

THE LEGO MONOPOLY

HOW PLATFORM FIRMS ARE CHALLENGING

EUROPEAN COMPETITION LAW

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INTRODUCTION

Digital platforms are something new. Although digital platforms go back to the late 1990s, it was until a few years ago which people and companies started using online platforms massively in almost all sectors. Factors like technologic innovation, overall Internet access, low barriers to entry to the platform, minimal regulations, and the aim of giving to the resources a more efficient use, increased the number of people opting to use online platforms as a sustainable way of earning money.

Nevertheless, it was soon realized that new platforms were only the tip of the iceberg of a general and massive economy system which has been labeled as "*Sharing economy*", "*Collaborative economy*", "*On-demand economy*", "*Peer Economy*", "*Platform Economy*", "*Circular Economy*" and "*Gig Economy*"². Furthermore, others prefer to use terms that

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² The term "*Collaborative Economy*" was first coined in 2007 by Ray Algar in the article titled "*Collaborative Consumption*"². But the concept of collaborative consumption began to become popular in 2010 with the publication of the book "*What's Mine Is Yours: The Rise of Collaborative Consumption*" by the authors Rachel Botsman and Roo Rogers². In general, refers to an economic system built on distributed networks of connected individuals based on sharing, swapping, trading, or renting products and services enabling access over

denote a new economic order like "*Post-industrial capitalism of the 21st century*", "*Digital capitalism*" or "*Digital Economy*". While some authors maintain that these terms are synonymous others criticize that they refer to different things. But apart from a lack of consensus about the label of the new economic phenomena, there is no consensus about its unique characteristics, and as a consequence, the lack of confinable empirical studies³.

As well, Digital platforms were initially well-received and were identified as a new economy known as sharing or collaborative economy. Economic commentaries saw this new economy as a new source of beneficial competitive pressure and economic innovation. It was assumed that digital platforms could lead to an increase in productivity through the use of underutilized assets, reduce costs transactions, create new markets through disruptive innovation, and dispersion of innovation among incumbent industries. Also, social media platforms were seen as democratizing devices that have increased the voice of excluded members of different societies. For instance, it was highlighted how the digital platform's firms played a key role in helping to organize the Black Lives Matter movement or the protesters in Hong Kong. Due to all these promises, it was assumed the bonafide of profit-making digital platform firms and it was avoiding legal regulation since digital platforms have their forms of self-regulation.

Despite the many benefits that digital innovation has brought much of the enthusiasm of the early years of the Internet has given way to skepticism. For instance, digital platforms started raised concerns about the lack of formalization and protection of gig workers, replacement of labor by machines, reinforcement of inequalities by technology, absence of consumer protection of P2P services. Inquiries about civil liability for platform user's damages, cybersecurity risks, abuses of intellectual property rights, and the closing of almost all minutest newspapers. As well, the non-existence of legal clarity about the ownership of data collected by digital platforms according to with our legal systems, *if digital platforms own*

ownership. While sharing economy is defined as an economic model based on sharing underutilized assets for monetary or non-monetary benefits.

³ A recent communication of the European Parliament stated that the term "platform economy" is the most objective term and called on the Commission to ensure the usage of coherent terminology. European Commission.

the data which collect or just hold the data who own to others? or if the outcomes of artificial intelligent deserve the same legal treatment of the creations of human intelligence?

Also, digital platforms raised family, personal and social fears such as data theft, isolation increased, family relations deterioration, dehumanization, privacy, and complaints about how home sharing makes feel neighbor's unsafety. Too, there are complaints about the increase of fake news and hate speech; today is no clear how the technology which made content diffusion cheaper and gave billions of people voice, has also become a tool used by powers manipulation and propagate disinformation and hate talking. In a nutshell, all these complaints refer to the impact of digital platforms on the pillars of our human being a democratic society.

As a result of the balance of the positive and negative impact of digital platforms, several controversies have arisen, especially about the need for legal regulation or if we continue to trust in the bona fide self-regulation of digital platforms.

Besides, nowadays exists several legal complaints about unfair competition against digital platforms around the globe. But, the big worry about digital platforms is the notorious economic power concentration in just a handful number of firms that can control and influence billions of lives around the globe. It has been seen that while an increasing volume of commercial activities are been digitalized almost all economic growth and revenues in the digital economy is centered only in a few firms instead of the welfare of the overall society⁴.

Thus, there is a worldwide debate about the need for changes to the current Competition Law framework to allow for enforcement action preserving economic competition in the modern economy. In fact, among European legal experts exists an overwhelming consensus that when applying EU Competition Law to what has been called "Digital Markets" something is missing, and the same consensus is sharing among Competition Law experts around the

⁴ In this line, the Digital Economy Report released on 4 September 2019 by the United Nations noted: “*Digital advances have generated enormous wealth in record time, but that wealth has been concentrated around a small number of individuals, companies, and countries. Under current policies and regulations, this trajectory is likely to continue, further contributing to rising inequality.*” ONU REPORT (2019)

globe⁵. At the same time, there is a consensus of the need for regulation for this new of economy system⁶.

Objective and aim of the work

In this context, this academic research pretends to analyze how digital platform firms are challenging EU Competition Law and which is the inherent conflicting competition legal issue about these firms with actual Competition Law rules.

This academic work aims to support that the future competition EU legal rules about the modern economy may be done based on a deep understanding of the "Digital Platform Business Model" and a special call to protect the firms which can be affected by this model. Too sharing, which was held by the actual European commissioner Vestager: The real guarantee of an innovative future comes from keeping markets open so that everybody, big or small, can compete to produce the best ideas⁷.

Regarding the challenges face Competition Law for the modern economy, it is true that Competition Law must be more flexible and adaptative. But it does not mean that Competition Law should base its legal analysis in other legal fields such as protection of privacy, consumer Law, or wealth distributive concerns. This is because enforcement of Competition Law must be based on a hard-core legal theory based only on economic competition in the markets.

⁵, For instance, the web seminary of concurrence competition organized in July 2020.

⁶ Similarly, the principal drafter of the first antitrust law in the world, the US senator John Sherman who faced the wave of the start of the industrial revolution at the beginning of the 20th century held “*Sur, now the people of the United States, as well as other countries are feeling the power and the grasp of this combinations, and are demanding of every Legislature and Congress a remedy for this evil, only grown into huge proportions in recent times. They had monopolies and mortmains of old, but never before such giants as in our day. You must heed their appeal or be ready for the socialist, the communist, and the nihilist*”. For that time, “*Antitrust law was instead desired by politicians and (in Europe) by scholars attentive to the pillars of the democratic systems, who saw it as an answer (if not the answer) to a crucial problem for democracy: the emergence from the company or firm, as an expression of the fundamental freedom of individuals, of the opposite phenomenon of private power; a power devoid of legitimation and dangerously capable of infringing not just the economic freedom of other individuals. But also the balance of public decisions exposed to its domineering strength*”. BRICS report, page 36.

⁷ Cremer Report (2019). Page 14.

Thus, in productive markets, Competition Law assumed that an effective competition inside markets between firms will lead to a lower price, the better quality of the products, and an intensification of the overall innovation and efficiency in that market. Of course, it was recognized some exceptions, for instance when is more efficient one company than several actors in one specific market such theory of natural monopoly in energy and telecom markets, or the case of the army legal national monopoly for security reasons.

Consequently, the enforcement of Competition Law in the new economy must be based on a similar strong theory but this does not mean just copy the competition theory of two-side productive markets to new cybernetic markets. This is because all economic actors changed in the modern economy due to the digitalization of information. Products have different characteristics (smart devices opposite to low price goods), consumers changed their preferences (quality instead of low prices), firms changed its structure (small firms versus Heavy industries of the 20th century) so the overall economic system changed.

Structure and methodology

This work is structured as follows. The first chapter is presented six problems that are facing Competition Law nowadays about digital platforms. The second part is a brief description of an overall analytics approach of the modern economy. The third chapter tries to outline how Competition Law should carry the legal analysis of digital platforms competitive games.

Finally, the methodology will be the method diagnosis and solution and the language of this master thesis pretends to be didactic (many graphics as possible), objective and neutral, as academy must be. Because the big challenge that the new economy creates to us as society is to find a solution fair for everybody, and the best way to reach that result is with an inclusive, clear, and open social dialogue.

RESEARCH SOURCES

As a coincidence, I start this academic research just when international debates about digital platforms have resulted in a chain of recent final expert reports around the globe about the competition of digital platforms. Consequently, this thesis is based on 14 final experts reports that have been published over the last two years in several countries about digital platforms:

Table No. 1.
REPORTS ABOUT DIGITAL PLATFORM COMPETITION CONCERNS

	REPORT	TITLED	GEOGRAPHY	DATE
1	OECD	RETHINKING ANTITRUST TOOLS FOR MULTI-SIDED MARKETS	OECD	2018
2	FURMAN	UNLOCKING COMPETITION IN DIGITAL MARKETS	UK Digital Competition high Expert Panel	2019, March
3	CREMER	COMPETITION POLICY FOR THE DIGITAL ERA	A report by Jackes Cremer, Yves-Alexandre de Montjoye and Heike Schwetzer for the EU Commission	2019, April
4	ACCC	FINAL REPORT DIGITAL PLATFORMS INQUIRY	Australian Competition Authority CAAA	2019, June
5	CMA	FINAL REPORT MARKET STUDY OF ONLINE PLATFORMS AND DIGITAL	Uk Competition Authority CMA	2020, July
6	STIGLER	FINAL REPORT STIGLER COMMITTEE ON DIGITAL PLATFORMS	USA Stigler Committee on digital Platforms	2019, September
7	Law 4.0	A NEW COMPETITION FRAMEWORK FOR THE DIGITAL ECONOMY	Commission Competition Law 4.0. presented to the German Federal Ministry for Economic Affairs and Energy	2019, September
8	BRIC	DIGITAL ERA COMPETITION: A BRICS VIEW	BRICS Competition Law and Policy Center	2019
9	CEPAL	THE REDEFINITION OF THE DIGITAL WORLD	ECLAC (Economic Commission for Latin America and the Caribbean)	2018
10	UNCTAD	RESTORING COMPETITION IN WINNER-TOOK-ALL DIGITAL PLATFORM MARKETS	UNCTAD (United Nations Conference on trade and Development)	2019, December
11	ONU	DIGITAL PLATFORMS	ONU	2019
12	UNCTAD	COMPETITION ISSUES IN THE DIGITAL ECONOMY	UNCTAD (United Nations Conference on trade and Development)	2019, May

Also, this academic work is based on web seminars about Competition Law which were taking place in the current year and video recording conferences sharing in digital platforms. Too, in the recent EU Competition Law's cases which involve digital platforms firms.

CHAPTER I.

THE COMPETITION LAW PROBLEM ABOUT PLATFORM FIRM

Digital Platforms have started being a singular concern for Competition Law because in some cases digital platforms are not just a technological tool that can be used but some of them are competing directly with traditional companies. But the principal concern which shares competition authorities is about the notorious economic dominant position held by digital platforms firms without being able to prove it with the traditional tools of Competition Law because Competition Law enforcement is getting increasingly complex when applying to digital intermediaries. Consequently, market players and policymakers are wondering: *if the actual Competition Law's tool kit is enough to handle the modern economy? And if not, How Competition Law should evolve to ensure that the digital era can benefit society?*

In this line, in June 2020, the European Commission launched a questionnaire for public consultation about new Competition Law rules for face "modern economy". In this inquiry, the EU Commission explained that due to the enforcement experience of the European Commission, and European national competition authorities, it has been identified certain structural competition problems that actual competition law cannot tackle (e.g. monopolization strategies by non-dominant companies with market power) or cannot address most effectively (e.g. strategies by companies with market power to extend their market position into multiple related markets). Thus, the European Commission asks: *If there is a need for a new competition tool to deal with structural competition problems that Articles 101 and 102 of the EU Treaty cannot tackle conceptually or cannot address most effectively?; and what are the most important structural competition problems that should be tackled with such a new competition tool?*

The European Commission held that the proposal for new competition tools is one of the measures aimed at making sure that EU competition policy and rules are fit for the modern economy. It meant to address gaps in the current EU competition rules, which have been identified based on the Commission's enforcement experience in "Digital Markets" which defined (provisionally) as *"Markets largely relying on digital technologies with certain*

specific characteristics, such as extreme economies of scale and scope strong network effects, zero pricing and data dependency."⁸.

The objective of the public consultation is to collect stakeholder views about whether is a need for new competition tools to ensure fair and competitive markets and address structural competition problems in a timely and effective manner. In parallel, the Commission is also engaged in a process of exploring, in the context of the Digital Services Act package, ex-ante rules to ensure that markets characterized by large platforms with significant network effects acting as gatekeepers remain fair and contestable for innovators, businesses, and new market entrants.

The public consultations of the European Commission are in line with the worldwide reflection process about the need for changes to the current Competition Law framework to allow for enforcement action preserving economic competition in the modern economy. In fact, among European legal experts exists an overwhelming consensus that when applying EU Competition Law to what has been called "Digital Markets" something is missing. And the same consensus is sharing among Competition Law experts around the globe⁹.

The problem created by digital platforms to Competition Law consists that legal operators have found an incredible complex meshing difficult to understand according to the traditional approach of Competition Law. For instance, the difficulty created because the same firm can be at the same time a consumer, a producer, a business partner, and a competitor of one digital platform or the difficult to assess when a firm holds a Dominant Position in the modern economy.

Due to this difficulties, scholars' researches have started a recent discussion over the implementation of Competition Law in the modern economy mainly focused on new issues such the importance of network effects, the role of big data, interoperability of technologies and digital ecosystems, the dynamic of the "winner takes all", the leveraging strategy of

⁸ European Commission public consultation on a new competition law tool, June 2020.

⁹ Concurrence competition web seminary in July 2020.

digital platforms across different product markets, different exclusionary strategies, non-price strategies, learning-by-doing effects and lock-in effects of consumers to a network.

To start unravelling this complex nest, this work divided the competition law analysis into five problems: (i) The problem about repeated abusive behavior by digital platforms firms; (ii) The market structural competition problem of the modern economy. (iii) The lack of Competition Law's tools to identified competition problems (the problem to identify the problem); (iv) The lack of economic theory about the creation of the surplus-value in the modern economy; and (v) The incredible amount of "a-legalities" (something that is not legal neither illegal) about modern economy conducts¹⁰.

