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Competition in the Digital Economy and Artificial Intelligence Era: Challenges for a Fair Digital Market and Recommendations for Vietnam

Abstract

This study examines how the digital economy transforms business competition and proposes sustainable solutions for emerging challenges. Using an interdisciplinary approach combining economic theory, legal frameworks, and technological assessment, it identifies four key disruptions to traditional competition: algorithmic collusion enabling price-setting without explicit agreements; data power abuse creating market entry barriers through strategic data control; self-preferencing practices allowing platforms to favor their services over competitors; and "killer acquisitions" eliminating future threats by acquiring potential competitors. Results reveal critical gaps in current competition laws, including difficulties defining relevant markets for digital services with network effects, limitations of traditional price-based analysis in zero-price markets, challenges measuring consumer welfare in "free" services, and tensions between protecting competition and encouraging innovation. For Vietnam as an emerging digital economy, the study recommends a comprehensive regulatory strategy: establishing a Digital Economy Unit within the Vietnam Competition Authority; expanding market dominance criteria beyond market share to include data control and network effects; introducing specific anti-competitive behavior rules; implementing transaction-value thresholds for merger control to capture high-value, low-revenue acquisitions; and adopting flexible regulatory approaches for technological change. These recommendations balance fair competition with innovation encouragement. The analysis is particularly relevant to dual transformation toward digitalization and sustainability, as digital platform concentration can either promote or hinder green innovation and sustainable development. The study demonstrates competition law reform's crucial role in supporting both digitalization and environmental sustainability objectives, with significant implications for Vietnam's broader sustainability agenda.

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1 Introduction

The Fourth Industrial Revolution is fundamentally transforming the global economy, with the digital economy serving as a key driver of growth. Technological advancements such as AI, big data, cloud computing, and the Internet of Things are driving this rapid transformation, reshaping traditional market structures and establishing disruptive new business models. The digital economy has profoundly altered market operations. Network effects, low marginal costs, multi-sided markets, and the growing centrality of data have produced a "winner-takes-all" trend across many industries. In industrialized countries, a few digital platforms have achieved dominance with market shares far exceeding those of traditional enterprises in comparable sectors.

Anti-competitive behaviors in this context have evolved distinctly from traditional markets. Rather than obvious tactics like price collusion or market division, they manifest through sophisticated pricing algorithms, data misuse, platform self-preferencing, and preemptive acquisitions of potential competitors. The complexity and opacity of these practices pose significant challenges for competition authorities worldwide, as traditional analytical tools often prove inadequate for digital markets.

This paper examines the challenges of regulating anti-competitive behavior in the digital economy and draws on international experiences to propose effective solutions for emerging economies such as Vietnam. The study addresses: (1) defining digital market characteristics and unfair competition types; (2) identifying theoretical, conceptual, and implementation challenges; (3) synthesizing regulatory lessons from other countries; (4) evaluating current legal frameworks and enforcement; and (5) recommending improvements to legal structures and enforcement mechanisms. This research gains urgency from the global "dual transformation" agenda advancing both digitalization and sustainability. Digital platforms increasingly determine market access for green technologies, sustainable products, and environmental services. When dominant platforms control these gateways, their influence can either accelerate green transformation through

network effects and data sharing or obstruct it through self-preferencing and data restrictions. Competition authorities must therefore assess how digital market concentration affects not only general innovation but specifically green innovation and sustainable business models.

This study employs an interdisciplinary methodology combining legal analysis, comparative law, and case studies, examining frameworks across the EU, US, and Asia, while analyzing landmark cases including the EU's Google Shopping decision, the FTC's Facebook investigations, and emerging Vietnamese digital platform cases.

2 Theoretical Basis of Competition in the Digital Economy

2.1. Characteristics of the Digital Economic Market

2.1.1. Network Effects and Positive Feedback

One of the most significant aspects of the digital economy is the concept of network effects. They happen when a product or service becomes more valuable to users as more people use it.[1] Direct network effects and indirect network effects are the two basic types of network effects. When the benefits to users increase directly with the number of other users, as in social networks or messaging apps, this is known as a direct network effect. Facebook (worldwide) and Zalo (Vietnam) are both more useful to users when more of their friends and family utilise them. In multi-sided markets, indirect network effects occur when the quantity of users on one side of the market increases its value for users on the other side. This is what happens when buyers and sellers utilise e-commerce platforms.[2]

Network effects can sometimes create positive feedback loops, enabling large platforms to improve over time. This leads to "winner-takes-all" or "winner-takes-most" tendencies. Network effects can make it very challenging for new businesses to enter a market and increase market

[1] Michael L. Katz, Carl Shapiro, "Network Externalities, Competition, and Compatibility" *American Economic Review*, No. 3 (1985): 424-440.

