Publishing, 2014) <https://doi.org/10.1787/9789264229358-en> accessed 10 June 2024.
[24] Lasserre and Mundt (n 2).

scale, can impact the value of the platform, service or product based upon the users who leverage it and may limit the vigour of competition.[25]

To enunciate further, network effects can be generally categorised into two types: direct and indirect. Direct network effects occur when the value of a product or service increases with the number of users or buyers, as evident from social media platforms like LinkedIn or Instagram.[26] Indirect network effects occur when a platform is dependent upon two distinct groups of users, such as producers and consumers or developers and users. As more participants from one group join and engage on the platform, the value amount for the other group increases, as illustrated by the operations of the e-commerce companies and taxi services.[27] The impact of network effects on competition may manifest in multiple ways. They may enhance competition by encouraging platforms to invest and compete better to acquire more consumers.[28] Conversely, they can also impede competition as the new entrants or smaller existing competitors might not be able to gather data to a similar extent due to fewer transactions or limited users.[29] Furthermore, even the third-party companies may refuse to share or sell data to the smaller competitors.[30] This could contribute to widening the gap in market share between larger dominant entities and newer market entrants.[31]

### 3.2 Effects of Big Data on Market Transparency

The second question that arises is whether data has an impact on market transparency. On one hand, it can be argued that data has the potential to significantly increase market transparency between the supplier and the customer, which can foster healthy competition.[32] Increasing transparency can also benefit the consumer by reducing information asymmetry and enabling them to compare prices and ratings of two products on two different forums. For instance, a customer can review and compare prices of similar goods on Amazon and eBay, which empowers them to make a well-informed decision. This, as a consequence, leads to more healthy and intensive competition in the market, encouraging digital businesses to innovate and improve their prices and quality

[25] G7 Competition Authorities, 'Compendium of Approaches to Improving Competition in Digital Markets', (*Hiroshima Summit*, 2023) <https://assets.publishing.service.gov.uk/media/654b7439b9068c000d0e7554/2023_updated_compendium_of_approaches_to_improving_competition_in_digital_markets_1.pdf> accessed 10 January 2025.

[26] Tim Stobierski, 'What are network effects' (*Harvard Business School Online*, 2020) <https://online.hbs.edu/blog/post/what-are-network-effects> accessed 10 June 2024.

[27] Ibid.

[28] G7 Competition Authorities (n 25).

[29] Ibid.

[30] Lasserre and Mundt (n 2).

[31] Lina M Khan, 'Amazon's Antitrust Paradox' (2016) 126 Yale Law Journal 710.

[32] Timothy Morey, Theodore Forbath and Allison Schoop, 'Customer Data: Designing for Transparency and Trust', (*Harvard Business Review*, May 2015) <https://hbr.org/2015/05/customer-data-designing-for-transparency-and-trust> accessed 10 January 2025.

of goods. Additionally, market transparency allows new entrants to know about customer requirements and the sale offers of their competitors, thereby lowering the cost of entry in the digital market.

However, on the flip side, it is argued that increased transparency due to data collection between suppliers could also hinder competition and harm consumers.[33] Especially in cases where market concentration is high, transparency among suppliers can even lead to explicit or even implicit collusion via the use of algorithms.[34] For instance, it can be noticed how some competing players in the same industry, such as airlines, hotel booking, and cab/transportation booking companies, apply dynamic pricing algorithms to increase or decrease their prices in consonance with their rivals. Due to the industry's dynamic nature, continuous change in supply and demand necessitates continuous data collection and price adjustments. This makes it difficult to implement explicit cartel agreements in these markets, so the enterprises opt for collusion via algorithms and create an illusion of conscious parallelism, which is difficult to detect.[35] Coordinated parallel behaviour can also happen by programming the algorithm to follow data being released by a particular leader (also referred to as the hub and spoke model), buying the same data or data analysing algorithm from the same third party.[36] Increased transparency may lead to a decrease in price competition between competing firms, resulting in their reluctance to lower prices.

### 3.3 Anti-competitive Practices Associated with Data

The third question that arises is whether data could be used as an instrument to engage in anti-competitive conduct and abuse of dominant position. This question can be answered by analysing six practices that shall be dealt with in this section.

#### 3.3.1 Refusal to Grant Access

As discussed earlier, big data can become an instrument for market power and even anti-competitive conduct if its access is restricted by a dominant company. This is especially noticeable in situations where data is considered an 'essential facility' by the company requesting access.[37] Companies generally incur substantial costs when they gather and analyse data, which incentivises them to create anti-competitive business strategies to limit their competitor's ability to access the same data. This often leads to

[33] Ariel Ezrachi and Maurice E Stucke, *Virtual Competition: The Promise and Perils of the Algorithm-Driven Economy* (Harvard University Press, 2016) 368.
[34] Ariel Ezrachi and Maurice E Stucke, 'Two Artificial Neural Networks Meet in an Online Hub and Change the Future (of Competition, Market Dynamics and Society)' (2017) Oxford Legal Studies Research Paper 24.
[35] Ibid.
[36] Suzanne Rab, 'Artificial Intelligence, Algorithms and Antitrust' (2020) Competition Law Journal, 141,150.
[37] Priyadarsini (n 5).

the formation of exclusive agreements with third-party data providers, leading to the denial of access to data, creating entry barriers, and foreclosure of competitors.[38]

The Court of Justice of the European Union, in the '*Microsoft Case*'[39] discussed whether withholding 'interoperability information' from competitors would constitute as an abuse of dominant position. In a relatively strict manner, the Court held that to categorise any information as 'essential facility', the parties would have to showcase that (i) the dominant company's data is unique, and the competitor does not have the possibility to obtain the data necessary for the performance of its services; (ii) refusal to grant access to data would prevent the introduction of a new product; (iii) the refusal is devoid of any reasonable justification; (iv) the refusal shall wipe out the competitor from the market.[40]

As emphasised by the French Competition Authority in the *Cegedim Case*, refusal to grant access to data could be categorised as anti-competitive in cases of 'discriminatory action', whereby (i) access to data is provided to certain competitors while it is denied to other competitors or, (ii) where data of certain consumers is given to down-stream competitors, while data of other consumers is restricted.[41] In this particular case, 'Cegedim', a prominent company that provided medical databases in France, sold its primary database called 'OneKey' to certain pharmaceutical laboratories (primary consumers of the product) but refused to sell it to other consumers that used Cegedim's competing software 'Euris' in the relevant market of 'customer relationship management' within the health sector. The French Competition Authority ruled such action to be discriminatory and on the grounds that Cegedim was a dominant player in the market, such discrimination was held to be restrictive of competition between Euris and Cegedim during 2008-12.[42]

Refusal to allow access to data could be discriminatory even in cases where self-preferencing principles are violated.[43] For instance, in some cases, online enterprises may perform the dual role of providing the platform (being the aggregator or marketplace) as well as acting as a competitor on the same platform, giving them disproportionate competitive leverage.[44] It is expected that the platform should not be biased towards any particular goods or services, even those owned by them. In such cases, they may be able

[38] AP Grunes and ME Stucke, 'No Mistake about it: the Important Role of Antitrust in the Era of Big Data' (2015) 3 University of Tennessee Legal Studies Research Paper 269.

