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Data as a barrier to entry and an essential facility: Law & Economics Analysis

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Contents

SUMMARY

Within the context of the European Union Competition Law, a master's thesis entitled "Data as a Barrier to Entry and and an Essential Facility in EU Competition Law: Law & Economics Analysis" conducts an in-depth investigation of the function that data plays in relation to competition law.

The idea that data might be a valuable asset in the contemporary digital economy is presented in the very first part of the thesis. It illustrates the growing relevance of data in a variety of businesses as well as the potential for data to create entry barriers for new market competitors. The purpose of this thesis is to investigate the strategic use of data by businesses in order to achieve market domination and obtain a competitive edge.

Further, the thesis analyzes the idea of an "essential facility" as it relates to the legal framework of EU competition law. It investigates the factors that determine what constitutes an essential facility and considers whether or not data can be categorized in this way. In this thesis, an analysis is performed to determine how competition authorities and courts have dealt with issues concerning access to data as an essential facility and the possible influence on competition in digital marketplaces.

Using this background as a foundation, the thesis then goes into the application of EU competition law to solve the issues presented by data as a barrier to entry and an essential facility. It investigates how the current legal framework may be understood and implemented in the context of data-driven markets, and it provides an analysis of the relevant provisions. The case law and the function of competition authorities in the enforcement of competition law against data-related anticompetitive acts are investigated over the course of the thesis.

In addition to a legal examination, this thesis also combines economic viewpoints to evaluate the significance of data as a barrier to entry and essential facilities. These perspectives are examined in conjunction with the legal analysis. The purpose of this study is to investigate various economic theories and models in order to get a better understanding of the implications

that the concentration of data has on market competitiveness, innovation, and consumer welfare. The thesis investigates the economic advantages and disadvantages of applying these concepts to data. Also, it examines the possible benefits of boosting data availability and portability in order to increase competitiveness and innovation.

In order to highlight the practical ramifications of data as a barrier to entry and essential facility, the thesis presents a number of different case studies and examples from the actual world throughout its whole. The thesis conducts an analysis of key cases, such as those involving dominant digital platforms, in order to get an understanding of how data-related concerns have been dealt within the framework of EU competition law.

In conclusion, the thesis underlines the necessity for a complete strategy that combines legal analysis and economic insights to solve the issues presented by data as a barrier to entry and essential facility in accordance with EU competition legislation. This approach should be taken in order to meet the challenges posed by data as such. It gives ideas for policymakers, competition authorities, and legal practitioners on how to manage the complicated dynamics of data-driven marketplaces while simultaneously encouraging competition, innovation, and consumer welfare.

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Abbreviations

EU – European Union

TFEU – Treaty on the Functioning of the European Union

CJEU – Court of Justice of European Union

OECD – Organization for Economic Cooperation and Development

IPRs – Intellectual Property Rights

GDPR – General Data Protection Regulation

US – United States

EDPS – European Data Protection Supervisor

FTC – Federal Trade Commission

DOJ – Department of Justice

ACCC – Australian Competition and Consumer Commission

UK – United Kingdom

APIs – Application Programming Interfaces

1. Introduction

1.1. Background and the context of the topic

Recent years have seen a tremendous rise of the digital economy, which has been driven by the widespread usage of data as well as the technical breakthroughs that have occurred. Data has evolved as a valuable resource, frequently being referred to as the "new oil," having the ability to fuel innovation, promote economic development, and change sectors.[1] Concerns have been made regarding the potential for anticompetitive consequences on market entrance and competition as a result of the growing concentration of power among a small number of dominant businesses and their possession of data.

The maintenance of healthy levels of competition is a primary focus of the law governing competition in the European Union (EU), which provides the enabling regulatory structure. The removal of obstacles to entrance and establishment of fair playing conditions for all market players are necessary steps toward achieving this goal. In the past, factors like as significant financial needs, technical competence, or access to distribution networks were considered to be examples of barriers to entry. Data, on the other hand, has evolved as a new sort of barrier in the digital age, and it may greatly hinder market access and limit competition.

There are a few different ways that data might serve as a barrier to entry. To begin, the collection of data and the ownership of that data by dominant organizations may produce considerable benefits for those firms. These advantages may include economies of scale and scope, network effects, and access to important insights. These advantages may make it exceedingly difficult for new entrants to reproduce or compete successfully in data-intensive markets, which can make it extremely difficult for new entrants. Second, data may serve as a strategic asset that enables incumbents to participate in exclusionary activities, such as refusing or limiting access to

[1] Panel discussion, "Personal Data: The 'New Oil' of the 21st Century," World Economic Forum on Europe and Central Asia 2011 (June 9, 2011).

crucial datasets, so excluding potential rivals from the market. These actions may further solidify the dominant position of existing companies and impede the growth of new competitors.

Additionally, in the field of competition law, the idea of an "essential facility" has been increasingly prominent in recent years. When discussing how rivals may successfully compete in a market, the term "essential facility" refers to a resource or infrastructure that is absolutely necessary for doing so.[2] In the context of data, some datasets or platforms that are held by dominant corporations may be deemed essential facilities. This is because these datasets or platforms serve a very important role in allowing competition and innovation. If data were recognized as an essential facility, dominant companies would be required to fulfill commitments to offer access to their datasets or platforms on conditions that are fair and do not discriminate against anyone else.

Even if there has been an increase in focus on the subject of data and its roles as both a barrier to entry and an essential facility, there is still a need for an in-depth investigation of the matter from both a legal and an economic point of view. This gap is something that the author of this thesis hopes to solve by undertaking an in-depth investigation of the essential facilities and data-related obstacles to entry that are governed by EU Competition Law. This study intends to analyze the efficiency of the present legal framework by using a law and economics perspective. It also aims to identify difficulties and provide alternative changes to guarantee competition and innovation in the digital economy.

1.2. Research objectives and question

The following is a list of the research goals that this thesis hopes to accomplish. In the first place, it intends to investigate the function of data in the context of EU Competition Law as a barrier to entry in the digital

[2] S. Anderman, 'The Epithet That Dares Not Speak Its Name: The Essential Facilities Concept in Article 82 EC and IPRs After the Microsoft Case' in Ariel Ezrachi (ed), Research Handbook on Intellectual Property and Competition Law (Edward Elgar Publishing, 2019) 87.

economy. Examining how data acquisition and management by dominant businesses produce advantages that inhibit new entrants from successfully competing in data-intensive marketplaces is a necessary step in this process. This thesis will investigate the influence that network effects, economies of scale and scope, and access to important insights produced from data have on a company's ability to enter new markets.

The second goal is to investigate the effects that the concentration of data and the management of that data by dominant actors may have on the level of competition in data-intensive marketplaces. This purpose requires doing research on the strategic use of data by dominant companies, which may result in practices of exclusion that restrict or block access to essential datasets. In this thesis, an analysis of the ways in which such tactics perpetuate the power of incumbents, stifle innovation, and limit consumer choices will be provided.

Thirdly, the purpose of this thesis is to evaluate the notion of data as an essential facility as well as its use within the framework of the EU Competition Law. In order to accomplish this goal, we will need to conduct an in-depth analysis to determine if certain datasets or platforms should be regarded as essential facilities. In the thesis, an investigation of the legal and economic factors that go into defining essentiality, as well as the ramifications of placing access duties on dominant enterprises, will be carried out.

In addition to this, the goal is to analyze the efficacy of the legislative framework that is currently in place in resolving concerns of competition that are connected to data. In order to successfully address the anticompetitive impacts of data concentration, it is necessary to investigate whether or not the restrictions that are already in place, such as those regarding merger control, abuse of dominance, and data-sharing, are enough. The thesis will analyze the benefits and drawbacks of the existing framework as well as locate any possible holes in the coverage.

In conclusion, the purpose of the thesis is to provide suggestions regarding legal and regulatory matters in order to promote consumer welfare, innovation, and competitiveness in the digital economy. This aim entails the formulation of practical suggestions to meet the issues provided by data as

both a barrier to entry and as an essential facility. These recommendations will be based on the results of the study, which will serve as the foundation. The thesis will discuss various legal and regulatory approaches to foster innovation, promote healthy competition, and safeguard the interests of consumers and market players.

How does data act as a barrier to entry and as an essential facility under EU Competition Law, and what are the consequences for competition and innovation in the digital economy? This is the core research issue that motivates this thesis. This research subject entails an in-depth analysis of the function that data play within the framework of EU Competition Law. The purpose of this study is to investigate the anti-competitive impacts of data concentration, the difficulties it creates for entering new markets, and the possible influence it has on both innovation and competition. The study topic also includes an analysis of how successful the legislative framework is, as well as the formulation of proposals to solve data-related concerns that pertain to competition.

1.3. Methodology

The utilization of a law and economics approach in the composition of this thesis offers a thorough structure for scrutinizing the intricate interrelationship among legal doctrines, economic hypotheses, and the intricate dynamics of markets that rely on data. The interdisciplinary approach of law and economics provides a robust framework for examining the effects of data as both a barrier to entry and an essential facility in digital markets. This analysis facilitates a more profound comprehension of how competition law can efficiently tackle the difficulties that emerge from data-related practices by incorporating legal and economic viewpoints.

The utilization of a law and economics analysis from a legal perspective enables a meticulous evaluation of the current legal structures,

such as competition laws and regulations, that oversee data-centric markets.[3] The aforementioned statement offers a methodical evaluation of the potential application and interpretation of legal instruments within the framework of data acting as both a barrier to entry and an essential facility.

The law and economics approach is useful in assessing the potential anti-competitive effects of data-related practices, such as data hoarding, exclusivity agreements, and discriminatory access to data, by taking into account their economic impact. This approach also aids in evaluating the available legal remedies to address such effects.

In addition, an economic evaluation presents a plethora of economic concepts and doctrines, bringing to light valuable perspectives on the motivations and actions of market actors within the digital domain. The application of economic theories, including market power, market concentration, and network effects, within the framework of law and economics analysis can provide insight into the impact of data-related practices on competition, innovation, and consumer welfare. The assessment offered is both quantitative and qualitative in nature, and it pertains to the economic efficiencies and potential negative impacts that arise from data serving as a barrier to entry or as an essential facility. This evaluation facilitates a more informed analysis of the legal and policy implications of such phenomena.

Furthermore, the application of the law and economics methodology provides a comprehensive structure for evaluating the compromises and equitable distribution of benefits and costs associated with the governance of data-centric markets. The analysis takes into account the enhancement of economic efficiency resulting from data-driven innovations, the possible hazards associated with data concentration and the exploitation of market dominance, and the imperative to promote competition and safeguard consumer welfare. Through the consideration of these variables, the application of law and economics analysis can offer pragmatic perspectives

[3] Francesco Parisi, "Positive, Normative and Functional Schools in Law and Economics" (2004) 18 European Journal of Law and Economics 259, 2 http://dx.doi.org/10.1007/s10657-004-4273-2 accessed 20 January 2023.

on the development of efficient competition policy, regulatory interventions, and remedies that achieve an ideal equilibrium between promoting innovation and guaranteeing equitable competition.

In general, the utilization of a law and economics analysis in writing this thesis offers a meticulous and systematic methodology for comprehending the intricate dynamics of data as both a hindrance to market entry and an essential facility in digital markets. The aforementioned approach facilitates a thorough assessment of the legal, economic, and policy ramifications, providing significant perspectives and suggestions for competition regulators, policymakers, and legal professionals to proficiently tackle the obstacles presented by data-driven practices. The integration of legal and economic perspectives through the law and economics analysis provides a more comprehensive and refined approach to the scrutiny of data-driven markets. This contributes to the ongoing discourse on competition law in the digital era.

1.4. Significance of study

The findings of this research are very relevant for a wide range of stakeholders, including those who set policy, those who regulate markets, those who practice law, academics, and market participants. The following are some of the points that illustrate the importance of the study:

1) Contribution to Knowledge: This research helps fill an important need in the current literature by offering a comprehensive examination of data both as a barrier to entry and as a necessary facility in accordance with EU Competition Law. It adds to the academic knowledge of the issues faced by data concentration in the digital economy and its consequences for competition and innovation, which is a very important area of study.
2) Policy and Regulatory Implications: The results of this research may give significant insights for policymakers and regulators, who can use

these insights to build effective strategies and regulations to address the anticompetitive impacts of data concentration. The legal and policy proposals that have been suggested may be of assistance in the development of a stronger regulatory framework that strikes a balance between competition, innovation, and the welfare of consumers.

3) Legal Guidance: This research provides recommendations to legal practitioners and other practitioners engaged in matters involving EU Competition Law that pertain to data-related competition problems. Insightful perspectives into how the principles of competition law may be applied in the digital economy can be gleaned via a review of the already in place legal framework and the spotting of any possible loopholes in those laws.
4) Industry Relevance: The results of the study have repercussions that may be seen in practice for market participants who work in data-intensive industries. Companies are able to create better informed strategies to traverse the competitive environment and make well-informed choices about data management and access if they have an awareness of the dynamics of data as a barrier to entry and as an essential facility.
5) Consumer Welfare: Consumers stand to gain from an improved awareness of how the consequences of data concentration for competition and innovation might eventually play out in their favour. The thesis intends to improve consumer choice, foster innovation, and assure fair and transparent access to important information by supporting effective competition in data-intensive marketplaces.
6) Future Research Directions: This study has the potential to provide the groundwork for further investigation into the shifting issues posed by data concentration and competition law in the future. It shows the need for continued academic investigation into the quickly changing digital world and gives a platform for researching further elements, such as the role of artificial intelligence, data privacy, and the interaction between competition law and sector-specific rules.