[2] Jean-Charles Rochet, Jean Tirole, "Platform Competition in Two-Sided Markets" *Journal of the European Economic Association*, No. 4 (2003): 990-1029.

concentration.[3] This is why there are generally only one or two corporations that control a significant portion of digital marketplaces, such as Google in online search or Facebook and YouTube in social media.

However, network effects do not always lead to a lasting monopoly, as new technologies can produce "creative destruction," allowing new competitors to overcome the network effect barrier.[4] The fall of MySpace to Facebook or the decline of Yahoo to Google are good examples. This illustrates the need for a balanced approach to competition policy that prevents dominant platforms from being abusive, while still allowing room for new ideas.

2.1.2. Low Marginal Costs and Economies of Scale

Another essential part of the digital economy is that it has very low marginal costs and very high fixed costs. Creating digital items, such as software, algorithms, or platforms, is a significant expense, yet serving an additional client incurs minimal additional cost.[5] Google, for instance, does not have to spend much more money to service one more user after making a search engine. This cost structure yields high economies of scale, meaning that average costs decrease rapidly as the number of users increases. Established companies have a significant edge over their competitors thanks to economies of scale and network effects. This can lead to "superstar" companies, which are a select few that dominate the market and generate substantial profits.

In the digital economy, economies of scope also exist. Digital platforms can quickly expand into adjacent areas by leveraging their existing users, data, and technology.[6] For instance, Amazon has grown from selling books online to operating a multi-industry e-commerce platform, offering

3 David S. Evans, Richard Schmalensee, "The Antitrust Analysis of Multi-sided Platform Businesses," [in:] *The Oxford Handbook of International Antitrust Economics*, t. I, ed. Roger D. Blair, D. Daniel Sokol (Oxford: Oxford University Press, 2013), 404-447; David S. Evans, Richard Schmalensee, *Matchmakers: The New Economics of Multisided Platforms* (Boston: Harvard Business Review Press, 2016).

4 Carl Shapiro, Hal R. Varian, *Information Rules: A Strategic Guide to the Network Economy* (Boston: Harvard Business School Press, 1999).

5 Hal Varian, "Artificial Intelligence, Economics, and Industrial Organization," [in:] *The Economics of Artificial Intelligence: An Agenda*, ed. Ajay Agrawal, Joshua Gans, Avi Goldfarb (Chicago: University of Chicago Press, 2019), 399-419.

6 Feng Zhu and Qihong Liu, "Competing with Complementors: An Empirical Look at Amazon.com" *Strategic Management Journal*, No. 10 (2018): 2618-2642.

cloud services (AWS), manufacturing consumer gadgets (Kindle, Echo), and even producing content (Amazon Studios). These economies of scope make it more challenging to define key markets and determine a company's market power.

2.1.3. Multi-Sided Markets and the Role of Platforms

Multi-sided markets are markets where two or more parties use an intermediary platform to communicate with one another. The interests of one group are affected by the existence of another group. Digital platforms such as Amazon, Shopee, Google, or Facebook function in multi-sided markets: Amazon connects sellers and buyers; Google connects search users, marketers, and content providers; and Facebook connects users, advertisers, and application developers.

A critical aspect of multi-sided marketplaces is "cross-subsidization," which occurs when platforms charge little or no costs to attract consumers on one side of the market while generating revenue on the other side. For instance, Google lets people use its search service for free, but charges for ads. Shopee, an online shopping platform, allows customers to sign up for free but charges sellers. This unusual approach to pricing makes it challenging to apply traditional competition analysis tools, which typically examine price and market share.

Often, multi-sided platforms employ an "ecosystem envelopment" strategy, where a platform that excels in one market expands into adjacent markets to leverage its data and network effects.[7] This can lead to "self-preferencing" difficulties, where a platform may favor its services over those of its competitors. The EU's Google Shopping case is a good example. Google was accused of prioritizing its shopping service over other shopping services in search results.[8]

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7 Thomas Eisenmann, Geoffrey Parker, Marshall Van Alstyne, "Platform Envelopment" *Strategic Management Journal*, No. 12 (2011): 1270-1285.

8 European Commission, Google Search (Shopping), Case AT.39740 (Brussels: European Commission, 2017).

2.1.4. Data as a Strategic Competitive Asset

In the digital economy, data has become a valuable asset for competitive advantage. One can gain a competitive advantage by collecting, analyzing, and utilizing big data. To improve their services, companies personalise them, find the best prices, and develop new items, using data. Data is more valuable when it is larger and covers a broader range. Big platforms can gather more varied and valuable data, which improves their services and attracts more users, creating a positive feedback loop.[9] Combining diverse forms of data (data fusion) can also provide much value, especially when it comes to building machine learning algorithms and artificial intelligence. This is one reason why internet companies want to acquire other companies, such as Facebook's acquisition of WhatsApp and Instagram, or Google's acquisition of Fitbit.

