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If You Can't Beat Them, Acquire Them.

**An analysis of the authorities'
investigations on some of the most
notable M&As in digital markets.**

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TABLE OF CONTENTS

INTRODUCTION.....	3
I. M&As, AN OVERVIEW	5
I.I PHASES AND MOTIVES OF M&As.....	7
I.II TYPES OF M&As.....	10
I.III THE EFFECTS OF MERGERS: POTENTIAL COMPETITION CONCERNS	12
II. EXPLORING DIGITAL MARKETS.....	14
II.I THE POWER(S) OF NETWORK EFFECTS	16
II.I.I MARKET POWER & DIRECT NETWORK EFFECTS	16
II.I.II MULTI-SIDED MARKETS & INDIRECT NETWORK EFFECTS.....	17
II.II MARKETS FOR ATTENTION.....	19
II.III INNOVATION AND BIG DATA	22
II.III.I BIG DATA AND DIGITAL PLATFORMS	23
II.III.II BIG DATA & PRIVACY.....	24
II.III POSSIBLE CONCERNS FOR ANTITRUST AUTHORITIES	27
III. GIANTS MERGING: FACEBOOK AND AMAZON CASES	30
III.I. COMPARATIVE DATA ANALYSIS OF THE TWO FIRMS	32
III.II META’S CASES: INSTAGRAM AND WHATSAPP ACQUISITIONS	37
III.II.I FACEBOOK / INSTAGRAM	37
III.II.II FACEBOOK / WHATSAPP	42
III.III AMAZON’S CASES.....	49
III.III.I AMAZON / WHOLE FOODS MARKET	51
III.III.II AMAZON / iROBOT.....	57
CONCLUSIONS	65
BIBLIOGRAPHY	67
SITOGRAPHY	67

INTRODUCTION

In today's rapidly evolving business landscape, mergers and acquisitions - M&As - have become integral strategic tools for companies seeking growth, market expansion, and competitive advantage. Particularly in the context of digital markets, where innovation and disruption are paramount, M&As play a significant role in shaping the competitive dynamics and reshaping the industry landscape. This thesis aims to delve into the realm of M&As, focusing specifically on the digital market space, and analyze some of the most notable acquisitions that have taken place.

The first chapter sets the stage by providing a comprehensive overview of M&As in general. It explores the fundamental concepts, motivations, and drivers behind mergers and acquisitions, shedding light on the strategic rationales that guide companies in pursuing such deals. By examining the historical context and theoretical frameworks surrounding M&As, this chapter aims to establish a solid foundation for understanding the subsequent analysis of digital market acquisitions.

In the second chapter the focus will shift towards digital markets, highlighting their distinguishing features within the realm of mergers. Digital markets, characterized by their rapid technological advancements, global connectivity, and innovative business models, present unique challenges and opportunities for companies engaging in M&As. This chapter examines the key elements that set digital markets apart, including network effects, data-driven strategies, platform dominance, and regulatory considerations. By understanding the specific dynamics of digital markets, we can better appreciate the intricacies involved in merger transactions within this context.

The third chapter represents the core of this thesis, as it delves into the analysis of the investigations of two digital giants' acquisitions: Meta and Amazon. Leveraging financial data from reputable sources such as Crunchbase and Statista and cross-examining them provided a valid framework of resources to work with, which allowed to get a clear understanding of the considered business and market dynamics in Meta's acquisitions of Instagram and WhatsApp and Amazon's acquisitions of Whole Foods Market and iRobot.

The aim of this chapter is not solely limited to financial analysis; it extends to a critical examination of the judgments passed by regulatory authorities in relation to these acquisitions. The methodology for this chapter involves a meticulous review of the official authorities' documents available on the internet about the cases under the lenses of the respective regulatory framework. For this purpose, the OECD documents on the relevant merger guidelines have been used as reference. By thoroughly analyzing these documents, the thesis aimed at identifying potential gaps or oversights in the authorities' assessments and propose alternative perspectives that consider the unique factors and dynamics prevalent in digital markets.

The analysis of both Meta's cases will revolve around possible unconventional theories of harm that could have been considered in the context of digital markets, and that could have affected the outcome of the original investigation.

In the case of Amazon's acquisition of Whole Foods Market, apart from the note provided by the regulatory authority, this thesis explores public concerns and opinions surrounding the case. This broader examination enables us to delve into consumer protection issues and highlight potential implications and ex-post considerations, which might provide an interesting perspective for considering future digital mergers.

Regarding the Amazon-iRobot case, the fact that authorities' judgment is yet to be published represented an opportunity to apply the theoretical knowledge in the subject matter into a real-life instance, employing a thorough self-analysis of the possible theories of harm to evaluate the potential impact of this acquisition. Moreover, this analysis took into consideration alternative regulatory frameworks, relevant in the context of digital markets.

Through this comprehensive examination, this thesis seeks to offer a critical and academically rigorous analysis that explores potential areas for improvement and highlights factors that may enhance the understanding and evaluation of acquisitions in the digital markets, contributing to the ongoing dialogue surrounding the regulation and evaluation of mergers and acquisitions in digital markets.

I. M&As, AN OVERVIEW

In today's rapidly changing business landscape, companies are compelled to adopt diverse growth strategies to remain competitive and enhance their profit margins. As a crucial aspect of corporate strategy, growth strategies involve determining the corporation's business scope and allocating resources to increase its size and long-term viability. A successful growth strategy enables businesses to expand their customer base, market segments, geographical reach, and product offerings, leading to revenue growth.

Mergers and acquisitions - henceforth M&As - have emerged as a popular option for companies seeking to achieve growth and expansion in the developed capitalist world since the late 20th century. As a critical component of growth strategy and a topic of significant research and consultation, mergers and acquisitions represent a prominent phenomenon in the corporate world.

M&As refer to the process of combining two or more companies through the transfer of ownership or the creation of a new entity. This process may involve a merger, where two companies combine to form a new entity, or an acquisition, where one company takes over another¹. M&As allow companies to achieve growth and expansion by entering new markets, acquiring new technologies, diversifying their product offerings, and gaining a competitive advantage in their industry. They are typically undertaken to enhance shareholder value, increase profitability, and improve operational efficiency.

M&As have a long history, dating back to the late 19th century when large corporations began to acquire smaller firms. However, the modern wave of mergers and acquisitions began in the 1980s, when a series of regulatory changes and financial innovations made it easier for companies to engage in mergers and acquisitions. The increasing globalization of the economy and the rise of new technologies have further fuelled the growth of mergers and acquisitions in recent years.

¹ A merger involves one corporation being absorbed into another "surviving" corporation, resulting in the transfer of assets, liabilities, and operations of both entities to the surviving corporation. As a consequence of the merger, the non-surviving corporation ceases to exist as a distinct entity. In a consolidation, two or more corporations combine into a single new corporation, leading to the dissolution of the consolidating corporations. Unlike a merger, the process of consolidation automatically generates the new corporate entity without the need for a separate incorporation.

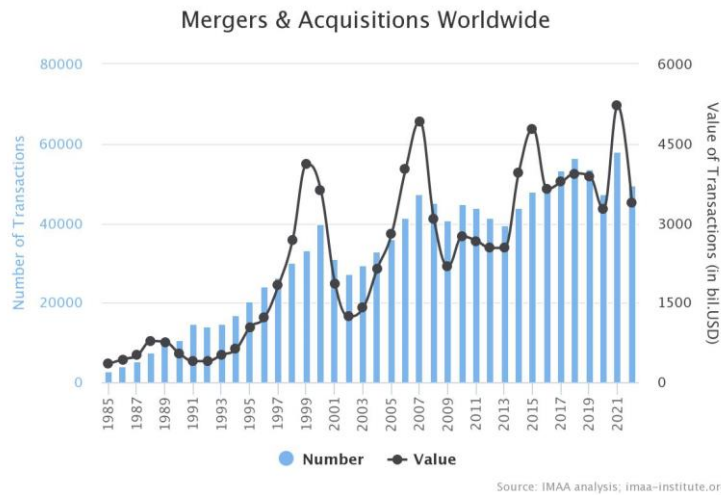


Figure 1: M&As Worldwide. Number and value of transactions over the years. Source: IMAA Institute, M&A statistics.

Overall, M&As are used by companies as a growth strategy to achieve various objectives, such as expanding their operations, accessing new markets, acquiring new technologies or products, and improving their financial performance. However, they are also complex transactions that require careful planning and execution to ensure that they are successful and create value for all stakeholders involved.

I.I PHASES AND MOTIVES OF M&As

M&As are complex and multifaceted strategic moves that companies undertake to achieve various objectives, which depend on the company's goals, vision, and circumstances. One of the primary motives for M&As is to access new markets, customers, or geographic regions, enabling them to expand their business and revenue streams. By merging with or acquiring a company that has a presence in a new market or region, a company can gain instant access to a new customer base, distribution channels, and supply chain networks. This can help them achieve significant growth and higher market share² in a shorter time frame than would have been possible through organic expansion. Moreover, entering new markets can also help companies reduce their dependence on a single market, spread their risk, and enhance their resilience in the face of market volatility and uncertainty.

Another common motive for M&As is to achieve economies of scale³. Combining the operations, resources, and talent of two or more companies can lead to cost savings and increased profitability. For instance, merging two companies can eliminate duplicate functions and overheads, reducing the overall cost structure. The resulting economies of scale can also help companies enhance their competitiveness and market position by providing them with a pricing advantage over smaller or less efficient competitors. Additionally, larger companies may be able to leverage their size to negotiate better terms with suppliers, achieve higher volumes of sales, and access new markets and customers.

Diversification is also a significant motive for M&As. By merging with or acquiring a company that operates in a different market, product line, or industry, companies can diversify their operations, products, and services, reducing their exposure to market volatility, i.e. being less vulnerable to idiosyncratic market shocks, and increasing their resilience. This can be particularly beneficial in times of economic downturn or disruptive changes in the industry. Diversification can also help companies take advantage of new growth opportunities and access new revenue streams.

Synergies⁴ are another motive for M&As. By combining two or more companies, M&As can create synergies that lead to increased efficiency, a higher level of innovation, and improved market position. For example, the combined research and development (R&D) resources of two companies can lead to new and innovative products and services that neither company would have been able to develop independently. Similarly, the consolidation of manufacturing

²Market share refers to the percentage of total sales revenue or unit sales volume that a company or product captures within a specific market or industry. A higher market share indicates a greater degree of market power and control over pricing, while a lower market share suggests weaker market position and less influence over market dynamics.

³ Economies of scale refer to the cost advantages that a firm can achieve by increasing production output and expanding its size. As a firm grows, it can spread fixed costs over a larger quantity of output, resulting in lower average costs per unit of production.

⁴ In business usage, synergy refers to the ability of two or more companies to generate greater value by combining their efforts rather than by working apart.

or distribution operations can lead to cost savings and increased efficiency. Some examples of synergies are:

- Shared know-how – companies often benefit from sharing knowledge or skills;
- Shared tangible resources – companies can reduce their fixed or variable costs by sharing physical assets or resources;
- Pooled negotiating power – by combining their purchases, two or more companies can gain greater leverage over suppliers, reducing the cost or even improving the quality of the goods they buy;
- Coordinated strategies – companies might benefit from aligning their strategies. Coordinating responses to shared competitors may be a powerful and effective way to counter competitive threats;
- Vertical integration – coordinating the flow of products or services along the supply chain⁵ can reduce inventory cost, speed product development, increase capacity utilization, and improve market access.

Finally, M&As can provide companies with increased bargaining power, allowing them to negotiate better terms with suppliers, customers, and competitors. By achieving a larger market share or greater economies of scale, companies may be able to exert more influence on their supply chain, suppliers, and customers. This can help them negotiate better prices, more favorable contract terms, and better access to key resources or markets.

However, companies need to assess the strategic fit and financial viability of the target company, as well as the legal and regulatory requirements, before deciding to merge or acquire another company. In addition, M&As are not always successful, and companies need to be prepared for potential risks and challenges, such as cultural clashes, integration issues, and financial liabilities. Therefore, companies should carefully consider their motives, conduct thorough due diligence, and develop a well-defined integration plan to maximize the chances of a successful merger or acquisition.

Prior research in the area found various approaches to understand better what the various parts, phases, or stages of M&A might be, all clearly identifying two different stages: pre and post-merger.

The pre-merger stage is the most analytical one: it involves strategic planning and analysis, as well as identifying potential targets and conducting preliminary research on those targets. During this phase, the acquiring company assesses the potential benefits and risks of the merger, defines its objectives and priorities, and determines the financial and operational criteria for selecting a target. A complete ex-ante research also considers the regulatory environment and any legal or cultural barriers to completing the transaction.

⁵ The supply chain is the network of all the entities, activities, resources, and information involved in creating and delivering a product or service to customers. It includes all the stages and processes involved in sourcing, transforming, transporting, and delivering goods or services from suppliers to manufacturers to distributors and ultimately to the end customers.

When the target is selected, it is analysed in a *due diligence*, a thorough investigation of its financial, legal, and operational aspects. Effective planning and execution during the pre-merger stage can set the foundation for a successful merger or acquisition.

The post-merger phase is the most complicated to manage on a human level, since it's when the two companies begin to integrate their operations, systems, and cultures. Poor management of relationships and a hostile working environment, apart from typical business failure reasons, might hinder M&As' success. Therefore, it is crucial for management to adopt a proactive approach during pre-merger negotiations, rather than a defensive and reactive one after the deal has been finalized, in order to avoid extensive post-merger integration challenges.

I.II TYPES OF M&As

Depending on the different objectives and features the merging firms can have, five main types of M&As can be found:

- Horizontal mergers: between companies active in the same market or in the same level of the supply chain;
- Vertical mergers: between companies that are active in different stages of a given supply chain (e.g., a retail company in the auto parts industry merges with a company that supplies raw materials for auto parts);
- Market-extension mergers: between companies active in different geographic markets that sell similar products or services;
- Product-extension mergers: a merger between companies in the same markets that sell different but related products or services;
- Conglomerate mergers: a merger between companies in totally unrelated business activities, whose relationship is neither horizontal (as competitors in the same relevant market) nor vertical (as suppliers or customers)(e.g., a clothing company buys a software company).

Horizontal mergers offer a variety of advantages. The primary objective of most horizontal M&As is to gain access to the goods and services of another company, allowing the merging companies to expand their assets and broaden the scope of their possible demand. This can lead to an increase in revenue, as the newly-formed organization can pool acquired customers and attract new ones. Another reason for this kind of acquisition is to improve product distribution, especially if the merged companies have established customer bases in different geographic locations. Exposure to a new customer base can lead to new marketing and revenue opportunities. Additionally, horizontal acquisitions reduce competition and increase market share.

Vertical mergers consist of the combination and integration of two or more companies that are involved in different stages of the supply chain in the production of goods or services. Merging companies can integrate their services backward (with earlier levels of the supply chain) or forward (with further levels of the supply chain).

Vertical mergers can often improve efficiency to the benefit of consumers: by combining complementary assets, the merging firms might be able to streamline production, inventory management, or distribution. Moreover, the elimination of double marginalization⁶ will often result in a decrease in retail price for customers and increased profits for the suppliers, since the merged firms could benefit from lower costs for the inputs at different levels of the supply chain.

⁶ Double marginalization refers to the distortion caused by the successive markups of independent firms in a distribution channel. The implication that this both reduces firm profits and harms consumers is known as the double-marginalization problem.

A market-extension merger is a merger between companies that sell the same products or services but that operate in different markets. The goal of a market-extension merger is to gain access to a larger market and thus a bigger customer base. A common example can be the merger of two banks offering the same services but to different clienteles.

A product-extension merger is a merger between companies that sell related but not identical products or services and that operate in the same market. Employing product-extension mergers allows the merging companies to group their products together and gain access to more consumers. The key is that by producing goods typically used together or generically linked, they utilize similar distribution channels and common, or related, production processes and supply chains.

A conglomerate merger involves companies active in totally unrelated business activities or operating in different geographical locations: they don't compete with each other and their strategies and objectives do not overlap. There are two types of conglomerate mergers: pure, when firms are absolutely unrelated (like Amazon and Whole Foods), or mixed, when the merging companies belong to totally different industries but still share a really slight common factor, and therefore could pursue a market or product-extension strategy.

Since they are much more difficult to work out than normal mergers, conglomerate mergers are pretty rare, but come with several advantages, including an expanded customer base, diversification, and increased efficiency.

By merging in a conglomerate, firms can access a new pool of customers without suffering the typical entry barriers, expanding its customer base and cross-selling new products. This increased market reach leads to increased revenue for the merged firm much faster than what would normally happen when entering a new market. In addition to increasing sales, the new firm can benefit from increased efficiencies when merged companies share best practices and competencies, optimizing operations.

Moreover, diversification spreads risk across different business sectors, mitigating the potential for losses if one sector underperforms. However, diversification has its risks, including a shift away from core operations, leading to poor performance if the working environment isn't sound enough to withstand changes.

Developing a new corporate culture in a conglomerate merger can also be challenging, particularly when merging firms have different industries or business models. If one of the merging firms lacks experience in the acquired industry, it may struggle with corporate governance policies, pricing structures, and workforce performance.

I.III THE EFFECTS OF MERGERS: POTENTIAL COMPETITION CONCERNS

Following the underlying assumption of these practices, which is that firms merge to generate more value than what they'd be able to alone, the most logical consequence of an M&A is an increase in market share of the resulting firm. Market share is a common indicator of market power. The more market power a firm has, the more likely it becomes for it to establish a dominant position, since it begins to exert some power on the industry. A dominant position is defined as the ability for a firm to behave with a certain degree of independence from its competitors, customers, suppliers and the final consumer.

In general, any merger or acquisition that results in a significant increase in market concentration or market power can lead to anticompetitive effects; compared to vertical and conglomerate, horizontal mergers are generally the most likely to potentially restrict competition.

There are two main theories of harm under which competition authorities intervene in a horizontal merger investigation: unilateral and coordinated effects.

Unilateral effects arise when a merger eliminates important competitive constraints on one or more firms, which consequently would have increased market power. Coordinated effects arise when a merger changes the nature of competition in a way such that previously uncoordinated firms are now more likely to collude⁷ and raise prices, thus harming consumers.

Specifically, horizontal mergers may significantly impede effective competition in a market by removing important competitive constraints on one or more sellers, resulting in increased market power for those sellers. The loss of competition between the merging firms is the most direct effect of the merger. For example, if one of the merging firms had previously raised its price, it would have lost some sales to the other merging firm. The merger removes this particular constraint. Furthermore, non-merging firms in the same market can also benefit from the reduction of competitive pressure resulting from the merger, as the merging firms' price increase may switch some demand to rival firms, which may then find it profitable to increase their own prices. The end result of this whole process would be detrimental to consumers.