Moreover, it brings to light the need of investigating the fast-changing digital landscape.

To summarize, the value of the study resides in the fact that it made a contribution to knowledge, had policy consequences, provided legal advice, was relevant to the sector, was beneficial to consumers, and had the potential to inspire more research on data-related competition concerns. It is to educate and influence conversations around the regulation of data and competition in the digital economy, to the benefit of many stakeholders and with the intention of supporting fair and competitive markets.

2. Literature Review

2.1. Overview of EU Competition Law

The EU Competition Law is an essential framework that tries to foster fair and effective competition within the European Union. Its main objective is to protect consumers from unfair business practices. It is a collection of legal norms and concepts that regulate antitrust conduct, merger control, and state aid. The major goal of the EU Competition Law is to secure the proper operation of the internal market, create economic efficiency, safeguard consumer welfare, and stimulate innovation and competitiveness.[4]

Articles 101 and 102 of the Treaty on the Functioning of the European Union (also known as the TFEU) are where we find the most important provisions of the European Union's Competition Law.[5] Cartels and other types of anti-competitive agreements are specifically outlawed under Article 101 of the said law, along with decisions, agreements, and coordinated actions that have the effect of restricting competition.[6] Article 102 of the Treaty on the Functioning of the European Union addresses the issue of abusing dominant market positions by outlawing behaviours that are detrimental to competition.[7] These behaviours include exploitative tactics and exclusionary behaviour.

EU Competition Law is guided not only by articles, but also by supplementary guidelines, opinions, and case law issued by the European Commission and the Court of Justice of the European Union (CJEU).[8] The aforementioned sources play a crucial role in the elucidation and execution of

[4] Damien Geradin, Anne Layne-Farrar, and Nicolas Petit, EU Competition Law and Economics (Oxford University Press 2012) 1.65.
[5] Treaty on the Functioning of the European Union (consolidated version) [2008] OJ C 115/47, art 101-102
[6] Treaty on the Functioning of the European Union (consolidated version) [2008] OJ C 115/47, art 101
[7] Treaty on the Functioning of the European Union (consolidated version) [2008] OJ C 115/47, art 102
[8] Alison Jones and Brenda Sufrin, EU Competition Law, 7th edn (Oxford University Press 2018) 81.

legal provisions, thereby guaranteeing uniform enforcement of the law throughout all the Member States of the European Union.[9]

A comprehensive understanding of EU Competition Law necessitates an examination of significant legislative documents, academic publications, and landmark cases that have influenced its development and application. The subsequent sources hold significance in relation to this subject matter.

The major legal foundation for EU Competition Law is the Treaty on the Functioning of the European Union (TFEU), which came into force in 2009 and outlines the fundamental principles as well as the prohibited behaviours.[10]

The European Commission has issued guidelines pertaining to a range of topics concerning EU Competition Law, such as the abuse of dominant market position, horizontal cooperation agreements, and vertical agreements. The guidelines presented herein offer interpretive recommendations on the application of the legislation across diverse scenarios.

When it comes to providing clarity about the interpretation and application of EU Competition Law, the judgements handed down by the Court of Justice of the European Union (CJEU) play a vital role. The cases of *Intel*,[11] *Microsoft*,[12] and *Google*[13] are considered to be important ones by the CJEU.

Decisions made by the Commission in high-profile cases may provide light on how European Union Competition Law is put into practice: instances that stand out include those involving *Microsoft*,[14] *Google Shopping*[15] and *Qualcomm*.[16]

The reports and studies that are issued by organizations such as the European Commission and the Organisation for Economic Cooperation and

[9] Ariel Ezrachi and Maurice E. Stucke, Virtual Competition: The Promise and Perils of the Algorithm-Driven Economy (Harvard University Press, 2016)
[10] Treaty on the Functioning of the European Union (TFEU) [2012] OJ C 326/47.
[11] Case C-413/14 P, Intel Corporation Inc. v European Commission [2017] ECLI:EU:C:2017:632
[12] Case C-201/04 P, Microsoft Corp. v Commission [2007] ECR II-3601.
[13] Case C-230/16, Google LLC v Commission [2019] ECLI:EU:C:2019:624.
[14] European Commission, Decision COMP/C-3/37.792, Microsoft, [2004] OJ L 32/23.
[15] European Commission, Case AT.39740, Google Search (Shopping) (Final Decision) (June 27, 2017).
[16] European Commission, Case AT.40167, Qualcomm (Final Decision) (January 24, 2018).

Development (OECD)[17] give significant views on competition law concerns and policy considerations within the European Union.

This thesis will investigate these sources as well as additional pertinent materials in order to assess the applicability of the EU Competition Law in the context of data as both a barrier to entry and an essential facility. The present framework's efficiency in resolving data-related competition challenges will be evaluated through the lens of the legal principles, doctrines, and case law that will be analysed as part of this process.

2.2. Concept of barriers to entry in Competition Law

Due to the fact that they have a direct influence on the dynamics of the market as well as the capacity of new businesses to join and successfully compete, barriers to entry play an essential part in competition law. Barriers to entry are defined as factors or hurdles that restrict or impede new entrants from joining a market and competing on an equal basis with existing enterprises.[18]

The existence of entry barriers may have a substantial impact on market competitiveness and can have repercussions for the well-being of consumers, innovation, and the productive capacity of the economy. Competition authorities and courts conduct an analysis of obstacles to entry in order to evaluate the competitive environment and uncover possible antitrust problems.[19]

There are many different types of barriers to entry, and the nature of these barriers, as well as the effect they have, may vary greatly across different businesses and marketplaces.[20] The following are some examples of frequent forms of barriers to entry.

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[17] OECD. (2019). Competition Law and Policy in the European Union. OECD Publishing.
[18] R Preston McAfee, H M Mialon and M A Williams, 'What is a Barrier to Entry?' (2004) 94(2) American Economic Review 461, 462.
[19] Damien Geradin, Anne Layne-Farrar, and Nicolas Petit, EU Competition Law and Economics (Oxford University Press 2012) 2.104-2.124.
[20] OECD, Policy Roundtable on barriers to entry, DAF/COMP(2005)42 http://www.oecd.org/daf/competition/abuse/36344429.pdf accessed 20 January 2023, para 2.2.

Barriers to entry caused by legal requirements and regulations: Some sectors have regulatory requirements or licensing systems that make it difficult to enter the industry.[21] According to Whish and Bailey (2018), some policies may hinder the capacity of new entrants to participate in the market by placing considerable expenses or administrative burdens on them.[22]

Economies of scale: Existing businesses may be able to profit from economies of scale, which are benefits in terms of cost that are realized when production levels expand.[23] New entrants may have difficulty achieving similar cost savings, which makes it difficult for them to compete on price or provide goods or services that are comparable to those offered by established businesses.[24]

Network effects:[25] In fields where network effects are common, the value of a product or service improves as more people join the network. This phenomenon is known as a "network effect".[26] New entrants have a more difficult time attracting consumers and competing successfully since established businesses that have huge user bases have a competitive advantage.[27]

Intellectual Property Rights: The concept of Intellectual Property Rights (IPRs) encompasses a range of legal entitlements such as patents, trademarks, and copyrights.[28] These rights confer exclusive ownership to the holders, thereby potentially impeding the entry of new competitors into the

[21] OECD, Policy Roundtable on barriers to entry, DAF/COMP(2005)42 http://www.oecd.org/daf/competition/abuse/36344429.pdf accessed 20 January 2023, para 3.2.7.
[22] Case C-457/10 P, AstraZeneca v Commission, EU:C:2012:770.
[23] OECD, Policy Roundtable on barriers to entry, DAF/COMP(2005)42 http://www.oecd.org/daf/competition/abuse/36344429.pdf accessed 20 January 2023, para 3.2.4.
[24] R Preston McAfee, H M Mialon and M A Williams, 'What is a Barrier to Entry?' (2004) 94(2) American Economic Review 461, 462.
[25] OECD, Policy Roundtable on barriers to entry, DAF/COMP(2005)42 http://www.oecd.org/daf/competition/abuse/36344429.pdf accessed 20 January 2023, para 3.2.6.
[26] Gregory J. Werden, 'Network Effects and Conditions of Entry: Lessons from the Microsoft Case' (2001) 69 Australian Law Journal 8.
[27] Nils-Peter Schepp and Andreas Wambach, 'On Big Data and Its Relevance for Market Power Assessment' (2016) 7(2) Journal of European Competition Law & Practice 120.
[28] OECD, Policy Roundtable on barriers to entry, DAF/COMP(2005)42 http://www.oecd.org/daf/competition/abuse/36344429.pdf accessed 20 January 2023, para 3.2.9.

market.[29] New entrants could have trouble building technologies or brands that are comparable, which would restrict their capacity for competition.[30]

Access to key inputs: Existing businesses could have control over key inputs or resources that are required for manufacturing, distribution, or innovation.[31] New entrants' capacity to enter the market and compete might be hindered if they have trouble gaining access to necessary inputs on conditions that are considered fair and reasonable.[32]

Costs spent when switching products or services: Switching costs refer to the financial expenditures incurred by consumers when they transition from one brand of a particular product or service to another. [33] The incumbent firms may possess entrenched customer loyalty or have implemented contractual or lock-in mechanisms, which can pose significant challenges for new entrants seeking to attract consumers.[34] The presence of established businesses poses a challenge for new businesses to compete.

2.3. Understanding data as a potential barrier to entry

In the contemporary age of digitalization, corporations have acknowledged that the collection and effective utilization of data have become a pivotal element in attaining a competitive edge. Data-driven technologies and business models possess the potential to significantly transform entire industries and market dynamics. Baker McKenzie (2019) have observed that the growing significance of data in the economy has given rise to apprehensions about its possible function as an obstacle to market. entry.[35] This phenomenon may be attributed to the intricacy involved in acquiring, maintaining, and analyzing data.

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[29] OECD, Roundtable report Intellectual Property Rights, DAF(2004)24 http://www.oecd.org/daf/competition/abuse/34306055.pdf.
[30] Damien Geradin, Anne Layne-Farrar, and Nicolas Petit, EU Competition Law and Economics (Oxford University Press 2012) 2.104-2.124.
[31] BPB Industries [1989] OJ L10/50, para. 120.
[32] Inge Graef, 'Market Definition and Market Power in Data: The Case of Online Platforms' (2015) 38 World Competition 473.
[33] R.J. Van den Bergh and P.D. Camesasca, European Competition Law and Economics: A Comparative Perspective (2nd edn, Sweet & Maxwell 2006) 146.
[34] E-book MFNs and related matters (Amazon) Decision, AT40153, [2017] para. 65.
[35] Baker McKenzie | European Union, 'European Commission Report on Competition Policy for Digital Era – Key Takeaways' (20 June 2019) page 4 <

Under specific circumstances, data can function as a hindrance to entry, impeding the involvement of new entrants. The aforementioned criteria comprise the following:

1. Availability of Data and Control. Established businesses may have accumulated enormous volumes of data over the course of their existence, providing them with a major edge over new competitors in the market. According to Ezrachi and Stucke (2016), they are in possession of important statistics, consumer insights, and proprietary algorithms, all of which might be difficult for new entrants to copy or acquire.[36]
2. Network Effects and Data Ecosystems: The prevalence of network effects and data ecosystems can give rise to self-reinforcing dynamics that bolster the market standing of dominant firms in industries where these effects are prominent. The acquisition and analysis of data can facilitate the attainment of this result. According to Lianos and Geradin's (2019) proposition, there exists a positive correlation between the value of a given platform or ecosystem and the quantity of users who furnish data to said platform or ecosystem.[37] This phenomenon presents a formidable obstacle for nascent participants to garner a user constituency and attain a competitive advantage.
3. Data-Driven Business Models: Data-driven business models have the potential to enhance operational efficiency, elevate customer experiences, and foster innovation. However, the realization of these benefits is contingent upon the organization's proficiency in advanced data analytics and machine learning algorithms. As per the findings of Baker and McKenzie's 2019 study, emerging players may encounter challenges in acquiring the necessary resources, expertise, or scale to effectively compete with well-established enterprises.[38]

https://www.lexology.com/commentary/competition-antitrust/european-union/baker-mckenzie/european-commission-report-on-competition-policy-for-digital-era-key-takeaways> (accessed 25 January 2023)

[36] Ariel Ezrachi and Maurice E. Stucke, Virtual Competition: The Promise and Perils of the Algorithm-Driven Economy (Harvard University Press, 2016) 96-99.

[37] Ioannis Lianos and Damien Geradin, Handbook on European Competition Law: Enforcement and Procedure (Edward Elgar Publishing, 2019).