[39] Case T-201/04, *Microsoft Corp v Commission* [2007] ECR II-3601, paras 320-336.

[40] Damian Geradin and Monika Kuschewsky, 'Competition Law and Personal Data: Preliminary Thoughts on a Complex Issue' (*Concurrences*, 2013).

[41] 'Cegedim' (*French Competition Authority Decision No 14-D-06*, 8 July 2014) <https://www.autoritedelaconcurrence.fr/en/decision/decision-14-d-06-8-july-2014-practices-implemented-company-cegedim-sector-medical> accessed 10 June 2024.

[42] Ibid.

[43] *Google Search (Shopping)* (n 19).

[44] Bipasha Kundu, 'Too Deferential: Critiquing CCI's Approach in the Amazon Private label Brands Case' (*NLSIU Law School Policy Review*, 22 January 2023) <https://lawschoolpolicyreview.com/2023/01/22/too-deferential-critiquing-ccis-approach-in-the-amazon-private-label-brands-case/> accessed 21 September 2024.

to gather not only information about consumer behaviour but also details about the products that their competitors are selling on their marketplace. Through data analysis, they have the potential to identify the most sought-after products and adjust the pricing and visibility of those products for their benefit. To aggravate the situation even further, they can restrict the competitors from accessing the information about their transactions with the consumers. Search limitations on information transfers could violate the ethos of platform neutrality and hamper fair play in the e-commerce market.

Additionally, the dominant entities could enter into exclusive dealing agreements with third-party data providers, making it difficult for the competitors to access the data. The European Commission fined Google €1.49 billion for breaching the European Union Antitrust Rules and abusing its market dominance by entering into restrictive agreements with third-party websites, preventing Google's competitors from placing their advertisements on these websites.[45] Although Google appealed against the order, the Commission held that Google, through these actions, violated Article 102 of the Treaty of the Functioning of the European Union (TFEU) and Article 54 of the European Economic Area (EEA) Agreement, which prohibits the abuse of dominant position.[46]

Another classic example to highlight this issue is the *Amazon Buy Box Case*[47], wherein the European Commission found that Amazon used non-public data regarding online retailers that competed with it as a seller on its marketplace. Through this, Amazon was able to aggregate and analyse business data from hundreds of individual sellers in the European Union to gather valuable insights that allowed it to favour its own retail products and products by its associated companies. Cases like these highlight the growing enforcement against companies that create barriers to access or indulge in self-preferencing leading to violation of competition laws.

However, according to the counter-argument, the dominant company that has collected the data is in a fiduciary relationship with consumers.[48] This relationship necessitates that the company that has gathered the data must enforce careful measures to safeguard the privacy of individuals and protect their sensitive information from potential breaches, misuse, or exploitation.[49]

[45] Case AT 39740 *Google (AdSense)* [2019] OJ L151/1.

[46] Ibid; European External Action Service, 'Antitrust: Commission Fines Google €1.49 Billion for Abusive Practices in Online Advertising' (*Press Release of European Commission*, 20 March 2019) <https://ec.europa.eu/commission/presscorner/detail/en/ip_19_1770> accessed 14 August 2024; *See* also, Case C-816/19 *CJEU Appeal* [2021] ECLI:EU:C:2021:894.

[47] Joined *Amazon Marketplace* (Case COMP/AT.40462) and *Amazon Buy Box* (Case COMP/AT. 40703) Commission Decision 2022/9442 EU [2022].

[48] Ariel Dobkin, 'Information Fiduciaries in Practice: Data Privacy and User Expectations', (2018) 33(1) Berkeley Technology Law Journal 1,7.

[49] Ibid.

### 3.3.2 Data and Price Discrimination

Through big data analytics, a company can identify and classify consumers based on their search history, purchasing habits, and willingness to pay higher amounts for luxury goods and facilitate price discrimination.[50] To enunciate, if a company knows about a consumer's preferences and general price range, it can adapt to the prices of the individual customer group.

On the one hand, it can be argued that price discrimination is beneficial for consumers and is a key element of competition because it allows consumers to buy products at a lower price, which they would not have been able to afford at a higher price.[51] However, according to the counter-argument, price discrimination also has its own negative impacts and can be categorised (in the words of the French Competition Authority) as "an unfair breach of consumer equality."[52] Price discrimination can heighten the information asymmetry between the supplier and the consumer and can lead to higher search costs for the consumer.[53] Price discrimination adapts and lowers prices for a particular set of consumers; similarly, it can adapt to give higher prices for the same products to another set of consumers,[54] which is unfair. However, to regard it as an anti-competitive practice, the presence of abuse of dominant position or vertical restraint is necessary.

### 3.3.3 Data-Driven Mergers

Accumulation of big data also raises concerns regarding the assessment of merger cases. A company can stitch a strategy to obtain access to new data by combining with a company that possesses a large amount of relevant data. Acquisition of data-rich firms (even with lower revenue) can grant significant data control, enabling the acquiring firm to enhance targeted, personalised advertisement and increase network effects. According to the OECD, 'big data related' mergers have more than doubled between 2008 and 2015.[55]

For instance, in the case of the *Facebook/WhatsApp* merger, the European Commission examined the impact of this merger on the possibility of data access and subsequent

[50] Nathan Newman, 'The Costs of Lost Privacy: Consumer Harm and Rising Economic Inequality in the Age of Google' (2013) 40(2) William Mitchell Law Review 849, 864.

[51] Organisation for Economic Cooperation and Development, *Executive Summary of the Roundtable on Price Discrimination* (*OECD Publishing*, 2018) <https://one.oecd.org/document/DAF/COMP/M(2016)2/ANN5/ FINAL/en> accessed 14 August 2024.