On the other hand, vertical mergers can have anticompetitive effects by reducing competition between one of the merging firms and its rivals that trade with or could trade with the other merging firms. This reduction in competition can occur in two ways. Firstly, the merged firm may use control of a key input to weaken or remove competitive constraints from its actual or potential rivals in the downstream market. Secondly, the merged firm may increase its

⁷ Collusion occurs when entities or individuals work together to influence a market or pricing for their own advantage. Acts of collusion include price fixing, synchronized advertising, and sharing insider information. Tacit collusion occurs when competitors reach an unspoken agreement to collude.

incentive or ability to raise its rivals' costs by increasing the price or lowering the quality of the input, or by refusing to supply rivals with the input altogether. In practice, the magnitude of the incentive to foreclose must be assessed to determine the anticompetitive effects of a vertical merger.

Input foreclosure arises when the merged entity restricts access to products or services that it would have otherwise supplied, thereby raising downstream rivals' costs by making it harder for them to obtain supplies of the input at similar prices and conditions compared to when the merger was absent. This may lead the merged entity to increase the price charged to consumers, resulting in a significant impediment to effective competition.

Customer foreclosure, instead, occurs when a supplier integrates with an important customer in the downstream market. This integration may allow the merged entity to foreclose access to a sufficient customer base to its actual or potential rivals in the upstream market (the input market) and reduce their ability or incentive to compete. Thus, the new merger could profitably establish higher prices on the downstream market.

Merger control remains a complicated duty to carry out, since each merger and each context is different. The objective of merger control is to prevent the adverse effects which may arise from anti-competitive mergers, which ultimately deprive consumers of the benefits of competition. Economic analysis – supported by robust and technical evidence – is at the heart of the assessment of mergers, and all leading competition authorities field integrated teams of economists and lawyers to assess competitive effects.

An apparent obstacle to any general overview of merger control is that different jurisdictions apply different legal tests and procedures for assessing mergers. Moreover, some merger control regimes accept efficiency, failing firm and other defences to otherwise anti-competitive mergers. The inclusion of efficiency perspectives⁸ in merger analysis stems from the recognition that mergers can impede competition but may also yield economic benefits. The purpose of efficiency analysis is to identify and evaluate the specific advantages and drawbacks of a particular merger to determine its fairness.

Merging firms facing accusations of potentially abusive conduct may present arguments for objective justification, including the 'efficiency defence', which asserts that the efficiencies generated by the conduct outweigh the anti-competitive effects and should thus be permitted. In practice, competition authorities make their judgments measuring the trade-off between the anticipated gain in consumers' welfare and the loss of market competition.

⁸ <https://ec.europa.eu/dgs/competition/economist/strohm3.pdf>

II. EXPLORING DIGITAL MARKETS

Companies active in digital markets frequently engage in mergers and acquisitions (M&A) to seek and acquire interesting start-ups. However, these transactions may raise concerns that they could prevent the target company from becoming a competitive threat. This is particularly problematic in digital markets, where competition is often *for* the market, and small market players or potential entrants exerting competitive pressure are essential to discipline incumbents' market behaviour. Furthermore, at least in the past, most M&A activity in digital markets has occurred under the radar of competition authorities, as the majority of these transactions did not meet traditional merger control thresholds based on turnover, especially for start-ups that are still trying to figure out a viable path to monetization.

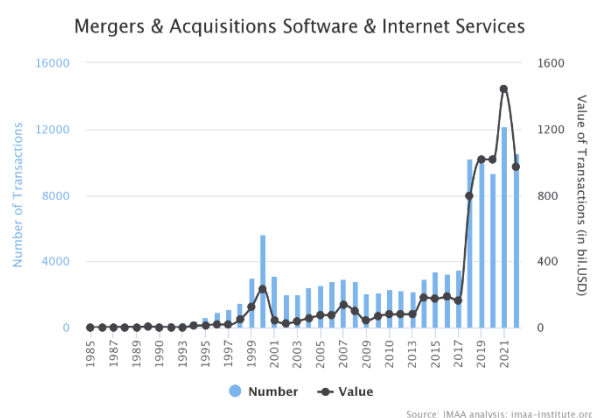


Figure 2: Number and value of M&As in Software and Internet services Source: IMAA Institute, M&A Statistics by industries.

Digital markets present a variety of challenges for competition policy. First, the prevalence of network effects often leads to a concentrated market structure and competition “for” the market rather than “in” the market. This can create an incentive for incumbents to carry out pre-emptive buyouts of entrants with the goal of reducing potential future competition.

Additionally, many digital products and services are offered free of charge⁹ to consumers and paid for with “advertising dollars”, within so-called “markets for attention.” Attention is a scarce resource typically monetized through advertising. Advertisers could pay more for an “exclusive” audience than for one that can be reached through multiple means. This means that platforms¹⁰ not only care about the size of their audiences but also about their composition, and that competition authorities should carefully assess how a merger between platforms can affect both.

⁹ Platforms seek to maximize their user base and engagement, and thus the value of their advertising inventory, by offering free access to their services. This creates a feedback loop whereby more users generate more data that can be used to improve the targeting and effectiveness of advertising, which in turn generates more revenue for the platform.

¹⁰ Content (good, services..) providers.

Finally, the quintessential task of many digital platforms is making predictions, for which big data is becoming increasingly relevant. Competition authorities and practitioners have raised concerns that big data may be an insurmountable competitive advantage that incumbents enjoy as a by-product of their operations, creating additional barriers to entry. Mergers may further enrich incumbents' data endowments and competitive advantages in digital markets.

II.I THE POWER(S) OF NETWORK EFFECTS

In its simplest incarnation, the term “network effects” refers to the fact that in some markets, a firm’s total demand or market share has a direct effect on consumption value. For instance, the value of joining a social media platform or a communication service is clearly increasing in the number of other individuals a consumer can potentially interact with. Digital markets almost always feature network effects. The reason being that firms active in these markets typically leverage on technology to enable users to interact among themselves. For this reason, these firms are typically referred to as “platforms.”

In some markets, the link between market share and consumption value is subtler. Network-like effects sometimes arise due to what some economists refer to as demand-driven dynamic economies of scale. For example, search engines’ users typically do not care directly about the engine’s market share. However, the quality of search results is intimately connected to the scale of operations, since the search engine algorithm learns by analysing most repeated users’ behaviours. More users, therefore, imply more accurate results and that quality is, in turn, increasing in market share. In such cases, the network effects are direct, since they influence the market itself.

In some other markets, typically referred to as “multi-sided markets”¹¹, network effects are “indirect” in the sense that they link different groups of economic agents. A classic example is that of smartphones’ operating systems, market in which users choose according to their preferences with little interest to others’ behaviour. Thus, systems that boast more apps are clearly more attractive. Vice-versa app developers value access to larger users’ pools. Nobody wants to incur in the fixed cost of developing an app for a system that only a few adopt. Another important example is that of “attention platforms”, content providers that harvest user attention and resell it to advertisers. Advertisers typically prefer to reach larger pools of users. So, a broader audience increases the advertisers’ willingness to pay.

In digital markets, the economic surplus derived from trade often directly depends on the other agents’ consumption choices, and different kinds of network effects have different outcomes on the market dynamics.

II.I.I MARKET POWER & DIRECT NETWORK EFFECTS

The strongest, simplest network effects are direct: increased consumption of a good leads to a direct increase in the perceived value of that product to its users. The magnitude of this phenomenon can affect the market power of a firm, since holding a significant portion of the demand in a particular market is a considerable advantage when direct network effects arise.

¹¹ Multi-sided markets are markets where the value that users on one side of the market assign to the platform depends on how many users on other sides of the market also patronize the platform.

Market power refers to the ability of a firm to profitably raise prices above marginal cost. Its extent depends on how far prices are from these marginal costs. When choosing mark-ups, firms typically trade off quantity (less units sold) for higher prices. Of course, whether this trade-off leads to a large or small mark-up depends crucially on the elasticity of consumer demand to price. More elastic demands induce lower mark-ups and vice-versa. That is, market power is inversely related to the elasticity of demand.

Therefore, a relatively inelastic consumers' demand combined with a significant market power is the perfect setting for strong direct network effects to arise. Moreover, the lower the elasticity, the higher the potential mark-ups the firms could charge, since costumers will be less sensitive to a subtle increase in price. This could help explaining why it is so common to find lower mark-ups in digital markets relatively to normal product industries, since they are characterised by an higher degree of volatility and a lower relevance of bare market power, and gives a hint about the sustainability of negative mark-ups and below-zero prices in such contexts.

II.I.II MULTI-SIDED MARKETS & INDIRECT NETWORK EFFECTS

The second broad category of network effects are often defined "indirect" in the academic literature. In order to better understand how they arise, it is important to clarify the concept of multi-sided markets: environments that involve distinct groups interacting with each other across the platform, and in which cross-platform externalities or network effects among those distinct groups arise.

The different sides of a platform rely on it to connect them directly or indirectly to each other, and are interdependent to the extent that their decisions affect each other, even indirectly.

Indirect network effects are the cross-platform externalities that result when the actions of participants on any side of the platform, or of the platform itself, affect participants on sides of the platform which are not directly related to their own one.

As defined above, a multisided market consists of at least two distinct groups that rely on a platform to interact. Considering the easiest possible definition of multi-sided markets, a 2-side network, the two groups can be categorized as supply-side and demand-side users. They each come to the network for different reasons, and they produce complementary value for the other side. For instance, each new seller (supply-side user) on eBay directly adds value for buyers (demand-side users) by increasing the supply and variety of goods. Likewise, every additional buyer is a new potential customer for sellers. The relationship between the two groups can either be classified as service-based or subsidy-based.

In a service-based relationship, the supply side (the "suppliers") provides a service or good to the demand side (the "users"). Service-based relationships are common in platforms such as Amazon (connecting sellers and costumers), Uber (drivers and passengers) and many others.

Service-based relationships typically result in positively correlated and relatively balanced network effects. Taking Uber as an example, passengers benefit when new drivers joins and drivers benefit as their costumer pool enlarges.

In contrast, a subsidy-based relationship exists when one side indirectly defrays another side's costs of using the platform but does not offer an additional service that directly attracts users to that platform. Facebook, YouTube, newspapers' websites, but also televisions and radio stations are examples of multisided markets involving subsidy-based relationships. Each of these entities connects users (or readers, viewers, and listeners) with advertisers, and each gives users below-cost (and often free) access to the platform and its services because of payments from advertisers.

At least three different agents are expected to take part in markets where this kind of relationship occurs: subsidizers (advertisers), suppliers (content providers), and users (subscribers). Subsidizers do not typically attract users to a platform on their own because they do not usually offer a good or service that users specifically seek out, but they are allowed to exploit the consumer base of the hosting platform.

Network effects in subsidy-based relationships are skewed towards the subsidizer and could correlate negatively. Subsidizers indeed benefit as the number of platform users grows and more people view the advertisements. As the pool of potential customers expands, the platform becomes more beneficial for advertisers, and more advertisers continue to join.

Users benefit as long as enough advertisers join so that they can subsidize the platform's operations and investments, driving the end price for consumers close to zero.

Once that subsidy has been paid, however, users might not experience additional benefits from additional advertising, and it could be detrimental for end users' experience. Therefore, even though both the supplier and the subsidizer benefit as the user base increases, driving user demand for access to the platform is exclusively a supplier's duty. Subsidizers are thus highly dependent on each additional supplier while suppliers may be indifferent to additional subsidizers. The network effect of an increase in suppliers is therefore likely to be stronger for subsidizers than it would be the other way around.

II.II MARKETS FOR ATTENTION

A large number of digital products and services are offered free of charge to consumers and paid for with advertising dollars. In the US alone, the internet advertising industry is projected to generate revenues for almost \$300 billion in 2023¹², with growth rates in the double digits. These firms include the top online businesses; some refer to them as “attention brokers”. Their industry is highly concentrated. For instance, the top 10 online platforms get almost three quarters of all online advertising revenues¹³.

Attention brokers are essentially platforms operating in multi-sided markets. Advertisers wish to place their creatives on platforms that have a large audience. Thus, their willingness to pay increases with the number of consumers the platform attracts. However, consumers’ willingness to pay typically decreases with the amount of advertising supplied. That is, advertising is often seen as a nuisance.

These markets received a special treatment in the economics literature for a number of reasons that go beyond their obvious relevance: first of all, the fact that in this context, consumers’ attention is the price¹⁴ they are charged for the services offered by firms; this creates new theoretical and empirical challenges since the absence of price variation makes it hard to estimate the demand system and thus to measure substitutability, which is key in assessing the impact of merger cases.

Moreover, new technologies allow advertisers to “target” audiences in a number of dimensions: demographics, physical location, time of the day, personal tastes, browsing history and many others. Targeting¹⁵ implies that competition is scaled at the individual level. In extreme cases, one can think of the attention of a single, identified individual being contended between so-called attention-brokers.

A key factor involved in this kind of markets is multi-homing¹⁶: the situation in which users tend to use several competing platform services in parallel. This applies to all sides of the market: businesses using different platforms to sell their goods and services; customers (buyers, end users) switching between different platforms to buy the goods and services that they need. As shown by Figure 3, multi-homing is widespread, and is seen to have profound implications on how competition works, since typical measures of market power become almost useless in this context.

¹² Statista.com: Digital Advertising – Worldwide, 2023

¹³ Silverman, David. 2017. “IAB Internet Advertising Revenue Report.” PwC.

¹⁴ One could think of the quantity of ads as basically a “shadow price” that consumers need to pay to satisfy their content needs.

¹⁵ The process of identifying a specific group of people or audience who are likely to be interested in a product or service and tailoring marketing efforts towards them. This involves gathering information about the characteristics, behaviours, and preferences of the target audience and creating marketing messages that appeal to them.

¹⁶ European Commission, Directorate-General for Communications Networks, Content and Technology, Barcevičius, E., Caturianas, D., Leming, A., et al., *Multi-homing : obstacles, opportunities, facilitating factors : analytical paper 7*, Publications Office, 2021, <https://data.europa.eu/doi/10.2759/220253>

Multi-homing implies that also the prices paid by firms (in terms of marketing and advertising) are competed away, since audiences are shared and therefore they have a lower value on the advertising side. As a result, firms not only look at the mere volume of their consumers and the size of their audience, but also at its composition and different features.

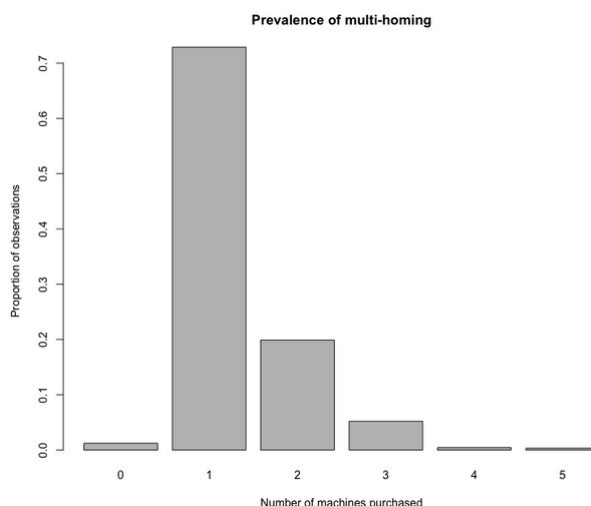


Figure 3: Survey on multi-homing habits with canonical platform goods.

Almost 30% of the surveyed population individually owns more than one platform.

Source: Howell, John & Allenby, Greg. (2019). *Analyzing Platforms Goods Using Multiple-Discrete Continuous Demand Models*. SSRN Electronic Journal.

The more recent literature recognizes that users typically satisfy their content needs on multiple platforms. For example, ComScore¹⁷ reports that the largest online advertising networks¹⁸ serve pretty much the same users. Indeed, this changes the patterns of competition in such markets, since firms now compete for shared users.

Platforms can lure users to join them either by reducing the quantity of ads, improving their quality, or entering new markets. However, up-to-date research highlights how advertising campaigns on multiple different audiences can be wasteful when consumers multi-home, because some consumers are reached too many times while others are missed entirely.

The reason is that while tracking technologies, such as “cookies”¹⁹, allow for controlling how many times a given consumer has been impressed with a particular ad on a given platform, there is no way for owners of other platforms to know which ads a multi-homing consumer has been exposed to. Advertisers seeking broader “reach”, i.e. more unique users, while avoiding inefficient duplication, anticipate this and tend to prefer larger platforms to minimize waste.

¹⁷ Comscore Campaign Essentials Measurement Capabilities, 2021

¹⁸ An advertising network is an attention broker that serves ads on multiple websites (some of which are owned and run by independent third parties) and can track users as they move across these websites.

¹⁹ A cookie is a piece of data from a website that is stored within a web browser that the website can retrieve at a later time. Cookies are used to tell the server that users have returned to a particular website.

The degree of concentration in markets for attention also has implications on product markets. The starting point is that entrants need to make consumers aware of their existence. That is, consumer attention is an essential input for entrants in product markets.

Clearly, incumbents might foreclose entry by buying large amounts of attention of each user for a large number of users, but this strategy is profitable as long as the number of competing attention brokers delivering content to individual users (and thus the quantity of advertising supplied) is not too large. The more concentrated the industry, the harder it will be for new entrants to acquire a significant level of market share, and therefore to successfully launch their products in the market.

II.III INNOVATION AND BIG DATA

Digital firms have revolutionized the business landscape by utilizing vast amounts of data to gain valuable insights into consumer behavior and preferences. The use of data has become a critical input for digital companies, particularly in their ability to make predictions using algorithms powered by Big Data. Harnessing this data enabled companies to offer a wide range of innovative and customised services, often at zero prices, with substantial gains for consumers. At the same time, data-driven network effects reinforced by user feedback loops, and high economies of scale associated with information technology infrastructures, may provide companies that own the data with market power and create a tendency for markets to tip.

The concept of Big Data, originally used by computer scientists and increasingly popularised among academics, regulators and politicians, is now widespread across multiple disciplines. Collecting, processing and exploiting personal data for commercial use is seen by many observers as a question of consumer protection rather than one of competition law enforcement. However, recent high-profile mergers and acquisitions in digital or Internet markets have raised the question of a possible competition impact of bringing together and gaining control over large data sets, as well as a desire to better understand the possible implications for consumers and markets.

Being able to harness Big Data can lead to important and positive gains for a business, which in turn may benefit consumers, employees, and society in general. Indeed, the use of Big Data for innovative and creative purposes, in a process known as data-driven innovation (DDI), allows companies to improve the quality of their products and develop entirely new services, by better understanding and targeting individual consumer needs.

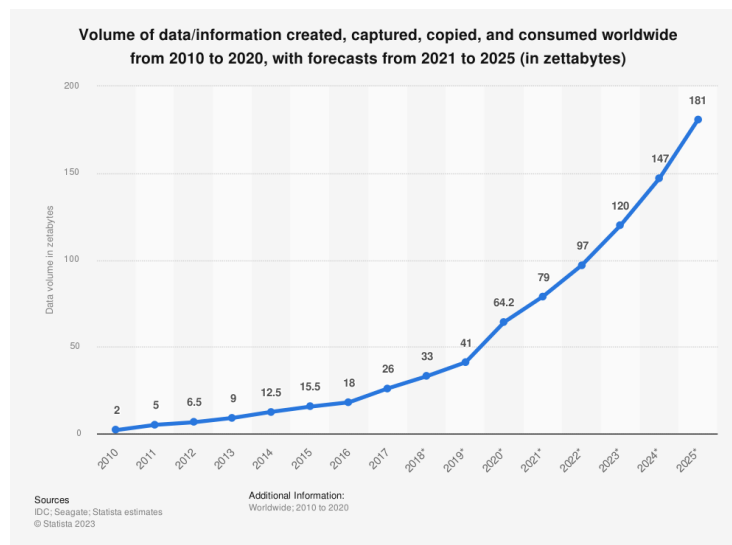


Figure 4: Volume of data/information created, captured, copied, and consumed worldwide from 2010 to 2020, with forecasts from 2021 to 2025 (in zettabytes, 1 ZB = 10²¹ GB). IDC, & Statista. (June 7, 2021).