[38] Baker McKenzie | European Union, 'European Commission Report on Competition Policy for Digital Era – Key Takeaways' (20 June 2019) page 4 <

4. Compliance with Data Privacy legislation. An ever-increasing emphasis on the privacy and security of personal information has led to the development of new legislation in certain regions, such as the General Data Protection Regulation (GDPR) in the European Union (EU). According to Ezrachi and Stucke (2016), new entrants may find it difficult to comply with these laws because they may not have the resources or the experience necessary to successfully traverse the complicated legal and regulatory environment.[39]

Competition authorities and politicians have begun to pay attention to the influence that data might have when it serves as a barrier to entry. Concerns have been raised about the potentially anticompetitive implications of data hoarding, the abusive use of data supremacy, and the need of guaranteeing data portability and interoperability in order to allow entrance and competition.[40]

In order to comprehend the potential impact of data as a hindrance to market entry, it is imperative to examine the legal and economic aspects that encompass data accessibility, data-centric commercial models, limitations on privacy, and the implications of data aggregation on competition. The aforementioned studies conducted by Ezrachi and Stucke (2016)[41] and Lianos and Geradin (2019)[42] provide valuable insights into the ongoing discourse surrounding the most appropriate regulatory measures to tackle potential antitrust issues and foster fair competition within the context of the digital era.

https://www.lexology.com/commentary/competition-antitrust/european-union/baker-mckenzie/european-commission-report-on-competition-policy-for-digital-era-key-takeaways> (accessed 25 January 2023)

[39] Ariel Ezrachi and Maurice E. Stucke, Virtual Competition: The Promise and Perils of the Algorithm-Driven Economy (Harvard University Press, 2016) 96-99.

[40] OECD, Handbook on Competition Policy in the Digital Age (OECD Publishing, 2022) 32.

[41] Ariel Ezrachi and Maurice E. Stucke, Virtual Competition: The Promise and Perils of the Algorithm-Driven Economy (Harvard University Press, 2016)

[42] Ioannis Lianos and Damien Geradin, Handbook on European Competition Law: Enforcement and Procedure (Edward Elgar Publishing, 2019).

2.4. Essential facilities doctrine and its application in EU Competition Law

The essential facilities doctrine is a legal notion that covers instances in which access to a certain facility or resource is needed for businesses to successfully compete in a given market. This may occur in a number of different contexts. It acknowledges that withholding access to an essential facility might have anticompetitive impacts by blocking off possible competition and reducing consumer choice.[43]

The theoretical framework was formulated in response to situations wherein a market entity possessing vertical integration or dominance possesses a crucial resource or facility that is indispensable for competitors to engage in equitable competition. Hence, physical infrastructure, including transportation networks and energy pipelines, as well as intangible assets such as intellectual property rights and crucial data, can function as essential facilities.[44] The legal concept of the essential facilities doctrine pertains to situations wherein businesses require access to a specific facility or resource in order to effectively compete within a particular market. This phenomenon may manifest itself in various contexts. The statement recognizes the potential anticompetitive effects of denying entry to a significant facility, which may impede possible competition and limit consumer options.[45]

Article 102 of the Treaty on the Functioning of the European Union (TFEU) is where the essential facilities theory is "implicitly" put into practice in the context of the legal framework for competition in the European Union.[46] Article 102 of the Treaty on the Functioning of the European Union

[43] J. Temple Lang, 'Defining Legitimate Competition: Companies' Duties to Supply Competitors and Access to Essential Facilities' (1994) 18 Fordham Int'l LJ 437.
[44] M. Stucke and A. Grunes, 'Debunking the Myths Over Big Data and Antitrust' (2015) 5 CPI Antitrust Chronicle 1.
[45] D. Geradin, A. Layne-Farrar, and N. Petit, EU Competition Law and Economics (Oxford University Press, 2012) 2.104-2.124.
[46] S. Anderman, 'The Epithet That Dares Not Speak Its Name: The Essential Facilities Concept in Article 82 EC and IPRs After the Microsoft Case' in Ariel Ezrachi (ed), Research Handbook on Intellectual Property and Competition Law (Edward Elgar Publishing, 2019) 87.

bans the abuse of a dominant market position, and one of the possible abuses is the refusal to allow access to an essential facility.

The demonstration of a violation of the essential facilities doctrine in accordance with European Union (EU) competition law is contingent upon the fulfillment of particular conditions.[47] The criteria were established on the foundation of case law and recommendations, encompassing the subsequent elements:

1. Indispensability: The facility or resource in issue must be indispensable for other businesses to be able to compete successfully in the downstream market. According to the Court of Justice of the European Union, this entails that there cannot be any reasonable or economically practicable alternative for rivals to utilize the service.[48]
2. Refusal to access: The company that is in the dominant position shall either refuse to allow access to the necessary facility or impose terms and conditions for access that are unfair or discriminatory. It is not enough to just have a dominant position in the market for a violation to occur; the refusal must be considered unfair or abusive.[49]
3. Effects that are anticompetitive: The restriction of access to the essential facility must have anticompetitive effects, such as the foreclosure of rivals, the suppression of competition, or the harming of consumer welfare. According to the European Commission (2017) and the Court of Justice of the European Union (2009), the rejection must have the potential to impair competition in the downstream market.[50]

Extensive anlysis has been carried out by the European Commission and the Court of Justice of the European Union (CJEU) regarding the application of the essential facilities doctrine in the context of competition law within the

[47] P. Areeda, 'Essential Facilities: An Epithet in Need of Limiting Principles' (1990) 58 Antitrust LJ 841, 852-853.
[48] Case C-7/97, Oscar Bronner, EU:C:1998:569, [1998] ECR I-7791, para. 8.
[49] European Commission, Guidance on the Commission's enforcement priorities in applying Article 102 TFEU to abusive exclusionary conduct by dominant undertakings (2017), para. 81
[50] Case 418/01, IMS Health v NDC Health, [2004] ECR I-5039, paras 44-52.

European Union. The interpretation and implementation of the doctrine have been shaped by significant cases such as *Bronner*[51] and *Deutsche Telekom*[52].

The European Commission has provided guidance on the implementation of Article 102, including the appropriate application of the essential facilities doctrine in specific situations.[53] The guidelines presented by the European Commission in 2017 provide instances where access to an essential facility may be deemed necessary for achieving effective competition. Additionally, they offer valuable perspectives on the analytical framework employed by the Commission.

The essential facilities concept is an important legal principle that ensures that significant infrastructure and resources are accessible to all parties while also avoiding abusive domination. Its indirect use in EU competition law under the concept of "refusal to deal" acts as a safeguard to promote fair competition, avoid market foreclosure, and foster innovation and consumer welfare. These are all goals of the EU competition law.

2.5. Previous studies and research on data as a barrier to entry and essential facilities

The idea that one's lack of data might act as a barrier to entrance has been the subject of considerable interest in both academic research and legislative concerns. Numerous investigations and examinations have been carried out by academics and industry professionals in order to comprehend the significance of data as a possible barrier to entry in a variety of sectors and its effect on competitiveness. In this section, an overview of a few noteworthy studies and pieces of research that have been undertaken on this subject is presented.

In their 2019 publication, "Competition and Competition Policy in a Data-Driven Economy" Justus Haucap examine the impact of data-driven markets

[51] Case C-7/97, Oscar Bronner, EU:C:1998:569, [1998] ECR I-7791,
[52] Case C- 280/ 08 P, Deutsche Telekom v Commission EU:C:2010:603, paras. 80– 85
[53] European Commission, Guidance on the Commission's enforcement priorities in applying Article 102 TFEU to abusive exclusionary conduct by dominant undertakings (2017), para. 81

on competition policy.[54] This study examines the challenges encountered by the digital economy due to the aggregation of data and business models that rely on data analysis.[55] The text sheds light on the potential anticompetitive effects of data-driven market dominance and explores various competition policy interventions that could be employed to tackle these concerns.[56]

Ezrachi and Stucke (2016) authored a publication titled "Virtual Competition: The Promise and Perils of an Algorithm-Driven Economy".[57] The topic of interest is "Virtual Competition". This literary work delves into the impact that algorithms and data-driven technologies have had on competitiveness and scrutinizes the potential avenues through which these technologies may engender entry barriers. The paper scrutinizes the perils associated with the aggregation of data, the ramification of network interconnectivity, and the data-driven pricing strategies.

The publication titled "Competition and Monopoly: Single-Firm Conduct Under Section 2 of the Sherman Act" was released by the Department of Justice of the United States in 2008.[58] This paper offers an examination of the challenges posed by data and its associated practices within the framework of monopolization. The present study conducts an analysis of the potential anticompetitive outcomes that may arise due to data serving as a barrier to entry. Additionally, the research provides valuable insights into the application of competition regulations in the contemporary digital landscape.

The OECD (2022) publication titled "OECD Handbook on Competition Policy in the Digital Age" explores the topic of data governance in the context of the digital age, with a particular emphasis on competition, privacy, and

[54] Haucap, J., 'Competition and Competition Policy in a Data-Driven Economy' (2019) 54 Intereconomics 201-208.
[55] Haucap, J., 'Competition and Competition Policy in a Data-Driven Economy' (2019) 54 Intereconomics 201, 203.
[56] Haucap, J., 'Competition and Competition Policy in a Data-Driven Economy' (2019) 54 Intereconomics 206, 201-208 https://doi.org/10.1007/s10203-019-0223-8 accessed 23 May 2023.
[57] Ariel Ezrachi and Maurice E. Stucke, Virtual Competition: The Promise and Perils of the Algorithm-Driven Economy (Harvard University Press, 2016)
[58] U.S. Department of Justice, Competition and Monopoly: Single-Firm Conduct Under Section 2 of the Sherman Act (2008) http://www.justice.gov/atr/public/reports/236681.pdf accessed 23 May 2023.

transparency.[59] The present study explores the correlation between data governance, the market, and the protection of an individual's privacy rights. The study provides valuable insights into the role of data as a barrier to entry by examining the potential competitive implications of data gathering, data transferability, and data availability.

Botta and Wiedemann (2020) discuss the intersection of big data, artificial intelligence, and competition law.[60] It investigates the ways in which access to data might serve as a barrier to entry and addresses the significance of data portability and data-sharing methods in fostering an environment that is conducive to healthy competition.

The aforementioned studies augment the existing body of knowledge regarding data as a potential obstacle to market entry and provide noteworthy perspectives on the challenges faced by regulatory agencies and decision-makers in addressing this matter. They bring to light the need for competition law and policy to evolve in response to the rapidly changing digital ecosystem in order to promote innovation and fair competition.

A large amount of study and analysis has also been conducted in the fields of competition law and economics on the idea that data is an essential facility. Studies have been carried out by academics and industry professionals to investigate the consequences of recognizing data as an essential facility and its effect on competitiveness in a variety of different industries. This section will provide a comprehensive summary of several notable studies and research endeavors that have been conducted on the topic at hand.

Ryan (2021) conducted a law and economic analysis on the concept of data as essential facilities.[61] In this paper, an economic examination of the practice of considering data as an essential facility is investigated. It

[59] OECD (2022), OECD Handbook on Competition Policy in the Digital Age < https://www.oecd.org/daf/competition/oecd-handbook-on-competition-policy-in-the-digital-age.pdf > accessed 10 April 2023

[60] M. Botta and K. Wiedemann, 'EU Competition Law Enforcement vis-à-vis Exploitative Conducts in the Data Economy, Exploring the Terra Incognita', Max Planck Institute for Innovation and Competition Research Paper No. 18-08, SSRN http://ssrn.com/abstract=3184119 accessed 23 May 2023.

[61] Deirdre Ryan, 'Big Data and the Essential Facilities Doctrine: A Law and Economics Approach to Fostering Competition and Innovation in Creative Industries' (2021) 10(1) Journal of Law and Jurisprudence 84-112. Available at: https://doi.org/10.14324/111.444.2052-1871.1206.

investigates the circumstances under which data may be regarded as important for competitors to join a market and successfully compete within that market. This study centers on the benefits of implementing the essential facilities doctrine to data, along with the potential drawbacks associated with its application.

The European Commission (2020) has published a report regarding the Competition Policy for the Digital Era.[62] This paper addresses the concerns arising from digital platforms and examines the role of data as a crucial instrument in the digital economy. This study explores the concept of data accessibility and its potential impact on innovation, consumer welfare, and business competition. This paper provides an analysis of the European Commission's perspective on the utilization of data as an essential facility.[63]

The scholarly article authored by Ezrachi, A., & Stucke, M. E. (2019) bears the title "Competition Overdose: How the Mythology of the Free Market Transformed Us from Citizen Kings to Market Servants".[64] This literary work delves into the phenomenon of data concentration within the digital economy and explores the potential anticompetitive consequences that may ensue. The statement underscores the importance of acknowledging data as an essential facility and the significance of ensuring data accessibility to promote incentivization.