[52] French Competition Authority and Bundeskartellamt, 'Joint Study on Competition Law and Data' (10 May 2016) <https://www.autoritedelaconcurrence.fr/en/publications/joint-study-competition-law-and-data> accessed 30 January 2025.

[53] Lasserre and Mundt (n 2).

[54] Ezrachi and Stucke (n 34).

[55] European Data Protection Supervisor, 'Report of Workshop on Privacy, Consumers, Competition and Big Data', (*Council of European Union*, 2014) <https://www.edps.europa.eu/sites/default/files/ publication /14-07-11_edps_report_workshop_big_data_en.pdf> accessed 14 August 2024.

utilisation for advertising in the market.[56] The merger was eventually approved without competitive concerns as the European Commission found the data collection by Facebook would not be a problem after the merger as many other companies were also collecting extensive data. However, the question remains whether emerging data-driven markets can give rise to 'vertical or conglomerate' effects if the merger allows the larger company to do data concentration and restrict upstream or downstream competitors' access to data.

The European Commission has discussed vertical mergers in the *Microsoft/LinkedIn Case*[57], highlighting how a merger between two dominant companies in different markets can lead to the foreclosure of the competitors. To ascertain whether the merger is anti-competitive, the European Commission examined (i) the ability of the merged entity to foreclose its potential or existing competitors, (ii) the presence of any economic incentive to do foreclosure of competitors, (iii) the significant adverse effect of the foreclosure strategy on the competition.

Another merger that raised antitrust concerns was in 2022 when Amazon acquired 'One Medical', a membership-based primary-care provider with extensive access to patient's healthcare records. This merger raised red flags regarding Amazon's ability to use consumer's healthcare data for unrelated purposes, such as influencing consumer behaviour, improving their advertisement, and extending dominance in the e-commerce market. Although the merger was approved, the United States Federal Trade Commission (FTC) has put the merger under further scrutiny to monitor how Amazon protects sensitive consumer healthcare information to initiate enforcement actions, if needed.[58]

Additionally, data-driven markets can also promote horizontal mergers between two entities in different positions within the upstream and downstream markets. This can decrease the competition, especially in cases where markets are concentrated, and data is the primary input without any effective substitute. For instance, a merger between a prominent or dominant player and a new entrant may result in an alteration of access to data and shall increase the concentration of data if the new entrant has access to big data sets collected in different markets. Through this, companies can use data-driven market power to attain prominence in the adjacent market.[59]

A similar issue occurred in the *Google/Fitbit*[60] merger, wherein the European Commission examined the concerns regarding the potential foreclosure of competing

[56] *Facebook/WhatsApp* (Case COMP/M.7217) Commission Decision 2014/7239 EU [2014] OJ L2985 1 para 164.
[57] *Microsoft/LinkedIn* (Case COMP/M.8124) Commission Decision 2016/8404 [2016].
[58] US Federal Trade Commission, 'Joint Statement of Chair Khan and others, Regarding Amazon.com, Inc's Acquisition of 1Life Healthcare, Inc.' (2023) <https://www.ftc.gov/system/files/ftc_gov/pdf/2210191amazononemedicalkhanslaughterwilsonbedoya.pdf> accessed 14 August 2024.
[59] German Monopolies Commission, 'Competition Policy: The Challenges of Digital Markets: Special Report' (Law Com No 68, 2015).
[60] *Google/Fitbit* (Case COMP/M.9960) Commission Decision 2004/139 [2020] 1.

wristwear suppliers from accessing Google Play. The Commission investigated the possibility of Google treating the competing wearable devices within the app store in a biased manner by lowering the ratings or delaying the approval process for updates. The app store represents an upstream market; therefore, if app developers responsible for competitive wearable devices are treated unfavourably, it could result in the foreclosure of competing vendors in the downstream market.[61] It also raised vertical concerns and was viewed as containing conglomerate characteristics as it centred on deteriorating the interoperability between smartphones operating on Android OS and competing wearable devices. The Commission eventually permitted the combination based upon Google's commitment that it would not use Fitbit's health and fitness data for advertising and would license certain Android APIs free of cost to allow interoperability between competitors.

### 3.3.4 Use of Data for Tie-in Arrangements

Tie-in arrangements or tie-in sales include an agreement wherein the purchaser of a particular good or service is required as a precondition to either make a purchase of another good or service from the seller or agree not to buy the tied goods from any other supplier. The basic premise behind these arrangements is to finish the inventory and to make profits via clubbed sales. In the data-driven market, enterprises may leverage data obtained from one market to establish or enhance their market dominance or power in another market through tied sales that could be deemed as anti-competitive, having the potential to cause adverse effects on competition. To enunciate further, the Competition and Markets Authority of the UK has highlighted that when a company collects and sells data for a long period of time, it would be easier for it to enter into the data analytics markets owing to its market power compared to its competitors.[62] In such situations, it may be tempted to tie its data analytics services with access to its acquired data, which is anti-competitive.[63] Similarly, the French Competition Authority opined that "cross usage of data" by acquiring data in one market to gain market power in another can have anticompetitive effects.[64]

In India, WhatsApp and Facebook were accused of tie-in sales. It was alleged that "*WhatsApp's proposed business model of integrating its payment app called 'WhatsApp*

[61] Akihilo Nakagawa and Noriaki Matsushima, 'A Note on Conglomerate Mergers: The Google/Fitbit Case' (2023) 67(6) Japan and the World Economy Journal 101203.

[62] Competition and Markets Authority, 'Commercial Use of Consumer Data' (2016) 38, 90 <https://assets.publishing.service.gov.uk/media/5a7f2a8840f0b6230268dd76/The_commercial_use_of_consumer_data.pdf> accessed 14 August 2024.

[63] Ibid.

[64] French Competition Authority, 'Relatif à L'utilisation Croisée des Bases de Clientèle, No. 10-A-13' (2010) <https://www.autoritedelaconcurrence.fr/fr/avis/relatif-lutilisation-croisee-des-bases-de-clientele> accessed 10 January 2025.

*Pay' within its messaging app is anti-competitive*."[65] Furthermore, WhatsApp used customer data to attract customers and provide customised advertisements, which was monetised by Facebook to generate revenue and to distort the market. Allegations for the violation of Section 4(2)(e) of the Indian Competition Act, 2002 were levied on the parties. However, the Competition Commission of India dismissed the case, stating that there was a lack of *prima facie* contravention of the Act.