However, having access to and control over extensive data can make it more challenging for new businesses to get started and help existing ones stay ahead. According to research from the UK's Competition and Markets Authority (CMA), data power can eliminate potential competitors and maintain market dominance for companies.[10] This raises concerns about fair access to data and how "open data" might enhance competition.

As e-commerce sites like Shopee, Lazada, and Tiki, as well as ride-hailing apps like Grab and Be, continue to grow rapidly in Vietnam, issues of data concentration and market power are becoming increasingly important. The three most significant online shopping sites in Vietnam collectively hold a large market share. Grab and Xanh SM are the biggest ride-hailing services in major cities (VCCI 2025).[11] This makes it harder for fair competition, especially since Vietnam's competition law lacks clear rules regarding data sharing and access rights.

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9 Anja Lambrecht and Catherine E. Tucker, Can Big Data Protect a Firm from Competition? (Brussels: Competition Policy International, 2017). https://www.competitionpolicyinternational.com/wp-content/uploads/2017/01/CPI-Lambrecht-Tucker.pdf.

10 Competition and Markets Authority, Online Platforms and Digital Advertising: Market Study Final Report (London: Competition and Markets Authority, 2020), https://assets.publishing.service.gov.uk/media/5efc57ed3a6f4023d242ed56/Final_report_1_July_2020_.pdf.

11 VCCI, Grab and Xanh SM Dominate Vietnam's Ride-Hailing Market: Report. https://en.vcci.com.vn/grab-and-xanh-sm-dominate-vietnam%E2%80%99s-ride-hailing-market-report. [accessed: 30.8.2025].

The importance of data becomes even clearer when considering the intersection of digital and green transformation. Important issues such as environmental monitoring data, supply chain sustainability metrics have value that can determine competitive advantage in the green technology market. Digital platforms that control access to environmental data or sustainable consumption patterns can leverage this information to favor their own green products or services over competitors. For instance, e-commerce platforms that possess extensive data on consumer behavior can give preferential treatment to their own sustainable private label products, while pushing competing green products to less prominent positions on their sites. This risk of data concentration extends to key sustainability areas, where information asymmetries can determine market access for green innovations.

2.2. Certain Forms of Competition Restriction in the Digital Economy

In the digital economy, anti-competitive actions have taken on new forms that differ from those of the past. The differences stem from the way digital marketplaces operate, the role of data and algorithms, and the fact that digital business models are complex and not entirely transparent. This section will examine four types of anti-competitive actions in the digital economy: collusion through pricing algorithms, abuse of data power, self-preferencing on digital platforms, and the acquisition of potential competitors.

2.2.1. Collusion Through Pricing Algorithms

When companies employ algorithms to coordinate their price behaviour, this is called algorithmic collusion. The outcomes are comparable to those of traditional collusion, but there is no explicit agreement in place. This happens in three main ways[12]:

First, algorithms serve as "messengers" that help companies work together in a standardized manner, utilizing algorithms to facilitate transactions. In the United States, the United States v. David Topkins case in 2015

12 Ariel Ezrachi, Maurice Stucke, "Artificial Intelligence & Collusion: When Computers Inhibit Competition" *University of Illinois Law Review*, No. 5 (2017): 1775-1810.

is a well-known example. In this case, online bookstores utilized pricing software to negotiate deals and manage prices.

Second, the "hub and spoke" algorithm. It allows multiple organisations to utilise the same price algorithm, which enables effects to be coordinated without a direct connection. This happens frequently when online stores utilize the same third-party pricing platform or when competitors use the same consulting firm to design their pricing algorithms.[13]

Third, "self-learning" algorithms, which are independent machine learning algorithms designed to maximize profits, have found that parallel pricing schemes are most effective. This is the hardest type, as there is no human agreement or goal; it is simply the result of optimizing an algorithm.[14]

Algorithmic pricing is particularly challenging for competition authorities to address. It is difficult to distinguish between legal tacit and criminal collaboration, especially when there is no clear evidence of an agreement. It is tough to prove collusive intent because powerful machine learning algorithms are like "black boxes." Moreover, algorithms can modify prices in real-time and respond quickly to market changes. This makes it easier to maintain stable pricing arrangements.

2.2.2. Data Power Abuse and Barriers to Market Entry

In the digital economy, data is becoming a strategic asset and a source of substantial market power. The abuse of data power can emerge in many different forms:

First, not giving out important information. If a dominant platform acquires unique and important data sets for competitive advantage in a market and refuses to share them, that could be an abuse of power. For instance, in the EU's action against Thomson Reuters, the corporation was required to allow its competitors to use its securities identification codes (SICs) as a means to resolve the issue.[15]

Second, exclusive data agreements occur when a corporation enters into agreements with key data sources, preventing competitors from accessing

13 Joseph E. Harrington Jr., "Developing Competition Law for Collusion by Autonomous Artificial Agents" *Journal of Competition Law & Economics*, No. 3 (2019): 331-363.