Using Big Data is also useful for businesses to generally improve the efficiency of production processes, forecast market trends, improve decision-making and enhance consumer segmentation through target advertising and personalized recommendations. Although the efficiency gains from data driven innovation are inherently hard to measure, some studies suggest that DDI users benefit, on average, from a 5% to 10% faster productivity growth²⁰ than similar companies that do not use DDI.

In addition to the overall productivity gains, the exploitation of Big Data can generate other substantial social benefits that are usually not accounted for by standard measures. Empirical studies estimate that, in the transport sector, the tracking of mobile devices to reduce traffic congestion could provide time and fuel savings of up to \$500 billion worldwide by 2025; in the electricity sector, the adoption of smart grid applications to control the operation of household appliances, send feedback to consumers about energy consumption and adjust production capacity to demand forecasts, could reduce the cost of CO2 emissions by \$79 billion by the same time period; and, in the US health-care sector, the creation of electronic health records could reduce medical errors, improve diagnosis, increase efficiency in management and pricing, foster R&D and achieve other goals that would allow savings of about \$300 billion by 2025²¹.

At the micro level, the impact of Big Data can more easily be illustrated by the business success of disruptive companies that collect vast amounts of data from consumers to offer data-driven services, such as the US chain-store Walmart, the high technological company Google, the UK owned supermarket chain Tesco or the US transportation network company Uber, to list just a few. In synthesis, it's clear how Big Data became an essential tool for modern enterprises, regardless of their belonging sectors.

At the same time that these companies become more efficient and profitable, consumers benefit from a variety of innovative services that provide greater convenience, customisation and, sometimes, significantly lower prices.

II.III.I BIG DATA AND DIGITAL PLATFORMS

One significant application of Big Data in digital markets is in search engines. Search engines rely heavily on predicting the relevance of URLs to a consumer query. The higher the relevance of the URLs displayed in consumers' search results page, the more likely it is that they will keep using the same search engine for their future queries. To achieve this, search engines use algorithms to analyze vast amounts of data from users' search behavior to provide more relevant search results. This process not only enhances the user experience but also enables search engines to keep users engaged and ultimately gain a competitive advantage in the digital marketplace.

²⁰ OECD, Big Data – Bringing competition to the digital era, 2016.

²¹ McKinsey (2022), The data-driven enterprise of 2025.

Another area where Big Data is crucial is social media and social networks. These platforms use algorithms to predict how interesting a piece of content is to a particular user, with the goal of building interesting content feeds. By serving engaging feeds to users, social media and social networks increase the likelihood of consumers continuing to engage with the platform in the future. This, in turn, creates more opportunities for companies to market and advertise their products and services to consumers, ultimately driving higher revenues and profitability.

Matchmakers are another type of digital business that utilizes Big Data to make predictions. These companies specialize in finding good matches for their users, whether it be between employers and employees or single men and women. Matchmakers use algorithms to analyze vast amounts of data from users' profiles to identify compatible matches. They then charge users for the service of being matched. By providing a more effective matchmaking service, matchmakers can retain users and increase their revenues.

E-commerce websites also rely heavily on Big Data to forecast consumer demand and manage inventories more effectively. By analyzing vast amounts of data on consumer behavior, e-commerce companies can identify patterns in consumer demand and adjust their inventory accordingly. This ensures that they have the right products available at the right time, improving the consumer experience and ultimately driving higher revenues.

Other attention platforms, such as online portals, newspapers, and blogs, monetize user attention through ads. They are paid based on user engagement with those ads, typically per click. To serve more relevant ads, these platforms rely on Big Data to predict the likelihood that a particular user would click on a particular ad. Better targeting translates to more clicks and higher revenues, making this application of Big Data crucial for these businesses to remain competitive.

Content producers and distributors, such as Netflix or Spotify, need to keep their users entertained to retain their customer base. To do so, they must predict consumer tastes to make recommendations about items already in the catalogue that users are not aware of. By analyzing vast amounts of data on user behavior and preferences, content providers can identify new trends and make production choices that will appeal to their target audience. This, in turn, keeps users engaged and more likely to continue using the service in the future.

Antitrust authorities and practitioners have voiced concerns that in digital markets data gives incumbents a competitive advantage.

II.III.II BIG DATA & PRIVACY

The accumulation of vast amounts of data about consumer behaviour and the expansion of targeted advertising has imposed costs in form of the loss of privacy on consumers. In fact, the price effectively paid by consumers for Internet services now extends far beyond punctual

advertising breaks (such as when using the music-streaming service, Spotify) or banner ads flashing next to a search entry.

Consumers' data and search entries are also analysed by data mining software, involving sometimes a more serious degree of intrusiveness. This can be illustrated by the now-famous anecdotal case of Target, the second largest discount retailer in US, which used historical purchasing data to estimate, among other things, a pregnancy probability score for female clients, to which they'd send multiple coupons for baby products.

This and a number of similar cases have contributed to a growing concern with the protection of consumer privacy in the context of the use of Big Data, raised not only by consumer protection and data protection offices, but also by antitrust authorities, which have already started bringing a privacy dimension to competition policy. The first competition law enforcement case involving privacy seems to be the Google/DoubleClick merger, when Commissioner Pamela Jones Harbour of the US Federal Trade Commission (FTC) raised the concern that the merger would deprive consumers of meaningful privacy choices²².

The introduction of a privacy dimension into competition policy is not a consensual practice, since some within the antitrust community believe that competition policy should have as sole objective the promotion of competition as a means to promote the efficient allocation of resources, while other public interests should be addressed by the respective public offices.

However, in circumstances where privacy violations by companies take place through the exercise of market power, it has been argued that there may be a legitimate justification for competition authorities to address privacy as an antitrust concern. In the sense that data has been identified as the 'new currency of the internet', an increase in the collection of private data can be compared, to some extent, to a price increase. Or, equivalently, if consumers value privacy as a desirable characteristic, a reduction in privacy is analogue to a reduction in the quality of the service provided.

For instance, in Facebook/WhatsApp, the European Commission officials noted that if a website, after the merger, "would start requiring more personal data from users or supplying such data to third parties as a condition for delivering its 'free' product" then this "could be seen as either increasing its price or as degrading the quality of its product"²³. Competition authorities have generally recognised the importance of quality as a competitive feature, especially when the product or service is offered for free. In fact, privacy considerations can fall within the ambit of non-price quality competition.

Some may claim that the collection of private data does not necessarily leave consumers worse off, as it allows companies to improve the quality of their products and improve

²² The Google/DoubleClick investigation was cleared in 2007 after careful consideration of the likelihood for the merger to lessen competition.

²³ Ocello et al, 2015.

consumer segmentation. Even so, privacy clearly confers a quality dimension that must be evaluated as a form of horizontal differentiation, since some consumers may prefer a higher degree of data protection, while other consumers may be willing to reveal their data to benefit from more personalised content and targeted ads. The consideration of privacy as a relevant parameter of non-price competition would have significant implications for merger review and ultimately affect the decision to clear or block a merger.

In particular, in its evaluation of whether a potential merger might substantially reduce the welfare of consumers with high privacy preferences, competition authorities could decide to prevent the acquisition of the few companies in the market providing services with a greater extent of privacy protection. This is the case of the internet company DuckDuckGo, which provides search engine services without collecting or sharing any personal information, such as the IP address, search entries and search history.

However, the real debate lies in three key issues: data substitutability, data complementarity, and data returns to scale. Data substitutability refers to the extent to which an entrant can replicate, dispense of, or purchase the incumbent's data on the market. If the incumbent's data is essential to making accurate predictions, then the entrant may face a significant disadvantage in competing.

On the other hand, data complementarity suggests that combining diverse data sources may give incumbents an advantage. For example, Google can improve its search results pages by using data from other users who have made similar queries. By leveraging the scale of its business, Google can learn and improve its predictions. Alternatively, it could use data from other lines of business, such as Gmail, to personalize its search results.

Finally, data returns to scale refer to whether and up to which scale increasing the size of a dataset increases prediction accuracy. If there are decreasing returns to scale, then the advantage of having a larger dataset may vanish at some point. This means that even small entrants with access to a sufficient amount of data can challenge incumbents.

In such digitalized markets where innovation runs fast, data can certainly provide an advantage to incumbents, but it is not necessarily a guarantee of success. New entrants who are able to effectively leverage their own data and find creative ways to combine different sources of data may still be able to compete successfully.

II.III POSSIBLE CONCERNS FOR ANTITRUST AUTHORITIES

Antitrust authorities have been paying increasing attention to digital markets in recent years. The rise of powerful tech giants and their strategic acquisition of smaller companies has raised concerns about market competition and potential anticompetitive practices. In the context of mergers and acquisitions, these concerns are particularly salient.

While the reasons for digital mergers are manifold, it increasingly emerges that competition concerns associated with these mergers need to be understood against the background of sophisticated digital ecosystems²⁴. In the digital sphere, there is a noticeable trend towards the creation and development of ever more tight-knit digital ecosystems that connect goods and services in an intricate, interoperable system – even if the goods and services connected through the ecosystem themselves are not closely related.

However, the orchestrators of these digital ecosystems have come to realize that this is their chance to lock-in users, prevent multi-homing and increase their hold on several relevant markets. Other than horizontal ones, conglomerate and vertical mergers can be one vehicle to expand their digital ecosystems. Digital ecosystems raise many questions as to how competition law ought to apply to them. These questions are also pertinent in the context of merger control, and have been investigated in more than 100 cases, as shown by Figures 5 and 6, retrieved from “A Decade and a bit of digital merger reviews in Europe²⁵”, by Econ-da.

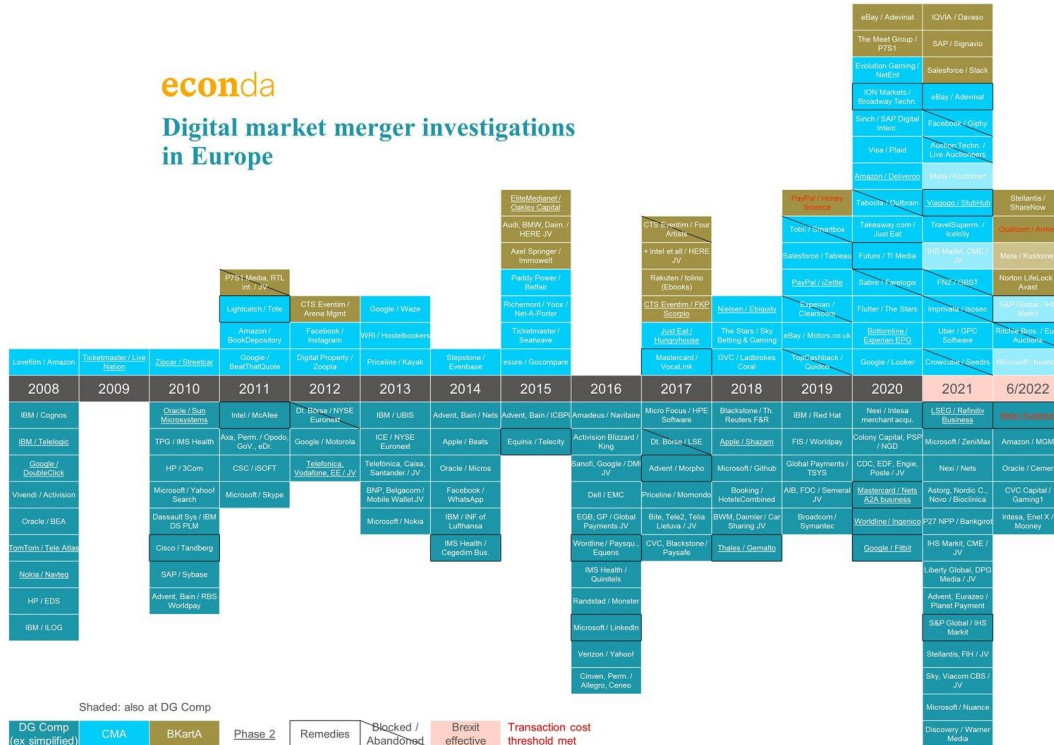


Figure 5: A Decade (and a Bit) of Digital Merger Reviews in Europe. Econ-da, 2022.

²⁴ https://competition-policy.ec.europa.eu/system/files/2022-12/kd0422317enn_merger_review_in_digital_and_tech_markets_1.pdf

²⁵ A decade and a bit of digital merger reviews in Europe. By Katharina Sailer, econ-da.com

One potential concern is the acquisition of potential rivals or nascent competitors. For instance, Facebook's possible acquisition of Instagram in 2012 has been criticized by antitrust authorities for presumably eliminating a potential competitor in the social media market. When the deal closed, Facebook's acquisition of WhatsApp for \$16 billion in 2014 has raised concerns about the company's dominance in the messaging app market. In both cases, antitrust authorities have argued that these acquisitions have reduced competition and innovation, and have harmed consumers by limiting their choices.²⁶

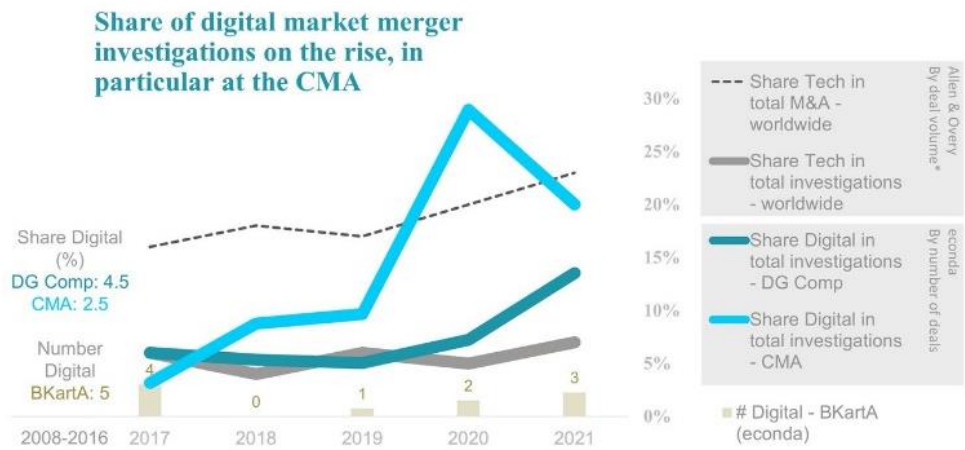
Antitrust authorities may also be concerned about the use of exclusive contracts and preferential treatment. For example, Amazon has been criticized for using exclusive contracts to prevent third-party sellers from listing their products on other online marketplaces. This can harm competition by limiting the choices available to consumers and preventing new entrants from gaining a foothold in the market. Similarly, Apple has been accused of giving preferential treatment to its own apps over those of third-party developers on its App Store, which can harm competition by limiting the exposure and sales potential of competing apps.

Finally, antitrust authorities may be concerned about the potential for mergers and acquisitions to harm innovation. For example, the merger of two major players in a market may lead to a decrease in innovation as the merged entity may have less incentive to invest in new products and services. In the context of digital markets, where innovation is a key driver of competition and growth, such concerns are particularly salient.

Against the background of the specific competition dynamics found in digital markets discussed above, the question arises whether digital and technology mergers can be assessed under the traditional merger framework, or whether traditional approaches need to be adapted or even replaced by more suitable ones.

As Margrethe Vestager, Commissioner for Competition and Executive Vice-President of the European Commission in charge of Europe fit for a digital age, pointed out in 2016, EU merger control rules are generally sufficiently flexible to adjust to the developments that have taken place in digital markets.

²⁶ In 2012, Facebook was cleared of all the accusations after a thorough investigation of its compliance with antitrust law. In 2014, The European Commission has fined Facebook €110 million for providing incorrect or misleading information during the investigation about the acquisition in 2014 under the EU Merger Regulation of Facebook's acquisition of WhatsApp. This will be deeply discussed in chapter 3.



* Allen & Overy, Global Trends in Merger Enforcement (<https://www.allenoverly.com/en-gb/global-news-and-insights/global-trends-in-merger-control-enforcement>), 26 jurisdictions included (but focus on US, EU and China), „Tech“ separate from Media and Telecommunications (as well as Consumer & Retail, Energy & Natural Resources, Financial Services, Industrial & Manufacturing, Life Sciences, Transport & Infrastructure, Other)

Note re Digital: CMA numbers based on financial year (April-March). Bundeskartellamt (BKartA) Phase 1 investigations might not be complete as data availability limited to those with press release. DG Comp excluding simplified procedure.

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Figure 6: A Decade (and a Bit) of Digital Merger Reviews in Europe. Econ-da, 2022.

However, she also acknowledged that there can nevertheless be a need to “revisit theories of harm”, so that intervention is accurately addressed. In line with this thinking, it has been argued that in applying the flexible rules of merger control, the specific characteristics and dynamics of digital markets need to be taken into account.

III. GIANTS MERGING: FACEBOOK AND AMAZON CASES

Companies active in digital markets are remarkably active in M&As, constantly seeking out and purchasing established businesses and interesting start-ups. Such acquisitions may have a variety of purposes: for instance, they may be conducted to secure a technology to be incorporated into the acquirer's product, or to secure highly skilled staff and use their expertise to develop products.

However, such acquisitions may also have the intention or effect to wipe out potential competitors. Buying out firms at an early stage of their development may effectively prevent them from ever becoming a competitive threat, as the innovation that they were developing would not serve to displace incumbents but would rather be instrumental to maintaining their market leadership or will be discontinued altogether. This may be especially problematic in digital markets.

As discussed in the second chapter, the prevalence of network effects makes it so that often competition is *for* the market rather than *in* the market. The threat exerted by smaller market players or potential entrants is therefore essential to keep market power in check. If such threats can be easily dealt with through targeted acquisitions, market participants' behaviours lose discipline, leading to the unrestrained exercise of market power.

Moreover, in the past, most of this M&A activity has occurred below the radar of competition authorities, as the large majority of transactions carried out by digital companies did not meet the relevant thresholds for merger control. Indeed, merger control thresholds are often based on merging parties' turnover, which is rarely met when targets are start-ups that in some instances are still trying to figure out a viable path to monetization. This has contributed to the rise and expansion of large digital ecosystems, through which platforms have extended their reach and influence into markets far beyond their core services. Due to the high rate of innovation and the different features from normal-product markets, for which antitrust measures have been accurately tailored, the entitled authorities might not have adequate tools to investigate modern cases thoroughly at their disposal. On these concerns, also the OECD expressed, highlighting how now in particular it is time for reform²⁷. For these outlined reasons, it is interesting to analyse the characteristics of M&A activity carried out by digital companies to understand whether they reveal any cause for concern.