The European Commission, in the *Google Android Case*[66], found that Google had violated its dominant position by tying the Google Search app to its Play Store app. Also, Google's arrangements with device manufacturers to mandate pre-installation of Google's app to limit competition in the market created ecosystem lock-in, giving Google a unique competitive advantage that its competitors could not offset. The commission fined Google €4.125 billion, highlighting the strict enforcement of competition law to tackle the abuse of dominant position by tie-in arrangements.[67]

However, according to the counter-argument, tie-in arrangements cannot be categorised as anti-competitive *per se* as they have their own set of economic benefits.[68] It is argued that after utilising and analysing user data, companies can increase sales by offering goods as a single combined package along with additional discounts, attractive prices, or complementary products by virtue of tying or bundling. Amazon, for instance, recommends 'frequently brought together products', giving customers appealing options to purchase different categories of products. So, if a customer buys a phone, recommendations of phone cases and screen guards are given for consumers' benefit. Therefore, it is imperative that in a data-driven economy, the competition authorities assess tie-in arrangements based on whether they are likely to promote or restrict competition, balancing both pro-competitive justifications and potential anti-competitive risks.

### 3.3.5 Concerted Actions

As discussed earlier, data collection can increase transparency between suppliers, limit competition and, in cases where market concentration is high, could even lead to cartelisation via the use of artificial intelligence.[69] Competition laws generally look down upon the existence of cartels as they can cause adverse effects on the competition in the market. With the insurgence of data-based algorithms to execute collusive agreements

[65] *Harshita Chawla v WhatsApp and Facebook* [2020] COMP 15/2020.
[66] Case AT. 40099, *Google Android* [2018] OJ C402/19.
[67] European Commission, 'Antitrust: Commission Fines Google €4.125 Billion For Illegal Practices Regarding Android Mobile Devices to Strengthen Dominance of Google Search Engine' (18 July 2018) <https://ec.europa.eu/commission/presscorner/detail/en/ip_18_4581> accessed 10 January 2025.
[68] Michael A Salinger, 'Tying and Bundling in a Nearly Contestable Market' (2011) SSRN Electronic Journal <DOI:10.2139/ssrn.1857551> accessed 10 January 2025.
[69] Ezrachi and Stucke (n 34).

and fix concerted prices, it has become increasingly difficult for competition regulatory authorities across the world to establish the existence of cartels that are more than mere conscious price parallelism.

The Canadian Competition Bureau also recognised that companies may use big data and artificial intelligence to innovate novel ways to implement cartel agreements.[70] A member of the Competition Commission of India stated that finding methods to prevent collusion between self-learning algorithms could be one of the biggest challenges that competition law enforcers have ever faced.[71] To combat this issue, the (then) European Commissioner issued a strict warning to companies that use pricing algorithms to facilitate tacit collusion.[72] Competition and Market Authority of the UK published research on 'Pricing Algorithms, Collusion, and Personalised Pricing', which states that some algorithmic decisions should be presumed to be anti-competitive.

### 3.3.6 Data and its Effects on Privacy

A significant concern regarding the collection of big data by dominant enterprises pertains to its impact on data privacy. Although most governments have executed specific statutes to look after data protection yet, they cannot exist in silos, especially in cases where the eligible violation of data privacy has been done by a dominant enterprise whose business model is predominantly based upon the collection and analysis of data. According to the OECD, data plays a pivotal role in platform markets' power and in situations where consumers and users become data subjects, "data privacy has the possibility of becoming a relevant non-price parameter of competition whether as a dimension of quality or of choice".[73]

For instance, the German Competition Authority issued an order against Meta (then Facebook) for excessive collection of user data through third-party websites and other services owned by Facebook without user consent.[74] Meta's actions were held to be an

[70] Canada Competition Bureau, 'Big Data and Innovation: Key Themes for Competition Policy in Canada' ( 2018) <https://competition-bureau.canada.ca/en/big-data-and-innovation-key-themes-competition-policy-canada> accessed 10 January 2025.

[71] Augustine Peter, 'Speech at the ASSOCHAM 5th International Conference on Competition Law and Tech Sector' (*Competition Commission of India*,19 January 2018) <http://164.100.58.95/node/3707> accessed 10 June 2024.

[72] Organisation for Economic Cooperation and Development, *Algorithms and Collusion - Note from the European Union* (OECD Publishing, 2017) <https://one.oecd.org/document/DAF/COMP/WD(2017)12/en/pdf> accessed 10 January 2025; Margrethe Vestager, 'Algorithms and Competition-Speech at the Bundeskartellamt 18th Conference on Competition' (*European Commission*, 17 March 2017) <https://ec.europa.eu/newsroom/comp/newsletter-archives/2831> accessed 10 June 2024.

[73] Organisation for Economic Cooperation and Development, *The Intersection Between Competition and Data Privacy-Background Note* (OECD Publishing, 2024) <https://one.oecd.org/document/DAF/COMP(2024)4/en/pdf> accessed 10 June 2024.

[74] Bundeskartellamt, 'Facebook Inc. Exploitative Business Terms Pursuant to Section 19(1) GWB for Inadequate Data Processing' (6 February 2019) Ref B6-22/16

abuse of its dominant position in the market for online social networks in Germany and a violation of Section 19(1) of the German Competition Act.[75] Meta, however, challenged this German ruling, leading to a preliminary reference at the Court of Justice of the European Union (CJEU).[76] The CJEU ruled that competition authorities can assess the compliance of the General Data Protection Regulation when examining abusive actions under the competition law.[77] Further, unfair data processing conditions imposed by a dominant enterprise could be categorized as an 'abuse' under Section 102(a) of TFEU. This case highlights the stern view being taken against data-driven companies with strong market power, primarily relying on collecting and analysing user data that may get incentivised to reduce the level of privacy and further increase data collection to a level that may become unfair, abusive, and detrimental to the consumers and competitors.

In India as well, a similar approach was observed when the Competition Commission of India started an investigation into WhatsApp's Privacy Policy for abusing its dominant position and violating Section 4 of the Indian Competition Act 2002. WhatsApp was accused of imposing unfair conditions upon users through its privacy policy and data-sharing terms.[78] WhatsApp and Facebook appealed against this investigation in the Supreme Court of India, citing that this investigation fell within the jurisdiction of the information technology law framework and not competition law. Interestingly, their appeal was rejected, and the Competition Commission of India was asked to further investigate the competition concerns around WhatsApp's data collection and usage.[79]

## 4 Pro-Competition Effects of Big Data: Counter-Argument

The discussion around the implications of big data on competition is incomplete without highlighting the benefits consumers can get through data analytics. Through appropriate collection, utilisation, and application of data, consumers can get personalised services from dominant companies such as Google, Amazon, and YouTube. Research has showcased that few customers believe that a data-driven company can (i) provide a better experience by using customer's personal information, (ii) decrease the prices or provide free services due to the use of their customer data. In many cases, the value of these tailored services may surpass the consumer's concern regarding their data privacy.[80] It has been contended that monetisation of big data should be viewed as "economically rational profit-

<https://www.bundeskartellamt.de/SharedDocs/Entscheidung/EN/Fallberichte/Missbrauchsaufsicht/2019/B6-22-16.pdf?__blob=publicationFile&v=> accessed 30 January 2025.