1.1. PROBLEM ONE: REPEATED ABUSIVE BEHAVIOUR BY PLATFORM FIRMS

In the last years, EU competition authorities, and several competition authorities around the globe, have obtained several complaints about platforms firms' abusive behavior. In a nutshell, these conducts may be divided into the following types: (i) Conducts implemented by platform firms against platforms business partners; (ii) Refusal to deal between platform firms; (iii) The leveraging of market power to related markets by platform firms; (iv) The problem of Data's Gatekeepers role; and (v) The tendency of digital markets to tipping. Each one of these conducts will be briefly described following. Scenarios falling under this category include unilateral strategies by non-dominant companies to monopolize a market through anti-competitive means.

a. Conducts implemented by platforms firms against its business partners

Around the globe, there are several complaints regarding restraints that platform firms imposed on their business partners or platform's users. Thus, business platform users are complaining that if they want to be presented in the digital platform they need to accept on terms and conditions which often are unfair, for instance, an excessive fee for the transactions using the digital platform. Thus, digital platforms have been compared with a vertical

¹⁰ An alegality is something that has not been regulated by Law.

integrated productive firm that implemented exclusionary conduct against its competitors.

b. Refusal to deal between platform firms

The second type of complaint consists that platform firms regularly exclude or refuse services of competing platform firms. These conducts have been classified as a platform versus platform competition.

c. The leveraging of market power to related markets by platform firms

The third category is complaints about the leveraging strategy used by platform firms to act in different product markets, sometimes unrelated between them. However, these complaints have not been proved yet.

1.2. PROBLEM TWO: THE STRUCTURAL COMPETITION PROBLEM ABOUT THE DIGITAL ECONOMY

Structural problems refer to scenarios where certain market characteristics and the conduct of the companies operating in the markets create a threat for competition or where the market is not delivering competitive outcomes.

a. The tendency of digital markets to tipping

It has been claimed that the digital economy is populated with temporary monopolies. Hardware and software firms hold monopolies today knowing that new technology will emerge that will topple their technology and, thus overtake their monopoly position. In comparison, the industrial economy was and still is, populated by stable oligopolies. The central difference between these two economies is that they have fundamentally different approaches to being successful: the driver in industrial economics is economy of scale, while the driver for the information economy is the network effect.

The other type of conduct regarded digital platforms refers to the ability of the digital system leaders to utilize network effects with the effect of tip the digital platform for consumer

attention (e.g. Facebook digital platform). Here the system leader can control the digital platform and its connected digital ecosystem and, thus, gain economic dominance inside that network market to a point where the system leader becomes a "winner takes all". Here, the successful platform firm which has been able to tip the market for the platform service may obtain power not only about the platform service market, but more importantly also about the connected business-users utilizing the digital platform. Indeed, the system leader controlling the digital platform gain power not only in the digital platform but in the whole connected ecosystem to the point where it commands the interactions of the ecosystem. Subsequently, the digital platform will be the only relevant hub and GateKeeper of the ecosystem, so the other web sites, services, business-partners, and consumer-users will be enclosed in the digital ecosystem becoming dependent on the digital platform.

Some authors held that when a market tipping occurred, the market must be defined as failed and the system leader becomes the regulator of that ecosystem, Competition Law should be utilized to create "competition inside the market (ecosystem)" rather than "competition for the platform's market".

b. The monopolization of data

The next complaints refer to the amount and uniqueness of the data obtained by firms that may represent power on separate data markets, while the data may still be a tool to be competitive. The big digital platforms have access to most of the data in their respective ecosystems, even though users in each ecosystem have access mainly to parts of their own generated data. Moreover, Uber and some other digital ecosystems have a business idea where the system leader collects exclusively the data generated by their users business (the drivers), while the drivers do not have the right to port the data from their customers should they wish to exit the Uber System. Indeed, access and control of data could reflect market power.

Also. The use of artificial intelligence algorithms and data analytics could be the bottleneck in the modern economy, rather than access to large data-sets (big data). It seems clear that for example, some algorithms used and developed are better than basic software, and that

data analytics could be the relevant competition tool for the future. Indeed, the firm holding the best algorithms will be holding market power rather than the firm holding the largest dataset.

The platform firms are aimed to attract and hold the attention of consumers, not only to harvest data but also more generally to influence their choice and manipulate their preference through some process of choice architecture. In the classic two-sided markets model, these digital platforms are considered matching intermediaries between one group (e.g. sellers, music producers, apps developers, drivers) and in the other the final users (potential consumers). Thus, data harvesting is indispensable for this process of matching of the two groups to work efficiently. Therefore, in reality, platform firms do not trade or sell access to the raw data of the users, which stay in the possession of the platform firm. Platform firms simply sell information, this is inferences from raw data which makes it possible to anticipate the preferences of the customer. Thus, production firms (or better firm which offer products in the markets) value a lot this information, to the extent that this enables firms to offer targeted advertising that would be more likely to attract the correct consumers and not just the dreamers consumers.

Furthermore, system leaders have claimed a right to access all data from business users. thus, platform users are forced to give to the system leader advantage knowledge about the data. The system leader gains data from the whole ecosystem and will enable the system leader to innovate about the ecosystem and the member of the ecosystem can be excluded from innovation.

c. The problem of Data's Gatekeeper role and the existence of a bottleneck

The last complaints related to the role of platform firms as gatekeepers of various economic activities in the digital economy. This is about the privileged position of platform firms which can locking-in customers, exclude or limit interoperability with other digital systems or machine, denied access to necessary data to compete.

1.3. PROBLEM THREE: THE PROBLEM OF IDENTIFYING THE PROBLEM FOR COMPETITION LAW

Once the competition authorities have faced the two problems described above, and when applied the legal framework of Competition Law to Platform's Firms, legal operators and policymakers have realized that something is missing. In response, competition authorities have taken numerous new approaches to demonstrate a possible abuse of a dominant position by a platform firm. However, all these theories have been rejected by National Courts and there is not a unanimous consensus.

Having noticed this conflict, some authors argued that Competition Law can not handle the challenges raised about the digital economy due to the missing legal dispositions while other authors alleged that the problem is about the analytical economy approach which is used to face the business model of the digital platforms.

A. The inherent difficulty of applying the classic theory of two-sided markets to the digital economy

According to the latest, it is notorious that applying the traditional Competition Law approach which is based on the economic theory of two-sided markets and production firms to network markets and platform firms creates an inherent conflict which until now has been impossible to be clarified by competition authorities. Some examples of this inherent conflict will be described.

The leading theory (almost all scholar and competition authorities) identified digital platforms as multi-side markets (MSM) or multisided platforms (MSP). According to the perspective of digital platforms as multi-side markets, platform firms have a conglomerate portfolio because are active on one specific market but as well in downstream, upstream, aftermarkets, and another not related markets. In respect with this approach the Competition Law problem is to determine the existence of a competition restriction by effect facing the difficulty consideration about "out-of-market efficiencies" or where is significant market power, either in the market for the core platform service or in the separate market for products

and services which are being sold through the digital platforms. Moreover, competition authorities would need to decide about digital platform firms which are participating in several markets: (i) which market will serve as the analysis of consumer welfare, (ii) To balance costs and benefits for the consumers affected in all markets in which platform firms are participating and (iii) It would also require the possibility outweigh consumer harm in other markets. In practice, this may be difficult.

Another example of this inherent difficulty is the market definition of multi-side markets under the SSNIP tests. If cross-side effects are positive, a price increase on one side that is profitable under a one-side analysis might become non-profitable. The decreases in sales on side A of the hypothetical monopolist's platforms reduce sales on side B, which is typical of cross-side effects, the further provides feedback and reduces sales on side A further. Not taking into account the cross-platform effects would lead to defined markets too narrowly. However, the cross-platform effect would be able to cover several markets. In practice, this may be difficult.

B. The problem to determine a Dominant Position by a platform firm using the classical approach

Under the classical methodology using the relevant market and the SSNIP-test, it is difficult to identify market power in the digital economy. Among platforms, the biggest platform firms have been accused of holding market power due to the popularity of their respective digital platform and their advantage in the amount and quality of data and knowledge about platform users. thus, questions like *if the amount and quality of data are the factors which create a dominant position? If a dominant position is the same that market power? Is market power the only parameter to determined a dominant position? Or what about determined a dominant position only based on the amount and quality of data? What is dominance in data when the amount of data always grows and that data can be duplicated without an enormous effort? And how to determine a monopoly if data is difficult to monopolize?*

Indeed, determine market power in the digital economy raises many questions left behind the classic theory of the economy based in two-side markets without considering network effects,

network externalities, advantage by data, and the high risk of markets tipping in favor of just one firm.

It is true, that high-quality data and better predictive modeling algorithms, combined with the holding of a big amount of data may also quickly create and maintain a dominant position in multiple markets or even a monopoly in digital markets since the leader system will be the only one who has access to information related to the preferences, needs and purchase history of users. But the question still arises, *how to define the market or markets affected? How to define the single economy unity which holds this power? This is about economic power or this is about technological power which leads to economic power in several markets?* If so, *what is the difference between both types of dominance?*

For instance, the German Competition Authority seemed to stress that system leaders within their ecosystem may be considered powerful enough to trigger a German competition law violation, even though not being dominant on general (platform) service markets. That would indicate that system leaders can be dominant on level two (Intra ecosystem) without being a dominant inter ecosystem (level one).

C. Competition law is more than a two-side market theory

Competition Law's difficulties arise is when competition authorities tried to deal with the post-industrial capitalism of the 21st century (called "Digital Capitalism") by applying the dominant economic approach created to face the Industrial capitalism of the 20th century. Specifically, the neoclassical theory about economic value creation for production firms does not apply to the value creation model used by platforms firms.

It has to notice that at the beginning of the 20th century (1900), Competition Law was created as a special field of law due to the concerns that the modern Industrial capitalism (of that time) was arising in a democratic society, especially the incredible success of a new business model implemented by a NorthAmerican businessman: Jhon Rockefeller. Consequently, during the following century, Competition Law was based in abstract economy theories which explain in detail the value creation in the Industrial Capitalism (e.g. The theory of the

firm, the theory of value chain of Posner (1980), the theory of the perfect competition or the theory of the natural equilibrium to the markets). All these economic theories were by the neoclassical theory of the natural markets and the invisible hand of Adam Smith (the natural order of the markets due to the interaction between supply and demand).

However, once the classical economy doctrines which were used by Competition Law to analyzed industries of the last century are used by competition authorities at the moment of evaluating digital platforms' firm's competition game, it is soon manifested several inherent difficulties of such analytical exercise. At the same time, it has been noticing the difference between the industrial production industries of the twenty century and the platform firms of the new millennium.

The industrial production industries were characterized by low prices as a competitive advantage, economies of scale and scope, few network effects, ownership of several physical assets, productive efficiency, mass production, not digitalization of the industries' functions, and the employe of a huge amount of workers. Opposite, Platforms Firms (PF) are characterized by quality and brand product as a competitive advantage, networks effects, almost null ownership of physical assets, technological path dependence, feedback processes, tipping points, leveraging market strategies, the outsourcing of almost all functions of the firm (e.g. IT desk, legal, logistic, receptions, transportation, marketing), the hire of minimum employees as possible and the use of intelligent machines which need a big amount of data to be trained¹¹.

In sum, the traditional economic theory to the digital economy does not provide adequate tools to fully comprehend the various dimensions of the new competition game and to guide public policy and Competition Law enforcement. Thus, it is a need to change the tools for identifying competition issues as the traditional methods do not seem to be working well in "Digital Markets". For instance, according to with Cremer report (EU, 2019), there is not a

¹¹ Just one example, traditional hotels, and the digital platform firms Airbnb. Airbnb does not own the rooms that are used by its consumers, has fee employees if this is compared with the traditional hotels, and almost all its departments are outsourcing.

need to rethink the fundamental goals of competition law in the light of the digital economy but it is necessary to adapt Competition Law methodologies and analytical tools, economic theories of harm and legal doctrines to the new environment.

Competition law needs to abandon the sole focus on the relevant market in terms of price competition on the digital economy. Consequently, it is necessary to develop a new mapping tool that represents more accurately competition games in the digital economy. Moreover, if Competition Law does not change its analytical tools, it will help to retain and improve the current status-quo without a real search for answers to the accursed questions.

One example, of other possible economic theories, is a branch of the economy which is called "Complex Economy" which allows an augmenting explanatory power in the context of a complex set of interactions between heterogeneous agents. Some of the concepts of complex economics have been gradually incorporated in Competition Law enforcement. Terms, such as increasing returns, tipping points, leveraging points are widely used by scholars, competition authorities, and courts and form now part of the current approach in Competition Law. But one of the major impediments for the use of such novel approaches is the rigidity of the consumer welfare standard¹².

1.4. PROBLEM NO. 4: THE LACK OF A GLOBAL ECONOMY THEORY ABOUT VALUE CREATION IN THE MODERN ECONOMY

Competition Law is traversing a period of the transaction. There is a need for the discussion over the role of competition law in the digital era to be integrated into the broader debate over the new processes of value generation and capture in the era of digital capitalism and the complex economy to which it has given rise to. Therefore, is essential to uncover the new value capture and value generation processes in the digital economy rather than take the established neoclassical price theory economics as the exclusive economy theory which exists.

¹² BRIC report (2019).

Therefore, Competition Law should first focus on the way the value brought by the digital economy is captured, shared, and generated, before exploring how this process affects the competitive strategies of firms. Only, when this effort is completed, it would be possible to re-target and re-conceptualize the Competition Law tools.

Therefore, the first step of the new Competition Law map tool is to address in general the way that value is created in the digital economy. This is because one thing is notorious: the most important part of the surplus-value brought by digital innovation is held by platform firms. However, reports which have been issued about digital platforms competition problems have not so far integrated the competition question in a broader debate over the new processes of value generation and capture in the era of the digital economy.

In other words, the first step to find a solution to digital economy competition problems would consist about introduce a new economy theory more following the new business model. This is learning about this business model using for platform firms and the taxonomy of digital platforms becomes an important starting point. The next chapter pretends to draw a line of how this taxonomy could be carried out in a multidisciplinary dialogue between law, economy, and technology.

1.5. PROBLEM FIVE: “THE A-LEGALITIES”

There is a fact assumption platform firms are the owners of data collected through its ecosystem. This means that data collected belongs to platform firms. It is true that already secrets law provides adequate security to data-holders against unwarranted use of data.

Smart devices are indeed designed to collect raw data. Some of these data are personal data while others refer to non-personal data and even public data. Thus, it is currently an open debate about property rights on data, *who owns data?* It is no clear whether non-personal data is protected by Intellectual Property Rights.