Lianos (2019) examine the intersection of the digital economy and competition law in the European Union.[65] The present publication delves into the challenges that the digital economy presents to the enforcement of competition law and offers potential remedies to address these issues. This paper explores the concept that data is an essential facility and analyzes its implications for competition policy. The present research delves into the

[62] European Commission, Competition Policy for the Digital Era: Final Report (Publications Office of the European Union, 2019).
[63] European Commission, Competition Policy for the Digital Era: Final Report (Publications Office of the European Union, 2019) 66.
[64] Maurice E. Stucke and Ariel Ezrachi, Competition Overdose: How Free Market Mythology Transformed Us from Citizen Kings to Market Servants (Harper Business, 2020).
[65] Ioannis Lianos, "Competition Law for the Digital Era: A Complex Systems' Perspective" (CLES Research Paper Series, No. 6/2019, August 2019), Centre for Law, Economics and Society (CLES), Faculty of Laws, UCL London, WC1H 0EG. Available at: https://www.ucl.ac.uk/cles/researchpapers.

financial and legal aspects of data as an essential facility, offering valuable perspectives on the potential benefits and risks that come with its utilization.

The study titled "Data as Essential Facility: Competition and Innovation on Online Platforms" was authored by Inge Graef in 2016.[66] The purpose of this research is to provide a complete examination of data as an essential facility from the viewpoints of economics, law, and policy. It investigates the circumstances under which data may be regarded as an essential facility, the possible anticompetitive impacts of limiting access to data, as well as the legal and policy implications of recognizing data as an essential facility.

The results of these studies contribute to an enhanced comprehension of data as an essential facility and provide illumination on the economic, legal, and regulatory concerns that are associated with it. They underline the need of considering access to data as a critical part of supporting competition, innovation, and consumer welfare in the modern age of digital technology.

[66] Graef, I., Data as Essential Facility: Competition and Innovation on Online Platforms (PhD thesis, KU Leuven, Faculty of Law, 2016) https://core.ac.uk/download/pdf/34662689.pdf accessed 23 May 2023.

3. Conceptual Framework

3.1. The economic analysis of barriers to entry

In the context of economic study, "barriers to entry" refer to characteristics that prohibit or dissuade new enterprises from joining and competing in a particular market.[67] Restrictions to entrance may come in many shapes and sizes, including legal and regulatory difficulties, economies of scale, financial needs, access to distribution networks, and technology restrictions.[68]

When looking at a market from an economic standpoint, barriers to entry are an extremely important factor in defining the degree of competition that exists within that industry. When there are low barriers to entry into a market, new businesses have an easier time breaking into that market as well as leaving it, which is healthy for competition, innovation, and customer choice. However, if the barriers to entry are high, then prospective rivals will have a difficult time entering the market, which would ultimately result in an environment with less competition.[69]

The purpose of doing an economic study of barriers to entry is to have a better understanding of the influence these factors have on the dynamics of the market and the level of competition. When there are significant barriers to entry into a market, it may lead to a concentration of market power among existing businesses, which in turn can restrict competitive pressure and possibly result in higher prices, poorer quality, and less innovation.[70]

Furthermore, barriers to entry can provide advantages for established businesses, allowing them to maintain their dominant positions while impeding the potential for competition from fresh players. Incumbents may

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[67] Bain, J., Barriers to New Competition: Their Character and Consequences in Manufacturing Industries (Harvard University Press, 1956)
[68] Perry, M., & Porter, R., 'Oligopoly and the Incentive for Horizontal Merger' (1985) 75 American Economic Review 219.
[69] Tirole, J., The Theory of Industrial Organization (MIT Press, 1988) 378.
[70] Bresnahan, T. F., 'Empirical studies of industries with market power', in R. Schmalensee & R. D. Willig (eds), Handbook of Industrial Organization, Vol. 2, 1011-1057 (Elsevier, 1989).

exhibit a lack of motivation to engage in innovation or improve their efficiency when confronted with low competitive pressure.[71] This could potentially lead to a deficiency in dynamic efficiency.

The interaction between barriers to entry and market structure is another factor that is taken into account in the economic study of barriers to entry. The amount of competition in a market may be affected by the structure of the market itself, such as the degree of market concentration and the existence of dominant enterprises. In highly concentrated markets, dominant businesses may have stronger control over resources, customer connections, and vital assets, making it more difficult for new entrants to overcome hurdles.[72]

The addition of new dimensions brought about by the digital economy has complicated the analysis of entry barriers. The gathering and ownership of data by dominant businesses have emerged as possible barriers to entry due to the strategic relevance of data in a variety of industries.[73] This is due to the fact that dominant enterprises tend to have a greater market share. The capacity to obtain and make use of data may provide considerable competitive advantages and serve as a barrier to entry for prospective competitors who lack equivalent data resources.

3.2. Economic theories and models related to essential facilities

Economic theorems and models have been developed to examine the consequences of identifying specific resources or infrastructures as essential for new entrants to enter a market and effectively compete in it, within the

[71] Gilbert, R., & Newbery, D., 'Preemptive patent acquisition, patent maintenance, and the persistence of monopoly power' (1982) 97(2) The Quarterly Journal of Economics 267-293.
[72] Aghion, P., Bloom, N., Blundell, R., Griffith, R., & Howitt, P., 'Competition and innovation: An inverted-U relationship' (2005) 120(2) The Quarterly Journal of Economics 701-728.
[73] Rochet, J. C., & Tirole, J., 'Platform competition in two-sided markets' (2003) 1(4) Journal of the European Economic Association 990-1029.

framework of essential facilities. The aforementioned resources and infrastructures can be regarded as essential facilities. The objective of these theoretical frameworks and conceptual models is to facilitate an understanding of the economic rationale underlying the essential facilities doctrine and its application within the domain of antitrust law. This section will cover significant economic models and concepts related to essential facilities.

The Natural Monopoly theory posits that certain industries, such as utilities or telecommunications, exhibit economies of scale and scope that result in the emergence of natural monopolies. In the context of these industries, it is deemed more effective for a solitary enterprise to provide the requisite services as opposed to multiple firms engaging in the same. Baumol, Panzar, and Willig (1982) argue that designating certain facilities as essential can facilitate access and utilization of these facilities by competitors on equitable conditions, thereby promoting competition in the context of natural monopolies.[74]

The concept of bottlenecks suggests that certain facilities or resources may function as critical constraints, whereby they serve as indispensable inputs for downstream competitors, yet there are no viable substitutes available. The proprietor's capacity to exercise significant market dominance through the management of these bottleneck infrastructures and potentially exclude or discriminate against competitors is a direct consequence of such control. Areeda and Turner (1975) proposed that the concept of essential facilities was formulated to address the aforementioned concerns by enforcing equitable and non-discriminatory access to essential facilities.[75]

The Indispensability test is an economic framework that revolves around the evaluation of whether a facility or resource holds an essential status for a competitor. This study assesses the necessity of a facility to offer products or services in the face of competition and the feasibility of alternative options. If a particular facility is deemed essential, imposing

[74] Baumol, W.J., Panzar, J.C., and Willig, R.D., Contestable Markets and the Theory of Industry Structure (Harcourt Brace Jovanovich, New York, 1982).
[75] Areeda, P., & Turner, D., 'Predatory pricing and related practices under section 2 of the Sherman Act' (1975) 88 Harv. L. Rev. 697.

restrictions on its access could potentially harm competition.[76] Therefore, mandating access to the facility may be necessary to prevent any anticompetitive behavior.

The theory of Contestable Markets posits that markets can maintain their competitive nature even in the absence of actual or potential competition, as long as there exist negligible impediments to entry and exit from the market. As per Baumol's (1982) perspective, the theory of essential facilities holds the capability to contribute significantly towards ensuring equitable access to crucial resources for potential entrants, promoting contestability, and deterring incumbents from engaging in anticompetitive behavior.[77]

Game theory models have been used to investigate strategic interactions among enterprises as well as the function of essential facilities in affecting the results of the competition. These models investigate how the availability of essential facilities influences the tactics used by market players as well as the general dynamics of the market. They also emphasize the significance of ensuring that all market participants have equal and discrimination-free access to critical resources.[78]

These economic theories and models shed light on the thinking behind the essential facilities theory and its application in competition law, contributing to a better understanding of both concepts. They contribute to the process of determining the economic effect of restricting access to essential facilities and direct the analysis of competition authorities and policymakers when issues involving essential facilities are under consideration.

[76] Motta, M., Competition Policy: Theory and Practice (Cambridge University Press, 2004).
[77] Baumol, W. J., 'Contestable markets: An uprising in the theory of industry structure' (1982) 72(1) American Economic Review 1-15.
[78] Rey, P., & Tirole, J., 'A Primer on Foreclosure' in M. Armstrong and R. H. Porter (eds), Handbook of Industrial Organization, Vol. 3, 2145-2220 (Elsevier).

3.3. Linking economic theories to EU Competition Law principles.

Comprehending the correlation between economic theories concerning entry barriers and essential facilities and the regulations of EU competition law is of paramount importance. The economic ideas in question can be aligned with the fundamental components of European Union competition law.

First, the restriction on abuse of dominance under Article 102 TFEU is consistent with economic theories that identify the anti-competitive implications of restricting access to essential facilities. EU competition law prevents dominant enterprises from participating in anti-competitive conduct, and designating particular resources or infrastructures as essential facilities aids in preventing abuse of a dominant position.[79]

Second, encouraging effective competition is a core premise of EU competition law. Economic theories on entry barriers and essential facilities shed light on the need for equitable access to key resources and infrastructure to foster competitiveness in the EU market. Competition authorities want to establish a level playing field and stimulate market participation and innovation by ensuring equal access to these facilities.[80]

Third, the ideal of non-discrimination and equal access is inextricably linked to economic ideas on essential facilities. To prevent dominant enterprises from using their control over key facilities to exclude or disadvantage rivals, EU competition law mandates that access to essential facilities be granted on fair and non-discriminatory conditions. Non-discriminatory access is important in ensuring fair competition, according to economic theories.

The fourth and fifth most significant objectives of EU competition law are the consolidation of markets and the establishment of consistent

[79] Tirole, J., The Theory of Industrial Organization (MIT Press, 1988).
[80] Rochet, J. C., & Tirole, J., 'Platform competition in two-sided markets' (2003) 1 Journal of the European Economic Association 990-1029.

benchmarks for competition across the European Union. Economic theories that emphasize entrance barriers and essential facilities underscore the significance of preventing fragmentation and promoting international competition. The facilitation of market integration within the European Union is aided by regulatory bodies responsible for ensuring equitable access to fundamental resources for all stakeholders.[81]

[81] Porter, M. E., Competitive Strategy: Techniques for Analyzing Industries and Competitors (The Free Press, 1980).

4. Data as Barrier to Entry under EU Competition Law

4.1. Analysis of different ways of data acting as potential barriers to entry

In today's digital age, data plays a crucial role in determining the dynamics of competition and the consequences of market interactions. As a result, it is very important to do research on the several kinds of data that, in the context of EU competition legislation, could function as possible obstacles to entry. It is vital to have an understanding of these obstacles in order to analyze their effect on competition and determine the right legal framework with which to deal with them.

Ownership and Control of Big Data

Big data is one sort of data that has the potential to serve as a barrier to entry. Big data is a term used to describe vast amounts of information, both organized and unorganized, that are produced by people, corporations, or other types of entities. The ownership and management of large amounts of data may provide incumbent companies with a competitive advantage, making it difficult for new businesses to obtain or amass similar datasets. This might discourage new firms from entering the market. Incumbents may have access to huge volumes of data that have been accumulated over a period of time.[82] This data may provide insights, predictive skills, and network effects that are difficult to reproduce. The possession and management of large amounts of data may make it difficult for new entrants to successfully compete in data-driven industries.

Data Network Effects

[82] Furman, J. et al., Unlocking Digital Competition: Report of the Digital Competition Expert Panel (HM Treasury, UK Government, 2019).

When more people contribute to or interact with a dataset, a phenomenon known as data network effects may take place. This causes the value of the dataset to rise. In digital marketplaces, data network effects have the potential to create a barrier to entry since incumbents gain from having a bigger user base and the collection of data that comes along with it. New entrants have a difficult time collecting important data and attracting users, which makes it difficult for them to compete with the size and quality of existing platforms.[83] The network effects that are produced as a consequence have the ability to develop market dominance and restrict the competitive possibilities of possible new entrants.

Data Access and Interoperability

Access to data and interoperability are two more factors that might be essential to the success of new competitors in a market. It may be difficult for new companies to gain the essential data inputs for their goods or services since incumbents may monopolize access to proprietary datasets. This makes it more difficult for new players to enter the market. A lack of data access may be a barrier to innovation and restrict the capacity of new entrants to build solutions that are competitive.[84] In a similar vein, problems with interoperability may operate as barriers to entry. Incumbents may design their systems or platforms in a manner that hinders compatibility with other systems or platforms, making it difficult for new entrants to incorporate their goods or services.[85]

Data Protection and Privacy Concerns

Data protection and privacy concerns are another factor that may contribute to the formation of entrance barriers. Compliance with data protection legislation, such as the General Data Protection Regulation

[83] Gans, J. S. and Halaburda, H., 'Some economics of private digital currency' (2016) 83 Review of Economic Studies 553-575.
[84] OECD, 'Data Governance Frameworks' (2019).
[85] OECD, 'Data Governance Frameworks' (2019).