²⁷ Digital Economy, Innovation and Competition. <https://www.oecd.org/competition/digital-economy-innovation-and-competition.htm>

In particular, this chapter examines some of the most notable acquisitions of Facebook²⁸ – henceforth, Meta - and Amazon²⁹, among the most significant players in the digital industry, focusing on common patterns and differences between the acquiring strategies and rationale of the two giants, and providing insights about what competition authorities might (not) have considered in their investigations. In order to do so, Crunchbase³⁰ and Statista³¹ have been used to compile a comprehensive list of acquisitions made by each firm, with a detailed description of the acquired firms' branches and their financial situation at the time of the transaction, so that one could get the sense and the rationale of the firms' plans of actions. In particular, data about formal features of the acquisitions, such as dates and evaluations, have been retrieved from Statista, while qualitative characteristics, such as clusters and belonging sectors, have been collected using Crunchbase.

Moreover, this chapter describes the merger investigations that have been conducted by competition authorities on some of the acquisitions by Meta and Amazon, critically describing the theories of harm considered by the agencies and attempting to outline what issues could emerge in the ongoing investigation(s) into Amazon's acquisition of iRobot.

²⁸ Meta Platforms, Inc., doing business as Meta and formerly named Facebook, Inc., and TheFacebook, Inc., is an American multinational technology conglomerate based in Menlo Park, California. On October 28, 2021, the parent company of Facebook changed its name from Facebook, Inc., to Meta Platforms, Inc., to "reflect its focus on building the metaverse".

²⁹ Amazon.com, Inc. is an American multinational technology company focusing on e-commerce, cloud computing, online advertising, digital streaming, and artificial intelligence.

³⁰ Crunchbase is a company providing business information about private and public companies. Their content includes investment and funding information, founding members and individuals in leadership positions, mergers and acquisitions, news, and industry trends.

³¹ Statista is an online platform specialized in market and consumer data, which offers statistics and reports, market, consumer and company insights.

III.I. COMPARATIVE DATA ANALYSIS OF THE TWO FIRMS

This paragraph presents the results of a comparative analysis of the M&A activities of Meta and Amazon. The research showed that the two companies carried out a total of 198 acquisitions from the time of their foundation, respectively 1994 for Amazon, with 97 completed acquisitions, and 2004 for Meta, with 101 acquisitions. Figure 7 displays the time-frame for the acquisitions. Data to build the graph was retrieved from the financial analytics of the companies available on Crunchbase.

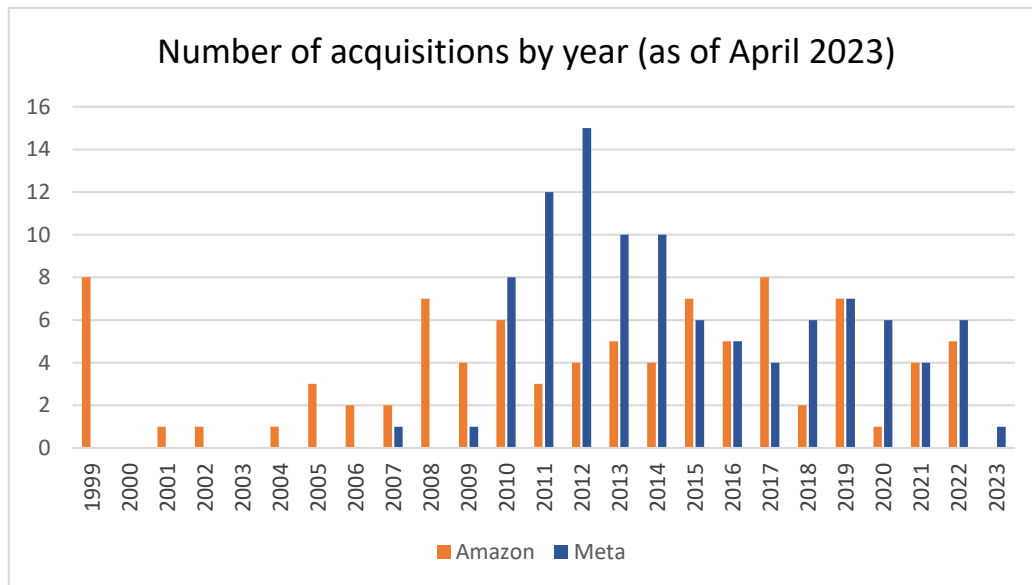


Figure 7: Meta and Amazon’s number of acquisitions by year, from their date of foundation.

Meta has been remarkably active between 2010 and 2016 whilst Amazon’s acquisitions had a peak in 2017. Both Meta and Amazon have shown a clear strategy of expanding their businesses and diversifying their portfolios through acquisitions. Despite having similar numbers for such transactions, the two companies have adopted different action plans, which can be attributed to their respective business models and strategic goals.

In order to understand where the acquisitions of both companies clustered, the acquired firms have been classified into 8 categories:

- Communication apps and tools: companies providing platforms that enable individuals and organizations to communicate with each other through direct messaging and email, as well as sharing of content and personal information.
- Tools for developers: companies offering tools and solutions for software developers to create and optimize their digital products, excluding products and services for end consumers.

- Physical goods and services: companies manufacturing, distributing, or selling physical goods of any kind, or providing services that facilitate these activities. This category includes price comparison websites, marketplaces, and online retailers.
- Digital content: companies delivering, creating, or facilitating the consumption of digital media such as movies, games, digital text, and other forms of digital content.
- Remote storage and file transfer: companies providing file storage, cloud, file sharing, and related services.
- Advertising tools and platforms: companies operating in the advertising industry as providers of advertising content, advertising platforms, or intermediaries between advertisers and consumers or suppliers.
- Artificial intelligence, data science, and analytics: companies creating, distributing, or enhancing self-learning software, image, speech, or text recognition software, virtual assistants, analytics, and machine learning services for big data.
- Home, wellbeing, and other personal needs: companies offering software and applications designed to simplify and/or improve experiences for different aspects of daily life, such as transportation, health, learning, entertainment, wellbeing, and home automation.

Figure 8 displays the resulted classification, carried out by labelling each of the companies' acquisitions and computing each clusters' share.

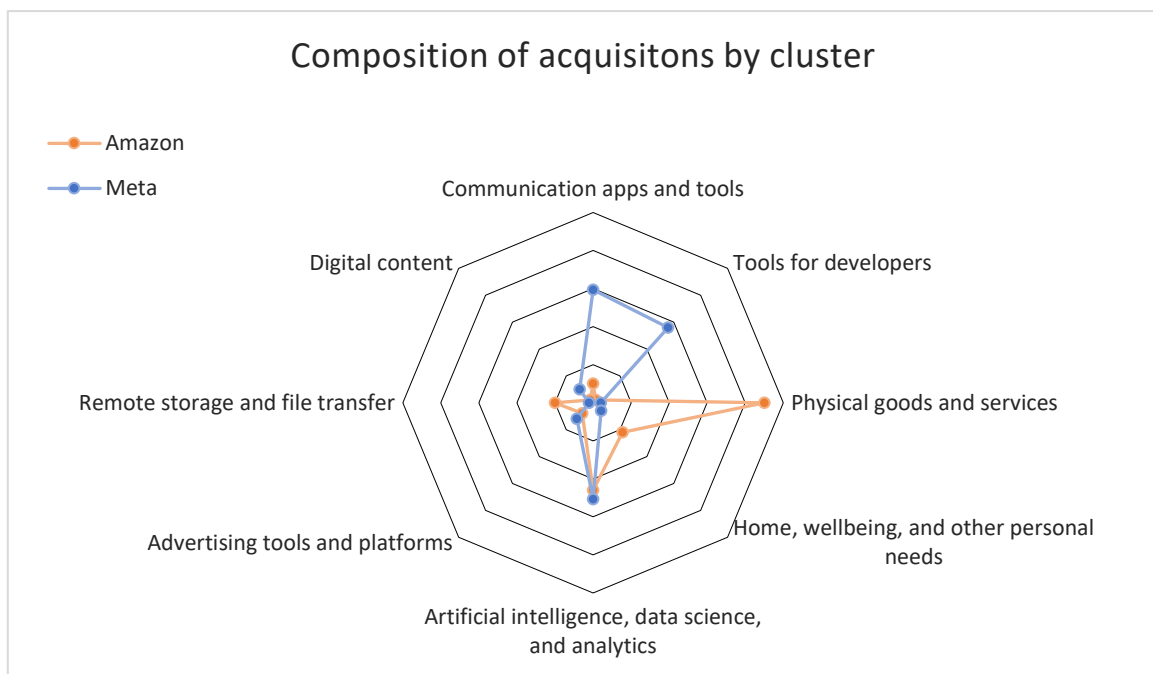


Figure 8: Composition of the companies' acquisitions, by cluster.

Meta has made a significant number of acquisitions in the social media and messaging sector, which aligns with its core business. Meta's core business as a social network requires its users

to be able to engage between each other and share files and information. Therefore, it is not surprising that Meta invested heavily in the Communication apps and tools cluster, which represents almost 30% of acquisitions. In the years 2009-2012, it has expanded its presence in the Communication apps and tools cluster with the notable acquisitions of the messaging app Beluga (2011), later transformed into Facebook Messenger, Instagram (2012) in the Photo apps sub-cluster, WhatsApp (2014) in the Direct messaging and calls one as well as Friendster (2010) and Hotpotato (2010) in the Topic specific platform cluster. These acquisitions have helped Facebook, the most profitable app in the social media company's roster, consolidate its position as the largest social media platform in the world³² and expand its offerings to include messaging services and other communication tools.

Over the period 2014-2016, Facebook has also invested in companies related to virtual reality technologies such as Oculus (2014) and Surreal Vision (2015). Meta's acquisitions in the artificial intelligence and virtual reality sectors signal its interest in developing cutting-edge technologies that could potentially disrupt the social media industry. Virtual reality, in particular, has the potential to revolutionize how people interact with each other and consume content, and Facebook is positioning itself as a major player in this emerging market.

Other significant clusters, for Meta, are tools for developers and artificial intelligence (AI), with 27.95% and 25.32% of acquisitions, respectively³³. In October 2021, Meta announced its involvement and effort in a new project, the Metaverse³⁴ (from which the former Facebook Inc. took the name), and in the last couple years it's focusing its fundings on research & development over machine learning and neural links.

On the other hand, Amazon has made more acquisitions in e-commerce and retail than in any other sector. Amazon's acquisitions in the Physical goods and services cluster represent 51.13% of its total acquisitions. Most of the companies acquired in this cluster were linked to the retail sector, such as Zappos, an online shoes retailer acquired in 2009 for 1.2 billion, Whole Food Market, a high-end online and offline groceries retailer acquired in 2017 for 13.7 billion, Souq.com, an online retailer active in the Middle-East region and other companies active in the retailing of books and other products (e.g. The Book Depository, Avalon Books, Audible.com). This is coherent with its main business of online retail and underscores its commitment to providing customers with a seamless and convenient shopping experience.

Similarly, Amazon's acquisitions in logistics and transportation could help it streamline its supply chain and improve delivery times, further enhancing its position as a leader in the online retail space. Amazon's interest in Robotics may be due to the process of automatization of its distribution centers: for instance, Kiva System, acquired in 2011, provided Amazon with the technology for automated storage and retrieval systems. Amazon's acquisitions in cloud

³² We Are Social, & DataReportal, & Meltwater. (January 26, 2023). Most popular social networks worldwide as of January 2023, ranked by number of monthly active users (in millions). In Statista.

³³ <https://www.crunchbase.com/organization/facebook>, accessed April 2023.

³⁴ According to Meta, the "metaverse" refers to the integrated environment that links all of the company's products and services. Wikipedia contributors. "Meta Platforms." *Wikipedia, The Free Encyclopedia*. Wikipedia, The Free Encyclopedia, 12 Apr. 2023. Web. 16 Apr. 2023.

computing and IT infrastructure may reflect its dominance in these areas, as well as its desire to expand its offerings to include a broader range of services. Additionally, Amazon's acquisitions in entertainment and media could be seen as a strategic move to expand its content offerings and compete with other major players in the industry, such as Netflix and Disney.

Therefore, the analysis shows that Meta and Amazon have both acquired companies that operate in economic sectors related to their core business: the former has acquired companies related to social media and social networking, while these acquisitions have primarily focused on e-commerce and shopping for the latter. On the surface, these transactions might be the most problematic from a competition perspective, as they may be more horizontal in nature and are precisely those that may have the intention or effect of preventing competitors from becoming a threat.

However, most transactions do not have a clear horizontal element for both companies. In fact, most acquisitions have targeted companies across a diverse range of economic sectors whose products and services complement those already offered by Meta and Amazon. This reflects the complexity of digital business models, where multiple activities are often involved in the production process.

The cluster analysis above reveals that all of these companies have also acquired firms to support their expansion into mobile, with mobile-related terms featuring prominently. This is in response to the growing number of mobile users, which has increased significantly over the past decade. On Meta's side, the Instagram and WhatsApp's cases are a clearly example of this, while on Amazon, its acquisitions of Twitch and Ring and its investments in its mobile platform app are an explicit attempt at increasing its mobile devices engagement rate.

Furthermore, both companies have invested in advanced data analytics techniques, such as machine learning, artificial intelligence, analytics, and big data, to improve their services. These techniques are crucial in predicting demand, providing targeted content and ads, and improving search algorithms. Overall, these mergers may be efficiency-enhancing as they enable incumbents to become better at making such predictions.

Another striking feature of acquisitions carried out by Amazon and Meta is that their targets are often very young firms. While there are some outliers, targets are four years old or younger in nearly 60% of cases. Amazon's relatively high mean age of companies acquired is the result of three acquisitions of long-established retailers: Avalon Books and Toby Press were publishing houses founded in 1949 and 1950 respectively, Whole Foods Market was founded in 1978. Most of the companies acquired by Amazon were between five and nine-year-old, which suggests the intention of buying relatively more established firms rather than new-born start-ups. Notable exceptions were Lexcycle and Stanza, active in the eBooks sector, which were acquired in 2009 when they were two and one year old respectively.

Meta's mean age of companies acquired is significantly lower than Amazon's. The majority of Meta's acquisitions targeted companies less than four-year-old, due to the highly dynamic and volatile nature of its core business and its particular involvement in the tech industry. This is particularly evident in Meta's push into virtual reality and AI, accomplished through the acquisition of three companies (Oculus VR, Surreal Vision and Two Big Ears) less than three-year-old, and other two companies (presize.ai, and AI Reverie) from less than 2 years from their foundation. Finally, all acquired companies in the Photo apps and Direct messaging and calls clusters were less than three-year-old, with the only notable exception being WhatsApp, which was five-years-old.

III.II META’S CASES: INSTAGRAM AND WHATSAPP ACQUISITIONS

Meta, formerly known as Facebook Inc., is one of the largest and most powerful tech companies in the world. With over 3 billion active users across its platforms, including Facebook, Instagram, and WhatsApp, Meta has become an integral part of people's daily lives and a dominant force in the tech industry. However, with this power has come increased scrutiny and regulatory challenges. Meta, like other tech giants, has faced allegations of anticompetitive behaviour and violations of antitrust laws. As the company has grown, its market dominance and influence have raised concerns about its impact on competition and consumers.

In recent years, there has been a growing trend of antitrust intervention in the tech industry. Regulators around the world have taken action against tech companies for anticompetitive practices, including investigations, lawsuits, and fines. This trend reflects a growing recognition of the importance of competition in promoting innovation, protecting consumers, and ensuring a level playing field for businesses. In particular, Meta’s acquisitions caught the attention of the European Commission, of the Federal Trade Commission – henceforth, FTC – and of the UK Office of Fair Trade – henceforth, OFT - in multiple occasions, the first one dating back to 2012.

III.II.I FACEBOOK / INSTAGRAM

In the early 2012, after launching its own photo app, Facebook Camera, the former Facebook Inc. proposed and announced the acquisition of Instagram, the new social media app on the rise. At the time, Facebook was a digital platform supplying social networking services having recently reached the billion mark for active users and \$3.7 billion from advertising revenues in the previous year; in the meanwhile, Instagram was less than two years old, but its reach was escalating quickly. In 2010, it was first launched exclusively on iOS devices, and still managed to grow up to 1 million users in the first three months. In 2011, its numbers ballooned ten-fold to the double digit in active users. Contemporary to the acquisition, its numbers skyrocketed thanks to its access to the Android ecosystem. It provided a free mobile photo app, allowing users to take, modify and share photos on Instagram itself or on other social networks.

The acquisition was scrutinised by the OFT, the UK competition authority , which opened its investigation into the transaction on the 21 May 2012.

After having noted that social networks are two-sided platforms, competing to attract users and advertisers, the OFT considered that Facebook was active in the provision of three relevant services: a social networking platform (Facebook itself), a photo app to users

(Facebook Camera), and the sale of advertising space to advertisers, in the form of sponsored content on the platform.

The major concerns were due to the overlapping in the supply of virtual social networking services by the two parties. Facebook's share of supply in the UK of virtual social networking services was over 25% and, given that Instagram was active in the supply of virtual social networking services, the transaction would have resulted in a further increment.

UNILATERAL EFFECTS THEORIES OF HARM

The OFT considered two unilateral effects theories of harm: actual competition in the supply of photo apps and potential competition in the supply of social network services.

The first theory of harm was dismissed on the basis of the existence of several relatively stronger competitors that constrained Instagram more than Facebook's recently launched photo app and the limited attractiveness of photo apps to advertisers.

The main piece of evidence evaluated by the Authorities to support the conclusion that Instagram and Facebook Camera were not particularly close competitors was the number of downloads of other competing photo apps relative to Facebook Camera, since Hipstamatic, Camera+ and Instagram had been downloaded three, six and 45 times more than Facebook Camera, at the time. However, the number of downloads might be a misleading measure of market share as it doesn't reflect users' engagement: since downloads are usually free and simple, consumers might decide to try more than one photo app, but actively use only the one(s) that better responds to their needs. Actual usage data may have provided a better insight into closeness of competition.

On the advertising side of the market, photo apps were not considered by the Authorities to be per se attractive to advertisers since users spent a limited amount of time on them. To reach this conclusion, the Authorities relied on the opinion of third parties, specifically Facebook's advertising consumers. Their verdict about Instagram's advertising appeal was not unanimous, but almost all the arguments collected agreed on the fact that the platform was still too unripe to be able to predict its future performances. The importance of this issue and the diverging views of the stakeholders should have prompted the Authorities to collect data and test independently the app's users' engagement to forecast its potential.

Data available shows that Instagram did generate significant user engagement compared to other photo apps and to other social networks. In September 2012, on average, Instagram's users spent over three times more time on the app than Photobucket's users; and the total minutes spent on the Instagram app were thirty times larger than the minutes spent on Photobucket. Moreover, total minutes spent on Instagram by its users, as well the average minutes per user, were not dramatically different from the same figures for Twitter. This

indicates that Instagram might have been different from other photo apps in terms of the user attention received and, consequently, potential attractiveness to advertisers.