For some scholars, it must be granted a legal property right over non-personal data to the data producers (e.g. platform’s users or the owner of smart devices), or at least, the law must grant

a right to access to data collected by platform firms, so it will give the possibility to digital users to utilize their data and contribute to the IoT system. At the same time, other authors questioned the introduction of a new IP right to data because the main justification for IP rights is the need to secure incentives for innovators and creators, but empirical evidence shows that firms are amassing a large amount of data and there appears to be no need for additional incentives for firms to data collection.

Other alegality, is about: *If to the outcomes of artificial intelligence should be granted the same protection of the creations of human intelligence?* In other words, *If Intelectual Property Law covers artificial intelligence?*

Beyond the debate which is still open, the fact is that data ownership and artificial intelligence have not been regulated yet by Law. So this "a-legality" raised difficulties for competition authorities to evaluate anticompetitive conduct. Consequently, it is necessary to clarify the legal situation of data-ownership.

In sum, once the five problems of Competition Law have been described, this work pretends to try to achieve a uniform approach to start solving these problems without pretending to resolve all problems which face Competition Law.

CHAPTER TWO

AN ABSTRACT AND STRUCTURAL OVERVIEW OF THE CYBERNETIC NETWORK ECONOMY

Despite that several authors expressed that digital platforms are too diverse for a one-size-fits-all solution, this part pretends to show: (a) All platforms firms shared the same business model. Here, “platform” is defined as a business model that creates value facilitating exchanges between two interdependent groups. Consequently, “platform firms” are profit-making firms that adopt the platform business model. And (b) The new economy system must be understood as a cybernetic-network economy system in which digital platform firms are just one type of agent in this interconnected global system.

2.1. THE CYBERNETIC SPACE

As a society, we share a conception that the Internet created a virtual space, this is like an imaginary space apart from the real world. However, if the economy is seen as a cybernetic system, the limit between virtual and real disappear. Accordingly, the first necessary step in the legal analysis is to ask, *How we defined real space after the Internet?*

To start, it is necessary to keep in mind that there are five important shifts which are happening continually in the new modern economy:

- *Digitalization:* All firms are digitalizing their functions, including industries that were not previously digital. From a historical perspective, mankind's first step was to build a mass Internet infrastructure during the years and started sell in mass end-to-end devices that can be connected to the Internet network.
- *Connectivity:* Everything is getting connected day by day: through 5G network, millions of smart devices (e.g. smartphones, laptops, computers, phones, cars, houses, hospitals, pharmacies, retails shops, banks, companies, wristwatches, refrigerators, washing machines, etc) will be connected to the Internet.

- *Artificial Intelligence:* Every connected thing is getting every day more intelligent smart devices);
- *Specialty:* Companies are getting smaller (few assets, fewer employees, and outsourcing most of the firm functions), compared with the bigger industries of the 20th century (characterized by the ownership of big assets, many workers and functions inside the firm). and;
- *Globalization:* Due to the Internet network, economic agents have access to goods and services from all over the world at any time, just need to connect to the electronic connection network: the Internet.

Indeed, the Internet change how human beings live, produce, work, consume, and connect. Due to the Internet, the same person can connect from everywhere in the world to the same digital platform. At the same time, real companies are offering their products to consumers around the globe and consumers can buy through online platforms everywhere. Thus, there are no geographical limitations to consume. Also, with the technology of augmented reality, a consumer on one side of the world (e.g. New Zealand) can be virtually present in the shop ubicated to the other side of the world (e.g. Alaska).

As well, the Internet and new technologies changed the characteristics of the products. For instance, the smartphone Industry provides an interesting is for the changing of the value chain analysis because shows an inseparable connection between physical and digital aspects. This industry has evolved from basic physical-real mobile phones to smart-phones. Here, the value chain of a smart-phone comprises hardware (the physical good), software (the operating system and other technical functionalities or digital components), app services (e.g. Internet navigation), and other digital functionalities.

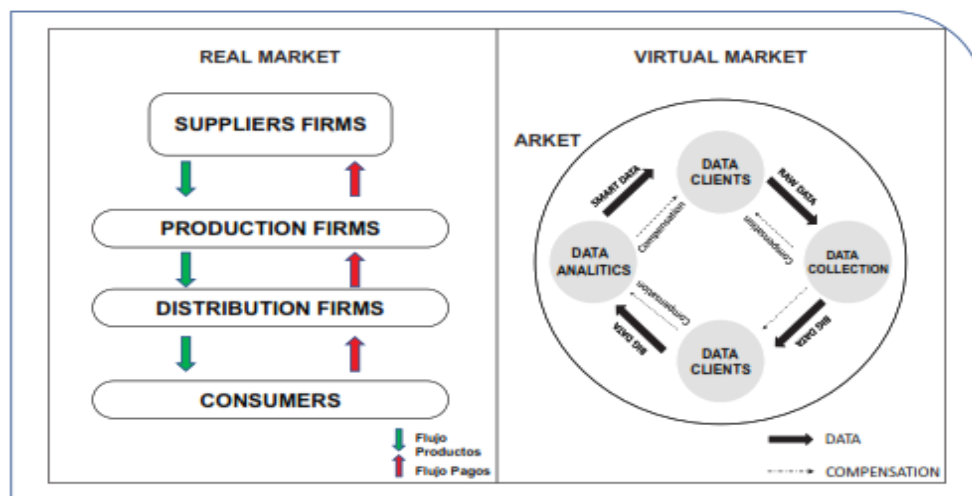
Another change due to the massive use of Internet network is that Consumer preferences change (quality, cyber-security, privacy instead of low prices) and product characteristics every cycle are changing, this is products are getting, day by day, smarter.

Thus, due to the globally used of the Internet and new technologies, and its potential to connect everything on earth, an imaginary virtual world has permeated our collective consciousness: separate reality from an imaginary virtual world.

For instance, we start thinking that digital commerce involves only trade about digital twins rather than the goods themselves, and that are two separate spaces without connection. Thus, there is a market for physical goods (the physical book) and another market for its digital twin (e-book). And due to this collective assumption of an imaginary place, we make a difference between “real markets with Brick-in-mortar firms” which are in the physical world and “virtual markets with Digital firms” who are in the imaginary digital space. However, interestingly, some competition authorities have observed that consumers tend to weigh the options available to them in offline and online markets before making a final decision. So, a significant increase in price in one space will cause the buyer to shift to the other space.

In sum, there is an imaginary collective approach to separate both types of markets: real markets from virtual markets¹³, like the following graphic display:

Figure No. 2.1. Real Markets and virtual Markets



Source: Authors' elaboration. Candidate Master of European and International Business, Competition and Regulatory Law at Freie Universität (Berlin).

¹³ Independently of how the virtual markets are configured for each author.

The consequence of the division between real and virtual space is that is assumed that Competition Law should be divided into two different fields: The field of "Competition in the real markets", which is about the economic competition between real firms about production and consumption of physical products and physical services in the physical world, and the field of "Competition in the Digital Markets", which is a technological competition between digital agents about the way which digital information flows in the cybernetic space. In other words, regulation about digital firms would not be about the regulation of a new era (as in a time perspective) but digital platform regulation would be a regulation of an adjacent space: *The digital space*.

However, when assessing this connected world, it would be a mistake to think in “a real-world” and “a digital world” or to differentiate between “real market” and “data markets” as two different sectors or types of products. The correct approach must consider that the expansion of smart devices which can connect to the Internet everywhere and everyone has created a network that implied the fusion between real and virtual, between the digital economy and real economy in which the real agents are competitors with virtual firms. Therefore, this new economy creates a huge challenge for Competition Law to define a law that merges traditional social values, reality, economy, and technology.

The fact is that the shift of approach of how to understand real and virtual is critical to understand the way the Internet shaped the modern economy. If we understand the fusion between real and digital, it would allow us to move away from the naturalized understanding that the Internet is a tool for entering an imaginary virtual world. Opposite, an Internet network must be understood as a tool for living both in a virtual and real-life at the same time. And it is the reason why is better called the network-cybernetic economy.

Also, this cybernetic perspective allows us to leave behind the conception that in a virtual world intelligent machines can decide¹⁴In the cybernetic economy, it is assumed that firms

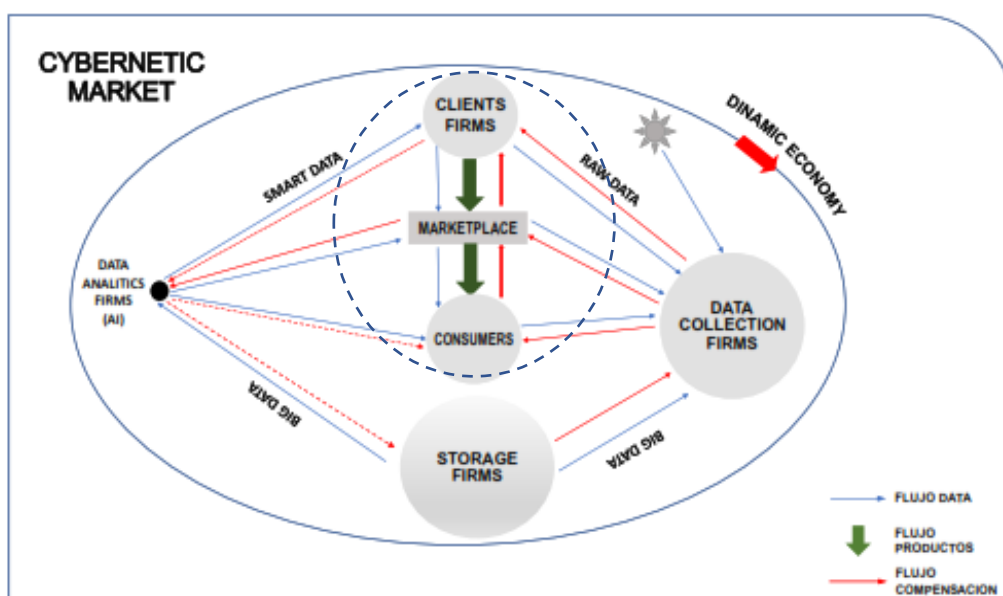
¹⁴ In all reports digital platforms are described as performed conducts by itself and it is notorious the difficulty to link the conducts performed by the digital platform with the firm or person who managed the firm.

are managed by natural persons and that the only individuals able to take decisions are natural persons (at least until this date). And to achieve the comprehension of this network-cybernetic economy system, the first step is to describe the circular cycle of data valuation which starts since the data has been generated until the moment data is valuable.

2.2. THE DATA CYCLE VALUE CREATION

In a general and abstract overview, in the modern economy data is a source of value creation because data is fundamental to a firm's ability to compete because firms that have access to the best data will benefit from a competitive advantage over its competitors. Thus, due to the digitalization process which is taking place every day, in the new economy, the amount of digital data generated increases immensely second by second, and this data flows over a circular economy system, cycle by cycle. Thus, the Cybernetic economy is like a does not stop spinning system (dynamic) enable by the Internet (the network) in which economy agents, machines, and products are in continuous development in each data cycle. Just as the following sketch is intended to display:

Figure 2.2. The cybernetic economy



Source: Authors' elaboration. Candidate Master of European and International Business, Competition and Regulatory Law at Freie Universität (Berlin)¹⁵.

¹⁵ The circle with the dashed line is what we understand by real markets.

As the graphic showed, there are four segments according to the activity carried out: Data generation (I), Data Collection (II), Data storage (III), and Data Analytics (IV). Each segment will be described separately below.

A. First segment: Data Generation

The first step of the data cycle is the generation of the data. One data is generated when input is entered into a machine. This process is known as the digitalization of the information. This is when data is entered into a digital ecosystem. For instance, when a consumer using the web site interface of a search engine write "I want to buy a car". This personal action generated data. Such use of the Internet generated one digital data which includes browsing and shopping history, goods ratings, inquiries about the Internet user. Also, smart devices with sensors collect raw data from the environment.

Data are generated by web users, consumers, governments, schools, families, healthcare institutions, environment, and physical phenomena, through several smart devices such personal laptops, photo cameras, personal smart-phones, tablets, smart-watches, smart-fridges, smart-car, smart-buildings, voice recorder machines, satellite pictures, and sensors machines.

This individual raw data can be just deleted (and not generate surplus value) or this raw data can be transferred using the network Internet to another digital system (thus this raw data can generate surplus value) and start the next segment.

B. Second segment: The collection of raw data

In the second segment, once raw data has been produced is transferred using an Internet network to another digital system. Here is the activity to collect raw data. The ways that firms collected raw data are many.

The collection and the activity of data analytics can be done internally for the production firms in a very simple way (e.g. an analysis of a table in excel about prices charged to costumers). Therefore, data don't leave the production firm.

However, some firms are dedicated exclusivity to collect data from different sources according to legal rules. Firms which are called Data Brokers (e.g. Acxiom, Experian, Epsilon, Core-Logic, Datalogic, Peekyou, Exacts). Example of the sources of data is: through the transactions made using the firm web page, asking directly to clients, surveys, from nature and space, from public governmental web sites, public social media information, video-sharing platforms, twitter digital platform, buying other specialized market researches, other firms web sites, through web indexation, telephonic guides, agreements of transfer of data with other firms, taking digital pictures, digitalization books of the physical libraries, between hundreds of others ways to collect data.

Other firms just own a digital platform to collect a vast amount of data as possible. These firms can be called "Platform Firms" which can obtain a vast amount of raw data about their users.

C. Third segment: Storage of Big Data

Due to the big amount of data collected, production firms can invest in private storage (e.g. internal servers) or can hire the service of data storage to a third party. For instance, a cloud computer storage provider.

Due to the big amount of data that can be collected every second, Big Data represents a new scale of datasets so voluminous. For instance, *“The amount of data added to the global dataset every day is quantifiable at around 2.5. quintillion bytes per day on average and this number continues to grow”*¹⁶.

¹⁶ BRICS REPORT. Page 120.

The definition of Big data recognized by most scholars was held by **Gartner`s (2001)** such *“high-volume, high-speed and/or high-variety information assets that demand cost-effective, innovative forms of information processing that enable enhanced insight, decision making, and process automation”*¹⁷.

Gartner`s definition is based on the enunciation of three broad dimensions of data processing, also called the “3 Vs”, that help to understand Big Data: **(a) High Volume:** it is the increase and significant size of the data volume that differentiates Big Data from conventional data analysis. This volume dimension is often considered to be the most relative. For instance, worldwide digital data have grown from 2,8 zettabytes in 2012 and will rise to 40 zettabytes in 2020¹⁸. **(b) High-Variety:** In addition to a quantity of information that surpasses conventional data analysis tools, the format of these data is also very different. These data are raw, semi-structured, or even unstructured, and **(c) High-Velocity:** These growing data streams are in perpetual development and require real-time processing to avoid the obsolescence of the statics obtained.