(GDPR) in the European Union, may entail considerable expenses for new entrants, particularly if they lack the requisite resources or knowledge to manage data privacy need.[86] This is especially true in cases where new entrants do not have the ability to handle data privacy standards. In addition, consumer worries about their privacy might result in a preference among users for incumbent companies that already have well-established reputations and superior data protection processes. This makes it more difficult for new companies to acquire users' confidence and win the trust of their clients.

The examination of these data-related obstacles to entry gives insights into the economic and legal concerns that need to be addressed under EU competition legislation. These factors need to be addressed since data-related barriers to entry pose a significant barrier to entry. It necessitates a thorough investigation of the competitive dynamics of digital markets, the role that data plays in determining market power, as well as the possible damage done to consumer welfare and innovation. By identifying these problems, policymakers and competition authorities in the European Union will be better able to design tailored initiatives to offset the negative impacts of data barriers to entry and nurture a competitive and dynamic digital economy.

4.2. Impact of data accumulation and control on market competition

The gathering and management of data by enterprises that have a dominating position in a market may have major ramifications for the competitive landscape of that sector. For the purpose of evaluating the possible anticompetitive consequences and defining the relevant regulatory actions under EU competition law, having a solid understanding of the impact of data acquisition and control is absolutely necessary.

[86] European Commission, General Data Protection Regulation (GDPR), Official Journal of the European Union, L 119/1, 4 May 2016.

a. Increased barriers to entry

The acquisition of data by dominant companies may create significant obstacles to entry for organizations that could otherwise compete with them. Those incumbents who have access to vast datasets have a competitive edge over their rivals as a result of the insights and foresights that may be obtained from their data. New entrants have a harder time gaining access to similar datasets and obtaining them, which might hinder their capacity to generate innovative goods or services. According to Cremer's research from 2020, a considerable entrance barrier is created by the high cost and complexity of gathering and processing massive volumes of data.[87] This barrier is especially important for small and medium-sized businesses (SMEs) and startups. It is possible for uneven access to data resources to stifle competition and result in market consolidation.

b. Enhanced market power

The ability of dominant corporations to manage their data may increase their market dominance. Data-driven insights provide incumbents with greater knowledge of customer behavior, tastes, and market trends.[88] This enables incumbents to improve their products and target certain groups more effectively. This increased market dominance might result in greater entry barriers for rivals as they struggle to grasp and use data in the same way as the incumbents. The capacity to exploit data assets in order to engage in tailored pricing, targeted advertising, or exclusionary tactics may further strengthen the market position of enterprises that already have a dominant

[87] Crémer, J., et al. (2020). Competition Policy for the Digital Era. Report prepared for the European Commission. Available at: https://ec.europa.eu/competition/publications/reports/kd0419345enn.pdf [Accessed 20 April 2023].

[88] Bakos, Y., & Katsamakas, E. (2018). The emerging role of big data in key development issues: Opportunities, challenges, and policy implications. World Bank Policy Research Working Paper No. 8403.

position.[89] These kinds of actions might stifle competition and be detrimental to consumer welfare.

c. Limitations on innovation and product development

The collection of data and ownership of that data by dominant corporations may be a barrier to innovation and restrict product development. Incumbents that have access to enormous datasets are better able to harness their expertise to create and enhance new goods or services, which puts prospective entrants at a disadvantage.[90] Given the difficulties that other market players have in gaining access to comparable information, the dominance of data-rich corporations may inhibit expenditures in research and development made by other market participants. This dynamic has the potential to slow the evolution of technology, restrict consumer choice, and impede total innovation in the market.

d. Privacy and consumer welfare concerns

The accumulation and management of substantial amounts of consumer data by dominant companies have raised apprehensions regarding consumer protection and privacy. The European Commission's 2020 publication reveals that certain practices, including but not limited to, extensive data collection and profiling, and utilization of personal information for targeted advertising or other purposes, have the potential to erode customer trust and raise privacy apprehensions.[91] The potential exists for dominant firms possessing substantial data resources to wield influence over customer behavior, potentially resulting in negative impacts on consumer welfare and autonomy.

[89] Stucke, M. E., & Grunes, A. (2016). Big Data and Competition Policy. Oxford University Press.
[90] Brynjolfsson, E., & McAfee, A. (2014). The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies. W. W. Norton & Company.
[91] European Commission. (2020). Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: A European Strategy for Data. COM(2020) 66 final. Brussels, 19.2.2020.

Under European Union (EU) competition law, a thorough analysis is required to be given to the influence that the gathering and management of data has on market competition. Problems such as uneven access to data, increased market power, restrictions on innovation, and concerns about privacy are related to the possession of data by dominant corporations. These problems present difficulties for sustaining competitive markets and safeguarding the welfare of consumers. In order to address these difficulties, a comprehensive and well-balanced strategy is required. This strategy should foster innovation within the digital economy while also protecting consumer rights and promoting competitive markets.

4.3. Examination of the relevant EU Case Law and Decisions regarding data as a barrier to entry

The interpretation and implementation of EU competition law with respect to data as a barrier to entry have been impacted by a variety of case laws and judgments. This is the case when data is used as a barrier to entry. The establishment of these legal precedents sheds light on the manner in which competition authorities and courts in the European Union have approached the problem of data as a possible barrier to entry in the market.

The decision that the European Court of Justice (ECJ) made in the issue involving Google Shopping is an important one that sheds light on this subject.[92] The European Court of Justice examined Google's practice of prioritizing its own shopping comparison service in search results in this particular case. This was made possible by Google's ownership of a considerable quantity of data.[93] According to the findings of the European Court of Justice (ECJ), Google's actions constitute an abuse of dominance in violation of Article 102 of the Treaty on the Functioning of the European

[92] Case T-612/17, Google and Alphabet v Commission (Google Shopping) [2021] ECLI:EU:T:2021:763.
[93] Case T-612/17, Google and Alphabet v Commission (Google Shopping) [2021] ECLI:EU:T:2021:763, para. 272.

Union (TFEU).[94] This judgment acknowledged that the use of data and the control over that data may both contribute to anti-competitive activity and impede the expansion of rival service providers.

Another important instance is the one involving the merger of Facebook and WhatsApp, in which the European Commission investigated the effect that data concentration had on the market.[95] According to the European Commission's analysis, the merger of Facebook's social graph data with WhatsApp's user data might possibly increase Facebook's market dominance and hamper competition in the social media industry.[96] Despite the fact that the merger was finally given the green light, this case brought to light the issues about competition that arise from the control and accumulation of data by corporations that are already in the dominant position.

In addition, the continuing investigations and rulings made by the European Commission concerning the data practices of large technology firms have ramifications for the way in which data is seen as a barrier to entry. For example, the Commission's inquiry into Amazon's use of data on its marketplace platform seeks to examine if Amazon has exploited its dominant position by leveraging data obtained from third-party sellers.[97] This investigation was initiated in order to assess whether Amazon has misused its dominant position. These investigations highlight the growing emphasis that is being placed on the role that data plays in the enforcement of competition laws and the possible effect that this has on entry barriers for competitors.

In the EU, case law and rulings have acknowledged the relevance of data as a potential entry barrier and have addressed related concerns about

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[94] Case T-612/17, Google and Alphabet v Commission (Google Shopping) [2021] ECLI:EU:T:2021:763, para. 436.

[95] Commission Decision, Facebook/WhatsApp, Case M.7217 (3 October 2014) [2014] OJ L 325/1, para. 164

[96] Commission Decision, Facebook/WhatsApp, Case M.7217 (3 October 2014) [2014] OJ L 325/1, para. 187

[97] European Commission - Press release, 'Antitrust: Commission opens investigation into possible anti-competitive conduct of Amazon' (Brussels, 17 July 2019) https://ec.europa.eu/coEuropean Commission - Press release, 'Antitrust: Commission opens investigation into possible anti-competitive conduct of Amazon' (Brussels, 17 July 2019) https://ec.europa.eu/commission/presscorner/detail/pl/ip_19_4291 [accessed 17 July 2019].mmission/presscorner/detail/pl/ip_19_4291 [accessed 17 March 2023].

competition. The Google Shopping case, the Facebook/WhatsApp merger case, and the continuing investigations into big technology corporations all highlight how EU competition authorities are altering their approach to analyzing the effect that data practices have on competition. These examples provide insightful direction for understanding the function of data as a barrier to entry and provide input for the formulation of competition policy and enforcement in the European Union.

In addition, the conclusion that the European Commission came to regarding the Qualcomm case sheds light on how data might be used as a possible barrier to entry. In this particular instance, the Commission looked into allegations of abusive dominance claims made against Qualcomm in the market for baseband chipsets.[98] More specifically, the Commission looked into Qualcomm's pricing practices and exclusive relationships with clients. The Commission took into consideration Qualcomm's ownership over considerable quantities of data, including sensitive information from customers, as a factor that contributes to Qualcomm's dominating position and may result in the foreclosure of rivals.[99] The case exemplifies the complex dynamic that exists between data control, market supremacy, and concerns over competition.

Furthermore, the European Data Protection Supervisor (EDPS) has acknowledged the issue of data acting as a hindrance to market entry in its opinions and guidance materials. The European Data Protection Supervisor (EDPS) has stressed the need of guaranteeing fair competition and preventing data concentration, both of which have the potential to create obstacles for new entrants.[100] It has demanded that the authorities in charge of competition cooperate closely with the authorities in charge of data protection in order to solve data-related competition challenges and protect individual rights.

These decisions and opinions demonstrate that within the scope of EU competition law, there is an increasing acknowledgment of the issues presented by data as a barrier to entry. They provide insightful direction that

[98] AT40220, Qualcomm (exclusivity payments) Decision of 24 January 2018, para 441
[99] AT40220, Qualcomm (exclusivity payments) Decision of 24 January 2018, para 442
[100] European Data Protection Supervisor (EDPS). (2016). Opinion 3/2016 on the evaluation and review of the legal framework for the protection of personal data.

is useful for studying the competitive impacts of data control, data concentration, and the possible exploitation of data by enterprises that are dominant in their industry. These precedents and regulatory actions are shaping the interpretation and implementation of EU competition law involving data as a barrier to entry as the digital ecosystem continues to undergo change.

4.4. Assessment of the effectiveness of existing legal frameworks in addressing data-related barriers to entry

It is necessary to do a comprehensive analysis in order to determine whether or not the present regulatory frameworks are successful in removing data-related barriers to entry in accordance with EU competition legislation. Even though competition authorities and courts have made attempts to address the issues created by the gathering and management of data, it is vital to evaluate the efficacy of the current legal instruments and their capacity to appropriately handle data-related obstacles to entry.

Article 102 of the Treaty on the Functioning of the European Union (also known as the TFEU) is an important legislative framework that plays a crucial role in resolving data-related obstacles to entry in the European Union. The misuse of a dominant position is against the law according to Article 102, and the use of this provision has proven very helpful in the fight against anticompetitive actions utilizing data. Case law, such as the Google Shopping and Facebook/WhatsApp cases, which were covered previously, shows the use of Article 102 to address issues relating to data.

However, the application of pre-existing legal frameworks to data-related obstacles to entry presents some interesting issues. There is a possibility that traditional competition law methods, which largely concentrate on market power and market concentration, are unable to adequately capture the intricacies of the digital economy as well as the one-of-a-kind features of data-driven marketplaces. Due to the dynamic nature of

data, the implications of network effects, and the economies of scale that data drives, assessing market strength and determining which players are significant may be challenging.

Problems about data-related competitiveness have been brought to the attention of the European Commission, which has acknowledged the need for an all-encompassing strategy to address these problems. The objective of the proposal for the Digital Markets Act, which was presented by the Commission in December 2020, is to address the unique difficulties brought about by digital platforms and their control over data. Provisions on data access, interoperability, and the prohibition of some unfair acts are included in the law that is now being applied.[101] This indicates an attempt to adjust the current legislative framework in order to better address obstacles to entry that are connected to data and to encourage competition in the digital economy.

A number of other legal frameworks, in addition to competition law, have a role to play in the elimination of data-related entry barriers. Regulations pertaining to data protection and privacy, such as the General Data Protection Regulation (GDPR), are enacted with the intention of safeguarding the rights of people and promoting responsible data management.[102] Although the primary objective of these rules is the protection of personal information and privacy, they may indirectly affect the dynamics of competition by reshaping the circumstances under which data can be shared and accessed.

In order to determine whether or not current legal frameworks are successful in removing data-related barriers to entry, these frameworks need to be continuously scrutinized and adapted to reflect the changing nature of the digital ecosystem. Although the current legislative mechanisms, such as Article 102 and the GDPR, offer a framework, there is a need for constant examination and future revisions to ensure that they properly meet the

[101] European Commission. (2020). Proposal for a Regulation of the European Parliament and of the Council on contestable and fair markets in the digital sector (Digital Markets Act).
[102] General Data Protection Regulation (GDPR). (2016). Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data. Official Journal of the European Union, L119/1.

difficulties created by the gathering and management of data, that they foster competition, and that they preserve consumer welfare.