14 Ai Deng, "What Do We Know About Algorithmic Tacit Collusion?" *Antitrust*, No. 1 (2018): 88-95.

15 European Commission, Reuters Instrument Codes, Case COMP/39.654 (Brussels: European Commission, 2012).

them. For instance, Google has secured exclusive deals with numerous publications and mobile platforms to ensure that it remains the default search engine. This lets Google acquire search data that no one else can.

Third, discriminatory access to data occurs when a platform grants its business partners or affiliates preferential access to data compared to its competitors. For instance, several have claimed that Amazon utilizes precise sales data from other merchants to create products that compete with its own.

Fourth, cross-service data combining occurs when a business utilizes data from multiple services to gain an unfair competitive advantage. The German Competition Authority (Bundeskartellamt) investigated Facebook for combining data from WhatsApp, Instagram, and the central Facebook platform[16]. Bases of data power can create or reinforce significant barriers to entry. Big data creates "data feedback loops": more data → better products → more users → more data. This loop can reinforce dominance and make it difficult for new competitors to compete, even with superior technology.

2.2.3. Self-Prioritization Practices on Digital Platforms

Self-preferencing is when a digital platform acts as both a market facilitator and a direct participant, giving its services or products an edge over those of its competitors on that platform. This behaviour usually happens when companies are vertically integrated, and it can show up in some ways:

The first type of bias is prominence bias, also known as visibility bias, which occurs when a platform displays its goods or services more conspicuously than those of its competitors. The EU's Google Shopping case is a great example. Google was fined €2.4 billion for favoring its shopping service over other shopping services in search results.[17]

Second, deep integration happens when a platform combines its service with its main platform in a way that competitors cannot copy. Apple, for instance, has integrated Apple Music with Siri, allowing customers to control Apple Music using their voice. Spotify, on the other hand, has struggled to achieve the same level of integration.

Third, proprietary data refers to a platform using data from its competitors to create goods that compete with its own. For instance, several have

16 Bundeskartellamt, Facebook Case Decision (Bonn: Federal Cartel Office, 2019).
17 European Commission, Google Search (Shopping).

claimed that Amazon utilizes comprehensive information from third-party merchants to create private-label products that compete with those sellers.

Fourth, discrimination in terms means that a platform uses different business terms for its service than its competitors do. It is said that Apple charges third-party apps a "App Store tax," yet Apple's apps are exempt from this fee.

Self-preferencing behaviour can have significant effects on competition. It can have "foreclosure effects," which means that good competitors are no longer able to compete. It can also make third-party innovation less appealing, as they fear the platform will imitate and promote its products.[18] Finally, it could make it harder for people to find different products and services in the long run.

2.2.4. Acquiring Potential Competitors

Acquiring potential competitors, also known as "killer acquisitions," is a strategy in which a dominant company buys innovative startups with the potential to compete in the future, thereby eliminating a potential competitive threat. This behavior occurs when existing corporations acquire up-and-coming innovative companies to eliminate potential competition without utilizing the acquired technology.[19]

There are several key aspects that these purchases have in common. First, the companies they want to acquire are often new and innovative, with low revenue valuations but technologies that could revolutionize the industry or user bases that are growing rapidly. Second, the deal value is typically far greater than the target company's current revenue, indicating its potential future value. Third, acquisitions usually happen before the target firm can grow into a direct competitor.

Some significant strategic acquisitions in the tech industry are: Facebook's purchases of Instagram (2012, $1 billion) and WhatsApp (2014, $19 billion);[20] Google's purchases of Waze (2013, $1.1 billion) and

18 Massimo Motta, Martin Peitz, "Big Tech Mergers" *Information Economics and Policy*, 54 (2021): 100868.

19 Colleen Cunningham, Florian Ederer, Song Ma, "Killer Acquisitions" *Journal of Political Economy*, No. 3 (2021): 649-702.

20 Rajesh Kumar B., "Major Acquisitions by Facebook: Management for Professionals", [in:] idem, *Wealth Creation in the World's Largest Mergers and Acquisitions* (Cham: Springer, 2019), 321-327.

DoubleClick (2007, $3.1 billion);[21] and Amazon's purchases of Zappos (2009, $1.2 billion) and Twitch (2014, $970 million).[22] Not all of these are "killer acquisitions" in the strictest sense, but they may all eliminate future competition. Most of the time, these acquisitions do not meet the usual merger notice requirement, which is mainly based on sales. This makes it hard to enforce competition rules, which is a big problem.