The storage ensures that data will be maintained, being relatively easy to access, secure, and amenable to verification.

D. Four segments: Data analytics and the generation of smart data

The last circular segment of the modern economy is data analytics. Due to the amount and complexity of data, Production Firms (PF) and Platform Firms (PTF) need performance the analytics of data to obtain valuable information (e.g. clients who are willing to buy its services). Thus, firms need to gain a greater understanding of the individual preference of the consumers (for production firms) and clients (for platform firms).

Like it was said, data analytics can be done internally for the production firms in a very simple way for production firms. For instance, a bank can have an IT department exclusively

¹⁷ International Data Corporation, the weight of Big data in the global market in 2020 is estimated at \$203 billion.

¹⁸ Garner paper.

to make data analytics about its clients and data will never leave the bank. But data analytics can be done for a third party. In practice, financial institutions are the main suppliers of information about users' financial transactions while are the main consumers of information about financial consumers.

Today, Data Analytics Activity (DAA) is done on a huge scale using artificial intelligence technology.

Artificial intelligence technology, the high-level expert group on artificial intelligence set up by the European Commission in 2019, proposes the definition of artificial intelligence systems as “(..) *software (and possible also hardware) designed by humans, that given a complex goal, act in the physical or digital dimension by perceiving their environment through data acquisition, interpreting the collected structured or unstructured data, reasoning on the knowledge, or processing the information, derived from this data and deciding the best action(s) to take to achieve the given goal.*”¹⁹.

At the same time, the AI HLEG explained that the artificial intelligence system consists of three main elements: sensors, operational logic, and actuators. Sensors collect raw data from the environment, actuators act to change the state of the environment and the operational logic system is which makes the decisions.

In the beginning, the operational logic system of the AI devices was based on simple logic rules, so it was a based decision-making process (called quasi-artificial intelligent systems or artificial intelligence conventional). For instance, think about a robot called SAM that is learning how to move forward. The operational logic of the computer program is: If the traffic light is yellow you have to walk forward but it is red you have to stop. Here, the programmer was directly in control of the input and the output. These operational logical systems were not fully autonomous because AI acted in a manner predetermined by their programming.

¹⁹ High-level expert group on artificial intelligence set up by the European Commission in 2019.

However, due to the development of a subset of AI called Machine Learning, today is taking place the creation of artificial intelligence systems that *“Instead of programming the computer every step of the way, this approach gives the computer instructions that allow it to learn from data without new step-by-step instructions by the programmer. This means computers can be used now for new, complicated tasks that could not be manually programmed. Things like photo recognition applications for the visually impaired, or translating pictures into speech.”*²⁰.

Thus, when using the Machine Learning technique, instead of programming the computer every step of the way (e.g. rules in SAM robot example), the programmer gives the software computer instructions (algorithms) that allow it to learn from data without new step-by-step instructions. For example, when applied ML to art-works, AI software is learning from data to generate a new piece of work, making independent decisions to determine what the new art-piece looks like. One case is The Next Rembrandt portrait project which is a computer-generated 3-D-printed painting developed by a facial-recognition algorithm (code program) that scanned data (input) from 346 known paintings by the Dutch painter for 18 months²¹.

As was showed, Machine Learning (ML) approach taught the algorithm to reach an outcome by showing them many examples of correct outcomes. Thus, it can be seen that the basic process of ML is to give training data to a learning algorithm (e.g. 346 Rembrandt's paints) afterwards the algorithm generated the final output.

To infer new instructions from the **data entered** is the core strength of ML. So, the more data available to train the algorithm, the more it learns. Here, Big Data is important because Data Analytics Activity (DAA) needs a huge amount of data for its improvement. This is because more data can be input to the artificial intelligence algorithm, the outcomes of the algorithm will be able more precise (smart data).

²⁰ Reference.

²¹ Rembrand Portrait article.

The real technology behind the current developments of Machine Learning technique which uses data to adjust algorithms (sequence of instructions in code of the software) is Deep Learning.

Deep Learning uses complex algorithms, called neural networks²², which makes choices that could be logical outcomes of the algorithm used but inexplicable for the humans. These complex algorithms simulate the human learning process. This is the reason why neural networks have been often been referred to as a black box because do not indicate how data could interrelate and the output is far too complex for the human mind to understand²³.

Once the black box of artificial intelligence has produced smart data, Smart Data is useful, intelligible, and profitable due to the greatest number of firms and people who demand it.

The firms in which performance Data Analytics Activity (DAA) can sell directly this data to its clients (e.g. selling of a data set to production firms, governments, or to schools). Thus, production firms can use this smart data to adjust production plans and increasing business competitiveness.

Also, firms in which performance Data Analytics Activity (DAA) can opt for not to sell directly this data to its clients but sell some services based on this smart data. For example, target advertising with more attractive recommendations for consumers and the formation of targeted marketing strategies.

In few cases, firms in which performance Data Analytics Activity (DAA) can get to a point of having so much information about consumers that can cross the line between legal

²² In a nutshell, “Neural networks involve repeatedly interconnecting thousands or millions of simple transformations into a large statistical machine that can learn sophisticated relationships between inputs and outputs. In other words, neural networks modify their code to find and optimize links between inputs and outputs”.

²³ Finally, thus, thanks to deep learning in the space of the last few years, image recognition, speech recognition, drug discovery, as well as robotics, all have reached news levels of performance. However, in the legal field, an algorithm means that no one, including its operators, has access to the source code (the list of human-readable instructions that the software programmer writes.). Consequently, transparency around AI algorithmic decisions is limited by technical literacy (the black box problem).

advertising and illegal manipulation of consumers, especially the most vulnerable, as teenagers.

Once the smart data has been formed with the activity of Data Analytics Activity (DAA) this is transfer to production firms which are very interesting in this kind of valuable data. Thus, Production Firms (PF) buy data sets that contained very valuable smart data. Thus, Data Analytics Activity (DAA) improves the knowledge of the consumers and the production process in the economy. And once data clients have obtained smart data, a new data cycle will be started again with the generation of new raw data (but in the new cycle raw data will be a little smarter).

This does not stop spinning movement lead that every day the production process gets better and therefore the products get better. Moreover, mankind's progress has been immense in the last years due to Big Data and Artificial Intelligence. For instance, it has been possible for big mankind's projects such as the recodification of the human genome in less than a day, astronomy, physical quantic aeronautics, and meteorology have also benefit. Moreover, mankind's progress has been immense in the last years due to Big Data and Artificial Intelligence. For instance, it has been possible for big mankind projects such as the recodification of the human genome in less than a day, astronomy, aeronautics, and meteorology have also benefit.

From an analyzer and maybe because the four activities (generation, collection, storage, and analytics od data) are done in micro-seconds it does not easily make the differentiation between these four digital economy activities. And can be argued that before these activities occurred at the same time, just one firm need to be allowed to concentrate the four activities.

Finally, in line that this work is aimed to describe platform firms' competitive game, the only segment which it will take into consideration is the third segment which is about data collection, the other three segments (data generation, storage, and data analytics activity) will not take into consideration for the aim of this research. As well, as other forms of collect data which do not related to the platform firm's business model.

2.3. PLATFORM DEFINITION

In general, the platform economy has been broadly defined as an economic system that is based on digital platforms. Under this approach, digital platforms are assumed as an object which is neutral in the transactions that occurred through this technological infrastructure. This definition emphasizes a digital platform (as technological infrastructure) as the critical component of this new economic system. However, few authors agree exactly which digital platforms and why are included. Indeed, the diversity of digital platforms is large and growing²⁴

However, the concept of “platform” is used to denote various meanings:

- i. **Platform as an object:** From a technical point of view, a digital platform is a code base on which third-party complementary modules can be added, allowing third-party development of complementary systems that can be offered to end users as applications or services.
- ii. **Platform as a business model:** According to the World Economic Forum (2017), platforms are technology-enabled business models that create value by facilitating exchanges and interactions.

²⁴, For instance, some authors, such **Codagnone (2016)** held that the platform economy is composed of: “(...) digital platforms, often operating as two-side markets (...) matching different groups of users and providers and enabling the increase in scale and speed for traditional transactions such as selling, renting, lending, labor trade, and provision of services.”.

2.4. THE PLATFORM BUSINESS MODEL

The platform is a new business model that is adopted with the aim of profit-making by some firms which its characteristics can be as follow²⁵:

A. The structure of the platform business model is different from the structure of the pipeline business model

In the industrial business model, the firm creates the product (good or service). As well if is vertically integrated distribute the product until the final consumer which is the individual which consume the product.

Figure 2.3. The Industrial Business Model



Source: YouTube video recording conference.

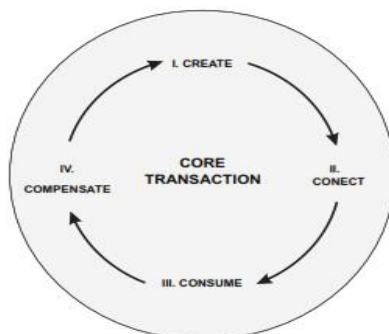
Opposite, according to the platform business model the firm does not create the product, but the firm is centered in enable interactions around a digital platform (technological infrastructure). Here, the economic function of the firm is improving the quality and the number of interactions because more interactions in the platform mean more opportunity to capture value. To do that, a platform firm follows four steps.

First, the firm need producers to create a digital inventory and put it into the platform (e.g. videos). Second, the firm needs consumers to connect with that inventory. Third, consumers must consume the value represented by that inventory. This can be such as making a purchase of a physical good (or downloading an App. Finally, the four-step is when the consumer creates value. This value is given to the producer in exchange for what he consumed. This

²⁵ This characteristic are a summary of several talks which are video recording and upload to Youtube digital platform.

compensation does not to be money because there are many other kinds of value currency, including share, likes, reputation, or attention.

Figure No. 2.4. The Platform Business Model



Source: YouTube video recording conference.

These four steps are actions that the firm needs end-users to take for them to exchange the value. The firm does not control each step, but it builds the technological and organizational infrastructure to support and incentivize the actions.

Apart from these four actions, the firm needs to implement other activities that support and frame the actions the firm need the platform users to take in the core transactions: (a) Audience building; (b) Matchmaking; (c) Create rules and standards and (d) Provide Key tools and services.

In the audience building function, the firm needs to attract users into the platform. So, the firm needs to create a large enough network in which supply and demand will overlap and transactions will be started to happen. In this process, the firm can operate under economic losses. Once the user comes into the platform the firm needs matchmaking to match the right customers with the right producers. Otherwise, users will be leaving the firm.

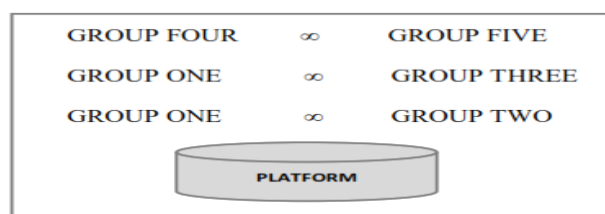
The third activity refers to establish the rules about what is explicitly allow and forbidden. As well, as the standards that establish what kind of behavior is encouraged or discouraged. Access to the platform is about who can join and who doesn't and why. In other words, is about the quantity of the users. But the firm needs to maintain the quality of the transactions

over time using data and platform's users' feedback. If the firms do not do that, transaction quality will be decreased and the network grows, and users will be left.

Finally, the firm needs to provide the technology infrastructure that supports each step of the core transaction.

In the beginning, the firm started with one core transaction between two groups. Thus, the primary activity of the platform is the core transaction. This is the set of actions that firms need users to take to transactions that happen. But the firm will continually add more transactions.

Figure 2.5. The core transaction



Source: Authors' elaboration. Candidate Master of European and International Business, Competition and Regulatory Law at Freie Universität (Berlin).

One example is the Linked-in platform firm. The core interaction is the contact between professionals (core transaction). But this platform firm has added more interactions to the platform as the interaction between recruiters (group 2) and job seekers (group one).

B. The firm is getting inverted: From focus in the internal process to focus on the external interactions

In the industrial business model with the aim of male profit, the firm needs to compete on based to low prices. The firm looks for economies of scale or scope. Consequently, firms are focus on their internal process with the aim to achieve mass production. Too, these firms are aimed to integrate all the functions to the firm. Also, these firms own their inventory and sell it to customers which pay a price for the product²⁶.

²⁶ Today, the "global value chain (VGC)", refers to an economic paradigm and a conceptual framework that brings together insights from a broad range of disciplinary fields. This framework has, however, gained practical

Opposite, platform firms are not focused on the internal process of production but in enable interactions. At the same time, these firms do not own their inventory and outsourced most of its functions (e.g. Human resources management, IT, logistics, marketing, legal department, publicity departments, cleaning workers are outsourcing).

For instance, two competitors. Airbnb and Marriot Hotels. Airbnb is a platform firm that does not own the rooms (platform inventory) which are rented through its platform. The economic function of Airbnb is improving the quality and the quantity of the interactions using its digital platform. Opposite, Marriot Hotels own the hotel infrastructure and is aimed to offer the service of accommodation.