[75] Ibid.

[76] Treaty of the Functioning of the European Union [2008] OJ C115/47, Article 267.

[77] Case C-252/21 *Meta v Bundeskartellamt* [2023] ECLI:EU:C:2023:537.

[78] *Updated Terms of Service and Privacy Policy for WhatsApp Users* [2021] (COMP/01/2021).

[79] *Meta Platforms Inc. v Competition Commission of India* [2022] (SLP (C) No. 17121).

[80] Morey, Forbath and Schoop (n 32).

maximising behaviour that results in obvious consumer benefits."[81] The following part outlines a few arguments that highlight the pro-competitive effects of big data in the digital markets.

### 4.1 Free Availability of Data

According to one argument, big data can create entry barriers owing to the difficulty of collection and replication of unique data; however, according to the counter-argument, citing big data as an entry barrier is a myth as data is omnipresent and freely available.[82] When considering the competitive impact of data ownership by one enterprise, the primary issue is whether similar big data in terms of size and relevance is available to another efficient enterprise. Three factors may contribute to the high accessibility of data between competitors. Firstly, data is considered non-rival goods, which means that the collection and use of one type of big data does not hinder other enterprises or companies from using the same data. Secondly, data acquired by one company is available for other companies to purchase (provided they can access it in both previous cases).[83] Thirdly, consumers can also provide similar data to different companies, whether they are competitors or not (multi-homing), making data availability seamless.

However, the non-rivalrous nature of data does not mean that it is equally accessible to all companies. As discussed earlier, companies may gain a competitive advantage due to the uniqueness of the data, which may not be easy to get, incentivising companies not to share them with their competitors.[84] This is coupled with the fact that access to data may also require some underlying costs and investments, like the development of data centres, building a significant customer base, innovation costs, research and development expenses, acquisition costs, and costs to develop highly technical algorithms for data analysis.[85] It makes it very difficult for a new entrant to amass a large number of consumers, collect data, and the consequential market power to become a significant rival.

Furthermore, data collected and sold by third-party intermediaries can also be used by new entrants. These third-party intermediaries use various data-collecting technologies such as tracking by cookies, picking up data from public authorities, or simply gathering data from alternative or unfair means. However, buying this data may be more expensive

[81] D Daniel Sokol and Roisin Comerford, 'Antitrust and Regulating Big Data' (2016) 23 Geo Mason Law Review 1129.
[82] Geoffrey A Manne and Ben Sperry, '*Debunking the Myth of a Data Barrier to Entry for Online Services*' (*International Center for Law and Economics*, 26 March 2015) <https://laweconcenter.org/images/articles/icle-tf_nomi_comments_20150526.pdf> accessed 10 June 2024.
[83] Nils-Peter Schepp and Achim Wambach, 'Big Data and its Relevance for Market Power Assessment' (2016) 7(2) Journal of European Competition Law and Practice 120.
[84] Priyadarsini (n 5).
[85] Lasserre and Mundt (n 2).

and less valuable for the new entrant than the data collected by continuous consumer interaction.

### 4.2 Fluidity of Data-driven Market Power

Another characteristic of the digital market is the potential of consumers to multi-home, whereby the consumer can utilise the services of different providers and share similar data within the same horizontal market.[86] For instance, in the e-commerce market, a consumer may share their relevant information (such as their name, phone number, and address) with multiple players like Amazon, Flipkart or eBay. Multihoming can reduce the possibility of the formation of a data monopoly and may even reduce market power.[87] In such situations, mere possession of data cannot confer a high competitive leverage. For instance, 'X' (formally Twitter) in the social networking market or 'Tinder' within the online dating platform market were successfully able to disrupt the market and supersede the older players that may have gathered ample data before them, showcasing higher importance of innovation and lesser of data as far as granting competitive benefits are concerned.[88]

The value of data is frequently perceived as temporary.[89] There exists a perpetual demand for new and differentiated data; therefore, even when a company possesses a substantial volume of data, competitors may undermine its competitive prowess by acquiring more relevant information.[90] In the case concerning the merger between *Microsoft and Skype*, the European Commission recognised that Microsoft's substantial market share, estimated to be between 80 to 90 per cent in the video communication sector, did not necessarily indicate the presence of dominant market power.[91] This conclusion was grounded in the rapidly evolving and innovative characteristics inherent within the technology sector. The General Court affirmed this rationale, highlighting that elevated market shares in dynamic, technology-centric markets often lack sustainability and that consumers are presented with numerous alternatives, which help to maintain competitive pressure.[92] This perspective was subsequently reaffirmed in the *Facebook/WhatsApp* case in 2014, where it was established that a high market share does

[86] David S Evans and Richard Schmalensee, 'The Industrial Organisation of Markets with Two-Sided Platforms' (2007) 3(1) Competition Policy International 151.
[87] Ibid.
[88] DS Tucker and HB Wellford, 'Big Mistakes Regarding Big Data' *(The American Bar Association*, December 2014) <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2549044> accessed 30 January 2025.
[89] Sokol (n 81).
[90] Ibid.
[91] *Microsoft/Skype* (Case COMP/M. 6281) Commission Decision 2011/7279 [2011] OJ L 268/1.
[92] Sangin Park, 'Market Power in Competition for The Market' (2009) 5(3*) Journal of Competition Law and Economics* 571.

not equate to enduring competitive harm, particularly considering the relative ease with which new competitors can enter the communications market.[93]

### 4.3 Data Privacy Concerns are Outside the Jurisdiction of Competition Regulators

According to the OECD, although data protection and competition authorities operate under distinct conceptual frameworks and pursue different public policy objectives, yet, there is an increasing focus on the simultaneous application of these two legal regimes within digital markets.[94] On the one hand, the anonymised nature of big data poses no threat to consumer privacy; on the other hand, it has been acknowledged that big data analytics has the potential to challenge the fundamental principles of privacy laws.[95]