These purchases have complicated effects on competition. On the one hand, they might make it harder for smaller companies to compete and easier for large platforms to maintain their position. On the other hand, the chance of being acquired is a significant reason why people invest in new businesses and innovative ideas. If there are limits on acquisitions, this reason may be less intense. Competition authorities struggle to strike the right balance between these two effects.

Due to this issue, many countries have begun to modify their online purchasing practices. The EU has established a referral system under Article 22 of the Merger Regulation to examine purchases that fall below the notification threshold.[23] Germany and Austria have established a minimum transaction value to capture purchases that are substantial, but do not generate significant revenue.[24] The UK has established a system to inform people about tech purchases and "Tech Sprinters."[25]

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21 "Google's Acquisitions Are in the Spotlight 15 Years After It Went Public" CNBC, 19 August 2019. https://www.cnbc.com/2019/08/19/googles-best-and-worst-acquisitions-are-in-the-spotlight-15-years-later.html.

22 FE International, *Timeline of Amazon's Biggest Acquisitions*. https://www.feinternational.com/blog/timeline-of-amazons-biggest-acquisitions. [accessed: 30.8.2025].

23 European Commission, Commission Guidance on the Application of the Referral Mechanism Set Out in Article 22 of the Merger Regulation to Certain Categories of Cases, C(2021) 1959 final (Brussels: European Commission, 2021).

24 German Act against Restraints of Competition (Competition Act – GWB), 10th Amendment, 2021; Austrian Cartel Act, as amended by the Cartel and Competition Law Amendment Act 2017.

25 Competition and Markets Authority, The CMA's Digital Markets Strategy (London: Competition and Markets Authority, 2021). https://www.gov.uk/government/publications/competition-and-markets-authoritys-digital-markets-strategy/the-cmas-digital-markets-strategy.

3 Challenges in Regulating Anti-Competitive Behaviors in the Digital Economy

3.1. Theoretical Challenges

3.1.1. Difficulties in Defining the Relevant Market

The first and most important stage in traditional competition analysis is to define the relevant market. However, in the digital economy, defining the relevant market can be challenging, which makes this method less effective.

First, the lines between digital marketplaces are often fuzzy and change rapidly due to technology convergence and the constant introduction of new ideas. For instance, apps like WeChat (China) and Zalo (Vietnam) have evolved from simple messaging services into comprehensive ecosystems that offer social networking, payments, e-commerce, and numerous other features. This makes it challenging to determine where the market ends.

Second, it is challenging to apply traditional methods, such as the Small but Significant Non-transitory Increase in Price (SSNIP) test, to determine the relevant market in zero-price or cross-subsidized marketplaces. It does not make sense to look at how people react to a 5% or 10% price rise when they do not pay for the service directly, such as with Google Search or Facebook.

Third, network effects and multi-sided markets make it challenging to identify a single market, as they complicate relationships between diverse user groups. For instance, while looking at competition on an e-commerce site like Shopee, you need to think about how buyers, sellers, advertisers, and other important people interact with each other.

Fourth, it is challenging to determine the geographic extent of the relevant market due to the widespread availability of numerous digital services worldwide. Users can often obtain services from multiple sources, and digital platforms can offer services across borders without maintaining a physical presence in those markets.

Some competition authorities have begun to modify their approaches, recognizing that these issues exist. The UK CMA has stated that it is more important to consider "competitive pressures" than to rely solely on a rigorous market definition. The European Commission's report, "Competition Policy for the Digital Era," also states that traditional market analysis may not always be effective for the digital economy, and that a more flexible approach, focusing on specific "theories of harm," is necessary.[26]

26 Jacques Crémer, Yves-Alexandre de Montjoye, Heike Schweitzer, *Competition Policy for the Digital Era* (Brussels: European Commission, 2019).

3.1.2. Traditional Analytical Framework Based on Price and Limitations

Price has been the main indicator of consumer welfare and market power in traditional competition analysis. According to mainstream economic theory, prices that are higher than the competitive level are seen as a sign of market power and a drop in consumer welfare. Price-based analysis, on the other hand, presents numerous challenges in the digital economy.

First, many digital services, such as search engines, social networks, and messaging applications, are offered "free" to users. Most of the time, competition is based on factors other than price, such as quality, innovation, privacy, and data collection. If you only consider pricing, you may overlook these important types of competition.

Second, in markets with more than one side, prices are often complicated and include cross-subsidization. A platform could charge a substantial amount to one group of users, while offering free or discounted services to another. For instance, e-commerce platforms sometimes offer customers free services, but charge sellers a fee, which makes it harder to determine the overall effect on consumer welfare.

Third, the "pay with data" concept contradicts what we typically think of as price. People "pay" for services by letting their data be gathered and exploited.[27] It is challenging to assign a value to this data and compare it to other data, which makes it difficult to determine the competitiveness of the market based on "data prices."

Fourth, network effects and economies of scale result in many digital markets where the winner takes all.[28] In these markets, competition is often "for the market" instead of "in the market." Instead of little price changes, disruptive innovation is what makes the difference.