C. The creation of the cybernetic ecosystem

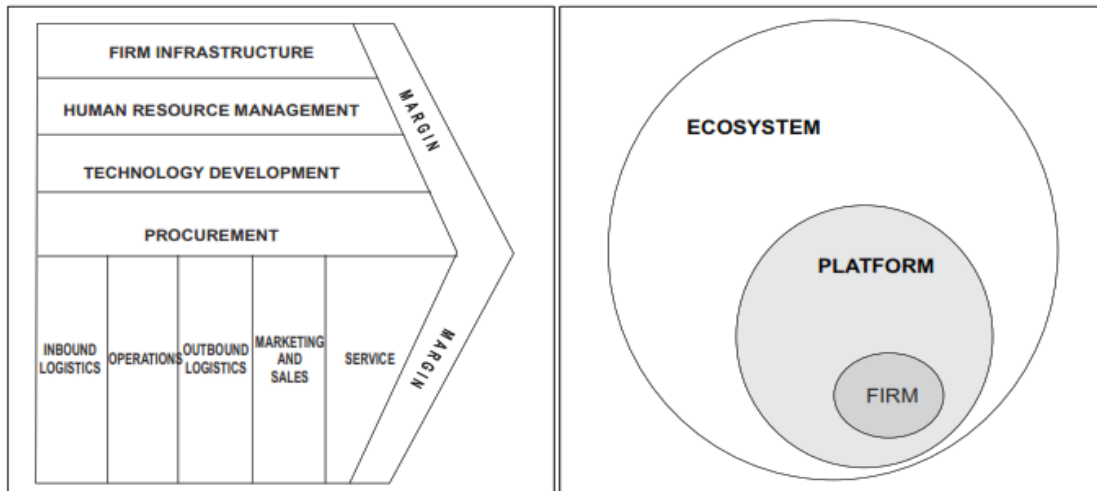
Too, due to platform firms are inverted, a Cybernetic- ecosystem is built around the digital platform. This cybernetic ecosystem is composed of several digital and non-digital components (e.g. cables). With the aim of the well-functioning of its ecosystem, platform firms need to keep the governance of its Cybernetic-ecosystem to reach efficient coordination between all the functionalities and components which are part of this ecosystem. For instance, one of the measures to keep the correct functioning of the Cybernetic-ecosystem is the exclusion of defectives components of its ecosystem.

Moreover, Platform Firms need the expansion of its ecosystem because between more users more Data can be obtained. Consequently, Platform Firms are using strategies for adding new functionalities or components to their Cybernetic-ecosystem (leverage strategy). Too, platform firms have strong incentives to retain control of their ecosystems. To achieve this, platform firms need to close critical points of their digital ecosystem.

importance by providing the conceptual underpinning of numerous policies and strategic analyses. Countries rely on the GVC to explore political economics considering value-added and capture of value in the value chain. GVC analysis has become a heuristic to understand the interconnectedness of global economic activity across time and space and enables us to point out dynamics between actors and processes.

Thus, in a theoretical framework, the firm is inverted. This is, we are in a process from huge firms to the smallest firm as possible.

Figure 2.6. The creation of the cybernetic ecosystem due to platform firm is inverted



Source: Authors' elaboration. Candidate Master of European and International Business, Competition and Regulatory Law at Freie Universität (Berlin).

In Parallel, in the current process of digitalization, traditional companies are starting the same process. First, they started to outsource many of its functions, and second, production firms start to be collecting information about its industry. For instance, in healthcare industry firms will not be limited to sell physical drugs but will be started to collecting information on the patient's conditions (e.g. digital medical records, medication history, genomic data, and lifestyle data). This digitalization would lead to the development of a personalized healthcare and precision medicine to identify optimal therapies which are more beneficial for the patients. Subsequently, to develop a more effective therapy pharmaceutical firm will need every day more and more data about its patients. And due to the new economy, production firms are starting to create and growing their cybernetic-ecosystem as well.

Hence, for digital platform firms, and production firms, competitiveness is about how much data the firm has about the new form of digital value in its industry and not how many products sell the firm.

D. The Governance of the Cybernetic ecosystem

Thus, the governance of the ecosystem is very important, because the business model is not just about the quantity of the transactions but too about the quality of the transactions. Moreover, the production of more complex products requiring a more centralized organization for control.

Thus, the coordination of the cybernetic-ecosystem is about how to manage participants better. Thus, with the aim of the well-functioning of its ecosystem, platform firms need to keep the governance of its Cybernetic-ecosystem to reach efficient coordination between all the functionalities and components which are part of this ecosystem.

For instance, one of the measures to keep the correct functioning of the Cybernetic-ecosystem is the exclusion of defectives components of its ecosystem which are not anticompetitive conduct. Moreover, platform firms need the expansion of their ecosystem because between more users more Data can be obtained. Consequently, Platform Firms are using strategies for adding new functionalities or components to their Cybernetic-ecosystem (leverage strategy). Too, platform firms have strong incentives to retain the control of their ecosystems. To achieve this, platform firms need to close critical points of their digital ecosystem (tipping strategy).

E. Network effects

Once the platform is created the network effects start to be important. The more people come into the digital platform more people benefit from all these people in the ecosystem. For instance, the more drivers come on board, the more consumers are affiliated with the platform. All suppliers and demandants started to agglutinate together in one platform. So, the platform takes a form of the winner takes all and this situation give the platform firm a lot of economic power in that industry.

Thus, the premise is that goods can be easily copied but networks don't. If a man is looking for a good business must go and look for a network. Is not about selling a product, is about buy something that customers can not get anywhere else.

F. Data analytics

As was said, for digital platform firm's competitiveness is about the quantity and quality of data the firm has about the new form of digital value in its industry. To achieve it digital platforms firms often performance Data Analytics Activity (DAA).

2.5. CLASIFICATION DIGITAL PLATFORMS FIRMS

Like it was described before, in the new economy, Platform Firms (PF) are profit-making firms that create surplus value through a new business model called "Digital Platform Business Model" which facilitates transactions between two or more interdependent groups.

A. Classification according to the transaction model

Digital platform firms can be classified according to the transaction model that can be applied: (a) Business-to-Consumer (B2C): Business owns the inventory and facilitates transactions among users; (b) Peer-to-Peer (P2P): Assets are owned and exchanged directly person to person. (c) Business-to-business (B2B): Solutions that enable the business.

B. Classification according to core transaction

Too, digital platform firms can be classified according to the characteristics of their core transaction as follow.

(i) The core transaction is the Online-content sharing

The digital platforms are known as "*online-content sharing platforms*" they facilitate the interactions between content providers and final consumers (e.g. Youtube, Twitter, Facebook, Instagram, Redtube, tik-tok, Linked-in, Netflix, Pinterest).

The online-content sharing platforms are regulated by the EU regulation and Directives in relation with the content which is shown in the digital platforms, especially about the protection of copyrights holders²⁷. Too, there are cases of the EU Court holding the principle of a reasonable and appropriate remuneration for the use of copyright work.

(ii) The core transaction is the interchange of physical goods (Marketplaces)

The digital platforms are known as "*online-content sharing platforms*" they facilitate the interactions between content providers and final consumers (e.g. Amazon, Alibaba, Liferando (local food), eBay, MercadoLibre, OLX). The digital labour platforms can be classified between Web-based and location-based. E-Commerce Directive.

Some authors called these relationships "Co-petition". For instance, Amazon is a competitor with national courier delivery services (e.g. FedEx) but at the same time is their customer. The debate about "private electronic marketplaces" is about its dual as a platform and as a merchant²⁸. This dual role produces a conflict of interest in the Digital Platform Firm, as well as an automated and unbalanced competition advantage.

²⁷ Case Murphy (C-403/09), the Court also importantly articulated for the first time, in evaluating the compatibility of the UK law with the freedom to provide services in EU, the view that the specific subject matter of copyrights to receive appropriate remuneration for the use of copyright work, not to guarantee the right holders concerned the opportunity to demand the highest possible remuneration. It went further to specify that to be appropriate, such remuneration must be reasonable concerning the economic value of the service provided, in particular about the actual or potential number of persons who enjoy or wish to enjoy the service, and even went as far as admitting that it may be appropriate to request a higher remuneration in the presence of territorial exclusivity (Para 108). This principle is now specifically in the recently approved Directive on Copyright in the Digital Single Market. Case C.403/08 and C-429/08 joined cases Football Association Premier League Ltd and Others v QC Leisure and Others and Karen Murphy v Media Protection Services Ltd.

(iii) The core transaction is the interchange of personal services (Digital labor Platforms or Gig Economy)

These platforms conform to what is called the "Gig economy" and are known as "digital labor platforms".

The digital labor platforms can be classified as (A) Leasing-assets-platforms and (B) Labour services platforms. The leasing-assets-platforms are known as the sharing economy (eg. Airbnb) while the labor-services-platforms enable that the execution of traditional activities, such as transportation, delivery, cleaning, or household services, is channeled through the digital platform.

In turn, the labor-services-platforms can be subdivided as (i) work-on-demand platforms and (ii) crowd work-platforms. Work-on-demand platforms refer where the natural person must be close to the final user at the moment the final user needs the service (e.g. Uber, Lyft, TaskRabbit, Handy app, Deliveroo) while crowd work platforms can be web-based (Micro tasking crowd work e.g. AMT and Clickworker and Contest-based creative crowd work e.g. 99designs).

(iv) The core transaction is to facilitate a digital service

Some digital platforms have as is core function facilitate digital services: Financial digital services (e.g. Paypal), digital calls (e.g. Zoom), or Internet web search (e.g. Yahoo).

(v) The core transaction is the digital match in human social relationships

There are digital platforms that have as is core interaction facilitate human relationships, for instance, match personal dates (e.g. Tinder), match friends (e.g. Couchsurfing) or play video games.

(vi) The core transaction is an online price comparison

There are online platforms that have as is core interaction to make a comparison between the prices offer on-line by different firms (e.g. Booking.com).

(vi) The core transaction is offering an operating system (OS)

There are digital platforms that have as is core interaction offer an operating system.

And thus, continually, day by day, entrepreneurs will create a digital platform with different core interactions. For instance, a digital platform in which drivers are the only woman. This new digital platform will have the effect of disintermediating some users of one digital platform.

C. Classification according to with revenue model for access to the inventory

Digital Platform Firms are profit-making economy agents, so, if economic analysis assumes that nothing is for free a price, just the payment is made with a different compensation²⁹.

Finally, the access for the end-users to the digital platform inventory can have different revenue models:

- a. Fee-for-content: (e.g. Netflix platform);
- b. Advertising-supported revenue model (e.g. broadcast network television and online classified as sites);
- c. Subscription model: where consumers pay a fee but also accept some level of advertising (e.g. online newspapers);

²⁹ In 1776, Adam Smith founder of modern economics and the doctrine of economic liberalism, defined the free market economy system with two propositions: The beneficial egoism and the invisible hand. Smith argued that the wealth of a nation is not measured by the number of precious metals it accumulates (as the mercantilist asserted), nor by agriculture (as the physiocrats defend), but the wealth of a nation consists of the sum of the production of all individuals. If it is to be expected that individuals pledge all their efforts in their business, even though not an individual intends to promote the public interest but only taking interest in his gain, promotes an end that was not part of his intention: The general welfare. The theory is known as the beneficial egoism, briefly in his words: *"It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their self-interest. We address ourselves not to their humanity but their self-love, and never talk to them of our necessities, but of their advantages* Adam Smith book.

- d. Fee for the transaction: firm charge a fee for each successful transaction carried through its platform (e.g. marketplaces);
- e. Fee-for-service (e.g. financial services);
- f. Fee for a few: where companies try to attract consumers by providing several digital products for free while tempting a small number of consumers to buy a more sophisticated version (e.g. Linked-in).

The following table shows the classification of digital platform firms according to the core transaction and inventory of the digital platform:

TABLE NO. 2.

CLASSIFICATION OF DIGITAL PLATFORM FIRM ACCORDING WITH ITS CORE TRANSACTION

No.		NAME	PLATFORM INVENTORY	GROUP 1	GROUP 2	CLASIFICATION
1	MARKETPLACES	Amazon	Physical Goods to buy online	Sellers	Buyers	Marketplace online
2		OLX	Physical Goods to buy online	Sellers	Buyers	Marketplace online
3		Ebay	Physical Goods to buy online	Sellers	Buyers	Marketplace online
4		Tencent	Physical Goods to buy online	Sellers	Buyers	Marketplace online
5		Alibaba	Physical Goods to buy online	Sellers	Buyers	Marketplace online
6		Apple Store	Apps	Apss developers	Consumers	App Marketplace online
7		Google Play	Apps	Apss developers	Consumers	App Marketplace online
8	GIG ECONOMY	Awin	Marketing online	Publishers	Companies	Marketing Network online
9		DoubleClick	Marketing online	Publishers	Companies	Marketing Network online
10		OpenEnglish.com	English classes	English students	Teacher students	Teachers online network
11		Taskrabit	Transport service	Local drivers	Consumers	Drivers online network
12		Lyft	Transport service	Local drivers	Consumers	Drivers online network
13		Uber, DIDI	Transport service	Local drivers	Consumers	Drivers online network
14		Airbnb	Rooms	Local rooms	Consumers	Rooms to rent online network
15	CONTENT SHARING	HandyApp	Home works	Local profesionales	Consumers	Online workers network
16		Liferandoo	Food	Local restaurants	Consumers of Food	Restaurants online network
17		Click-worker	Minijobs	workers	Companies	Crowdsourcing
18		Facebook	Photos and short videos online	Content providers	Consumers of content	Social online network
19		Instagram	Photos and short videos online	Content providers	Consumers of content	Social online network
20		Tik-Tok	Photos and short videos online	Content providers	Consumers of content	Social online network
21		Snapchat	Photos and short videos online	Content providers	Consumers of content	Social online network
22	DATES	Flickr	Photos and short videos online	Content providers	Consumers of content	Social online network
23		Pinterest	Photos and short videos online	Content providers	Consumers of content	Content sharing online
24		Twitter	Short text online	Content providers	Consumers of content	Social online network
25		Youtube	Videos online	Content providers	Consumers of content	Video sharing online platform
26		RedTube	Videos online	Content providers	Consumers of content	Video sharing online platform
27		Netflix	Movies video sharing	Content providers	Consumers of content	Video sharing online platform
28		Tinder	Personal Dates using Internet	Person	Person	Private social Network
29	MUSIC	Grindr	Personal Dates using Internet	Person	Person	Private social Network
30		Happn	Personal Dates using Internet	Person	Person	Private social Network
31		SoundCloud	Music streaming service	Music providers	Consumers of music	Network music sharing online
32		Spotify	Music streaming service	Music providers	Consumers of music	Network music sharing online
33		Pandora	Music streaming service	Music providers	Consumers of music	Network music sharing online
34		Deezer	Music streaming service	Music providers	Consumers of music	Network music sharing online
35		TIDAL	Music streaming service	Music providers	Consumers of music	Network music sharing online
36	GAMES	MusicUP	Music streaming service	Music providers	Consumers of music	Network music sharing online
37		Nintendo	Video Games	Developers video Games	Gamers	Platform video games
38		Xbox	Video Games	Developers video Games	Gamers	Platform video games
39		Cloud gaming	Online Video Games	Developers video Games	Gamers	Platform video games
40		Wechat	Private short text and calls	Person	Person	Communication Services online
41		WhatsApp	Private short text and calls	Person	Person	Communication Services online
42		Zoom	Private short text and calls	Person	Person	Communication Services online
43	FINANCE	Skype	Private short text and calls	Person	Person	Communication Services online
44		PayPal	Online Payment	Merchants	Buyers	Financial services online
45		Visa	Digital Payment	Merchants	Buyers	Financial digital Network
46		MasterCard	Digital Payment	Merchants	Buyers	Financial digital Network
47		Google	Internet search engine	Persons and machines	Online information	Indexation of web sites
48		Bing	Internet search engine	Persons and machines	Online information	Indexation of web sites
49		Microsoft edge	Internet search engine	Persons and machines	Online information	Indexation of web sites
50	OS	Yahoo	Internet search engine	Persons and machines	Online information	Indexation of web sites
51		Apple iOS	Computer Operating system	Operating systems	Consumers	Operating systems
52		Android OS	Computer Operating system	Operating systems	Consumers	Operating systems
53		Booking.com	Hotels rooms	Hotels	Consumers	Price comparison platform
54		Shopzilla	shops price comparisiton	shops	Consumers	Price comparison platform
55		Shopping.com	shops price comparisiton	shops	Consumers	Price comparison platform
56		Kayak.com	Flytickets prices comparison	Airlines	Consumers	Price comparison platform
57	COMPARATION	Google shopping	shops price comparisiton	shops	Consumers	Price comparison platform
58		shopping.com	shops price comparisiton	shops	Consumers	Price comparison platform

Source: Authors' elaboration. Candidate Master of European and International Business, Competition and Regulatory Law at Freie Universität (Berlin).