As per research, utilisation of big data undermines the effectiveness of informed consent in three significant ways: (i) it is impossible for firms that possess the data to provide adequate notice, as it is unpredictable when a particular conclusion might be derived; (ii) users are unable to provide meaningful consent for the use of their data in big data analyses at every juncture; and (iii) the applicability of concepts such as consent, portability, and access to knowledge obtained through data analysis is ambiguous, particularly when such data has been anonymised, as there may not be a breach of any individual obligation.[96]

For instance, in the *Google/Nestlab*[97] and the *Facebook/WhatsApp*[98] transactions in the early 2000s, the United States regulators iterated that data privacy and misuse of data by platforms are issues exclusively within the jurisdiction of consumer protection authorities and are outside the scope of antitrust regulations.[99] Even in the *Microsoft/LinkedIn Case*[100], the European Commission reminded that "the risks associated with data combination strategies would be mitigated and addressed by the applicable data privacy rules". In the recent past, the Competition Bureau of Canada also shared the 'separatist perspective' like its US and EU counterparts observing, that its jurisdiction is not inclusive of data privacy concerns that are unrelated to competition, as competition and data privacy laws are "associated with different rights and focus on different harms".[101]

[93] Facebook (n 56).
[94] OECD-2024 (n 73).
[95] Priyadarsini (n 5).
[96] Ira S Rubinstein, 'Big Data: The End of Privacy or a New Beginning?' (2013) 3(2) *International Data Privacy Law* 74.
[97] US Federal Trade Commission, 'Early Termination Notices 200140457: Nest Labs Inc. and Google Inc.' (February 2014) <https://www.ftc.gov/legal-library/browse/early-termination-notices/20140457> accessed 14 August 2024.
[98] US Federal Trade, 'FTC Notifies Facebook, Whatsapp of Privacy Obligations in Light of Proposed Acquisition' (2014) <https://www.ftc.gov/news-events/news/press-releases/2014/04/ftc-notifies-facebook-whatsapp-privacy-obligations-light-proposed-acquisition> accessed 14 August 2024.
[99] Pinar Akman and Martin Christen, 'International Perspectives on Privacy and Competition law' (*American Bar Association*, 2022) <https://www.americanbar.org/groups/business_law/resources/business-law-today/2022-february/international-perspectives-on-privacy-and-competition-law/> accessed 14 August 2024.
[100] *Microsoft/LinkedIn* (n 57).
[101] OECD-2024 (n 73).

Historically, competition law and data privacy were viewed as distinct areas of regulation. However, as discussed in the earlier parts, many jurisdictions are now beginning to recognise that collection and access to consumer data pose significant implications for competition policy and enforcement. For instance, Articles 101 and 102 of TFEU prohibit the abuse of a dominant position in the market through data collection, control, or privacy, which impacts competition.[102] Therefore, it is prudent to say that data privacy is now being regarded not merely as an independent variable but also as a potential component of quality, which can serve as a basis for fair competition amongst companies.

## 5 Is Competition Law Ready for Big Data?

The above discussion showcases how there are arguments for and against the issue regarding the potential of big data to affect competition in the long run. Proving foreclosure of competitors or adverse effects on competition in the market due to data ownership presents significant challenges, specifically due to the inherent characteristics of the digital market, such as its multi-sided nature, prevalence of multi-homing, and dynamic conditions of the digital trade. The following part outlines a few arenas where the competition regulatory authorities encounter challenges while addressing this issue along with suggestions for rectification.

### 5.1 Delineating 'Relevant Market'

The first step in identifying anti-competitive behaviour is identifying the relevant market. A market where businesses are powerless to regulate the prices of the goods they sell is said to be perfectly competitive.[103] This is because the market for the specific good in question has many buyers and sellers, each of whom is small in comparison to the market's size, and when the products sold are the same, there are no obstacles preventing new businesses from entering the market.[104] A poorly defined market can impact the assessment of market power and anti-competitive practices; therefore, it is a challenge for competition authorities across the world to define a 'relevant market' in the digital marketplace. Traditionally, two factors are taken into consideration to define the relevant market: (i) the relevant product market, which includes goods and services; (ii) the

[102] *Meta Case* (n 77).
[103] Competition Commission of India, *Competition Law Module for Administrative and Judicial Academies* (1st edition, Government of India, 2019).
[104] Ibid.

relevant geographical market, which connotes the geographical location where the competition takes place.[105]

However, in the context of big data, delineating relevant markets becomes a complex task due to the presence of factors such as the intangible nature of data, consumer multi-homing, network effects, and the multi-sided nature of platforms -as they cater to many types of different groups of users like buyers, sellers, consumers or advertisers concurrently and possibly in different jurisdictions.[106] For instance, online platforms like Google or Instagram do not monetarily charge consumers for their 'services' but collect vast amounts of personal data.[107] The challenge in such situations lies in determining relevant markets for data-driven businesses that may not conform to traditional market boundaries. While data is a crucial contributor to market power, it is not always clear whether it should be treated as a separate product or simply part of a broader service offering, as the market power may not manifest on all sides simultaneously.

Furthermore, in antitrust cases, the definition of 'relevant market' is established through the application of the 'substitutability test', which identifies the relevant market as the collection of goods and services that are interchangeable or substitutable with each other from the perspective of the consumer.[108] A vital tool for determining substitutability is the "Small but Significant, Non-Transitory Increase in Price (SSNIP) test or Hypothetical Monopolist Test, which evaluates whether, for a small, yet significant price rise (of about 5% to 10%), the consumers of a particular product would shift their choices to another product."[109] If so, then the two products can be considered to be part of the same market.

In the case of big data, the SSNIP or Hypothetical Monopolist Test may become ineffective. Big data does not fit within the pigeon-hole of being either a product or service, making the SSNIP test ineffective for two reasons. Firstly, unlike tangible goods, big datasets can be reused multiple times simultaneously by many firms, making it difficult to define them within the norms of a single market based on substitution. Secondly, many platforms gather data in return for free of cost services.[110] In such situations, determining

[105] Vicente Bagnoli, 'The Big Data Relevant Market as a Tool for a Case-by-Case Analysis at the Digital Economy: Could the EU Decision at Facebook/WhatsApp Merger Have Been Different?' (12th Ascola Conference, 2017) <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3064795#> accessed 14 August 2024.

[106] Organization for Economic Cooperation and Development, *The Digital Economy, New Business Models and Key Features in Addressing the Tax Challenges of the Digital Economy* (OECD Publishing, 2014).