Recognizing these limitations, many competition authorities have begun to broaden the scope of their analysis. The European Commission has recognized the importance of non-price competition parameters such as quality, innovation, and privacy in the digital economy.[29] The US Federal Trade

27 Alessandro Acquisti, Curtis Taylor, Liad Wagman, "The Economics of Privacy" *Journal of Economic Literature*, No. 2 (2016): 442-492.

28 Shapiro and Varian, Information Rules.

29 European Commission, Competition Policy for the Digital Era (Brussels: European Commission, 2019).

Commission (FTC) has also emphasized the need to consider non-price competition parameters, especially privacy, in free-service markets.[30]

3.1.3. Assessing Consumer Welfare in "Free" Services

When it comes to "free" digital services, determining their impact on customer welfare is significantly more challenging than in traditional markets. People might not pay directly, but they do provide personal information, attention, and sometimes even view ads as a form of "paying".

First, there is not a single, easy-to-measure indicator, such as price. Several significant factors impact consumer welfare in digital services, including the quality of the service, data privacy, user experience, and innovation.[31] For instance, how can we determine if better search results compensate for less privacy?

Second, there are hard choices to make between distinct parts of consumer welfare. Users may prioritize privacy, service quality, features, or the amount of advertising.[32] Some people may be willing to share more information in exchange for better personalized service, while others might prioritize data privacy.

Third, users cannot fully understand the actual cost of "free" services due to information asymmetries and "perception gaps"[33]. Many people are unaware of how their data is collected, processed, and shared, which can lead to poor decisions.

Fourth, the platform's incentives to make consumers better off may not be the same for all user groups in a multi-sided market. For instance, a platform can enhance the experience for advertisers rather than end users, as advertisers are the primary source of income.

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30 Federal Trade Commission, Privacy & Data Security Update (Washington, DC: Federal Trade Commission, 2019). https://www.ftc.gov/system/files/documents/reports/privacy-data-security-update-2019/2019-privacy-data-security-report-508.pdf.

31 Maurice E. Stucke, Ariel Ezrachi, "When Competition Fails to Optimize Quality: A Look at Search Engines" *Yale Journal of Law and Technology*, No. 1 (2016): 70-123.

32 Alessandro Acquisti, Laura Brandimarte, George Loewenstein, "Privacy and Human Behavior in the Age of Information," *Science*, No. 6221 (2015): 509-514. https://doi.org/10.1126/science.aaa1465.

33 Daniel J. Solove, "Privacy Self-Management and the Consent Dilemma," *Harvard Law Review*, No. 7 (2013): 1880-1903.

Researchers and government officials have proposed several approaches to address these issues. Newman suggested a "quality-competition-quality framework" to examine competition in markets without prices.[34] This framework prioritizes service quality over price. The OECD has established guidelines for assessing the online performance of consumers. These rules emphasize the importance of considering factors beyond pricing, such as privacy, innovation, and quality.[35]

3.1.4. Balancing Competition Protection and Encouraging Innovation

One of the most challenging aspects of regulating digital competition is finding a way to protect existing competition while also fostering new ideas in the long term. Innovation is the primary factor driving the growth of the digital economy and enhancing people's lives; however, the relationship between market structure, competition, and innovation is complex and not always straightforward.

First, major platforms have a significant edge in innovation due to their substantial financial resources, vast amounts of data, and the capacity to attract top talent. Companies like Google, Amazon, and Facebook invest billions of dollars in research and development, resulting in significant technological advances. Too much intervention can make it harder for them to generate new ideas and maintain their motivation.

Second, buying creative firms can have two effects on innovation. On the one hand, the possibility of being bought is a big reason why venture investors and entrepreneurs want to invest in new ideas. On the other hand, buying a company can eliminate potential competitors and reduce the likelihood of new ideas emerging in the future.

Third, some competitive measures, such as requiring data sharing or interoperability, may encourage short-term competitiveness, but lower the motivation to innovate in the long run by reducing the returns on investment in research and development. For instance, if a company must share its new idea with its competitors, it may not invest as much money in the original idea.

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34 John M. Newman, "Antitrust in Zero-Price Markets: Foundations" *University of Pennsylvania Law Review*, No. 1 (2015): 149-206.

35 OECD, *Quality Considerations in Digital Zero-Price Markets, DAF/COMP(2018)14* (Paris: OECD Publishing, 2018).

Fourth, in the digital economy, new technologies and business models often completely replace old ones. This concept is known as "creative destruction", making it more challenging to predict how competitive actions will impact innovation.