2.5. THE CYBERNETIC NETWORK OF ECOSYSTEMS

A. The cybernetic global network

Once it has been showing the way that firms are inverted, one of the consequences is the creation of the cybernetic ecosystem. Under this theoretical approach is easier to describe the unique cybernetic global network, as a theoretical concept of cybernetic-ecosystems interconnected between them, as is showed in the following graphic:

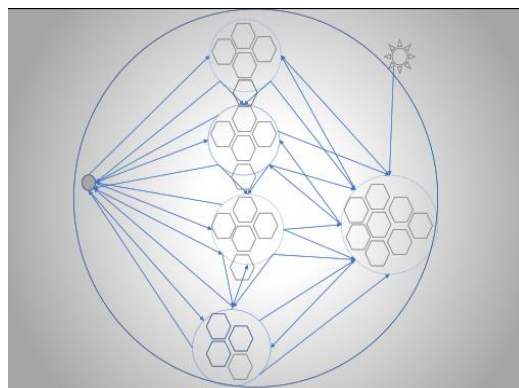
Figure No. 2.7. The Global Cybernetic Network Ecosystem



Source: Getty Images

As an analytical tool, the mapping of this global cybernetic-network is just a cyber-ecosystems interconnected between them, where each module is an ecosystem:

Figure No. 2.8. The Global Cybernetic Network Ecosystem



Source: Authors' elaboration. Candidate Master of European and International Business, Competition and Regulatory Law at Freie Universität (Berlin).

Under the approach of a global cybernetic-network economy, in the value chain all production firms (e.g. agriculture firms, cars manufacturers, smart-phones manufacturers, etc) are not limited to sell physical goods but to collect information about its consumer and the environment (e.g. weather conditions, soil quality) and all firms, machines, economy agents, governments, consumers, data clients, families, and space-satellites are interconnected between them through the Internet network. In sum, under this analytical approach, will be easier to examine the competitive game of a firm like “*Intel*” which uses more than 19,000 suppliers in over 100 countries to provide direct material and machines to consumers around the globe.

B. The definition of the cybernetic-ecosystem under Competition Law.

The concept of the "digital ecosystem" has emerged as the dominant idea when describing the competitive environment in the modern economy. Several authors and competition authorities have recognized that the ecosystem manager (or ecosystem leader) determines the elements of the ecosystem. But most studies of “digital ecosystems” focus on the role of the ecosystem as a “hub” of inter-firm relations taking place around a platform. Hence, the point is, under this new analytical approach, *how Competition Law defines a cybernetic-ecosystem?*

Developed in the early 1990s, the concept of an ecosystem has been defined in broad terms as a group of interdependent firms that depend on each other’s activities. Noted that “*The system being typically reliant on the technological leadership of one or two firms that provide a platform around which other system members, providing inputs and complementary goods, align their investments and strategies*”³⁰.

Too, ecosystems have been defined as a group of interdependent firms, people, and things that share one standardized digital platform for a mutually beneficial purpose. For instance, **Gartner (2017)** defines an ecosystem as “*an interdependent group of enterprises, people and/or things that share standardized digital platforms for a mutually beneficial purpose,*

³⁰ Teece paper.

*such as commercial gain, innovation or common interest”. Digital Ecosystems enable you to interact with customers, partners, adjacent industries, and even your competition.”*³¹.

Thus, due to the economy and technical interdependence of the complementary products and services around the core interaction of the digital platform, one of the most noteworthy characteristics is that digital platforms firms are participating in several sectors of the traditional economy. For instance, the CEPAL report (2018) shows the economic sectors that some Digital Platforms Firms were participating in the year 2018, in the following table:

In this line, for instance, according to a UK report (2020), one of the defining features of Googles and Facebook’s firms is that *“they have built large “ecosystems” of complementary of products and services around their core service”*³². And recognized the existence of the platform firm ecosystem as it was displayed in its report:

However, the UK report (2020) continued to apply the traditional approach of the industrial economy. And when the “cybernetic-ecosystem” is analyzed under the traditional approach of the off-line and online market, competition authorities find it very difficult to analyze the competitive game. The questions started being around how to define relevant markets when some of the digital platform firms are participating in several different relevant markets. For instance, Google and Facebook platform firms are participating in 11 relevant sectors according to table No. 3.

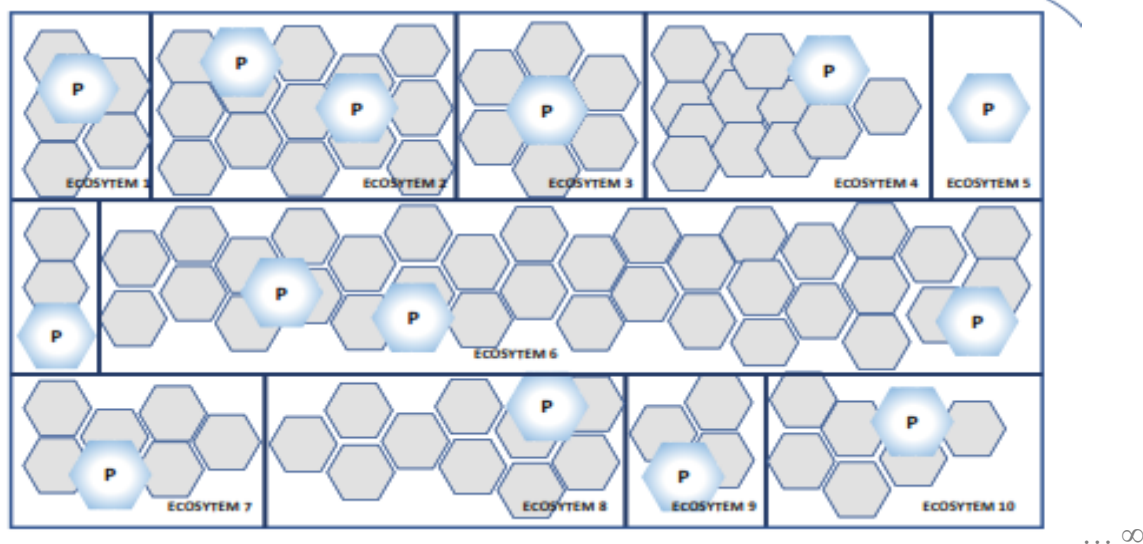
Opposite, under a new theoretical approach which considers the unique cybernetic global network as a theoretical concept of cybernetic-ecosystems interconnected between them (as was showed in the **figure No. 2.8** of this work) it will be noted that due to platform firms are inverted, a cybernetic ecosystem is built around digital platforms. And the competitive game is about how to expand this cybernetic-ecosystem. This expansion means adding more “components” to the firm’s ecosystem. This is because more components mean more users, more users mean more data collected, and more data means a better position in the

³¹ Gartner.

³² CMA, Competition, and Markets authority the UK. Online Platforms and digital advertising market study. Final Report, 1 July 2020. Page 57.

competitive gain for the surplus-value which is created in the economic system. Subsequently, the mapping with an analytical purpose about the competitive game of digital platform is a flat map that might look like as the following graphic:

Figure 2.11. Competition Law analytical mapping



Source: Authors' elaboration. Candidate Master of European and International Business, Competition and Regulatory Law at Freie Universität (Berlin).

In that mapping tool, each hexagon is a cyber-component³³ of the cybernetic ecosystem of a platform firm. And a cybernetic-ecosystem is defined as a group of interdependent cybernetic components (persons, firms, and digital functionalities) that share one standardized digital platform for a mutually beneficial purpose. And the cybernetic-global-network is the cybernetic-ecosystems interconnected between them.

Finally, under this analytical approach tool, will be easier to examine the competitive game of a firm that uses thousands of suppliers in over 100 countries and has consumers around the world. And, this is the mapping that will be used in the following chapter to describe the approach which could be implemented by Competition Law to analyzed if a conduct performed by one platform firm is anticompetitive or not. The following chapter will be explained the way this approach can be plausible use in the current EU Competition Law.

³³ The definition of the cyber-component (each hexagon), or if these components refer only to firms (as economy subjects) or digital functionalities, or both at the same time is left open in this work.

Too, under this holistic approach, it will be easier the cohesion of law and new brands of the economy such as "the complex economy models" which focus on interactions between agents and models' social systems as networks of nodes and ties. However, this work will not be based on these new brands which could be very useful.

According with complex economy, ties act as pipes through which things (e.g. information) flow. This brings to the fore the role of networks as spaces of interaction"¹. This has important implications on the understanding of power relations within systems. For instance, in "small worlds" networks, where each agent is first connected to a set of neighboring agents, information can be transmitted between any two nodes using, typically, only a small number of connections which shows the crucial role in the operation of the system of only a few intermediate nodes. If however, a network is solely composed of neighborhood connections, *"information must traverse a large number of connections to get from place to place"*, thus limiting the power/influence of the intermediary nodes. Hence, the position of an agent in a network may be a source of advantage and power³⁴.

³⁴ The Complex Economy.

CHAPTER III.

THE ANALYTICAL APPROACH OF COMPETITION LAW

RESPECT DIGITAL PLATFORM FIRMS

In a democratic society law, as a representation of the voice of citizens, Law property rights, ensure the enforceability of contracts, allocate liability for harmful activities, impose burdens to the economic agents and shape economic markets according to the general interest.

Competition Law, as a field of Law, has as its goal guarantee competition. Consistent with its goal, the function of Competition Law is to punish anticompetitive behavioral conducts and remove structural factors than impede effective competition. Thus, Competition Law does not punish an economic Dominant Position but sanctioned the maintenance of a Dominant Position through conduct that constitutes unfair methods of competition. For instance, exclusionary conducts which have an appreciable adverse effect on competition (AAEC), agreements between competitors which effect is to restrict competition (e.g. Hard-Core Cartels, restrictions on sales, anticompetitive parity clauses, and anticompetitive geo-blocking practices). Too, opposite of sector-specific regulation (SSR) which acts *ex-ante* behaviors, Competition Law acts as *a posteriori* once a behavior is observed and mostly relies on the dissuasive power of economic sanctions. At the same time, only in exceptional cases where behavioral sanctions are not enough to restore competition, Competition Law has legal jurisdiction to block Mergers and Acquisitions (M&A) which may lead to an irreversible effect on Competition. Also, in some jurisdictions law expressly authorized judges to order the divestiture of companies in few specific circumstances.

About digital platform firms' competition game, there is necessary to differentiate between competition between digital platforms firms: (i) Competition inside the ecosystem and (ii) Competition between platform firms (competition between ecosystems). Therefore, this chapter will be divided into two parts referring to this type of competition. But before the first part about a structural overview.

3.1. COMPETITION LAW STRUCTURAL VIEW OF THE CYBER-ECOSYSTEM NETWORK

According to the European Commission public consultation, there are two types of structural problems of competition: structural risks for competition and structural lack of competition. The first one, structural risks for competition refers to scenarios where certain market characteristics and the conduct of the companies operating in the markets create a threat for competition. The second one, structural lack of competition refers to a scenario where markets are not working well and not delivering competitive outcomes due to its structure (e.g. structural market failures). Also, under the traditional single entity doctrine³⁵, Competition Law does not intervene in competitive relationships between components of the same legal single unity (The firm).

However, as it will be explained this approach will not be the correct one to evaluate the competitive game of digital platform firms under Competition Law. Consequently, it is necessary for a different analytical approach, a conceptual redefinition, and other procedural tools.

3.1.1. COMPETITION AND MONOPOLY

Competition Law does not punish an economic Dominant Position but sanctioned the maintenance of a Dominant Position through conduct that constitutes unfair methods of competition between independent competitors.

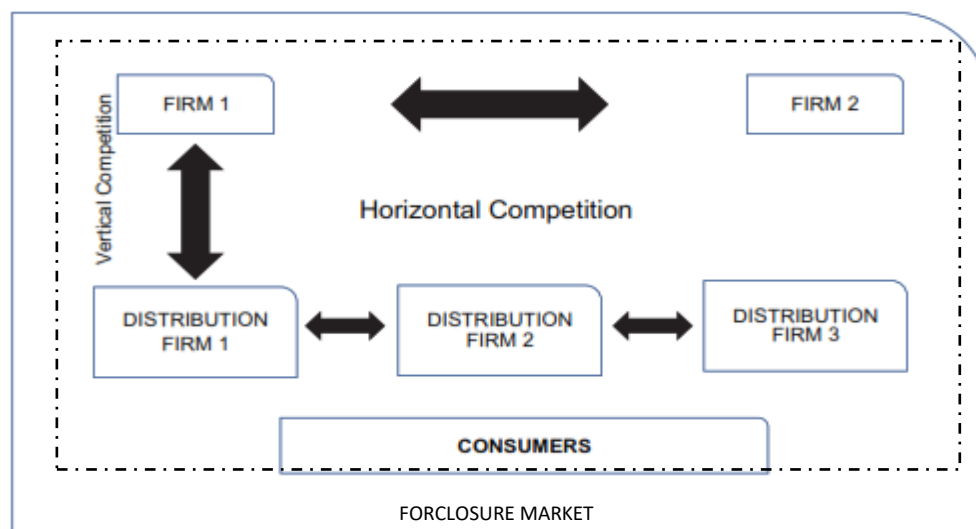
Under Competition Law, competition is not just about rivalry for everything or a rivalry between firms for consumers. Competition is about the fair allocation of the surplus-value between the different economic agents in economic transactions.