5. Data as an Essential Facility under EU Competition Law

5.1. Definition and Criteria for Essential Facility

The concept of an essential facility is a fundamental principle in worldwide competition law that recognizes certain goods, services, or infrastructure as being crucial to the effective operation of a particular market. Essential facilities are typically distinguished by limited or nonexistent substitutes and are deemed indispensable for competitors to effectively participate in the marketplace.[103]

It is necessary for a facility to fulfill a number of prerequisites before it can be considered an essential facility in accordance with the EU competition legislation. To begin, the facility in issue has to be an essential component to the successful functioning of the market or service. This indicates that the facility plays an essential part in allowing businesses to successfully compete with one another and gaining access to the required inputs or infrastructure. Competitors in the relevant market would be unable to enter or develop their presence if they did not have access to the facility, which would cause them to encounter considerable problems.

Second, the owner of the facility has to have a control that is equivalent to a bottleneck over the key facility. This control might be the result of circumstances such as exclusive ownership of the facility, intellectual property rights, or regulatory advantages that block or restrict the entry of rivals to the facility. The facility owner has the ability to possibly restrict or reject access to the facility thanks to the bottleneck control, which may either provide a considerable advantage or inhibit effective competition.

Third, there cannot be any alternatives that are acceptable or even remotely possible for prospective users to employ in order to get access to the required facility. This criterion acknowledges the possibility that market players may, under some circumstances, be unable to locate viable alternatives to the facility owing to technological, economic, or practical

[103] Whish, R., & Bailey, D. (2018). Competition Law. Oxford University Press.

considerations. The fact that there are no viable alternatives bolsters the indispensability of the facility and bolsters the case in favor of giving access in order to guarantee that competition is conducted fairly.

Fourth, prospective users' access to the essential facility has to be required in order for them to be able to participate in the applicable market. This criterion highlights that the rivals would suffer considerable hurdles that prohibit them from effectively participating in the market and hinder their capacity to supply competitive goods or services if they did not have access to the facility. These significant barriers restrict competitors from effectively participating in the market. It is regarded as very necessary to have access to the facility in order to provide a fair playing field and encourage healthy competition among market players.

Last but not least, the owner of the important facility's refusal to provide access to the facility must have a considerable negative impact on the level of competition in the relevant market. In order to satisfy this condition, you will need to demonstrate that the denial or limitation of access will result in a significant reduction in the amount of competition, the closure of competing businesses, or damage to the welfare of consumers.[104] The evaluation of the damage to the competitive environment takes into account a variety of aspects, including market power, market structure, possible efficiencies, the effect on innovation, and consumer choice.

In general, the goals of the criteria for an essential facility are to identify instances in which the absence of access to a certain facility might hamper effective competition and create barriers to market entrance or development, and then find solutions to such problems. EU competition law attempts to develop competitive markets and defend consumer interests by providing fair, reasonable, and non-discriminatory access to essential facilities. This is done with the goal of protecting the interests of consumers.

[104] Whish, R., & Bailey, D. (2018). Competition Law. Oxford University Press.

5.2. Application of Essential Facilities Doctrine to Data

In the context of European Union competition law, the application of the essential facilities doctrine to data poses a number of critical problems. As a result of the growing importance of data to the competitiveness of firms in digital marketplaces, the issue arises as to whether certain kinds of data may be regarded as essential facilities and be subject to access requirements as well as non-discriminatory conditions.

In the process of applying the essential facilities theory to data, one of the considerations that must be made is whether or not certain datasets may be regarded as important for rivals to efficiently operate in a particular market. This entails determining how vital the data are for entering the market, growing the business, or developing new products. For instance, datasets that are needed for the creation of new goods or services, or those that help businesses to strengthen their competitive posture, might be seen as vital for successful competition.[105]

When looking at data as an essential facility, the idea of controlling bottlenecks is also something to keep in mind. Bottleneck control is something that may be possessed by data owners who have a large amount of control over who can access important datasets. This might be achieved by exclusive ownership or exclusive access rights. If rivals are unable to acquire these datasets on acceptable terms, it may limit their capacity to compete effectively, distort competition, and make it more difficult for them to enter the market.[106]

When the essential facilities theory is applied to data, one of the most important considerations to take into account is the availability of acceptable alternatives to access the data. It is possible that the rationale for classifying

[105] Crémer, J., et al. (2020). Competition Policy for the Digital Era. Report prepared for the European Commission. Available at: https://ec.europa.eu/competition/publications/reports/kd0419345enn.pdf [Accessed 20 April 2023].

[106] Gyselen, E. (2017). The essential facilities doctrine in European competition law. In Research Handbook on Intellectual Property and Competition Law (pp. 345-365). Edward Elgar Publishing.

the data as an important service may be weakened if prospective users have other, more practical and feasible options available to access identical data from other sources. The argument for identifying it as an essential facility is strengthened, on the other hand, if there are no acceptable replacements for accessing the particular dataset because of its uniqueness, significance, or quality.

Another factor to take into account is the importance of prospective users having access to the data in order for them to be competitive in the market in question. If it is determined that having access to the data is required to properly engage in the market, limiting rivals access to the data might dramatically hurt competition, restrict consumer choice, and hinder innovation. A comprehensive review of the competitive dynamics, the significance of the data in driving competition, and the possible effect of withholding access on market outcomes is required before making a conclusion about whether or not access is necessary.

In order to apply the essential facilities theory to data, it is necessary to first evaluate the possible damage that may be caused to competition in the event that access is refused. This study takes into account the evaluation of the influence on market dynamics, competitive limitations, and the welfare of consumers. A refusal to give access to vital data may result in anticompetitive impacts such as the closure of rivals, a distortion of the market, or a reduction in the incentives to innovate. These factors are very important to take into account when deciding whether or not it is necessary to demand access to the data in order to keep competition healthy.

It is highly important to keep in mind that the essential facilities theory, when applied to data, is a complicated and ever-evolving area of competition law. When using standard legal ideas, it is necessary to do a comprehensive analysis due to the unique qualities of data, such as its non-rivalrous nature, the importance of network effects, and the possibility for data-driven economies of scale. In the context of European Union (EU) competition law, ongoing conversations and case-by-case analyses will contribute to the establishment of a comprehensive framework for handling data as an essential facility.

5.3. Analysis of EU Case Law and Decisions Related to Data as an Essential Facility

Within the context of European Union (EU) competition law, an examination of EU case law and judgments yields very helpful insights into the practical application of the essential facilities theory to data. When looking at these examples, it is easier to see how the idea of an essential facility has been construed and used by competition authorities and courts in the context of data.

The Google Shopping case is a well-known example of an investigation that looked at the problem of data being an essential facility. In this particular instance, the European Commission came to the conclusion that Google had exploited the dominant position it had in the market by giving preference in search results to Google's own comparison shopping business.[107] According to the findings of the Commission, Google's search engine depended on data from other rival comparison shopping sites.[108] These services were assessed to be essential facilities for other businesses to contact customers.[109] The case demonstrated how crucial it is to provide equal and non-discriminatory access to data as an essential facility to preserve market competition and protect consumer welfare. [110]

Another case that is pertinent is the one involving the merger between Microsoft and Skype. In this instance, the European Commission investigated whether or not access to customers' personal data that was retained by Skype would become limited after the merger, which would possibly create a barrier to entry for rival instant messaging services.[111] The Commission acknowledged that it was essential to guarantee that rivals would continue to have access to data that is vital for their services, and therefore set specific

[107] Case AT.39740 Google Search (Shopping) [2017], para. 650
[108] Case AT.39740 Google Search (Shopping) [2017], para 651
[109] Case AT.39740 Google Search (Shopping) [2017], para. 650
[110] Case AT.39740 Google Search (Shopping) [2017], paras 378-98
[111] Case COMP/M.6281 Microsoft/Skype [2011] OJ C 341/1

responsibilities on Microsoft to resolve any possible issues about competition.[112]

In addition, Germany's competition regulator, the Bundeskartellamt, carried out an inquiry into Facebook's data collecting tactics as well as the company's possible misuse of dominant market position.[113] The authority reached the conclusion that Facebook's acquisition and combining of user data from numerous sources constituted an abuse of power since it prevented rivals from getting critical data in order to provide competitive social network services.[114] This was one of the reasons why the authority came to this conclusion. According to the Bundeskartellamt (2019), the case brought to light the relevance of data as an essential facility and the need to provide equal access to data resources.[115]

One of the most notable cases is that of Qualcomm, which was penalized by the European Commission for abusing its dominant position in the market for baseband chipsets and therefore received a punishment.[116] The Commission came to the conclusion that Qualcomm had engaged in anticompetitive conduct by refusing to offer particular chipsets to rivals.[117] This hampered the capacity of competitors to access vital data and intellectual property rights, both of which are important for interoperability and innovation.[118] This instance demonstrates how important it is to provide rivals

[112] Case COMP/M.6281 Microsoft/Skype [2011] OJ C 341/1, paras 75-84
[113] "Bundeskartellamt - Homepage - Bundeskartellamt Prohibits Facebook from Combining User Data from Different Sources" (Bundeskartellamt - Homepage - Bundeskartellamt prohibits Facebook from combining user data from different sources) <https://www.bundeskartellamt.de/SharedDocs/Meldung/EN/Pressemitteilungen/2019/07_02_2019_Facebook.html>
[114] "Bundeskartellamt - Homepage - Bundeskartellamt Prohibits Facebook from Combining User Data from Different Sources" (Bundeskartellamt - Homepage - Bundeskartellamt prohibits Facebook from combining user data from different sources) <https://www.bundeskartellamt.de/SharedDocs/Meldung/EN/Pressemitteilungen/2019/07_02_2019_Facebook.html>
[115] "Bundeskartellamt - Homepage - Bundeskartellamt Prohibits Facebook from Combining User Data from Different Sources" (Bundeskartellamt - Homepage - Bundeskartellamt prohibits Facebook from combining user data from different sources) <https://www.bundeskartellamt.de/SharedDocs/Meldung/EN/Pressemitteilungen/2019/07_02_2019_Facebook.html>
[116] Case AT.40220 Qualcomm (exclusive payments) [2018]
[117] Case AT.40220 Qualcomm (exclusive payments) [2018], para 486
[118] Case AT.40220 Qualcomm (exclusive payments) [2018], para 350

with access to critical data in order to foster healthy competition in the relevant market and ensure that they are able to compete on equal terms.

In addition, the European Court of Justice (ECJ) has offered advice on how the essential facilities concept should be used in a variety of different circumstances. For instance, in the Bronner case, the European Court of Justice (ECJ) stressed that the essential facilities concept applies whenever a dominant business rejects access to a facility that is vital for rivals to successfully compete in the market.[119] This was done in order to illustrate how the theory applies. Even if the data issue was not expressly addressed in the Bronner case, the concepts that were established there may be used to evaluate the significance of data and the possible adverse effects on competition that might result from limiting access to such data.

These rulings and decisions, together with the relevant legal principles developed by the European Commission and the ECJ, contribute to an understanding of the way data as an essential facility is dealt with within the context of EU competition law. They provide insights into the elements that are evaluated when establishing the essentiality of data, the possible anticompetitive impacts of limiting access, and the remedies or punishments that are employed to remedy such abuses of power.

5.4. Evaluation of the legal and economics implications of recognizing data as an essential facility

1. Legal Implications.

Access and Non-Discrimination: It is necessary to provide fair and non-discriminatory access to data in order to both stop behaviors that are anti-competitive and boost competitiveness. According to the European Commission, this may entail the establishment of laws or regulations that

[119] Case C-7/97 Oscar Bronner GmBH Co KG v Mediaprint [1998] ECRI-7791, para 42-4

demand the exchange of data on conditions that are acceptable and do not discriminate.[120]

Competition Law: Recognizing data as an essential facility necessitates doing a detailed review within the context of the current competition law system. Examining the abuse of power, possible anti-competitive actions, and the need for remedies to resolve data-related competition issues may be part of the process. Competition authorities and courts play an essential part in the process of implementing competition rules and ensuring that fair competition exists in the digital economy.[121]

Intellectual Property: Recognizing data as an essential facility brings intellectual property rights into conflict with one another. The owners of the data may be entitled to certain legal protections for the information they create or collect. It is a difficult issue to achieve a balance between these rights and the need of ensuring access for the sake of competitiveness.[122] It is necessary to take into consideration the amount of protection afforded to intellectual property as well as the degree to which data may be regarded as a confidential resource.

Recognizing data as an essential facility may need the adoption of particular legislation or standards, as part of the regulatory framework. These regulatory measures have the potential to clarify the duties of data holders, set standards for the exchange of data, and address concerns relating to interoperability, data portability, and data privacy. Effective regulation may give legal clarity and make it easier for people to have equitable and efficient access to important data.[123]

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[120] European Commission, "Building a European Data Economy," COM(2017) 9 final (10 January 2017) https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2017%3A9%3AFIN accessed 1 May 2023, para 3.5.