[107] *Google Search (Shopping) Case* (n 43); European Commission, 'Antitrust: Commission Fines Google €2.42 Billion For Abusing Dominance as Search Engine by Giving Illegal Advantage to Own Comparison Shopping Service' (27 July 2017) <https://ec.europa.eu/commission/presscorner/detail/en/ip_17_1784> accessed 14 August 2024.

[108] Tilottama Raychaudhuri, 'Abuse of Dominance in Digital Platforms: An Analysis of Indian Competition Jurisprudence' (2020) 1 Competition Commission of India Journal on Competition Law and Policy 1.

[109] Ibid.

[110] European Commission (n 107).

substitutability in terms of 'small yet significant price rise' makes the whole concept redundant.[111]

Therefore, instead of viewing data as a product to define the relevant market, other ancillary factors, such as consumer preference or a company's ability to analyse and act on data, may be considered by the regulators while investigating cases. In the case of multi-sided platforms, the regulators can define a relevant product market for the products being offered by the overall platform or the products offered on each side of the platform as a distinct relevant market. The European Commission's case against *Google*[112] also provides insight into assessing market dominance. The Commission highlighted that Google's actions of accumulating users' big data created high entry barriers even though, in this case, data itself was not the sole focus of market definition. Further, the Commission identified four separate but interrelated product markets that were affected by Google without explicitly distinguishing between a single market approach and multiple separate markets but focusing on the source for competitive constraints.

### 5.2 Assessing Dominance

The increasing reliance on data for trade and innovation within digital markets presents challenges to traditional analysis of dominance under competition regulation, as the competition between digital enterprises is no longer solely centred around monetary pricing. The primary challenge associated with assessing dominance in cases related to data is the manner in which data is utilised along with its uncertain value, which complicates the application of price-based analytical tools as data itself does not possess a fixed value.[113] Its potential value is derived from the application of data analytics in the digital trade. Merely acquiring or holding data sets big datasets is inefficient in the long run for two reasons: firstly, the organisation must be capable of unlocking its potential value in conjunction with employing sophisticated algorithms that can extract valuable insights from the information; secondly, the organisation must be engaged in continuous data collection and maintaining access to relevant datasets.[114]

Due to the dynamic nature of data-driven digital markets, companies that have accumulated large amounts of big data sets that contribute to their market power may become temporarily dominant but may eventually be replaced by companies with better products, advanced algorithms, personalised recommendations (like Netflix)[115], higher

[111] Howard A Shelanski, 'Information Innovation and Competition Policy for the Internet' (2013) 161 University of Pennsylvania Law Review 1663.
[112] *Google Android* (n 66).
[113] Tone Knapstad, 'Digital Dominance Assessing Market Definition and Market Power for Online Platforms Under Article 102 TFEU' (2023) 20(2) European Competition Journal 412.
[114] Ibid.
[115] Andrei Hagiu and Julian Wright, 'When Data Creates Competitive Advantage' (*Harvard Business Review*, January 2020) <https://hbr.org/2020/01/when-data-creates-competitive-advantage> accessed 28 January 2025.

search accuracy, better technology or novel ideas (like the replacement of Yahoo! and Bing by Google or Myspace and Orkut by Facebook). In such circumstances, enforcing strict regulations that hinder the ability of these companies to achieve such market power or temporary dominance may not only impede innovation but may even be detrimental to overall economic growth and consumer welfare.[116]

Furthermore, the term 'dominance' is the key term here because one of the primary challenges in enforcing competition regulation is the lack of finding a company to be dominant in the relevant market. An entity is said to be dominant when it possesses the ability to behave independently of market forces.[117] Many digital platforms collecting consumer big data cannot be termed 'dominant' due to the presence of other significant competitors who are also collecting similar data (for instance, due to consumers' multi-homing), which renders them unable to operate independently of market forces.

It is pertinent to mention that dominance in itself is also not a sign of anti-competitive action. In the *Google case*, the Competition Commission of India noted that if an enterprise accumulates big data to wield substantial market power, it is not the core cause of concern; the cause of concern shall arise when the enterprise abuses this dominant position to stifle competition and innovation, create entry barriers, and exploit the market adversely impacting the consumer.[118] Only by holding the big data of consumers, digital companies do not exclude new entrants.[119]

This means that in such circumstances, case-to-case evaluation by the regulatory authority is necessary to assess dominance. Assessment can be based upon various parameters such as size and resource of the enterprise, number of end users and their dependence on the company, economic power of the company, network effects, barriers to entry, cost of substitutable goods, data-driven advantages or data leveraging techniques.

### 5.3 Data-sharing to Aid Competition

As discussed in the earlier parts, prominent digital companies in a data-driven market can hold and restrict access to large amounts of big data, hindering fair play. Data sharing among computers can facilitate the realisation of 'data value transfer' and its co-creation, enhancing product innovation.[120] Additionally, such data sharing can augment the attractiveness of the product and intensify competition within the market. Access to

[116] Shelanski (n 111).
[117] Knapstad (n 113).
[118] *Matrimony.com* (n 18).
[119] US Federal Trade Commission, 'Generative AI Raises Competition Concerns' (29 June 2023) <https://www.ftc.gov/policy/advocacy-research/tech-at-ftc/2023/06/generative-ai-raises-competition-concerns> accessed 28 January 2025.
[120] Haifei Yu, Yanbin Gao and Yuanyuan Lu, 'Company Data Sharing, Product Innovation and Competitive Strategies' 234 (2023) Expert Systems with Applications 121083.

relevant data can enable new market entrants to anticipate evolving market needs, deliver targeted products and services, and triumph over data-rated barriers to entry.[121] Furthermore, data sharing by those with exclusive access to valuable information or essential data with new entrants can reduce consumer welfare concerns and increase overall market efficiency.

The concentration of data with a single player (data monopoly) has the potential to cause market failure and loss of efficiency that could otherwise be achieved by leveraging that data.[122] To promote fair competition, it may become imperative to mandate the sharing of essential data on a case-to-case basis, specifically in markets where the ability of new entrants to compete effectively is hindered without access to data possessed by the dominant enterprises.[123] To justify the collection of data, fair, reasonable, and non-discriminatory (FRAND) pricing could be determined to compensate the data-sharing digital company.[124] The concept of FRAND is frequently discussed in relation to Standard Essential Patents can be effectively utilised to attain a balance between fostering competition and minimising the intrusion into databases of major technological companies.[125]

The 'Citymapper' case study is a great example of how data sharing fosters innovation and enhances consumer welfare. Following 'Transport for London's' provision of free, real-time data in 2009 in an open format, a business called Citymapper generated economic benefits of approximately GBP 130 million annually within the United Kingdom, showcasing how an appropriate data-sharing strategy can be established without unfairly harming the original owner of data.[126] Furthermore, the UK's "Online Platforms and Digital Advertising Market Strategy, 2019" and EU's "Regulation on Contestable and Fair Markets in the Digital Sector Act, 2022 (DMA)" are noteworthy regulations that have established explicit and proposed data-sharing obligations. According to these laws, dominant search engine service providers must share click and query data with competing search engines. The Act also requires gatekeepers to provide "effective, high-quality, continuous and real-time access and use of aggregated and non-aggregated data"[127], showcasing the growing regulations to promote data-sharing between competitors.