About production firms, the identification of abuses of a dominant position and structural competitive concerns was based in the investigation of market foreclosure and when

³⁵, Several legal persons may form an economic entity if a control relationship exists between them.

determining exploitative abuses more emphasis was put on the consumers:

Figure 3.1. Illustration of the traditional approach of the concept of Monopoly and Competition

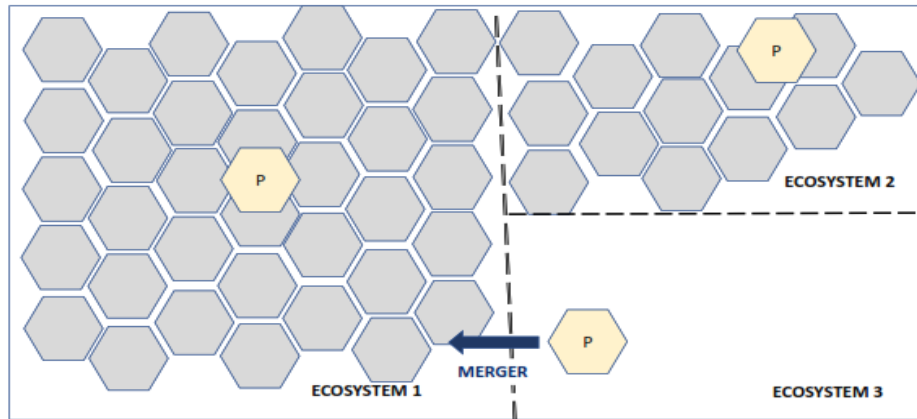


Source: Authors' elaboration. Candidate Master of European and International Business, Competition and Regulatory Law at Freie Universität (Berlin).

Consequently, under the traditional approach, production firms have incentives to foreclose the market because the foreclosure means market power and market power means more profits. This market foreclosure can be achieved by firms' anticompetitive conducts as creating artificial entry barriers, tying and bundling practices, exclusivity agreements, or conducts aimed to lock-in consumers.

Opposite, Platform firms need to expand their ecosystem. To do that need to add new components (e.g. functionalities to its ecosystem). The addition of a new component (hexagon) can have several reasons. For instance, improve the coordination of the ecosystem, replace a component which is based on obsolete technology, look for better innovation, a new technology compatibility need. But too, this adding can have an anticompetitive effect such as avoid competition for the firm (e.g. acquiring a potential firm with a high probability of creating competition to the platform firm).

Figure 3.2. Illustration of a Merger by a Digital Platform Firm



Source: Authors' elaboration. Candidate Master of European and International Business, Competition and Regulatory Law at Freie Universität (Berlin).

Platform firms need the expansion of their ecosystem because between more users more Data can be obtained. Consequently, Platform Firms are using strategies to adding new functionalities or components to its Cybernetic-ecosystem³⁶.

And contrary to natural resources, functionalities are not limited, opposite the creative capacity of human intelligence is unlimited. So, the adding can consist in add a new module that has been created by the platform firm or in the disintegration of a module of another cyber-ecosystem to pass to the integration to other cyber-ecosystem.

Consequently, structural competition can be defined when there is competition between different cyber-ecosystems. Opposite, a Monopoly will be found in the hypothetical situation when all the cyber-ecosystems belong to the same platform firm (One Ecosystem). Like in the next two figures are displayed:

³⁶ Examples of platform firms adding functionalities using mergers are Facebook (WhatsApp, Instagram), Microsoft (Linked-in, Skype, GitHub), and Google (DoubleClick, NetLabs).

Figure 3.3. Competition between Digital Platform Firms

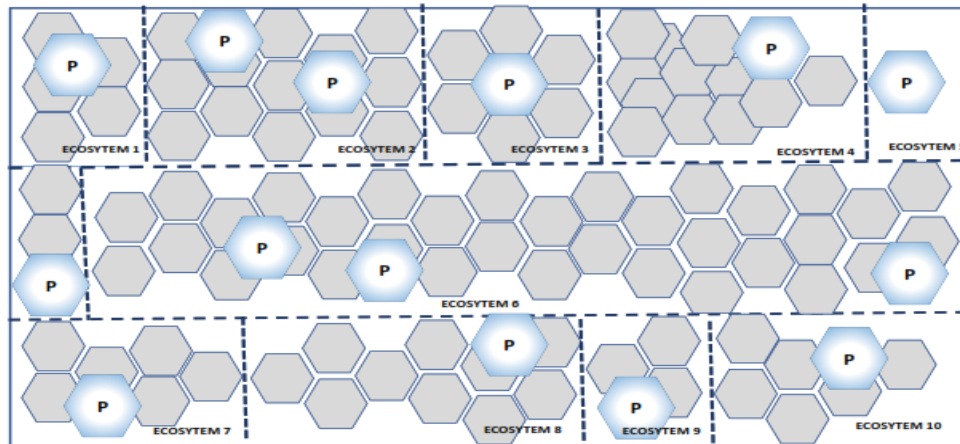
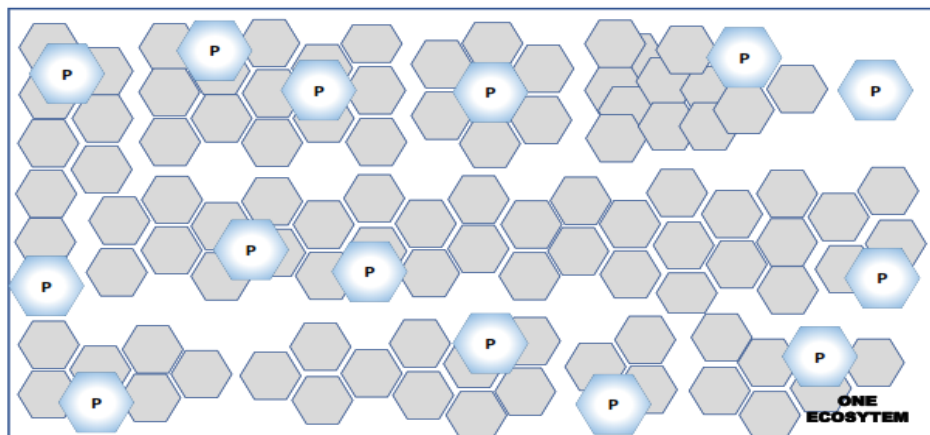


Figure 3.4. Monopoly



Source: Authors' elaboration. Candidate Master of European and International Business, Competition and Regulatory Law at Freie Universität (Berlin).

Therefore, monopolization means adding a new component to the ecosystem by anticompetitive means (opposite to foreclosure the market by anticompetitive means)³⁷.

However, it would be argued that platform firms need to add more components to their ecosystem or platform due to better efficiency, interoperability, or other technical and economic justifications. And both arguments must be evaluated by Competition Law.

³⁷ Just like a Lego play (adding blocks).

In sum, the definition of Monopoly as has been defined for the industrial economy does not apply to the cyber-network global ecosystems³⁸.

3.1.2. THE LEVERAGING STRATEGY

Like it was explained in chapter one, the third category of complaints is about the leveraging strategy used by platform firms to act in different product markets, sometimes unrelated between them.

Under the traditional approach of market foreclosure, This strategy has been perceived as problematic only if the transfer of power from one market to another establishes two monopolies that generate two monopoly profits than a single monopoly. For some authors, the ability of platform firms to leverage their economic power results from the control of resources such as Big data, algorithms, and Artificial Intelligence, on which the new economic model depends on. Thus leading to the emergence of a dominant position over a dominant social good (information).

However, under the approach of the platform business model, the leverage strategy is something that platform firms need. Indeed, Platform Firms need the expansion of its ecosystem because between more users more Data can be obtained. Consequently, Platform Firms are using strategies for adding new functionalities or components to their Cybernetic-ecosystem. And contrary to natural resources, functionalities are not limited, opposite the creative capacity of humans is unlimited. And the expansion of the ecosystem may not be limited by Competition Law per se.

Leveraging strategy only can be considered anticompetitive when (a) Adding a new cyber-component (module) is aimed to finish with a potential rival, (b) When the effect of adding the cyber-component to the cyber-ecosystem of the acquirer has an appreciable adverse effect

³⁸ The size of the monopolies can be different. Too, if the monopoly must be considered in a local, national or global perspective must be defined, as well if these monopolies must be defined about a type of Industry, the type of data or not, or according to economic transactions.

on competition (AAEC) and (c) When the addition of a new cyber-component is achieved through exclusionary or discriminatory conduct.

3.1.3. DIGITAL MARKETS ARE PRONE TO TIPPING

According to European Commission consultation, tipping markets may be considered as a structural risk for competition because refers to markets with certain characteristics. and risks for the competition can arise through the creation of powerful market players with an entrenched market and/or gatekeeper position, the emergence of which could be prevented by early intervention.

However, like it was explained there are not digital markets, or at least is not the correct terminology. So, can take the approach that the market is prone to tipping. Moreover, the concept of the market must be redefined about the cybernetic-global network.

Under the new approach, platform firms need to retain the critical points of their ecosystem (e.g. Android maps). As making profit firm, these firms have incentives to limit competition. For instance, platform firms have incentives to engage in exclusionary practices to control the standard of the network or incentives for tipping the network. It must sound a little contradictory, but platform firms need to open their ecosystem but retain the critical points. In sum, this is about openness and close to the cyber-ecosystem by digital platform firms. And which critical points of the ecosystems need to be retained and which has to be opened is a crucial point in the platform business model

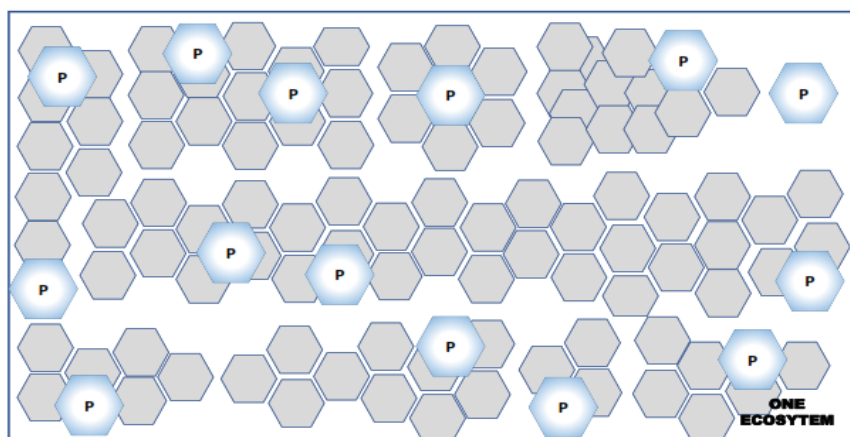
In conclusion, the structural competition problems which lead that economic structures are not delivering the desired results that must be evaluated under another analytical tool. These tools beyond the traditional theory of two-sided markets. In the new Competition Law analysis, it must be considered the unique cybernetic-global network, as a theoretical concept of cybernetic-ecosystems interconnected between them, where each ecosystem is composed of hundreds or thousands of cyber-modules. Thus, the economic relationships of each of these modules between them and between these modules and the system leader will be analyzed in the following part.

3.2. COMPETITION LAW ANALYSIS OF COMPETITION INSIDE THE CYBERNETIC NETWORK ECOSYSTEM

Like it was defined, a cybernetic-ecosystem is a group of interdependent cybernetic components (cyber-modules) that share one standardized digital platform. Consequently, competition game inside the ecosystem is about the competition between the different cybernetic components (persons, firms, and digital functionalities) that share one standardized digital platform.

In the analytical mapping tool, each hexagon is one module of the cyber-ecosystem. These modules can be hundred or even millions in just one ecosystem. Thus, the challenge is identified how to configure each module of the cyber-ecosystem:

Figure 3.5. Illustration of one cybernetic ecosystem



Source: Authors' elaboration. Candidate Master of European and International Business, Competition and Regulatory Law at Freie Universität (Berlin).

This work to analyze if one conduct performed inside one ecosystem is anticompetitive will consider that each module (hexagon) is a functionality of the cyber-ecosystem.

3.2.1. DOMINANT POSITION IN THE ECOSYSTEM

About production firms, the identification of abuses of a dominant position was based in the investigation of market foreclosure and when determining exploitative abuses more emphasis

was put on the consumers. In this line, the causes which are considered European Commission to determine a dominant position about digital platform firms are:

TABLE NO. 4
CAUSES FOR A DOMINANT POSITION IN MODERN ECONOMY

1	One or few large players on the market.
2	High degree of vertical integration (scenarios where the same company owns activities at upstream and downstream levels of the suppl chain)
3	High start-up costs (e.g. non-recurring costs associated with setting up business)
4	High Fixed operating costs (e.g. costs that do not change with and increase or decrease in the amount of goods or services produced or sold)
5	Regulatory barriers (regulatory rules that make market entry or expansion more cumbersome or extensively expensive)
6	Importance of patents or copyrights that may prevent entry
7	Information asymmetry on the customer side (occurs when customers (consumers or businesses) in an economic transaction possess substantially less knowledge than the other par so that they cannot make informed decisions).
8	High customer switching costs(are one time expenses a consumer or business incurs or the inconvenience it experiences in order to switch over from one product to another or from one service provider to another)
9	Lack of access to a given input/asset which is necessary to compete on the market (e.g. access to data).
10	Extreme economies of scale (occur when the cost of producing a product or service decrease as the volume of input increases)
11	Economies of scope (occur when the production of one good or the provision of a service reduces the cost of producing another related good or service).
12	Strong direct network effects (where network effects are present, the valor of a service increases according to the number of others. using it)
13	Strong indirect network effects (also known as cross-side effects, typically occur in case of platforms which link at least two user groups and where the value of a good or service for a user of one group increases according to the number of users of the group)
14	Customets typically use one platform (e.g. they predominantly single-homing and cannot easily switch).
15	The platform owner is competing with the business users on the platform (so called dual role situations, for instance the owner of the e-commerce platform that itel sells on the platform)
16	Significant financial strenght
17	Zero-pricing markets (refers to markets in which companies offer their goods and services to consumers at a zero price and monetize via other means, typically via advertising)
18	Data dependency (refers to scenarios where the operation of companies are largely based on big datasets)
19	Use of pricing algorithms (are automated tools that allow vey frequent changes to prices taking into account all or most competing offers on the market)

Source: European Commission public consultation, July 2020.