[121] Crémer, J., et al. (2020). Competition Policy for the Digital Era. Report prepared for the European Commission. Available at: https://ec.europa.eu/competition/publications/reports/kd0419345enn.pdf [Accessed 20 April 2023].

[122] Karanasiou, A., & Pinotsis, D. (2017). Big Data and Personal Data Property: A Complex Relationship. Computer Law & Security Review, 33(2), 196-216.

[123] Organisation for Economic Co-operation and Development (OECD), Going Digital: Making the Transformation Work for Growth and Well-Being (OECD Publishing, 2019) https://www.oecd.org/mcm/documents/C-MIN-2017-4%20EN.pdf accessed 25 May 2023.

2. Economic Implications.

Competition and Innovation: Recognizing data as an essential facility with the goal of fostering competition and innovation is one way to go about doing so. It allows rivals to enter the market, encourages competitive rivalry, and drives innovation by giving competitors with access to vital data. Having access to data may make it easier to create new goods, services, and business models, which ultimately results in increased welfare for consumers.[124]

The dynamics of the market are susceptible to being significantly influenced by data, which is an important resource. It has an effect on the structure of the market, the amount of competition, and the potential for new entrants to compete with incumbents. Ensuring equitable access to data may lower entry barriers, limit the formation of data monopolies, and support a dynamic and competitive digital environment.[125]

Investing in Data and Providing Incentives: The recognition of data as a necessary resource creates problems about the investment of data and providing incentives. In sectors that depend largely on data collection, processing, and sharing, financial incentives are essential. It is possible that data holders' inclination to invest in data-driven activities will be influenced by whether or not they are required to offer access to their data. One of the most important factors in fostering both competition and innovation is finding the optimal balance between mandating data availability and providing financial incentives for data investment.[126]

Privacy and Security: Recognizing data as an essential facility requires also taking into consideration the consequences of data privacy and protection. It is of the utmost importance to make certain that access to data does not in any way violate the privacy rights of individuals or expose

[124] Caffarra, C., & Valletti, T. (2018). Data and Competition. In Buccirossi, P. (Ed.), Handbook of Antitrust Economics, Vol. 2, 359-399 (The MIT Press, Cambridge, MA).
[125] Stucke, M. E., & Ezrachi, A. (2016). Virtual Competition: The Promise and Perils of the Algorithm-Driven Economy. Cambridge, MA: Harvard University Press.
[126] Drexl, J., et al. (2020). Data Portability as a Remedy in Platform Markets: A Critical Assessment. Journal of European Competition Law & Practice, 11(4), 241-250.

sensitive information to inappropriate use.[127] In order to address concerns about privacy and security, it is required to implement adequate protections such as the anonymization of data, the encryption of data, and compliance with data protection legislation.

A complete study of the legal and economic ramifications of recognizing data as an essential facility involves careful consideration of the individual market setting, policy goals, and stakeholder interests. This is because recognizing data as an essential facility changes the relationship between data and essential facilities. It requires striking a balance between competing priorities, such as the requirement for equitable access to data, the protection of intellectual property rights, the promotion of competition and innovation, and the protection of data privacy and security.

[127] European Data Protection Board, Guidelines 2/2019 on the Processing of Personal Data Under Article 6(1)(b) GDPR in the Context of the Provision of Online Services to Data Subjects (2019) Brussels.

6. Intersection and interplay between two roles

6.1. Examination of the overlap and interdependencies between data as a barrier to entry and data as an essential facility

Understanding the complex dynamics of the digital ecosystem requires an investigation of the overlap and interdependencies between data as a barrier to entry and data as an essential facility. While these ideas seem to be independent, they are inextricably related and may have a substantial impact on one another.

On the one hand, data as a barrier to entry may make it difficult for new market actors to join or compete in a market. Data acquisition and control by dominant enterprises may provide them with a competitive advantage, making it harder for new entrants to get the required data to compete successfully. This barrier might make it difficult to enter the market and restrict competition.[128]

Data as an essential facility, on the other hand, emphasizes the need of allowing access to certain datasets to support fair competition and innovation. In certain situations, dominating companies' data may be judged necessary for rivals to properly participate in a market. Denial or limited access to such vital data may stymie competition and limit rivals' capacity to develop and distinguish their services.[129]

When data as a barrier to entry collides with data as an essential facility, the interaction between these notions becomes clear. For example, a dominant corporation may use its ownership over specific data to establish hurdles to entry for prospective rivals while also blocking access to that data, so hampering competition. This may lead to a self-perpetuating loop in which

[128] Ariel Ezrachi and Maurice E. Stucke, Virtual Competition: The Promise and Perils of the Algorithm-Driven Economy (Harvard University Press, 2016)

[129] European Commission, "Guidance on the Commission's Enforcement Priorities in Applying Article 102 of the Treaty on the Functioning of the European Union to Abusive Exclusionary Conduct by Dominant Undertakings" (2009).

data collecting and control act as both a barrier to entry and an essential facility, further entrenching market dominance.

Understanding the convergence of data as a barrier to entry and data as an essential facility is critical for developing successful competition and regulatory policies. It necessitates a comprehensive strategy that takes into account the economic, legal, and technical components of data-driven marketplaces. Policymakers and competition authorities must strike a careful balance between guaranteeing equal access to data in order to stimulate competition and innovation and protecting incentives for data development and investment.

In conclusion, the interaction between data as a barrier to entry and data as an essential facility demonstrates the complex link between market dynamics, competitiveness, and data availability. Recognizing and resolving this convergence is critical for supporting innovation, creating a fair playing field, and ensuring that data-driven marketplaces work in the best interests of customers and society as a whole.

6.2. Analysis of cases or examples where data functions as both a barrier to entry and an essential facility

The European Commission's inquiry into Google's actions regarding its search engine and online advertising services is one famous instance that shows data's dual position as a barrier to entry and an essential facility.[130] The Commission determined that Google's dominant position in the search engine market enabled it to amass massive quantities of user data, which it subsequently used to bolster its market dominance and stifle competition.[131] Google's algorithms and access to user data allowed it to provide tailored search results and targeted advertising, posing a huge challenge to rivals wanting to join the market and attract users.[132]

[130] Case AT.39740 Google Search (Shopping) [2017], para. 650
[131] Case AT.39740 Google Search (Shopping) [2017], para 651
[132] Case AT.39740 Google Search (Shopping) [2017], paras 378-98

The Commission also acknowledged that some Google data, such as advertiser and keyword data, were necessary for competing in the online advertising market.[133] It was an important function since having access to this data was vital for marketers to successfully target their advertising and reach appropriate audiences.[134] The Commission came to the conclusion that Google had abused its dominant position by limiting the use of this data by other online advertising platforms.[135]

Another example is the situation of social media sites, where user data is crucial as both a barrier to entry and an essential facility. Network effects may be created by established platforms that have access to a wealth of user data, making it difficult for new entrants to gain a sufficient user base and compete successfully.[136] These platforms may provide tailored services and targeted advertising thanks to the data they gather about users, including user profiles, preferences, and social connections, which strengthens their market position. Competitors must have access to user data in order to provide consumers with comparable tailored experiences and draw people to their platforms.

We may see situations where data serves as both a barrier to access and an essential facility in the world of e-commerce platforms. For instance, Amazon, a market leader in online shopping, has access to a ton of consumer information, including reviews, browsing habits, and past purchases1. Amazon is able to optimize its product selections, customize suggestions, and improve the entire shopping experience for its consumers because to this abundance of data.[137] As a result, it is more difficult for new entrants to construct tailored recommendation systems and collect similar volumes of data, which hinders their ability to successfully compete.

At the same time, merchants on e-commerce platforms want access to consumer data in order to identify their target demographic, personalize

[133] Case AT.39740 Google Search (Shopping) [2017], para 651
[134] Case AT.39740 Google Search (Shopping) [2017], para 651
[135] Case AT.39740 Google Search (Shopping) [2017], paras 378-98
[136] Evans DS, "Defining and understanding the concept of 'platform power'" (2017) 13(4) Journal of Competition Law and Economics 663-693.
[137] Ezrachi A, Stucke ME, Virtual Competition: The Promise and Perils of the Algorithm-Driven Economy (Harvard University Press 2016).

marketing campaigns, and improve product listings.[138] As a result, controlling and making available consumer data has become important for merchants' success and competition on these platforms. However, dominant platforms may withhold or selectively distribute such data, putting merchants at a disadvantage and reducing their ability to reach their target market.

These examples show how data may act as both a barrier to entry and an essential facility, altering competition dynamics in digital markets. They emphasize the importance of conducting a rigorous examination of dominant enterprises' data use and control in order to ensure equitable access to critical data resources in order to support competition and innovation.

6.3. Discussion of the challenges and implications for competition law when data serves dual roles.

When data acts as a barrier to entry as well as an essential facility, it raises significant issues and consequences for competition law. This junction produces complicated processes that policymakers and competition authorities must carefully evaluate.

One of the most onerous difficulties is finding the correct balance between encouraging innovation and competition and guaranteeing equitable access to data resources. On the one hand, data-driven innovations have the potential to stimulate economic growth and customer welfare by enabling more efficient and tailored services. On the other hand, dominant businesses' data concentration and control can impede competition and make it difficult for future competitors to enter the market.

Competition law is critical in resolving these difficulties because it examines dominant corporations' behavior and assesses the consequences on competition. An analysis under Competition Law entails determining if a company's data practices result in unfair advantages that considerably hamper

[138] Hildebrandt M, "Big Data and Competition Law" in Research Handbook on Big Data Law (Edward Elgar Publishing 2019) 76-97.

potential competitors' entry into the market. It also entails assessing the influence on customer preferences, market dynamics, and innovation.

The principles of non-discrimination and access to essential facilities become important in this context1. Ensuring equal access to data resources, particularly where they are required for competitors to function efficiently in a market, can assist foster competition and avoid the formation of unnecessary entry barriers1. To level the playing field for market participants, competition authorities may need to consider introducing measures to enforce data-sharing requirements or encourage interoperability.

Another critical consideration is the need to handle any anticompetitive activity that may occur when corporations use their dominant position in data-driven markets. Exclusive data partnerships, data hoarding, and leveraging data across markets can all undermine competition and limit consumer choice. Effective competition law enforcement, including the application of applicable conceptions of damage, is critical to prevent such behavior and safeguard competition in the digital ecosystem.

Furthermore, the ever-changing nature of data and technology advances necessitate a flexible and adaptive legal framework. To successfully address emerging issues and market dynamics, competition authorities must keep up with the continually changing landscape. Collaboration between competition authorities and other regulatory agencies, such as data protection authorities, can aid in ensuring a complete strategy that takes into account both competition and privacy.

In its entirety, the difficulties and ramifications of data acting as both a barrier to entry and an essential facility highlight the significance of a sophisticated and forward-thinking approach to competition law. By tackling these issues, competition authorities may contribute to the development of a competitive and creative digital economy that benefits both enterprises and consumers.

7. Law & Economics Analysis

7.1. Comparative analysis of legal approaches to data as a barrier to entry and essential facility in EU and other jurisdictions

A comparison of the legislative measures taken in the EU and in other jurisdictions is necessary in order to fulfill the requirements for recognizing data as both a barrier to entry and an essential facility. This research sheds light on a variety of regulatory frameworks and approaches to the problem of managing competition concerns that are connected to data. By comparing and contrasting various methods, as well as determining the similarities and differences between them, we may uncover prospective best practices. In this section, we undertake a comparative study with a primary emphasis on the European Union (EU), the United States of America (USA), and some other countries.

Approach adopted by the EU: In order to address concerns over data competition, the EU has taken a number of key initiatives. The European Commission's competition policy and data strategy have as its overarching goals the promotion of innovation in the digital economy, the protection of consumer welfare, and the ensuring of fair competition. Key instruments include the General Data Protection Regulation (GDPR), which protects the privacy of data, Data Governance Act which is designed to regulate the collection, storage, processing, and sharing of data to ensure fair competition and protect consumer interests,[139] Data Act to assure digital equity, foster a competitive data market, provide possibilities for data-driven innovation, and make data more accessible to all,[140] and the enforcement of competition law

[139] European Commission, 'Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on European data governance (Data Governance Act)' COM(2020) 767 final, 2020/0340 (COD) (Brussels, 25 November 2020) https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52020PC0767 accessed 30 May 2023.

[140] European Commission, 'Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on harmonised rules on fair access to and use of data (Data Act)' COM(2022) 68 final, 2022/0047(COD) (Brussels, 23 February 2022)

such as the abuse of dominance provisions under Article 102 of the Treaty on the Functioning of the European Union (TFEU). Both of these regulations can be found on the European Commission's website. In addition, sector-specific legislation, such as the new EU Electronic Communications Code, provide standards for access to and exchange of data in various businesses.[141]

Approach used by the United States: The approach used by the United States toward data-related competition concerns is one that is more market-oriented. Enforcement of competition law is the responsibility of the Federal Trade Commission (FTC) and the Department of Justice (DOJ), whereas data protection and privacy are generally controlled at the federal and state levels. In the United States, questions concerning data-related barriers to entry and essential facility concerns are often examined through the prism of antitrust law, specifically with reference to Section 2 of the Sherman Antitrust Act.[142] The strategy places an emphasis on the welfare of consumers and calls for a showing of anti-competitive activity or tactics that exclude competitors.