Although, in light of these evidences, the OFT considered no realistic prospect for the merger to result in a significant lessening of competition, in particular due to the absence of any form of advertising revenue for Instagram and the existence of closer competitors in Facebook's relevant markets.

VERTICAL EFFECTS THEORIES OF HARM

The UK competition authority also considered two vertical effects theories of harm: i) the foreclosure of social networks competing with Facebook, by limiting Instagram users to uploading their photos to Facebook; and ii) the foreclosure of other photo apps, by preventing them from uploading their photos to Facebook.

The key argument for the dismissal of the first theory of harm was that the incentive to engage in a foreclosing strategy was missing as Instagram's popularity would likely be negatively affected. In particular, the OFT concluded that the merged entity had the technical ability to prevent Instagram users from uploading photos to social networks other than Facebook, but minimized the possible incentives for the platforms to do so. The main grounds for this judgment were the assumption that at least part of Instagram's popularity was due to the possibility of uploading their photos to other social networks and that Instagram's success was likely to be replicated by other apps.

The OFT also conducted a comparative analysis with other photo apps that allowed users to share their pictures with social networks, and found out that this feature had significant relevance for most of the users. It might as well have been the case for Instagram at the time of the merger, but that was likely to change in the future, had its popularity increased. The results of the studies convinced authorities that Instagram's rapid growth from 1.4 million users in January 2011 to around 24 million users in February 2012 was an indication of the weakness of barriers to entry in the market rather than of the app's uniqueness.

Moreover, the likelihood of foreclosure wasn't considered to be consistent, since Google+ was Facebook's strongest competitor and, according to the OFT, it was able to exert enough market power so that competition wouldn't have been lessened to a critical extent after the merger. However, a report from The Wall Street Journal³⁵ measuring users' engagement to social-media sites in January 2012 highlighted that the Google's app users averaged only three minutes on the app each month. Figure 9 shows the exact data about users' engagement times in different social media websites, from The Wall Street Journal.

³⁵ "The mounting minuses at Google+" – Amir Efrati, wsj.com

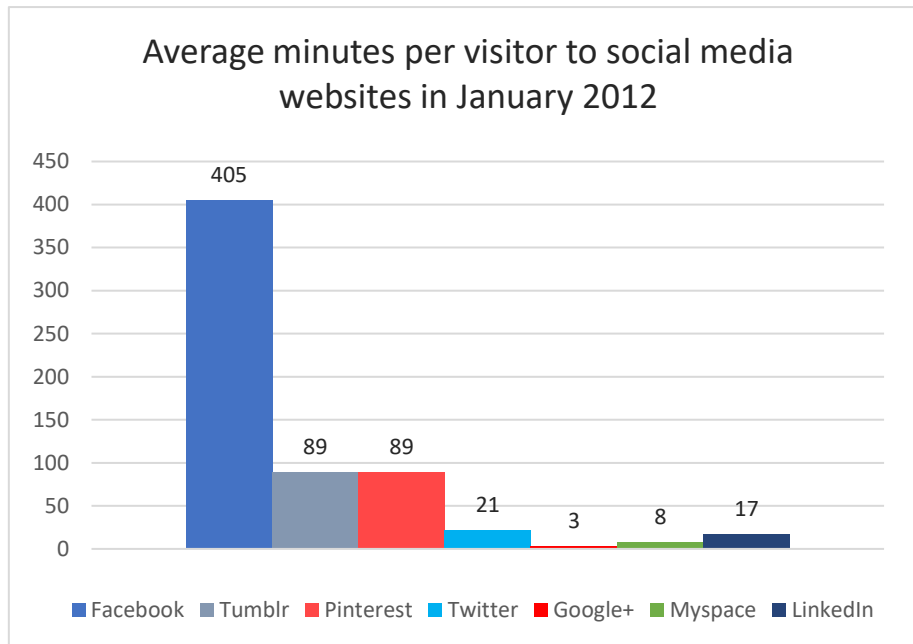


Figure 9: Engagement times of users in different social media websites as per January 2012. Google+, thought be Facebook's biggest competitors, managed to keep users on their platform for only 3 minutes a month on average. Source: WSJ – The mounting minuses at Google Plus.

The dismissal of the second vertical theory of harm came on the basis of the argument that foreclosing other photo apps would have likely reduced engagement of Facebook's users, and therefore the parties had no incentive in doing so. This implicitly assumes that the losses for Facebook would have likely outweighed the benefits for Instagram making the strategy overall unprofitable for the merged entity. A more accurate prediction of Instagram's post-merger popularity could have been helpful to better understand the parties' incentives. Indeed, had Instagram significantly improved its position in the market for the supply of photo apps, the volume of content uploaded to Facebook from rival photo apps would have been very low, and consequently, the losses Facebook would have incurred in terms of user engagement could have been negligible.

POST-MERGER CONSIDERATIONS

The OFT cleared the case the 14th August 2012, concluding that the acquisition would have not resulted in a significant lessening of competition. Other than the gaps outlined above, the analysis undertaken could have probably benefited from the choice of a different metric to evaluate users' engagement, since the number of downloads could be inappropriate in digital markets, where downloads are usually free and simple and do not reflect actual people's preferences. More correct measurements would have been, for example, an account of users' base exclusivity (the extent to which common users of the app had access to exclusive services), platform's size (not only at firm level, but also in terms of resources and available

user data to retrieve) and its ability to target ads. Instead, the OFT considered the services both parties provided and belittled the prospect of Instagram entering in the advertisers' market.

The assessment of the market structure which has arisen after the merger shows that the acquisition of Instagram has provided a competitive advantage to the merged entity across all three dimensions, which has resulted in unmatched growth in terms of users and advertising revenues, in particular due to the acquired ability of efficiently avoiding multiple ads thanks to retrieving data from several apps.

However, there are reasons to believe that Instagram's growth has significantly benefitted from the integration with Facebook: Snapchat and Vine's³⁶ cases show that transforming users' attention into advertising revenue is no easy task, and Instagram's success in this respect has likely benefitted from Facebook's guidance and expertise.

Finally, whether the decision has ultimately harmed consumers also depends also on the possible benefits accrued through the merger, which may have countervailed anti-competitive effects. Being able to monitor consumers' behaviour on its platform and on Instagram, Facebook can effectively target advertising and reduce inefficient ads duplications on its platforms. This may have generated benefits to consumers, which may have not arisen in the absence of the merger. These efficiencies seem also to be merger-specific, and it is difficult to assume that they would have arisen in a counterfactual scenario where Instagram was not acquired by Facebook or another social network.

³⁶ Snapchat is an American multimedia instant messaging app and service developed by Snap Inc in 2013. It had a quick growth until 2016 but never really satisfied its premises. Vine was an American short-form video hosting service where users could share video clips. It was originally launched in 2013, by Vine Labs, Inc. and shut down in 2017 due to poor financial management.

III.II.II FACEBOOK / WHATSAPP

WhatsApp is Mark Zuckerberg's firm's most significant acquisition and one of the most enormous Silicon Valley has ever seen. It is over 20 times larger than its Instagram acquisition, totalling an acquiring price of \$19.6 billion. WhatsApp, founded by Jan Koum and Brian Acton, two former Yahoo! Executives, is an ad-free mobile application that allows users to send unlimited messages to contacts without using the wireless network or sustaining data fees. The app is free to download and is an alternative to the cell provider's traditional text messaging platform.

The stated reason for the acquisition was growth, as for Facebook's CEO user base expansion comes before monetization. At the time of the transaction, WhatsApp itself had 450 million monthly active users, and claimed to be adding 1 million a day. It charged a \$0.99 subscription fee to users after a year's free trial (although it was possible to continue using the service without paying), which brought in an estimated \$100 million annual revenue for the company – meaning approximately 22% of WhatsApp's users paid for the service³⁷.

At first glance, WhatsApp and Facebook seem to have had incompatible strategies – WhatsApp was staunchly opposed to advertising, yet Facebook was seeing huge growth in its advertising revenues. However, the collaboration between the two could make up for the absence of Facebook in the instant messaging app industry, since its own IM app, Facebook Messenger was having a hard time in breaking into the market, and coping for the increasing demographics of the app's user base. Furthermore, being WhatsApp a mobile exclusive, it could foster Facebook's ambitions to grow in the mobile device market.

On the 29th of August 2014, the European Commission received a notification of the proposed concentration by which Facebook had acquired WhatsApp, as for Article 3 of the EU Merger Regulation a concentration shall be deemed to arise where a change of control on a lasting basis results from the merger of two or more previously independent undertakings or parts of undertakings³⁸.

The Commission's analysis focused on three sectors. The first one is consumer communications services, which are multimedia communications solutions that allow people to reach other contacts in real time. At the beginning, those services were developed and offered as software applications for computers, but were progressively shifted towards mobile devices, becoming "consumer communications apps". Many of these apps, if not all, were free of charge. The second sector was social networking services: platforms which allow users to connect, share, communicate and express themselves online or through a mobile app, usually provided without any monetary charges, but normally monetized through advertising, charges for premium services, and through the acquisition of personal data. The third sector – related to the second one – was online advertising services: Facebook's activities in such division consisted in the provision of services on its social networking platform but did not include any

³⁷ The service became free of charge in 2016.

³⁸ Council Regulation (EC) No 139/2004 of 20 January 2004 on the control of concentrations between undertakings (the EC Merger Regulation).

ads on the Messenger app at the time of the EC's analysis on the deal, while WhatsApp wasn't monetizing advertising opportunities.

On the 3rd of October 2014, the EC concluded that the deal would raise no competition concerns and authorized the proposed acquisition of WhatsApp by Facebook ruling that Facebook Messenger and WhatsApp were not close competitors and that consumers would continue to have a wide choice of alternative for consumer communications apps after the merger.

CONSUMER COMMUNICATION SERVICES

The dismissal of the first theory of harm, that of potential competitors' foreclosure, came on the basis that WhatsApp and Facebook were not close competitors as consumer communication apps and therefore network effects arising from the merger would have been mitigated by a combination of some structural features of the market, such as weak barriers to entry, rapid growth rate and low switching costs for users. To reach this conclusion, the EC focused its assessment on the relevant product market of apps for smartphones and concluded that Facebook Messenger and WhatsApp are not close competitors since the former is a standalone app integrated with the homonymous social network, while access to the latter is provided through phone numbers. Moreover, it is possible that the analysis underestimated the combined market position of the merged entity, which was based on the merged entity's market share in the iOS and Android markets for communication services. In particular, the Commission observed that high market shares were not necessarily indicative of market power, as they determined no lasting damage to competition due to the recent and fast-growing sector, which is characterised by frequent market entry and short innovation cycles. For these same reasons, a more tailored assessment method for their combined post-merger market position should have included a measure accounting for the increase in the volume of user data retrieved had the merger occurred.

SOCIAL NETWORKING SERVICES

The second theory of harm, that of actual competition foreclosure, was rejected on the basis of the difference between the service provided by social networking services and communication apps. In particular, Facebook's social networking service consisted of a user profile – user's online identity – which contains information about jobs, levels of education obtained, relationship status, birthday, life events, and likes and interests; a newsfeed, which consists of regularly updated personalized posts from friends and people the user is connected to; and a timeline, which allows users to organize and display events and activities. On the other hand, WhatsApp was not active in social networking and is notably focused on facilitating fast and simple communications between and among users. Despite being similar, in that they allow interaction and sharing of information and content between users, both services displayed significant differences, leading the Commission to state that "on a general level, social networking services tend to offer a richer social experience as compared to consumer communications apps"³⁹, and dismiss the close competition hypothesis for the two, since

³⁹ EC, Case no. COMP/M.7217, Facebook/WhatsApp, paragraph 54

including them in the same relevant market would have meant including in the analysis several other similar apps, which would have exacerbated competition. Moreover, the idea of a potential integration of WhatsApp into Facebook's social networking ecosystem was ruled out since too many hurdles for the operation were found: one of those was the technical difficulty in matching users' online identities – their Facebook profiles – and their phone numbers – their WhatsApp accounts. As stated by Facebook, apart from the practical inability, they didn't have any intention to do so because of the huge overlapping of the user base, which would have alleviated the benefits from such integration.

ONLINE ADVERTISING SERVICES

With respect to online advertising services, Facebook used to (and still does) collect and analyse data on the users of its social networking platform to provide better fitted ads on behalf of advertisers. Each user is targeted, but the data is neither sold nor does Facebook provide data analytics services to advertisers or other third parties as a separate product from the advertising space itself, but manages such data on its own. During the time of the investigation, WhatsApp did not sell any form of advertising or store or collect data on its users that would be valuable for advertising purposes, besides messages that are not stored in WhatsApp's servers, but only on the users' mobile devices or chosen cloud. Therefore, no horizontal overlap was verified as the Commission considered the deal wouldn't increase Facebook's potentially available amount of data in its sector. Nevertheless, to verify if the deal with WhatsApp could increase Facebook's position in the online advertising market, the Commission analyzed two main possible theories of harm: introducing advertising on WhatsApp, and/or using WhatsApp as a potential source of user data for improving the targeting of Facebook's advertising activities outside the communication app. Both the theories of harm were dismissed on the basis of the fact that "there will continue to be a sufficient number of other actual and potential competitors who are equally well placed as Facebook to offer targeted advertising"⁴⁰. The reasoning behind this assessment took into consideration the possibility that the increased amount of data which will come under Facebook's control resulting from the deal with WhatsApp will materially reinforce Facebook's position in the provision of online advertising services, but belittled it because of the presence of many other market participants outside Facebook's exclusive control. The different entities engaged in the collection of users' data are shown in Figure 10, together with the relative share of retrieval. The chart was built by computing each firm's share employing the Ghostery panel data from the first quarter of 2013, which offers a comprehensive overview of the data market dynamics of that time.

⁴⁰ EC, Case no. COMP/M.7217, Facebook/WhatsApp, paragraph 179

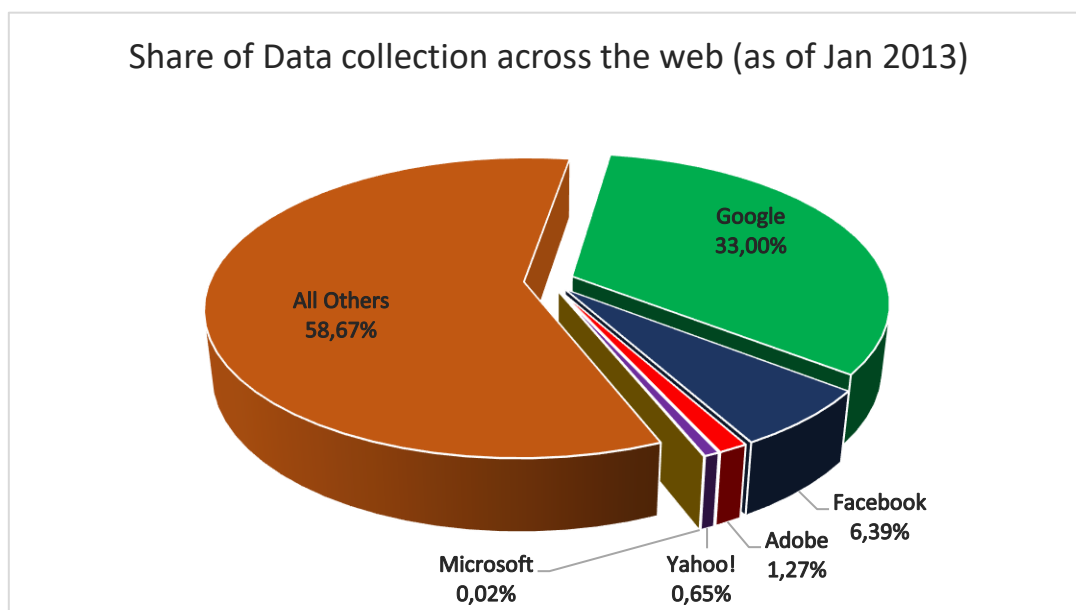


Figure 10: Share of data collected across the web. Source: Ghostery panel data, Jan-Mar 13. Ordered by frequency of panel user interactions with tracking applications.

DATA, PRIVACY AND AUTHORITIES' RESPONSIBILITIES

It is worthwhile to highlight that the investigation conducted by the EC analysed potential data concentration issues only to the scope that they could weigh down competition in the online advertising market. Privacy-related concerns from the increased concentration of data within the control of Facebook as a result of the deal with WhatsApp were not considered in the assessment of those transactions.

According to the ex-post evaluation of the case by LearLab⁴¹, the main flaw of this intervention is the absence of any analysis considering data as an additional input market. Assessing to what extent the concentration of two companies competing for the same data would foreclose competition or affect the transparency of privacy policies and the motivation to invest in privacy enhancing technologies could have helped better address the understanding of such case.

The relevance of Big Data in merger investigations is not restricted to how data is negotiated in a market, but includes how companies collect and analyse a vast amount of data and use it as an input to provide goods/services to end users and companies. The fact that no market for data exists, does not imply that data is an irrelevant factor in assessing the effects of a merger.⁴²

⁴¹ Ex-post assessment of merger control decisions in digital markets. LearLab, June 2019

⁴² Pitruzzella, G. (2016). "Big data, competition and privacy: a look from the antitrust perspective."

Nevertheless, considering that Facebook and WhatsApp were somehow competitors in the market of users' data (since in the very moment their data is retrieved by the platform, users become exclusive consumers of that platform) and pondering any strengthening of dominance in the online advertising market resulting from the merger, it can be considered a vertical concentration on the present relevant market of big data. The assessment from the Commission could have been different if the transaction was analyzed on the grounds of the EU non-horizontal merger guidelines.

In December 2016, the European Commission addressed a Statement of Objections to Facebook since it found that, contrary to its statements in the 2014 merger review process, the technical possibility of automatically matching Facebook and WhatsApp users' identities already existed in 2014, and that Facebook's staff had been aware of such a possibility. In particular, few months before then, in August of the same year, WhatsApp publicized updates to its terms of service and privacy policy, including the possibility of linking their users' phone numbers with Facebook users' identities. After a thorough investigation confirming the initial suspects, in May 2017 The European Commission fined Facebook €110 million⁴³ for providing incorrect or misleading information during its 2014 investigation under the EU Merger Regulation of Facebook's acquisition of WhatsApp⁴⁴. However, the decision had no impact on the previous judgment on the fairness of the deal.

Since the decision of the European Commission of not opposing to the Facebook/WhatsApp deal and declaring it compatible with the internal market and with the European Economic Area Agreement, some investigations were opened by national competition authorities on the Facebook's use of personal data.

In Germany the Bundeskartellamt, the Federal Cartel Office, initiated in March 2016 a proceeding against Facebook on suspicion of abuse of market power by infringing data protection rules in the use of unlawful terms and conditions that could represent an abusive imposition of unfair conditions on users. According to the Bundeskartellamt, through the collection of a large amount of personal user data from various sources and the creation of user profiles Facebook facilitates its advertising customers on targeting their businesses sharply. Even if it can be deemed a matter of Data Protection Law, for the German officer "if there is a connection between such an infringement and market dominance, this could also constitute an abusive practice under competition law"⁴⁵.