Different competition authorities worldwide have addressed this trade-off in various ways. The US has typically focused on the long-term effects of innovation, even if it entails taking the short-term risk of market concentration, provided that it leads to more innovation.[36] The EU, on the other hand, has prioritized safeguarding existing market competition, believing that over time, competitive markets will lead to increased innovation.[37]

This balance becomes particularly complex in the context of a dual transition, where competition authorities must consider both digital innovation and green technology development. The market position of dominant firms enables greater investment in green technology and sustainable business models. Yet, this concentration can hinder environmentally friendly innovation by creating obstacles for sustainable startups and reducing the range of green solutions available. The key challenge for competition authorities is to prevent digital market dominance from becoming a barrier to national green transformation objectives, while also preserving incentives for platforms to continue investing in sustainable technologies.

3.2. Implementation Challenges

3.2.1. The Speed of Technological Development and the Adaptability of the Law

One of the most challenging aspects of regulating digital competition is that technology advances more rapidly than the law can keep pace. Technology advances at an exponential rate, but the process of creating laws and rules can be slow and inflexible. This difference leads to a big "regulatory gap," which means that the law may not keep up with technology.

First, creating and implementing laws can take a considerable amount of time, as several steps are involved, including research, drafting, consultation with stakeholders, and passing the law. During that time, technology

36 Herbert Hovenkamp, "Antitrust and Innovation: Where We Are and Where We Should Be Going" *Antitrust Law Journal*, No. 3 (2011): 749-770.

37 Josef Drexl, "Anticompetitive Stumbling Stones on the Way to a Cleaner World: Protecting Competition in Innovation Without a Market" *Journal of Competition Law & Economics*, No. 3 (2012): 507-544.

and business models may have undergone significant changes, rendering the new regulation ineffective. The EU began investigating Google Shopping in 2010, but it did not decide for 2017, when the competition landscape had changed significantly.

Second, classic legal ideas in competition law, such as "relevant market" or "dominant position," would struggle to keep pace with the digital economy's unique features, including network effects, multi-sided marketplaces, and the utilization of data.[38] This makes it difficult for law enforcement to apply these ideas in new contexts, which renders the law unclear.

Third, traditional regulatory thinking is "prohibitive," meaning it identifies and prevents specific actions. In the digital market, where behaviors can change quickly and it is hard to distinguish what is fair and what is not, this method is challenging to use. For instance, personalised pricing based on user data can benefit some users while harming others, making it harder to determine the overall effect.

Some regulators have experimented with innovative solutions to address these issues. The European Commission has proposed a Digital Markets Act (DMA) that would adopt a gatekeeper approach and establish rules in advance, rather than relying on traditional market research.[39] This would enable the law to focus on platforms with significant roles, regardless of the market in which they operate. Some countries have adopted "agile regulation," which allows them to adjust rules quickly based on real-world insights and experience, resulting in shorter feedback cycles. Singapore, for instance, has employed "regulatory sandboxes" in fintech to test novel business models under close supervision before making them official.[40]

38 Howard A. Shelanski, "Information, Innovation, and Competition Policy for the Internet" *University of Pennsylvania Law Review*, No. 6 (2013): 1663-705.

39 Regulation (EU) 2022/1925 of the European Parliament and of the Council of 14 September 2022 on contestable and fair markets in the digital sector (Digital Markets Act), Official Journal of the European Union L265/1.

40 Monetary Authority of Singapore, FinTech Regulatory Sandbox (Singapore: Monetary Authority of Singapore, 2016). https://www.mas.gov.sg/development/fintech/regulatory-sandbox.

3.2.2. Technical Capacity and Resources of the Competition Authority

Competition authorities must possess the necessary technological knowledge and resources to regulate competition in the digital economy effectively. However, many competition regulators, especially in developing nations, lack the same resources and technical expertise as the IT corporations they oversee. To examine digital competition cases, a broad range of skills and experience is required, spanning classical competition economics to data science, AI, and software engineering. Many competition organisations struggle to hire and retain the right people, as these skills are difficult to find and expensive to acquire.

Second, large digital businesses have substantial financial resources and technical expertise, which enables them to hire top lawyers and employ sophisticated legal techniques.[41] This imbalance may lead to a "capability asymmetry" between those who create the rules and those who follow them.

Third, the technologies and algorithms that power the digital economy are becoming increasingly complex and difficult to comprehend. It is challenging to assess and evaluate the impact of algorithms on competition due to the "black box" problem in artificial intelligence and machine learning.[42]

Fourth, many competition agencies, especially in developing countries, have to prioritise cases because they lack sufficient resources or personnel. This means that more complex infractions may not be thoroughly investigated.