[121] Priyanka Vinayak Bhat, 'Data Sharing for Contestability in Data-Driven Digital Markets: An Analysis' (2023) 4 Competition Commission of India Journal of Competition Law and Policy 1,1.
[122] Jan Kramer and Daniel Schnurr, 'Big Data and Digital Markets Contestability: Theory of Harm and Data Access Remedies' (2022) 18(2) Journal of Competition Law and Economics 255.
[123] Vikar Kathuria, 'Exclusionary Conduct in Data-Driven Markets: Limitations of Data Sharing Remedy' (2020) 8(3) Journal of Antitrust Enforcement 511.
[124] Mathew Heim and Ignor Nikolic, 'A FRAND Regime for Dominant Digital Platforms' (2019) 10(1) Journal of Intellectual Property, Information Technology and Electronic Commerce Law 38, 55.
[125] Ibid.
[126] Bhat (n 121).
[127] Regulation (EU) 2022/1925 of the European Parliament and of the Fair Markets in the Digital Sector (Digital Markets Act) [2022], Art 6(10).

### 5.4 Merger Thresholds

As discussed in the earlier parts, competition authorities are recognising that control over data can enhance market power. In a data-driven market, a merger like this could increase the concentration of relevant data and could restrict the entry and expansion of new companies. Although it is difficult to find a 'one-size-fits-all' merger control policy that can be applied in all merger matters cutting across all jurisdictions as competition policy across the goal is dependent upon various factors such as personal laws, available resources, the experience of regulators and policymakers, and the overall economic status of the country.[128]

Yet, the policymakers must widen the ambit of review to scrutinise mergers by large digital companies even if they do not meet the traditional threshold criteria based upon monetary value. Regulators must pay attention to 'killer acquisitions' in the data-driven markets where large firms buy smaller firms to pre-emptively eliminate future competition. Many jurisdictions have already improved or are in the process of improving their merger control standards to incorporate data-driven combinations. For instance, competition regulatory authorities of Germany[129] and Austria[130] have recognised the lacunas and have introduced the 'value of transaction threshold', through which an acquisition exceeding a value limit can be reviewed even if the turnover or threshold criteria are not met. The Digital Markets Act (DMA) of the European Union also scrutinises data-based mergers. The DMA specifically targets large digital platforms (or 'gatekeepers'), mandating them to notify any merger that they plan to undertake in advance if it involves the collection of large data sets or could adversely impact the competition in the market. Furthermore, through its "Digital Markets, Competition and Consumers Act, 2024", the UK has introduced acquirer-focused merger control thresholds to strengthen the Competition and Market Authorities' investigations and enforcement powers. The Australia Competition and Consumer Commission recommended lowering thresholds for tech mergers, arguing that high thresholds often overlook data-centric acquisitions. Interestingly, unlike its European counterpart, the Australian Commission denied the *Google/Fitbit merger*[131] due to its potential anti-competitive impacts, highlighting the uncertainty in this arena.

Each merger control regime possesses its own criteria for assessing whether a specific transaction will receive approval; polar verdicts in the Google/Fitbit cases, as discussed

[128] United Nations Trade and Development, Intergovernmental Group of Experts on Competition Law and Policy, 'Round Table on Recent Developments in Merger Control Standards' (2024) <https://unctad.org/system/files/information-document/ccpb_IGECOMP2024_PROG_RT_developments_ merger_control_standards_en_0.pdf> accessed 14 August 2024.

[129] German Competition Act 2017 (9th Amendment) (GWB), s. 35 (1a).

[130] Cartel and Competition Law Amendment Act 2017, s. 9(4).

[131] Australian Competition and Consumer Commission, 'ACCC Rejects Google Behavioural Undertaking for FitBit Acquisitions' (2020) <https://www.accc.gov.au/media-release/accc-rejects-google-behavioural-undertakings-for-fitbit-acquisition>accessed 14 August 2024.

above, are a classic example of this. While the overarching ideology may exhibit similarities across many jurisdictions, it is essential to have a global collaboration. Collaboration on an international and regional level is crucial for creating a comprehensive consensus on merger standards, given that business mergers of multinational digital entities significantly affect markets in various jurisdictions.[132]

## 6 Conclusion

Based upon the above discussion, and after analysing both sets of arguments for and against big data, it can be inferred that big data is fundamentally neither good nor evil. Yet its insurgence and utilisation in trade practices in the digital age cannot be overlooked. The potential of big data to enhance services and products is significant. The effective enforcement of competition regulations can ensure that stakeholders maximise this potential. The practice of collecting, analysing, and utilising data, especially customer data, is a practice that has been in use for a long time. However, recent developments, driven by rapid technological advancements, increased digitalisation, and enhanced connectivity, have dramatically expanded the velocity, variety, volume and value of data and its sources. Consequently, the economic significance of data has escalated rapidly.

The potential adverse effects on competition in a data-driven market have also increased substantially and should not be overlooked. Competition authorities must update their strategies to maintain their effectiveness as regulators. Failure to do so may result in them becoming detached from market realities and reliant on outdated investigative techniques. Therefore, the competition regulating authorities must consider technical, data-related variables when evaluating market power and company behaviour. Due to the diverse and even ambiguous effects of data utilisation, it is pertinent that the regulators assess market situations on a case-by-case basis. In this context, the dynamic characteristics of digital markets- such as network effects, multi-homing, and use of advanced algorithms, must be taken into account.

It is evident that competition regulatory authorities across the world are still in a nascent stage of addressing this new challenge. Therefore, it is essential for them to and hence their strategy to continue being effective regulators. Furthermore, increased collaboration amongst regulatory authorities worldwide, along with the cooperation of data protection agencies, will yield mutual benefits. By fostering such collaborations, authorities will be better equipped to tackle the challenges that big data presents for trade in the digital economy.

[132] United Nations Trade and Development (n 128).