In December 2017, the Bundeskartellamt informed Facebook of its pre-liminary legal assessment in the abuse of dominance proceeding. In the view of the competition authority, Facebook was abusing the dominant position it had in social networking services by making the use of its social network conditional on it being allowed to limitlessly amass all kinds of data generated by using third-party websites and merging it with the users' Facebook

⁴³ European Commission - Mergers: Commission fines Facebook €110 million for providing misleading information about WhatsApp takeover. https://ec.europa.eu/commission/presscorner/detail/en/IP_17_1369

⁴⁴ According to the Merger Regulation, the Commission can impose fines of up to 1% of the aggregated turnover of companies, which intentionally or negligently provide incorrect or misleading information to the Commission.

⁴⁵ "Bundeskartellamt initiates proceeding against Facebook on suspicion of having abused its market power by infringing data protection rules", 2016, Pressemitteilungen/2016/02_03_2016.

accounts. The German authority⁴⁶ found that third-party data was made available to Facebook in a number of instances, namely: when users were active on digital services owned by Facebook, such as WhatsApp or Instagram; when a third-party website embedded visible Facebook interfaces such as the "Like" or the "Share" buttons, and also when a website relied on Facebook Analytics without this being visible to the user. By combining extensive third-party data sets with the data it gathered through its own website and applications, Facebook was able to turn multi-source data into comprehensive user profiles. Users do not freely agree to this practice, as theirs is an all-or-nothing choice: either access Facebook's social networking services and accept its exploitative data practices, or be shut out from that dominant social network. In the eyes of the Bundeskartellamt, this did not represent voluntary consent. Finally, in February 2019, the authority imposed far-reaching restrictions on Facebook in the processing of user data, in particular requiring voluntary individual consent from each user for their data to be retrieved and collected, both *from* the Facebook platform and *by* the platform itself on third-party websites. The decision was taken on the basis of the analysis of the abuse of dominance underlying on the asymmetry in the bargaining power between Facebook and its users, which consists in a prohibited conducted under Section 19(1) of the German Competition Act⁴⁷.

In Italy, in May 2017, the "Autorità Garante della Concorrenza e del Mercato" (AGCM) fined WhatsApp €3 million for having forced its users to share their personal data with Facebook, closing two investigations opened in October 2016 concerning infringements of the Consumer Code. One investigation alleged that WhatsApp forced its users to accept in full their new Terms of Use, specifically the condition to share their personal data with Facebook. According to the AGCM, WhatsApp induced its users to believe that without conceding such approval the service would be blocked. The other investigation consisted of an alleged unfair nature of some contractual clauses included in WhatsApp's "Terms of Use" and therefore considered the contract terms illicit.

The Italian Authority, in November 2018, furtherly imposed two additional fines on Facebook totalling €10 million. AGCM found out that Facebook, in violation of Articles 21 and 22 of the Consumer Code⁴⁸, deceptively induced consumer users to register on the Facebook platform, by not informing them adequately and immediately, during the account activation phase, of the collection, with commercial intent and remunerative purposes, of the data provided by them, emphasizing that it is free of charge only. The Authority also ascertained that Facebook, in violation of Articles 24 and 25 of the Consumer Code, implemented an aggressive practice as it exerts undue conditioning on registered consumers, who are subjected, without express and prior consent, to the transmission of their data from Facebook to third party websites/apps, and vice versa, for commercial purposes.

The Authority also imposed Facebook the obligation to publish a corrective statement on the website and app to inform consumers. However, due to the firm's reiterate misconduct, Facebook was fined again by AGCM, this time for an amount close to €7 million.

⁴⁶ The Theory of Harm in the Bundeskartellamt's Facebook case

⁴⁷ Gesetz gegen Wettbewerbsbeschränkungen (German Competition Act), Federal Law Gazette Nr I 2013/1750

⁴⁸ <https://www.codicedelconsumo.it/parte-ii-artt-4-32/>

As can be observed, the investigations in Germany and in Italy bring some challenges for competition authorities which somehow had already been mentioned in the Facebook/WhatsApp acquisition. This raises suspicions as to whether the analysis covered all the complexities related to data in the digital economy.

III.III AMAZON'S CASES

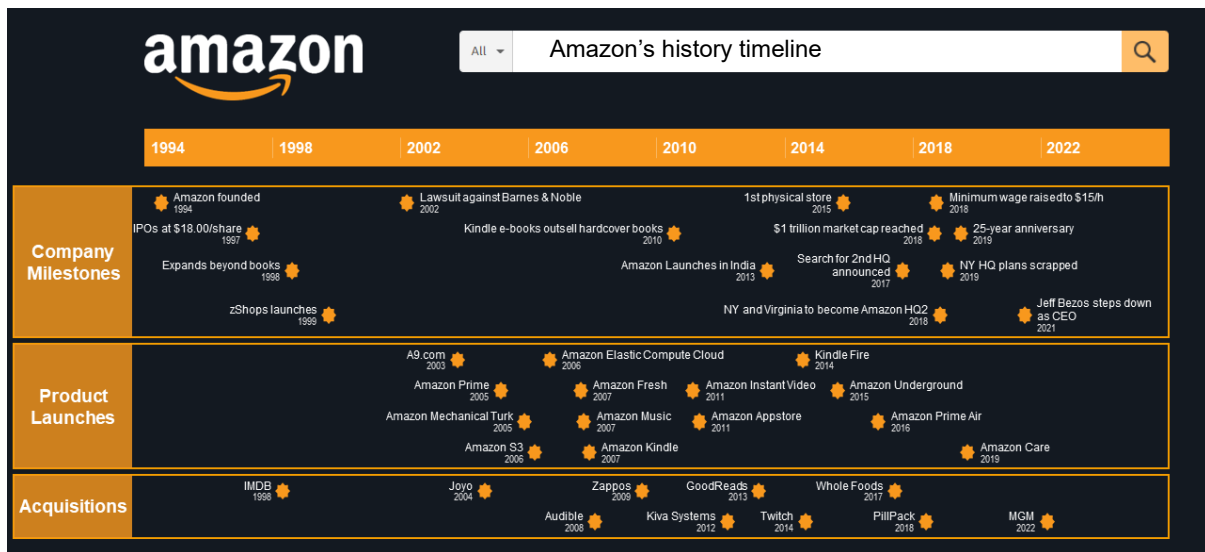


Figure 11: Amazon's history timeline. Source: Office Timeline, June 2022

Amazon is the titan of twenty-first century commerce. Coming straight from Jeff Bezos' garage in Bellevue, Washington, in addition to being a retailer, it is now a marketing platform, a delivery and logistics network, a payment service, a credit lender, an auction house, a major book publisher, a producer of television and films, a hardware manufacturer, a streamable music provider, and a leading host of cloud server space. Although Amazon has clocked staggering growth, it generated modest profits through the years – partly showed in Figure 2012, since from the Covid pandemic onward profits skyrocketed for the company - choosing to price below-cost and expand widely instead. Applying this strategy and seeking farsighted applications, the company went from just an idea in Jeff Bezos' garage to positioning itself at the centre of e-commerce, and now serves as essential infrastructure for a host of other businesses that depend upon it. Elements of the firm's structure and conduct pose several anticompetitive concerns—yet it has always escaped antitrust scrutiny.

At its core, Amazon is an online store. The e-commerce business contributes to over 50% of the company's total revenue but a large portion of the revenue comes from supporting third-party businesses to sell on its platform. Meanwhile, costs are minimised as Amazon has no need for physical stores. It is an exceptionally high-volume business that maximises efficiencies using the scalable web platform and uses leading-edge data analytics to optimise business performance.

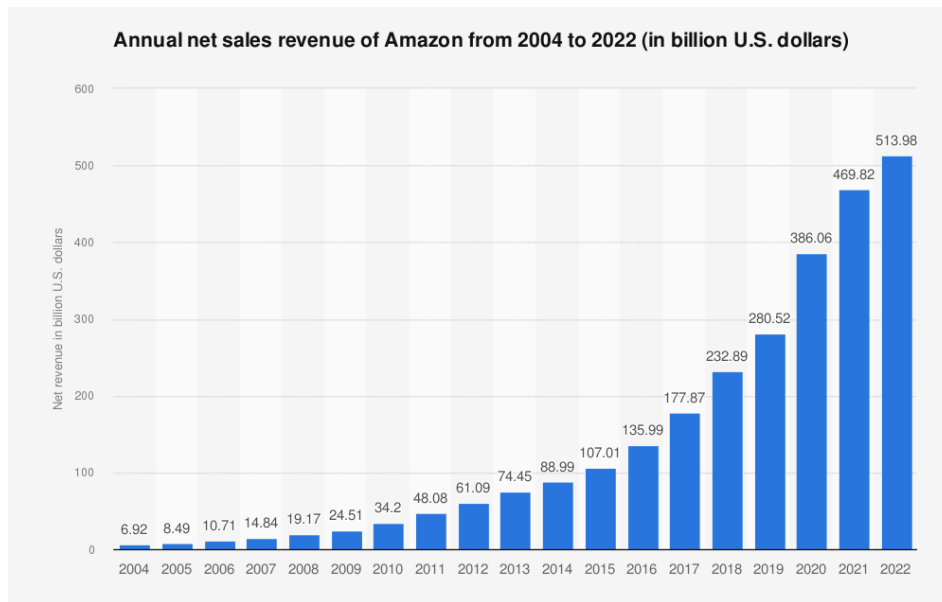


Figure 12: Annual net sales revenue of Amazon from 2004 to 2022 (in billion U.S. dollars). Source: Statista.

Amazon also works hard to build customer loyalty through excellent customer services such as one-stop shops and speedy delivery. Despite returning meagre profit margins, this sector achieves significant cash flow thanks to a highly efficient system of collecting payments from customers on the same day, while payment terms with suppliers are delayed of some months.

Amazon's M&A strategy appears to favour prospect firms that share at least some degree of synergy with it, and those that own a level of know-how which would be impossible to replicate in-house: this led Amazon to enter in several different markets, regardless of the physical nature, products sold and customer bases of the acquired firms, as this is shown by their acquisitions, ranging from Twitch to MGM⁴⁹, from Deliveroo to Whole Foods⁵⁰, just to name a few.

⁴⁹ Twitch is an American video live streaming service that focuses on video game live streaming, including broadcasts of esports competitions, in addition to offering music broadcasts, creative content, and "in real life" streams. It was acquired by Amazon in 2014. Metro-Goldwyn-Mayer Pictures, abbreviated as MGM, is an American film, television production, distribution and media company owned by Amazon from 2022 through MGM Holdings.

⁵⁰ Deliveroo is a British online food delivery company founded in 2013 in London. Whole Foods is an American multinational supermarket chain headquartered in Austin, Texas, which sells products free from hydrogenated fats and artificial colors, flavors, and preservatives in over 500 supermarkets in the US. From 2017 it is an Amazon's subsidiary.

III.III.I AMAZON / WHOLE FOODS MARKET

In June 2017, Amazon completed its biggest acquisition, Whole Foods Market, for a total price of \$13,7 billion. This transaction represented a major event in the retail and grocery industries, with experts pointing to it as the catalyst for major investments in digital grocery capabilities⁵¹. The move was also seen as a significant step forward for Amazon's long-standing ambition of becoming a major player in the grocery business, apart from the retail industry.

Whole Foods had long been known for its high-quality, organic merchandise, and had reached a significant market share in its sector acquiring small independent healthy food chains, but its reputation for sky-high prices had become a problem as its main competitors, namely Safeway and Korgger, began to replicate its offerings at much lower prices. By the mid-2000s, the company had lost its edge, and CEO John Mackey recognized that its ideas had gone from "the fringe of the organic food culture to sort of the cool and hip," and were now entering into the mainstream⁵².

The competition only got stronger, and Whole Foods struggled to keep up. Its stock dropped dramatically in 2006 and again in 2008, and by the early 2010s, it faced increasing pressure from unhappy investors. Whole Foods had expanded rapidly across the country, reaching the 300 mark for opened stores, but it was no longer able to offer something unique to each neighbourhood it opened in.

By the time of the acquisition, Whole Foods Market wasn't even considered to be a credible competitor to the leading retailers, but, looking at historical data retrieved from Yahoo! Finance, it can be shown how the deal had a remarkable effect on retail stocks, making Walmart, Target and Costco's quotations sink, and Amazon's ones skyrocket, as shown by Figure 13.

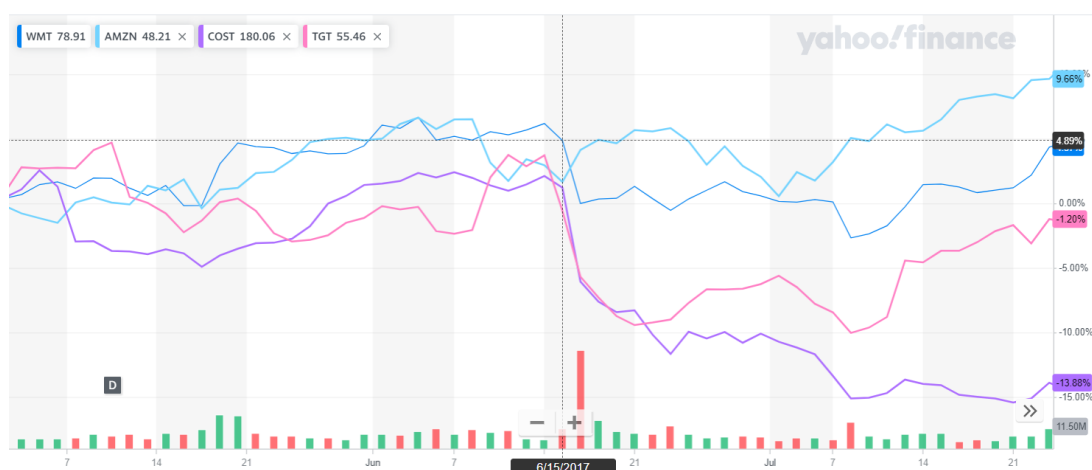


Figure 13: Amazon, Walmart, Costco and Target's stock prices on the 15th June 2017, date of the merger. Source: Yahoo! Finance.

⁵¹ "Amazon to Buy Whole Foods for \$13.7 Billion." June 2017, article from Wall Street Journal

⁵² It's finally clear why Amazon bought Whole Foods – by Seth Stevenson, via slate.com

The main reason for that was big retailers struggle to keep up with online merchants and the digital transition, and investors' fear that the acquisition would have opened the e-commerce doors to Whole Foods Market, and disintegrated brick-and-mortar industry's barriers to entry for Amazon.

At first, the two retailers didn't seem like an immediate match. Amazon is a low-price leader, while Whole Foods is a premium offering. Whole Foods' operating margins, at 5.5%, were higher than those of Amazon's North American retail business at 3%, as Citi analysts noted⁵³. The combined companies would be the third-largest U.S. grocery retailer by sales, according to the National Retail Federation. The sales of the leading retailers in 2017 are shown in Figure 14.

Rank	Company	2016 retail sales (000)	Expand all
1	Wal-Mart Stores	\$362,815,000	+
2	The Kroger Co.	\$110,215,000	+
3	Costco	\$85,778,000	+
4	The Home Depot	\$85,086,000	+
5	CVS Caremark	\$81,482,000	+
6	Walgreens Boots Alliance	\$79,283,000	+
7	Amazon.com	\$77,024,000	+
28	Ace Hardware	\$15,833,000	+
29	Starbucks	\$15,775,000	+
30	Whole Foods Market	\$15,011,000	+
31	7-Eleven	\$14,323,000	+
32	Nordstrom	\$14,265,000	+
33	Subway	\$13,945,000	+

Figure 14: Sales of top 100 retailers in 2017.

Source: nrf.com

Acquiring Whole Foods was a strategic move for Amazon, as it represented a way to quickly grab a bigger portion of the estimated \$674 billion U.S. market for edible groceries, according to consulting firm Kantar Retail. Until then, Amazon largely focused its grocery efforts around its Amazon Fresh subscription service, which promises quick delivery of online food orders. Online grocery shopping was – and still is - logistically complex, and, particularly in that period, firms had to fight consumers' hostility to the digital transition.

Online shopping accounted for 2% of grocery sales in 2016, according to Kantar. Before Amazon's announcement, that share was projected to grow to 3% by 2021; however, as COVID-19 hit in 2020, the digitalization process accelerated drastically, and even forced portion of the population the most averse to online shopping to change their beliefs, registering

⁵³ CNBC Retail - Wal-Mart is 'best positioned' in online grocery battle against Amazon.

a staggering 300% increase in the share of online grocery sales in the grocery retail industry. A forecast of the future market for US grocery sales is presented in Figure 15.



Figure 15: Online grocery sales to reach \$250B in 2025, an analysis by Mercatus and Incisiv.
Source: Mercatus, 2021.

Onto the physical feature of Amazon’s predicted intent in the acquisition, analysts said they expected Amazon eventually to use the stores to promote private-label products, integrate and grow its artificial-intelligence-powered Echo speakers, boost Prime membership and entice more customers into the fold, growing more and more important into people’s lives.

POST-MERGER CONSIDERATIONS

On the 23rd of August 2017, the FTC cleared the case, stating that after investigating whether the acquisition substantially lessened competition under Section 7 of the Clayton Act⁵⁴, or constituted an unfair method of competition under Section 5 of the FTC Act⁵⁵, they decided not to pursue the matter further. Under a “formal” point of view, the reasons why officers approved the transaction are clear, as they are grounded on two main basis: the current performances of the interested firms and the different relevant markets included. Onto the first one, the acquisition occurred in a time-frame where Whole Foods Market was losing considerable market share and appeared doomed to a downward revenues spiral. Therefore, the merged entity could have never reached the relevant threshold for market share in the retail industry, and neither posed as a significant threat for direct peers. In order to discuss the relevant markets included in the analysis, it is important to clear that the case was investigated as a vertical integration, thus only vertical theories of harm have been considered. However, any potential foreclosure of inputs or costumers were counterintuitive to the ethics and business conduct of Amazon, other than unprofitable: having based its growth on foregoing profits for a much wider consumer base, this strategy couldn’t have fit for the acquiring firm, and there was no probability of it being the case in the future. Moreover, this practice would also have conflicted with Amazon Fresh, Amazon’s grocery delivery branch.

⁵⁴ Section 7 of the Clayton Act prohibits mergers and acquisitions where the effect "may be substantially to lessen competition, or to tend to create a monopoly."

⁵⁵ Section 5 of the Federal Trade Commission Act (FTC Act) (15 USC 45) prohibits "unfair or deceptive acts or practices in or affecting commerce. "

Despite the FTC's greenlight, the deal has evoked diverse reactions and opinions from various stakeholders and activists, reflecting the public concerns and speculations surrounding the merger. Delivery startup Instacart, for instance, expressed apprehension about Amazon's expanded dominance in logistics, particularly in the last-mile delivery of perishable goods to consumers' doorsteps⁵⁶.