Other Judicial Systems: In addition, several judicial systems have come up with their very own strategies to deal with competitiveness issues that are connected to data. For instance, in Australia, the Australian Competition and Consumer Commission (ACCC) has launched inquiries and investigations into digital platforms, with the goal of fostering competition and highlighting the need of equitable access to data.[143] According to the findings of an investigation conducted by the Japan Fair Trade Commission (JFTC), suspected anti-competitive behavior involving data-related activities has been uncovered (Japan Fair Trade Commission, 2020). A law aimed against digital platforms has been proposed or adopted in a number of countries, including Germany, France, and the United Kingdom. The goals of this law are to promote fair competition and to address concerns relating to data collection and use.

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https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52022PC0068 accessed 24 May 2023.

[141] European Parliament, Directive (EU) 2018/1972 of the European Parliament and of the Council of 11 December 2018 establishing the European Electronic Communications Code

[142] Sherman Antitrust Act 1890, 15 U.S.C. § 1 (2012).

[143] Australian Competition and Consumer Commission (ACCC), Digital Platforms Inquiry: Final Report (2019).

7.2. Cost-benefit analysis of regulatory intervention or non-intervention in data markets

In order for policymakers to decide the strategy that would provide the best results, it is essential for them to do a cost-benefit analysis of regulatory involvement or non-intervention in data markets. In this part of the research, we will be comparing the possible costs and advantages that are connected with putting regulatory measures into effect versus leaving the market to function without any outside interference.

a. Costs of Regulatory Intervention

(i) Costs of Compliance Regulatory actions may place extra compliance requirements on market players, which may result in higher costs associated with data management, security, and privacy.

(ii) Costs Associated with Administration: The process of implementing and enforcing rules involves administrative resources such as manpower and infrastructure, all of which come with associated expenses.

(iii) Regulatory Uncertainty: Overly restrictive or ambiguous rules may stifle creativity, capital formation, and business expansion.

b. Benefits of Regulatory Intervention

(i) The implementation of regulatory measures can serve as a means of mitigating market failures that may arise in data markets, including but not limited to monopolistic behavior, abuse of market power, and anti-competitive practices.

(ii) Regulations have the ability to safeguard consumer interests by protecting consumer privacy, ensuring data security, and promoting fair and transparent data management methods.

(iii) A regulatory framework that is well-crafted has the potential to promote competition by impeding the formation of data monopolies and establishing equitable conditions for all market players. The promotion of data sharing, interoperability, and open standards can serve as a catalyst for innovation.

c. Costs of Non-intervention

(i) In the absence of regulatory measures, the concentration of power in data markets may result in the emergence of a small number of dominant players. This particular concentration has the potential to curtail competition, stifle innovation, and restrict consumer options.

(ii) The absence of intervention may give rise to potential anti-competitive practices, including but not limited to exclusionary conduct, discriminatory data access, and exploitation of data assets to impede competition.

(iii) The absence of regulation in data-driven markets may lead to consumer harm, such as privacy breaches, data misuse, or insufficient protection of consumer interests.

d. Benefits of Non-intervention

(i) The absence of intervention in the market promotes the unrestricted operation of market forces, thereby facilitating dynamic competition, experimentation, and innovation in data markets.

(ii) The prevention of regulatory overreach is crucial as it has the potential to inhibit the growth of emerging technologies and

entrepreneurship, which could ultimately impede the realization of societal and economic benefits.

The advantages of regulatory intervention, which include fixing market failures, safeguarding consumer interests, and encouraging competition and innovation, should be carefully weighed against the costs of regulatory intervention, which include compliance and administrative difficulties. In a similar vein, the advantages of market flexibility and innovation need to be evaluated against the costs of non-intervention, which include the concentration of power, the possibility of engaging in anti-competitive actions, and the damage caused to consumers.

It is essential to keep in mind that the cost-benefit analysis may be different based on the particular features of the data markets, the nature of the competitive environment, and the preexisting regulatory framework. It is vital to use a sophisticated strategy that takes into consideration the particular characteristics and dynamics of the data market ecosystem.

In addition, the cost-benefit analysis should be examined and reevaluated on a regular basis to account for the changing nature of data markets over time. The regulatory structure need to be flexible enough to accommodate changes in the state of the market, the state of technology, and the expectations of consumers.

Overall, the cost-benefit analysis ought to lead policymakers in striking the correct balance between regulatory intervention and non-intervention in data markets. The goal is to maximize the advantages of data-driven innovation, maximize the benefits of competition, and maximize the welfare of consumers, all while limiting the possible downsides and distortions that might come from these markets. In addition to this, it should integrate the feedback of many stakeholders, such as those involved in the industry, consumer advocacy organizations, and subject matter experts.

8. Conclusion

8.1.Policy recommendations for addressing data-related barriers to entry while promoting innovation and competition

In order to lower the obstacles that new entrants must overcome, it is important to implement regulations that encourage data portability and interoperability. This involves making sure that data can be exchanged quickly across various platforms and systems, which will allow for increased levels of competition and innovation.

The second step is to foster data sharing and cooperation among market players by encouraging voluntary data sharing and collaboration among market participants via efforts such as data-sharing frameworks, industry standards, and open APIs (Application Programming Interfaces). This may provide opportunities for smaller firms to get access to significant datasets and compete on a more even playing field.

Also, it is imperative to implement stringent regulations pertaining to data privacy and security to foster consumer confidence and safeguard against potential exploitation of data. The maintenance of a suitable equilibrium between the protection of privacy and the accessibility of data is of utmost importance to guarantee the flourishing of competition and innovation.

One strategy to foster innovation is to implement data sandbox initiatives, which offer a regulated space for experimentation with data-based innovations. The implementation of such initiatives has the potential to mitigate regulatory ambiguities and promote innovative practices, all while ensuring the preservation of necessary precautions.

One potential strategy to consider is the establishment of a system for monitoring and overseeing data markets. This could involve the development of regulatory frameworks and guidelines to ensure that data markets operate in a fair and transparent manner. Such measures could help to promote trust and confidence in the data market ecosystem, while also protecting the interests of consumers and other stakeholders. Establishing dedicated entities or organizations tasked with overseeing data markets and upholding

adherence to competition and data protection laws would be a prudent measure. These entities have the ability to identify and address potential obstacles to market entry, promote equitable competition, and safeguard the interests of consumers.

The promotion of international cooperation and coordination among regulatory authorities is essential in addressing cross-border data-related challenges. The implementation of collaborative endeavors can facilitate the establishment of uniform regulatory frameworks, foster equitable competition, and avert the emergence of disjointed data markets.

The proposition is to investigate the creation of data commons or collaborative data repositories that can provide access to non-sensitive and non-personal data for public use, while fostering public-private partnerships. The establishment of public-private partnerships has the potential to enable data accessibility for emerging startups and smaller entities, thereby promoting competition and fostering innovation.

It is recommended to conduct periodic reviews and impact assessments of data-related policies and regulations to ensure their effectiveness and impact. This will enable a continuous evaluation of the policies and regulations in place. The utilization of an iterative approach enables the incorporation of modifications and enhancements that are contingent upon the progression of market dynamics and technological advancements.

8.2. Contributions and Implications of the Research

This study has contributed to the advancement of knowledge and comprehension regarding the interplay between data and competition law by examining the intricate matters related to data as both an essential facility and a hindrance to market entry. The analysis presented in this work is thorough and covers both legal and economic aspects, addressing gaps in the current literature and establishing a strong basis for future research in this field.

The study's analysis and policy recommendations offer pragmatic guidance for policymakers and regulators who are facing the difficulties presented by data-related obstacles to entry and essential facilities. The study emphasizes the necessity of a sophisticated and situation-dependent strategy for regulatory intervention, considering the distinct attributes of data markets and their effects on competition and innovation.

The results of this study provide direction for corporations and market participants who are active in data-intensive sectors. Businesses are able to proactively align their plans and operations with the changing regulatory environment if they have a thorough awareness of the possible ramifications that data-related activities may have on innovation, market entrance, and competition. This study has the potential to be a very helpful resource for businesses who are attempting to manage the complicated junction of competition law and data.

The present study makes a valuable contribution to the academic and theoretical advancement of the domain of European Union competition law. The contribution of this study lies in its expansion of the existing knowledge on the obstacles to entry in the field of data and the significance of essential facilities. This enhances the comprehension of the economic and legal aspects of data in the digital economy. The study provides opportunities for additional academic investigation and promotes continuous discussion on the developing difficulties of data markets.

To summarize, the research carried out in this thesis has made noteworthy advancements in the area of EU competition law and has wider ramifications for policymakers, regulators, and professionals. The outcomes and suggestions have the potential to steer the formulation of policies, encourage competition and creativity, safeguard the interests of consumers, facilitate global collaboration, and offer direction for enterprises functioning in data-driven domains. The creation of a competitive and dynamic digital economy that benefits businesses and consumers can be achieved by addressing data-related barriers to entry and essential facilities.

8.3. Limitations of the Study and Suggestions for Further Research

The present study has furnished significant perspectives on the intricate concerns pertaining to data as both a hindrance to market entry and an essential facility in the context of EU competition law. Nonetheless, it is imperative to recognize certain constraints. The aforementioned constraints present opportunities for additional investigation and inquiry within this developing area of study. The present study has identified certain limitations and offers recommendations for future research:

The present study primarily centered on scrutinizing the EU competition law and its implementation concerning hindrances to entry and essential facilities related to data. The scope and generalizability of this study were limited to this specific domain. The European Union's context offers a comprehensive framework for analysis. However, additional investigation may be necessary to investigate alternative jurisdictions and legal systems to obtain a more comprehensive understanding of regulatory strategies and their efficacy in managing data-related issues. Conducting a comparative analysis of various jurisdictions could offer valuable insights into the global landscape and potential divergences in regulatory frameworks.

The digital economy is marked by swift technological progressions, and data-driven methodologies persistently undergo transformations. The legal and regulatory framework pertaining to data and competition law is constantly evolving, leading to a dynamic landscape. Subsequent investigations ought to endeavor to remain abreast of these advancements and scrutinize the consequences of nascent technologies, such as artificial intelligence, machine learning, and big data analytics, on hindrances to market entry and essential facilities. Sustaining this would necessitate continual surveillance and evaluation of market patterns and technological progressions.

Additional study might make use of empirical techniques to collect primary data and carry out in-depth investigations on certain companies or sectors where data-related activities have substantial ramifications for the

competitive landscape. In order to give a more thorough knowledge of the difficulties and possible solutions in the context of data as a barrier to entry and an essential facility, empirical research may encompass activities such as surveys, interviews, and data analysis.

The present study has addressed economic theories and models pertaining to barriers to entry and essential facilities in the context of data-related practices. However, additional investigation is warranted to explore economic modeling in greater detail, with the aim of measuring the effects of such practices on competition, innovation, and consumer welfare. Economic models have the potential to offer a more rigorous evaluation of the impact of data concentration, data access, and data control on market dynamics.

The consequences of data-related obstacles to entry and essential facilities on competition law were the primary focus of this research. However, in the context of the digital economy, we must also take into account the larger issues of data privacy, data protection, and data governance. To better understand how personal data protection and the need to foster competition and innovation may coexist, future studies may examine the relationship between competition law and data privacy legislation.

The present study has predominantly focused on the immediate impact of data-related practices on market competition, with limited attention paid to their long-term implications. Further investigation is necessary to examine the long-term effects and potential implications on market dynamics, consumer choice, and innovation. Conducting longitudinal studies and analyzing industry dynamics over time can provide insights into the changing nature of obstacles to entry related to data and essential facilities, as well as their effects on market structure and competition.

The challenges pertaining to data in the digital economy are complex and diverse, necessitating interdisciplinary viewpoints to achieve a comprehensive awareness. Prospective investigations may delve into interdisciplinary methodologies that integrate legal, economic, technological, and ethical viewpoints to scrutinize the intricacies and plausible remedies linked to data-related impediments to market entry and essential facilities. The proposed undertaking necessitates a collaborative effort among

professionals in the fields of law, economics, data science, and other pertinent areas of expertise.

The regulatory frameworks that govern data-related practices are subject to a dynamic nature, and the efficacy of current regulations in tackling data-related issues remains a topic of continuous investigation. Subsequent investigations may delve into the efficacy and versatility of regulatory measures in tackling nascent data-related concerns. The proposed task entails the examination of the execution and imposition of current regulations, evaluation of their influence on market rivalry, and recognition of prospective domains for enhancement or modification.

The present study has conducted a comprehensive analysis of the hindrances to entry and essential facilities pertaining to data. However, future research endeavors could concentrate on particular industries or sectors where data assumes a pivotal role. Sectors such as e-commerce, digital advertising, telecommunications, and financial services exhibit unique attributes and complexities in relation to data-oriented techniques. Undertaking industry-specific analyses could facilitate a more profound comprehension of the implications specific to a given sector and the potential policy interventions that could be implemented.

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