However, it must be noticed that article 102 TFEU refers to the terminology of “Dominant Position in a Market” and not “Market power in the market”. And this terminology has a profound meaning.

Thus, it was to be noticed that according to article 102 TFEU, under EU Competition Law a dominant position can be established by market power and by other dominant positions in markets.

Here, is very important to define the meaning of the market. In the Competition Law market does not refer exclusively to two-side markets. In a broad definition, the market refers to “*a set of economic transactions in a place*”³⁹. Consequently, in the case of platform firms, the dominant position must be considered relative to the cyber-ecosystem.

Accordingly, it is no doubt that platform firms have control over the ecosystem which was built around its digital platform because this cyber-system is built around the digital platform infrastructure. In other words, around the digital platform, the system members provide inputs and complementary goods, align their investments and strategies, sell physical goods, or offer personal services. In other words, the dominant position of a digital platform firm respect of its cyber-ecosystem must not be probed. Opposite, it must be presumed by law. And, in cases in which a digital platform firm lost the dominant position respect its cyber-ecosystem, is these firms that must prove it.

3.2.2. ANTICOMPETITIVE CONDUCTS BY A DIGITAL PLATFORM FIRM

Due to the Dominant Position in its Cyber-ecosystem, platform firms can perform anticompetitive conducts against members of their Cyber-ecosystem. And this is the only type of conduct which are sanctioned by Competition Law. In other words, under Competition law, other types of conduct which do not constitute an anti-competitive practice are not punished (e.g. cyber-crimes or conduct against personal privacy).

As was explained in the second part, the governance of the ecosystem for the platform firm is necessary for the well-functioning of the ecosystem. And, under Competition Law, platform firms have a special responsibility to preserve competition by creating a fair level played field in their Cyber-ecosystems.

³⁹ Opposite, to the theoretical meaning of the market as the sum of sellers and buyers in a place.

In this sense, the **Cremer report (EU, 2019)** recognized the fact that platforms choose rules is not a problem per se because platform firms have incentives to write good rules to make their platform more valuable to its users. However, sometimes digital platform could have incentives to design the rules in a way which allows it to engage in abusive behavior. Because of its role as self-regulators, platform firms have the responsibility to ensure that their rules do not impede free and vigorous competition inside the ecosystem. For instance, a platform firm that sets up a marketplace must ensure a level playing field on this marketplace and must not use its rule-setting power to determine the outcome of the competition (neutrality).

Here, when analyzed anticompetitive conducts, it is necessarily differentiated between anticompetitive practices performed by platform firms and anticompetitive practices performed by Production firms, thus:

TABLE NO. 5
CAUSES FOR A DOMINANT POSITION IN MODERN ECONOMY

	ANTICOMPETITIVE CONDUCTS BY PRODUCTION FIRMS		ANTICOMPETITIVE CONDUCTS BY PLATFORM FIRMS	
	HORIZONTAL COMPETITION	VERTICAL COMPETITION	RESPECT OF ITS CYBER-ECOSYSTEM	BETWEEN CYBER-ECOSYSTEMS
1	Exclusion of the market (foreclosure)	Exclusion of the market (foreclosure)	Exclusion of the cyber-ecosystem	Exclusion of the cyber-ecosystem
2	online Geo-blocking and Geo-Filtering agreement between competitors	online Geo-blocking and Geo-Filtering	online Geo-blocking and Geo-Filtering	online Geo-blocking and Geo-Filtering
3	Agreement of using a Platform	Imposing ban of using a Platform	Bans and restrictions in its cyber-ecosystem	Bans and restrictions of using other cyber-ecosystem
4	Agreements on restrictions on sales on the digital Platform	Imposing restrictions on sales on a digital Platform	Restrictions on sales on its digital Platform	Restrictions on sales on other digital Platform
5	Use of Parity Clauses (MFN) between two producers	Use of Parity Clauses (MFN) between producer and distributors	Use of Parity Clauses inside cyber-ecosystem	Use of Parity Clauses inside cyber-ecosystem
6	Discrimination against its competitors	Discrimination against its suppliers or distributors	Inside discrimination in the cyber-ecosystem	Discrimination respect a module of other cyber-ecosystem
7	Online Price Maintenance	Online Price Maintenance	Online Price Maintenance inside cyber-ecosystem	Online Price Maintenance between two cyber-ecosystems
8	Tacit collusion using online algorithm between competitors which offer its goods in the same platform		Tacit Collusion algorithm between modules cyber-ecosystems	Tacit Collusion algorithm inside modules cyber-ecosystem
9	Use of digital price comparison tools	Use of digital price comparison tools	Use of digital tools for comparison of prices of its digital platform	Use of digital tools for comparison of prices of its digital platform
10	APPA (across platform parity agreements between two offerers)	APPA (across platform parity agreements)	APPA (across inter cyber-ecosystem parity agreements)	APPA (across cyber-ecosystems parity agreements)
11	Refusal to deal to a competitor	Refusal to deal to a supplier or distributor	Refusal to interoperability to another internal module	Refusal to interoperability to an external module

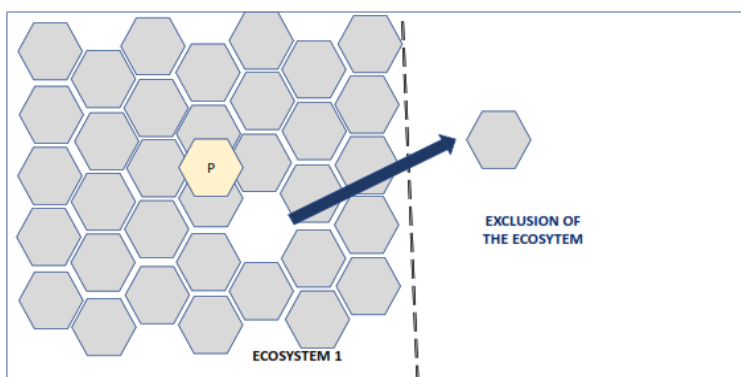
Source: Authors' elaboration. Candidate Master of European and International Business, Competition and Regulatory Law at Freie Universität (Berlin).

A. Exclusion of the Cyber-ecosystem by the Platform Firm (system leader)

As was explained in the second part, the governance and coordination of the cyber-ecosystem for the platform firm are necessary for the well-functioning of the cyber-ecosystem. And of the conduct which may help to this function is the exclusion of some components, for instance, modules based on obsolete technology or bad behavior of platform users.

The exclusion of the cyber-ecosystem consists when the platform firm eliminates or block one module of its Cyber-ecosystem, thus:

Figure 3.6. Exclusion of the cybernetic-ecosystem



Source: Authors' elaboration. Candidate Master of European and International Business, Competition and Regulatory Law at Freie Universität (Berlin).

For instance, a platform firm excludes one module of its cyber-ecosystem because this module rejected to pay the fee which was established publicly for all this type of module (e.g. music providers). In this case, this conduct is not anticompetitive. However, in the cases where the platform firm competes with its modules, this conduct can be considered anticompetitive. And this is because, without reference to the intention of the exclusion, the effect is that without that module in the ecosystem competition is limited.

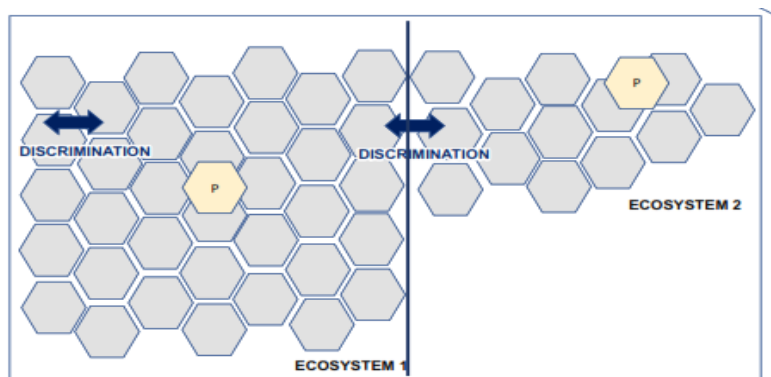
In sum, there are several reasons why a digital platform firm can exclude one module of its cyber-ecosystem, for instance, because users broke the rules or modules are not more functional. Thus, the exclusion cannot be considered anticompetitive. However, exclusion of the cyber-ecosystem can be considered anticompetitive when (a) The exclusion of the cyber-component (module or functionality) is aimed to finish with a potential rival (b) The

exclusion limit the ability of this module to compete, or (c) When the effect of excluding the cyber-component to the cyber-ecosystem has an appreciable adverse effect on competition (AAEC).

B. Discrimination by Platform Firms respect the modules of its cyber-ecosystem

The second anticompetitive behavior which can be performed by a Platform firm is discrimination against a module of its cyber-ecosystem (internal). Also, platform firms can be discrimination against a module which is part of another its cyber-ecosystem, (external), thus:

Figure 3.7. Exclusion of the cybernetic-ecosystem



Source: Authors' elaboration. Candidate Master of European and International Business, Competition and Regulatory Law at Freie Universität (Berlin).

Similarly, discrimination can be based on several justifications, so cannot be considered anti-competitive, per se. (e.g. objective and publicly different prices depending on the type module or transaction).

But in some cases, for instance, when platform firms configured the technical infrastructure of the digital platform in favor of the products which own and against other platform users which compete directly with these products, this conduct is anticompetitive.

For instance, the European Commission case against Amazon for using data on its third-party merchant's⁴⁰. The idea is to address the dual role of the e-commerce giant, given that it hosts

⁴⁰ Case European Commission against Amazon.

but also competes against these other merchants. There are concerns that Amazon's platform firm could be using sensitive information about its competitors to its advantage. According to the terms and conditions, business users needed, for example, to assign the right to use the information material which a seller has to provide regarding the products offered on pan-European despatch⁴¹.

In sum, internal or external discrimination performed by a platform firm using its Cyber-ecosystem can be considered anticompetitive when (a) The conduct is aimed to finish a potential rival; (b) The discrimination limit the ability of the module to compete, or (c) When the discrimination has an appreciable adverse effect on competition (AAEC).

3.3. COMPETITION LAW ANALYSIS OF COMPETITION BETWEEN CYBER-ECOSYSTEMS

Here, the conduct implies two or more cyber-ecosystems. This type of conducts involves anticompetitive agreements between two or more platform firms and unilateral actions of one platform firm using its Cyber-ecosystem against other firm.

A. Deny interoperability

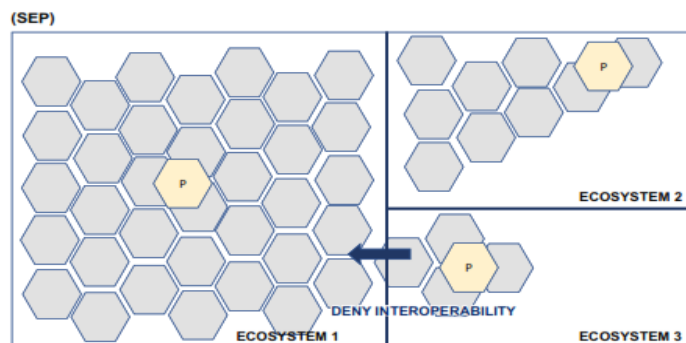
Under a new theoretical approach that considers the unique cybernetic global network as a theoretical concept of cybernetic-ecosystems interconnected between them (as was shown in **figure No. 2.8**), it will be noted that interoperability is a key factor for the well-functioning of the global-cybernetic ecosystem.

Technological interoperability implies using the same technological standards, language, or to make different languages interoperate. Indeed, interoperability is the leading focus for upholding competition in the global-cybernetic ecosystem. Consequently, when a digital platform firm denies interoperability is their responsibility to justify the reason. For instance, it is a legal reason to deny the interoperability of a module of its cyber-ecosystem to another

⁴¹ Case German Competition authority against Amazon.

cyber-ecosystem because this is managed by cyber-criminals. In this case, Competition Law cannot force interoperability.

Figure 3.8. Deny Interoperability to a module of other cyber-ecosystem



Source: Authors' elaboration. Candidate Master of European and International Business, Competition and Regulatory Law at Freie Universität (Berlin).

However, in cases where a platform firm denies the interoperability of a module with its Cyber-ecosystem and this conduct have the effect of decrease the ability of a competitor to compete or when this generation has an appreciable adverse effect on competition (AAEC), this conduct must be sanctioned under Competition Law.

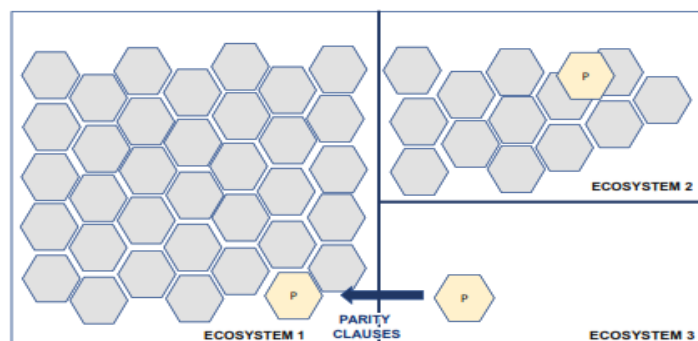
This conduct is especially important in the case of interoperability to APIs (Private application programming interfaces) because cyber-ecosystems are connected through APIs which connected the services. Do not bring granted access to private APIs implies the risk of exclusion from access to the Cyber-ecosystem. Too, concerning standards interoperability (SEPs) and protocols interoperability (ensures that two systems can fully work together and that complementary services can be provided).

Due to the need for interoperability between cyber-ecosystems, there is a need that this type of conduct must be evaluated by Competition law in an agile legal procedure way. One solution must be granting the right of interoperability between cyber-ecosystems and at the moment which a platform firm denied this interoperability the burden pf the proof for this denegation must be in the head of the platform firm. And not like today where competition authorities must to prove that interoperability is an abuse of dominant position.

2.3.4. Parity Clauses between two cyber-ecosystems

The parity clauses have been found to soften competition between cyber-ecosystems, leading to increased platform-sellers' prices.

Figure 3.8. Deny Interoperability to a module of other cyber-ecosystem



Source: Authors' elaboration. Candidate Master of European and International Business, Competition and Regulatory Law at Freie Universität (Berlin).

However, the analysis of parity clauses must be different when are used by the platform firms (e.g. marketplace) and when these clauses are used by the sellers which used the marketplace.

A platform firm has the incentive to improve the quantity of the transactions while the sellers have incentives to increase prices.