Figures such as US deputies Elizabeth Warren, Bernie Sanders, Amy Klobuchar, and even at-the-time presidential nominee Donald Trump raised alarms regarding Amazon's power acquisition and the potential implications for competition and innovation. Their concerns are grounded in the belief that the acquisition could exacerbate the existing market dominance of Amazon and negatively impact job markets and local communities.

Ronald Cass, dean emeritus of Boston University's law school, advised both the FTC and the US Department of Justice to take a closer look into the case, particularly referring to the actual benefit of consumers from the transaction, net of the resulting lower prices and increased efficiency from economies of scale and scope. Anant Raut, former counsel to the assistant attorney general in the Department of Justice's antitrust division, highlighted the potential harmful effects on innovation resulting from the merger, pointing out that while prices and potential scarcity of goods are easily quantifiable, possible long-term lags of innovation could have been left out of the picture⁵⁷.

Lina Khan, current FTC president but a Yale legal scholar at the time of the events, emphasized the political resonance of a major acquisition like this amidst the turmoil faced by the retail industry, focusing on the impact of Amazon's power on jobs and employment, and pointing to the struggles faced by brick-and-mortar retailers, which "had already lost 89,000 jobs"⁵⁸ and were leaving potential for e-commerce companies to fill vacant spaces. Her article "Amazon's Antitrust Paradox", described as "refraining decades of antitrust law" by the New York Times⁵⁹, argues that some elements might have slip from antitrust scrutiny due to its legal frontiers, and proposes alternative measures to integrate into the antitrust framework.

Among the specific elements that could pose anticompetitive concerns, Khan identifies two: firstly, Amazon's control over essential infrastructure as a prominent source of competitive advantage. By exercising such control, Amazon fosters the dependent relationship over rivals, which have to rely on their biggest competitor for consumer access. This extends beyond its retail platform to encompass cloud computing services, logistics networks, and other vital services within the online commerce ecosystem, and can create barriers for potential competitors seeking to enter or expand within the market, or even foreclosure.

⁵⁶ Whole Foods delivery partner Instacart: Amazon just 'declared war' on America's grocery stores. By Todd Bishop, geekwire.com

⁵⁷ Ready for a Monopoly fight? Amazon and Whole Foods isn't it. By Nitasha Tiku, wired.com

⁵⁸ Fake working class. By Janelle Bouie, slate.com

⁵⁹ Amazon's antitrust antagonist has a breakthrough idea. By David Streitfeld, New York Times

Secondly, conflicts of interest within Amazon's operations contribute to anticompetitive concerns, as the firm competes both with other retailers and serves as the distributor of their products, generating conflicts that can hinder competition and can be misleading when identifying sources of harm. These conflicts become particularly pronounced in the realm of search results on Amazon's platform, or on its control over its own delivery network. In both scenarios, Amazon can prioritize its own products or those of preferred partners over those of third-party sellers. This preferential treatment might restrict the ability of third-party sellers to reach customers and foster business growth, thereby undermining competition.

Onto the proposed alternative antitrust framework, Khan asserts that the current one, which pegs competition to "consumer welfare" defined as short-term price effects, is unequipped to capture the architecture of market power in the modern economy, and should instead start taking into account the structural dominance of firms like Amazon and their impact on competition in a more holistic approach. The alternative framework emphasizes three critical factors: market structure and dominance, conduct that undermines competition, and potential harms to innovation. Regarding the first one, the article proposes that antitrust enforcers should broaden their assessment of a firm's dominance by considering qualitative aspects beyond analytical ones, such as the firm's control over essential infrastructure and its ability to leverage data across different business lines; about the other two factors, Khan's advocates for a more proactive approach by authorities, considering possible cross-factors in evaluating factors that can hinder competition and innovation, referring to Amazon's unprecedented expansion.

Beyond antitrust issues and concerns, the aftermath of the Amazon-Whole Foods Market acquisition has generated mixed opinions concerning the impact on working conditions for employees. Whole Foods employees have reported feeling the pressure to promote Amazon Prime deals and memberships, as well as witnessing the integration of Amazon-related elements into their work environment, with some that report to have undergone training to ask each consumer if they are Prime members and to get them signed in⁶⁰. However, the company reiterated that it values its team members and boasted competitive wages and a high ratio of full-time and part-time employment. Despite these assertions, workers expressed their perception that Amazon's priorities take precedence over other aspects of their roles, leading to an understaffed and labour-intensive environment. While the persistent labour crunch, reduction of work hours, and an increased focus on Amazon-related tasks have affected workers' ability to provide quality customer service, financial analytics paint a different picture, supporting Amazon's approach, which led it to be the third-largest brand worldwide in 2022, as showed by Figure 16. These accounts shed light on the challenges faced by employees post-merger, highlighting the dichotomy between financial success and employee satisfaction in a such fast-paced economy.

⁶⁰ Whole Foods workers say conditions deteriorated after Amazon takeover. By Micheal Sainato, The Guardian

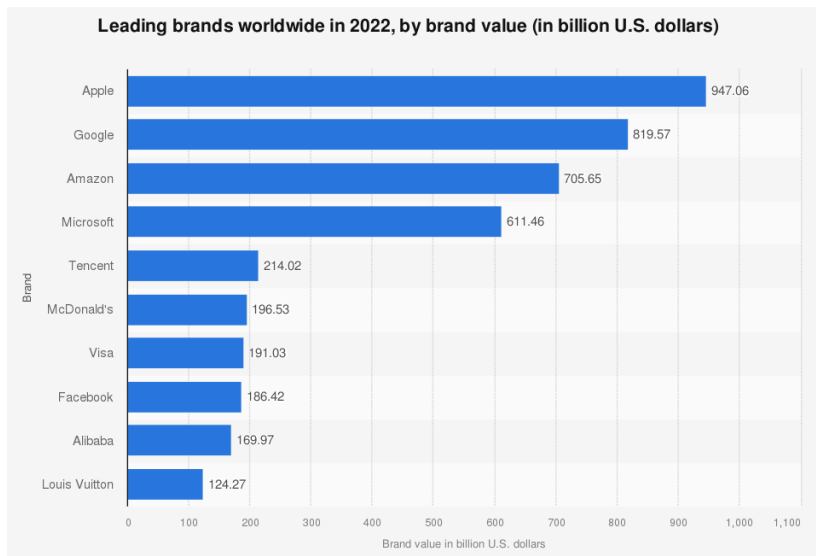


Figure 16: Leading brands worldwide in 2022, by brand value (in billion U.S. dollars). Source: Statista.

Apart from its employers, also Whole Foods Market's balance sheet had a hard time withstanding the impact of the deal. The acquisition provided the grocer with access to Amazon's endowment of resources and advanced technical ability, which has led to notable changes in Whole Foods stores. However, that came with a cost, since Amazon has utilized the brick-and-mortar platform of Whole Foods to minimize costs related to returns, delivery, and marketing, and to gather a treasure trove of consumers data to generate better targeted advertisements. This surely had a role in Whole Foods' transition⁶¹ from serving a niche of consumers that demanded biological and often regional products to a cost-efficient national retailer, which resulted in the most loyal portion of its consumer base's dissatisfaction and in the shift of its suppliers to other competitors. The impact of the transition on Whole Foods Market net income can be well seen from the graph, retrieved from Statista. After a couple of settling years, the firms appears to have found its balance in terms of products catalogue and targeted audience, which seem to be more "inclusive" towards mass consumption. Figure 17 displays the impact of the merger on Whole Foods Market's income.

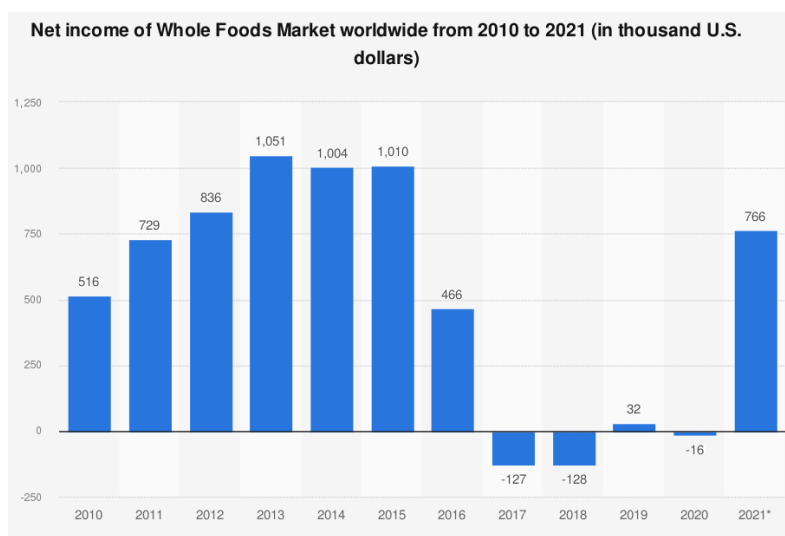


Figure 17: Net income of Whole Foods Market worldwide from 2010 to 2021. Source: Statista.

⁶¹"A year after Amazon announced its acquisition of Whole Foods, here's where we stand." By Lauren Hirsch, cnbc.com

III.III.II AMAZON / IROBOT

On August 5th 2022, Amazon and iRobot announced to have entered into a definitive merger agreement worth \$1.7 billion, under which the former will acquire the latter. iRobot Corporation is an American technology company founded in 1990 by three members of MIT's Artificial Intelligence Lab, who designed robots for space exploration and military defence, with the vision of making robot-assistance a reality. iRobot designs and builds robots that empower people to do more, helping them find smarter ways to clean and accomplish more in their daily lives. The firm's portfolio of solutions features proprietary technologies for the connected home and advanced concepts in navigation, mobility, manipulation and artificial intelligence, which fit well with Amazon's scope and potential business plans.

In 2002, after more than a decade of offering military products, iRobot debuted its first domestic robot, the Roomba. The Roomba is an autonomous robotic vacuum cleaner powered by a rechargeable battery, that allowed it to automatically go around all households' floors, without making its owner do any of the job. By 2004, thanks to its innovative features, a million Roombas had been sold⁶². One of the distinguishing characteristics of the product is that iRobot intentionally released the API for the serial of the Roomba model, so that people could hack into its system and better its performances. This surely had a role in the Roomba's evolution, since it enabled the firm to have a preliminary trial period carried out by the consumers themselves, which contributed to the firm's hotbed of ideas.

The first improved version of the original Roomba, model 980, was released in 2015. It had a built-in camera that allowed the robot to map the entire area and recognize objects and textures, so that it could apply the best cleaning techniques and calculate its trajectory more accurately. In this same year, iRobot generated \$617 million in revenue, as shown in Figure 18, and employed more than 600 of the robot industry's top professionals, including mechanical, electrical and software engineers and related support staff.

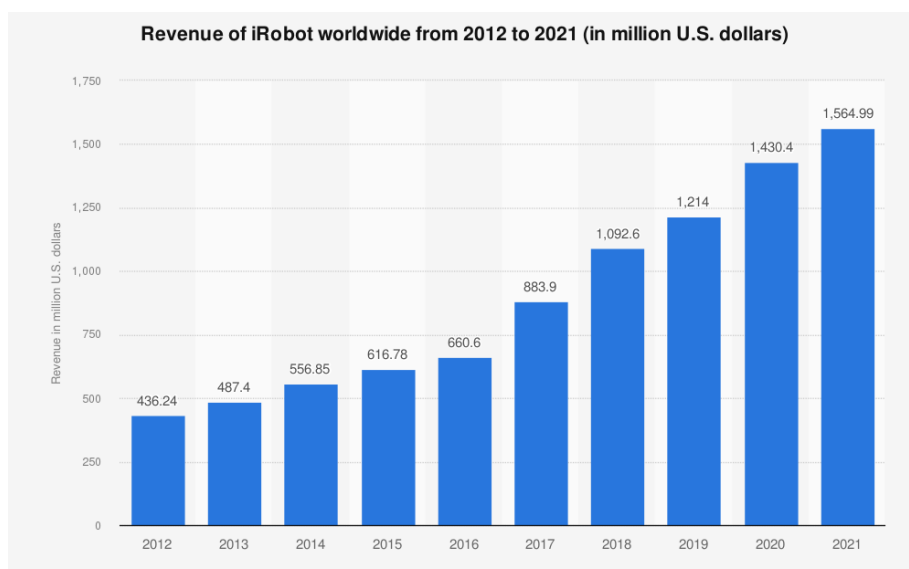


Figure 18: iRobot's revenues from 2012 to 2021. Source: Statista.

⁶² The history of Roomba. By Jolie Kerr, fortune.com

In May 2022, iRobot announced the new operating system and software platform for its Roomba vacuum cleaners, iRobot OS. According to the company's statement⁶³, iRobot OS will aid in giving their products a deeper understanding of the user's households and the users' habits, in addition to voice commands and greater object identification. As scary as it may sound, it's a clear sign of progress in the home domotics and robot industry in general, which could come in handy to Amazon as for its recent investments' focus transition towards AI and machine learning.

POTENTIAL MERGER CONCERNS

On 6th of April 2023, the CMA⁶⁴ opened an investigation aimed at understanding whether it is or may be the case that this transaction, if carried into effect, will result in the creation of a relevant merger situation under the merger provisions of the Enterprise Act 2002⁶⁵ and, if so, whether the creation of that situation may be expected to result in a substantial lessening of competition within any market or markets in the United Kingdom for goods or services.

As of May 2023, the official decision on the investigation is yet to be made public, but this could serve as an opportunity to apply the recognised pathways of investigation from the cases studied in this thesis to a real-life situation, in light of the alternative grounds of analysis that have shown to comply with the purpose. Therefore, this last part of the thesis will be aimed at analysing the possible concerns that competition authorities might find in this investigation, highlighting the antitrust features of this case and considering 2023 OECD document on theories of harm for digital mergers⁶⁶.

Based on the public information disclosed concerning the deal, the Amazon-iRobot merger can be classified as a vertical/conglomerational merger under the Enterprise Act 2002, since the two companies can be found operating at different stages of the supply chain or in different parts of the production process: Amazon is primarily an online retail giant, while iRobot is a manufacturer of robotic vacuum cleaners. It is important noticing how the merger could be investigated also under the viewpoint of a horizontal merger, since the two firms are both active in two singular markets: that of robot vacuum cleaners and, more in general, smart home devices. However, carrying an analysis based on the individual relevance of the firms in those markets, it can be shown how any potential horizontal definition falls short, while applying the vertical definition on the merger extends the case into more complex dynamics involving different markets, possibly allowing the intervention to tackle different and more comprehensive arising issues.

⁶³ "iRobot OS is the newest 'brain' for your Roomba". By The Verge, 31 May 2022.

⁶⁴ <https://www.gov.uk/cma-cases/amazon-slash-irobot-merger-inquiry>

⁶⁵ Section 23 defines a relevant merger situation. Section 35 provides guidelines for potential lessening of competition.

⁶⁶ "Theories of Harm for Digital Mergers", OECD 2023. <https://www.oecd.org/competition/theories-of-harm-for-digital-mergers>

Figure 19 shows how in the first market, even though iRobot leads the play with an outstanding 50% of market share, Amazon isn't considered as a credible actor, despite having released its own robotic vacuum cleaners. Moreover, it must be pointed out how iRobot's market presence is currently passing through a declining trend, in favour of other competitors.

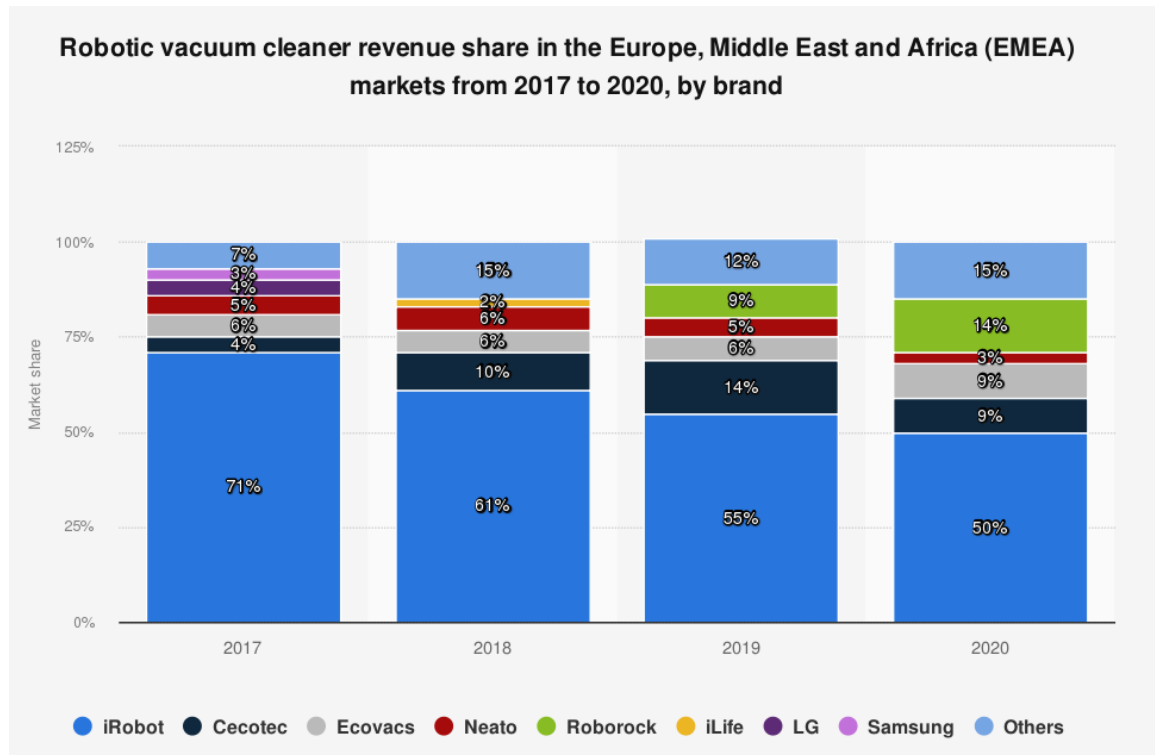


Figure 19: Robotic vacuum cleaner revenue share in the Europe, Middle East and Africa markets from 2017 to 2020, by brand. Source: Statista.

In a hypothetical relevant market for “smart home devices”, the situation becomes the opposite. Even though Amazon states that “more than 140.000 products are now compatible with Alexa” and it directly ships 11% of the volume of all goods traded in this sector⁶⁷, it doesn't own the patents for them and directly gains really small profit for each of those transactions. Furthermore, as shown by the “Smart Home – Market Data & Forecast 2022” from Statista, reported in Figure 20, competition occurs fiercely in this industry, with the leading companies each accounting for a small fraction of the market, and firms are expected to grow in number due to the ongoing wave of home automation. iRobot can be considered to be engaged in a segment of this industry, thus it isn't credibly close to compete with the top of the table.

⁶⁷ Amazon dominates the \$113 billion smart home market. By Katie Tarasov - CNBC

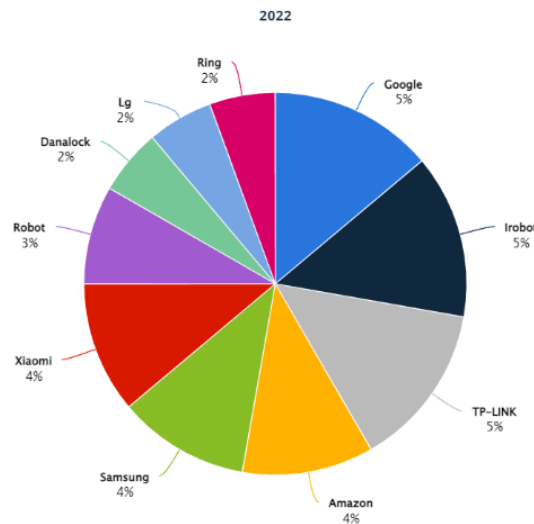


Figure 20: Market share of the leading companies in the market for smart-home devices. - Source: Statista. Only top brands are shown, so the numbers do not add up to 100.

In order to understand how the merger could result in a significant lessening of competition, it is important to analyse which are the relevant markets that might be affected by the transaction, so that we can distinguish the different theories of harm. Together with the previously stated relevant markets, namely retail and smart home devices, it could be useful to investigate the impact of the deal on the market for consumer data and privacy, in order to carefully assess any possible concern for consumer protection and data collection. Unfortunately, under the Enterprise Act 2002 there isn't a specific section that directly addresses privacy concerns. However, the kinds of concerns are also regulated by specific legislation such as the General Data Protection Regulation (GDPR) in the European Union and other data protection laws in different jurisdictions. These privacy laws may provide additional avenues to address privacy concerns associated with the merger and its implications for the handling of consumer data.

PREDATORY PRICING & POTENTIAL COMPETITION FORECLOSURE

Referring to the first relevant market, the retail market, as unlikely as it might sound, it could be the case that Amazon starts engaging in a predatory pricing strategy, selling iRobot's products such as the Roombas at artificially low prices, bundling them with other in-house products and subscriptions, such as Amazon's virtual assistant speaker Alexa or Prime, its free-shipping service. This could drive iRobot's direct competitors away since they would not be able to sustain such prices, given the importance of Amazon as shopwindow for their offerings, distorting competition in the retail industry. However, it's worth noticing how Amazon's bundling history never featured third-party products, and this might make a bundle of Amazon's own products and iRobot's ones quite unlikely⁶⁸.

⁶⁸ Amazon product bundling policy for 2021. By nozzle.ai

In the same fashion, prioritizing iRobot's vacuum cleaners and leveraging of the combined dominance in the home devices industry could give rise to vertical integration theories of harm and a consequent foreclosure of potential competition in the market for innovative home technologies. For instance, by incorporating iRobot's products tightly into its own smart-home ecosystem, Amazon might discourage rivals from competing or exclude them definitively from the market, since other smart-home devices would not be able to match its offering, as well as a such consolidated native environment. Due to the structure of ecosystem environments, the degree of interconnectedness between products destined to be complementary is a crucial factor. Smoothing the process of connection between smart-speaker devices and innovative home-appliances, Amazon could possibly find a blue ocean of opportunities, where its competitive capabilities would be unmatched. In the meanwhile, on iRobot's side, it would gain a considerable competitive advantage from its peers, given the significant spotlight that such conduct by Amazon would grant.

DATA COLLECTION & PRIVACY CONCERNS

As stated by Colin Angle, iRobot's CEO, in a recent interview⁶⁹, as a leading provider of home robotics, the firm places paramount importance on safeguarding customer data and privacy, as it is committed to respecting customer's trust by neither selling nor divulging personal information. Customers retain full control over the personal data they choose to share, which iRobot utilizes solely to enhance robot performance and enable customers to directly manage cleaning missions.

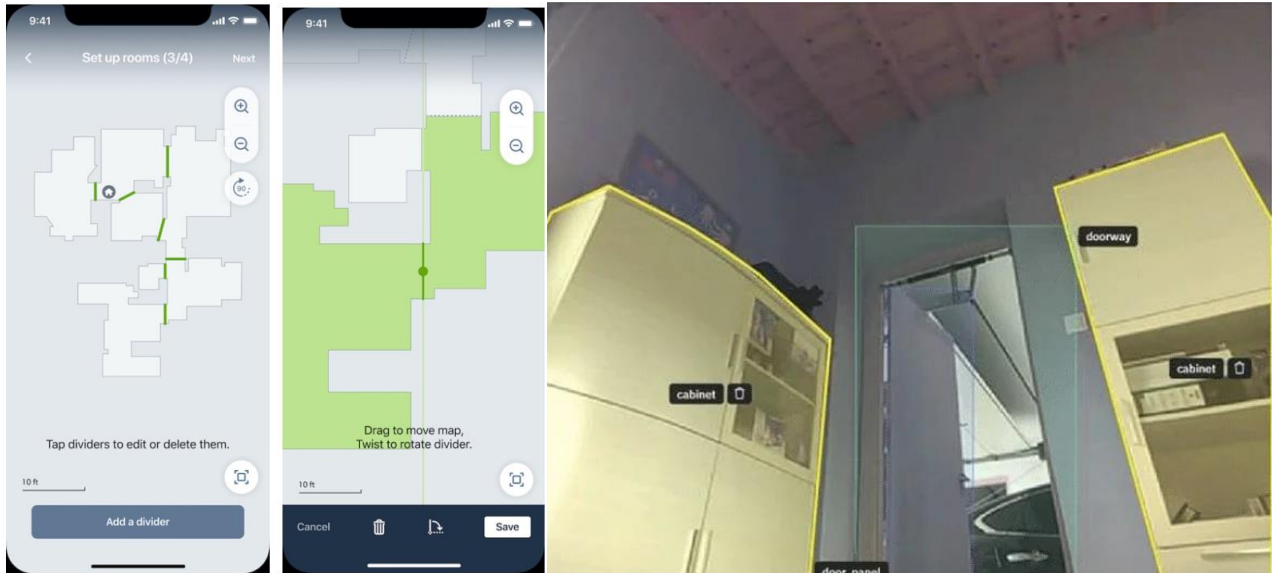
The Roomba and Braava robots, offered by iRobot, employ advanced capabilities such as mapping to facilitate effective cleaning and provide customers with valuable insights into cleaning performance. For instance, the Roomba j7 can identify and navigate around objects such as pet waste, cords, and shoes, ensuring a thorough cleaning process. Through the use of a Smart Map, iRobot's connected home robots can identify rooms and furniture, allowing customers to personalize cleaning missions and target specific areas within their homes that require extra attention. Importantly, all data generated by the Smart Map and captured images are securely encrypted and transmitted to the cloud, so there's no data breach risk. Customers can access this information via the iRobot Home App, ensuring their privacy is maintained while benefiting from a comprehensive cleaning experience.

Furthermore, iRobot offers customers the option to enable voice control through popular services like Amazon's owned Alexa, Google Assistant, or Siri. In order to facilitate this integration, a limited amount of data sharing might be required between the interacting platforms. Even though this will happen conditional of users' explicit approval, the actual details and amounts of data shared are not publicly disclosed, and it is pretty unlikely that it will be the case in the near future, raising potential concerns about the specifics and volume of the data shared. Moreover, in the aforementioned interview, Angle neither confirmed nor denied these concerns, stating that *"iRobot does not – and will not – sell customers' personal information to third parties. Our customers control the personal information they provide us, and we use that information to improve robot performance and the customer's ability to directly control a mission."* However, concluded the merging process, the firms would cease to be

⁶⁹ "iRobot will always protect consumers' data and privacy." By Colin Angle, via linkedin.com

distinct, so Amazon would not be technically considered a third-party. Either this theoretical loophole is voluntary or not, consumer data collection and sharing might give rise to some concerns, which can be synthesized into one ecosystem-based and two privacy-focused theories of harm, according to their definition in the previously mentioned OECD document.

Ecosystem theories of harm do not fit neatly into the traditional categorisation of merger theories and can apply whether the products or services supplied by the merging entities are complements, substitutes, or unrelated. However, at their core is the notion that mergers involving ecosystems may have a broader impact in terms of entrenching the position and strength of the ecosystem as a whole. The gatekeeper role that ecosystems play, combined with their significant informational advantage, then makes entry by a new firm in any of the markets within which the ecosystem operates very difficult. It may also enable the merged entity to directly leverage its ecosystem dominance to harm competition in a specific market. In this case, due to the structure of Amazon's ecosystem itself and the way it is strengthened – consumer data collection - this theory of harm is directly tied to another one, that of access to commercially sensitive information: the collection of such information would provide the acquirer a unique advantage over its competitors, gaining insights about an otherwise unknown consumer base. At this point, the link between the two firms becomes clear: Amazon might use Roomba's images and maps of consumers' houses to better target their advertisements, improve Alexa's capabilities and prioritize products on its marketplace based on users' houses' furnishing and style, potentially disrupting competition for alternative products in the smart-devices ecosystem.



Figures 21-22. On the left, screenshots of Roomba app to monitor the vacuum cleaner, displaying a detailed map of the house. Source: iRobot FAQs. - On the right, leaked footage of a Roomba labelling a room's furniture. The leak involved also sensitive pictures taken without the owners' consent. Source: Roomba's sensitive pics leaked online, businessinsider.com

However, this theory of harm was already brought up in the Meta - Kustomer case⁷⁰, where the Bundeskartellamt deemed it necessary to assess the potential for the merger to impact “the wider context of Meta’s ecosystem” which included the Facebook platform, WhatsApp, Instagram, and its monetisation through online advertising. Notably, the German authority focused on the advantage Meta could obtain through the accumulation of additional data from Kustomer’s corporate clients and their end customers, which could be used at various points within Meta’s ecosystem, particularly for online advertising. Nevertheless, it ultimately did not proceed to investigate these concerns due to issues surrounding the standard of proof, as it was unlikely that the services and capabilities associated with Kustomer were of sufficient significance for the ecosystem to develop in such a way to warrant a more detailed examination of the merger. Even so, the Amazon – iRobot case might be different in terms of volume of data traded and scope of the collection, and it might be interesting to know authorities’ opinion on this viewpoint.

With regards to privacy theories of harm, it can be useful to consider the assessment framework for digital mergers proposed by Samson Esayas⁷¹, an associate professor at BI Norwegian Business School, that puts forward a set of approaches for integrating privacy as a non-price parameter in such investigations. The first approach proposed is the “privacy as a quality” theory of harm, whereby harms to privacy are considered akin to degradation of the quality of the products for final users. Noting that there are differing consumer preferences surrounding the collection and use of data, it is important to consider privacy dimensions that go beyond the volume of data collected, including those relating to the ability of consumers to control and make informed decisions regarding their data. As such, reductions in privacy can result from increasing the amount of personal data demanded or expanding usage of existing data, but also from abandoning of end-to-end encryption and conducts that negatively affects users’ ability to control the information they give up. In the context of the General Data Protection Regulation – GDPR - a privacy reduction refers to a situation where there is a decrease or compromise in the level of privacy protection afforded to individuals’ personal data. It occurs when the processing of personal data no longer aligns with the principles and requirements set forth in the Article 5 of the regulation⁷², namely lawfulness, fairness, and transparency, and as such, might be considered a violation of the GDPR.

Applying this theory to the Amazon-iRobot merger, the increased access to and consolidation of consumer data by Amazon raises concerns about privacy and consumers protection. As iRobot collects extensive data on consumers’ homes and lifestyles through its robotic vacuum cleaners, as previously stated, the merger may result in the expanded utilization and potential misuse of this data. This could include personalized advertisements, targeted marketing, or sharing of data with third parties. From a “privacy as a quality” perspective, the reduction in privacy resulting from the merger could be seen as a deterioration in the quality of the products and services offered by both the two entities, and rises questions about the data collection dynamics’ compliance with the GDPR.

⁷⁰ “Mergers: Commission clears acquisition of Kustomer by Meta (formerly Facebook), subject to conditions.” https://ec.europa.eu/commission/presscorner/detail/da/ip_22_652

⁷¹ Esayas, Samson, Data Privacy in European Merger Control: Critical Analysis of Commission Decisions Regarding Privacy as a Non-Price Competition (December 4, 2019). *European Competition Law Review* 40(4) (2019) pp. 166-181, Available at SSRN: <https://ssrn.com/abstract=3498242>

⁷² General Data Protection Regulation - <https://gdpr.eu/>

The second theory proposed by Esayas is the incorporation of privacy considerations into the "maverick-firm" theory of harm. The maverick-firm theory focuses on the potential competitive harm arising from the acquisition of low-end disruptive smaller firms, defined as smaller companies with fewer resources, able to challenge incumbents by "successfully targeting overlooked segments, gaining a foothold by delivering more-suitable functionality frequently at lower price", even without a substantial increase in market power. In the digital setting, a maverick firm may cater to privacy-conscious consumers who value strong privacy safeguards and are willing to sacrifice some convenience or advanced features for better data protection. The elimination of a maverick firm from the market could result in a lessening of competition, in the sense that it might reduce the competitive pressure on incumbents by weakening the industry's privacy constraints, and could eventually slow down innovation.

In the Amazon-iRobot case, iRobot might have been seen as a potential maverick firm due to its focus on privacy-centric home robotics, at least until some sensitive footage captured by Roombas have been leaked in 2022⁷³ (Figure 22). Even though an iRobot spokesperson, James Baussmann, stated the pictures were taken by test-robots inside the firm's property, and not by any of the unit available to consumers, public opinion is yet to change their mind, and get really hostile when privacy issues come in, and even more when evidence confirming Baussmann's statement are nowhere to be found⁷⁴. Alternatively, if iRobot is considered to be a maverick firm for its forward-looking attitude and cutting-edge technologies, then the magnitude of the merger's impact on the degree of innovation in the market for privacy-conscious home automation should be carefully assessed.

Furthermore, it might be useful to investigate the case under the lenses of the GDPR, and in particular, with respect to the already mentioned 5, 6, 9, 25 and 32. Article 6 establishes the lawful bases for processing personal data. In the context of the merger, it becomes crucial to assess whether Amazon and iRobot have a lawful basis for processing the personal data they collect from consumers. This could include obtaining consent from individuals, performing a contract with the individuals, complying with legal obligations, pursuing legitimate interests, or protecting vital interests. Article 9 imposes additional restrictions on the processing of sensitive personal data, such as health data or biometric data, for the collection of which companies must adhere to specific conditions. Article 25 safeguards individuals' data protection rights, ensuring that privacy considerations are integrated into the design and development of products and services. In the context of the merger, it becomes essential to evaluate whether Amazon and iRobot have implemented privacy and data protection measures in their products and services. This includes adopting privacy by design principles, implementing security measures, and providing individuals with control over their personal data. Article 32 mandates organizations to implement appropriate technical and organizational measures to ensure the security of personal data. This includes measures to prevent unauthorized access, accidental or unlawful destruction, loss, alteration, or disclosure of personal data. In the merger case, it is crucial to assess whether Amazon and iRobot have implemented robust security measures to protect the personal data they process. In conclusion, assessing compliance with these articles could help addressing privacy concerns in the investigation and ensuring the protection of individuals' privacy rights in the context of mergers in digital markets.

⁷³ "A Roomba recorded a woman on the toilet. How did screenshots end up on Facebook?" – Source: MIT Technology Review

⁷⁴ Roomba says leaked pictures including one of a woman on the toilet were taken by test vacuums, not purchased ones. Source: [businessinsider.com](https://www.businessinsider.com)

CONCLUSIONS

This thesis presented a comprehensive analysis of mergers and acquisitions in the digital market context, with a particular focus on the examination of notable acquisitions by Meta and Amazon. The research has explored alternative methods for antitrust intervention and investigation, taking into account the unique challenges posed by digital markets, including the growing importance of big data and privacy considerations. By critically analyzing regulatory judgments and considering the dynamics of digital markets, this thesis contributes to the ongoing dialogue surrounding effective antitrust measures in the digital era. Throughout this study, the thesis examined the fundamental concepts and strategic rationales underlying M&As, providing a foundation for understanding the motivations behind these transactions. To serve this purpose, the second chapter delved into the distinguishing features of digital markets, shedding light on the complexities that arise from factors such as network effects, data-driven strategies, and platform dominance.

Chapter 3, the core of this thesis, involved an in-depth examination of the Meta/Instagram, Meta/WhatsApp, Amazon/Whole Foods Markets and Amazon/iRobot acquisitions. The examination of these cases has been carried out by scrutinizing the official authorities' documents – when available - and introducing new factors derived from the perspective of digital market competition. By critically analyzing the judgments and identifying potential gaps, we aimed to provide alternative viewpoints that more adequately addressed the intricacies of digital markets.

In the case of Meta's acquisitions of Instagram and WhatsApp, the analysis revealed the need for renovating an outdated regulatory framework. The traditional approach to merger control often fails to capture the dynamic and rapidly evolving nature of digital markets. This thesis argues for the inclusion of novel factors, such as the magnitude of network effects, data-driven strategies, and platform dominance, in regulatory assessments to ensure effective competition oversight in the digital realm.

Moving on to the Amazon/Whole Foods case, the analysis went beyond the financial aspects and incorporated considerations of consumer protection. By taking into account both the regulatory note and public concerns surrounding consumer welfare, this study highlights the importance of inserting consumer protection regulations within the framework of M&As in the digital realm. Safeguarding consumer interests, ensuring fair competition, and promoting choice are critical aspects that regulators must address in the context of digital market transactions.

Regarding the Amazon/iRobot acquisition, as the judgment was yet to be pronounced, the chosen methodology for the examination was a self-analysis on the basis of the acquired field knowledge, involving professional analytical techniques. This comprehensive research aimed to provide insights into the potential implications of the acquisition and the factors that should be considered within the context of digital market competition. A key takeaway from this

analysis is the significance of understanding and addressing the potential privacy implications of mergers in digital markets that employ a vast amount of data. Ensuring robust privacy safeguards and effective data governance mechanisms should be key considerations for regulatory authorities when evaluating such transactions.

Despite these cases displaying several different features among them, the main *fil rouge* is the pivotal role played by big data in shaping market dynamics. One of the main messages of this thesis is the recognition of the need to adapt regulatory frameworks and practices to address the challenges posed by big data in M&As. Authorities must consider the implications of data concentration, the potential for exclusionary practices, and the impact on consumer privacy and choice. By incorporating these factors into merger control and antitrust investigations, this thesis advocates for a holistic approach that safeguards competition, innovation, and consumer welfare in the digital era.

To effectively address the challenges posed by digital markets, regulators must embrace a forward-thinking approach that recognizes the evolving nature of these markets and their impact on competition and consumer welfare. By continuously updating regulatory frameworks, incorporating novel factors, and ensuring robust privacy protections, authorities can foster a fair, competitive, and consumer-friendly digital marketplace that encourages innovation and safeguards societal interests.

Through this thesis, we have contributed to the ongoing academic and policy discourse surrounding effective antitrust measures in the digital era. As technology continues to advance and reshape markets, the insights gained from this research might serve as a foundation for developing adaptive and forward-looking regulatory approaches that promote competition, innovation, and the well-being of consumers in the digital economy.

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