To address these issues, many competition agencies have initiated programs to enhance their capabilities. The European Commission has adopted a Communication on "Building a European Data Economy", accompanied by a Staff Working Document. This document offers policy and legal solutions to unleash the EU's data economy, which is part of its Digital Single Market strategy.[43] Collaborating with other countries is becoming increasingly crucial for expanding capacity. The ICN and the OECD have provided a platform for competition authorities to discuss their experiences and share best practices for regulating digital competition. Bilateral collaboration

41 OECD, *Implications of E-commerce for Competition Policy, DAF/COMP(2019)3* (Paris: OECD Publishing, 2019).

42 Jenna Burrell, "How the Machine 'Thinks': Understanding Opacity in Machine Learning Algorithms" *Big Data & Society*, No. 1 (2016): 1-12.

43 EUR-Lex, Building a European Data Economy. https://eur-lex.europa.eu/content/news/building_EU_data_economy.html. [accessed: 30.8.2025].

between competition authorities also facilitates the sharing of knowledge and the optimal use of resources.

3.2.3. Detecting and Collecting Evidence of Violations in the Digital Environment

Enforcement authorities face unique challenges in identifying and gathering evidence of competition violations in the digital world. In the digital economy, breaches are typically more complex and challenging to identify than in classic competition violations, where evidence is often found in written agreements, meeting minutes, or direct communications.

First, a significant amount of digital anticompetitive behavior occurs through complex algorithms that appear to be uncoordinated. For example, when it comes to algorithmic pricing, competitors do not have to agree on anything; they only have to utilise the same algorithms or respond to the same market data.

Second, the digital economy generates so much data that it is challenging to find evidence of infringement. It is like looking for a needle in a haystack. Competition authorities may not yet have the advanced data analysis methods and digital forensics capabilities needed for this.

Third, the fact that many digital services operate across borders makes it challenging to determine jurisdiction and to obtain evidence. Data and algorithms may be held in various nations, making it hard to access them. However, current methods of collaboration are typically slow and ineffective.

Fourth, people typically use trade secrets and intellectual property to keep information about algorithms and data secret. This makes it challenging to strike a balance between the need for businesses to be protected by the law and the need for competition to remain open.

Competition authorities have developed new tools and strategies to address these issues. The European Commission has acquired powerful digital forensic tools and engaged data scientists to analyze a substantial amount of data in digital competition investigations.[44] To demonstrate that Google Shopping was unfair, the commission analyzed a substantial amount of search results data. In the digital world, several countries have granted competition agencies greater authority to investigate. Germany, for instance, amended its Competition Law (GWB) to grant the competition

44 European Commission, "Digital Forensic Capabilities in Antitrust Investigations" *Competition Policy Brief*, 2020-04 (2020): 3-7.

authority greater access to data and algorithms during investigations (Act against Restraints of Competition 2021).[45]

3.2.4. Assessing the Competitive Impact of Algorithms and AI

Competition regulators have a new and challenging task: determining how algorithms and artificial intelligence (AI) impact competition. Algorithms and AI are becoming increasingly crucial in business decisions, from setting prices and displaying products to advertising and rankings. However, figuring out how they affect competition is not easy.

First, many modern algorithms, including deep learning models, operate like "black boxes," meaning that developers cannot always explain exactly how the algorithm made a particular choice. This makes it difficult for competition authorities to determine if an algorithmic output is anticompetitive, as they need to be able to explain it.

Second, machine learning algorithms can evolve and grow over time as they receive new data, making it more challenging to determine their exact impact. An algorithm that begins with a competitive design can gradually start to act in an anticompetitive manner without anyone taking action to prevent it.

Third, it can be challenging to distinguish between legal and illegal optimisation methods. Dynamic pricing algorithms, for instance, can make the market more efficient by swiftly reacting to changes in supply and demand. However, they can also facilitate collaboration among individuals without revealing their identities.[46]

Fourth, to determine the impact, it is necessary to understand how the algorithm works, what data it uses, and the business setting.[47] Depending on the data used and the market structure, the same algorithm can have varied effects on competition.

To address these issues, competition authorities have begun to develop new approaches and tools. The Federal Trade Commission (FTC) in the US has established a "Technology Division" to investigate and provide tools for assessing the impact of new technologies, such as artificial intelligence and

45 German Act against Restraints of Competition (Competition Act – GWB), 10th Amendment, 2021.

46 Ezrachi and Stucke, "Artificial Intelligence & Collusion."

47 Dominik Bierecki, Christophe Gaie, Mirosław Karpiuk, Jean Langlois-Berthelot, "Creating Resilient Artificial Intelligence Systems. A Responsible Approach to Cybersecurity Risks" *Prawo i Więź*, No. 5 (2025): 131-149.

algorithms, on competition. The FTC has also conducted workshops and research to examine the impact of pricing algorithms and data usage on competition. Academics and international groups have also helped develop methods to evaluate things. The OECD has issued guidance on "Algorithms and Collusion," which proposes a framework for assessing the potential for algorithm collusion, taking into account factors such as algorithm transparency, frequency of interaction, and market characteristics.[48] An "algorithmic auditing" method utilizes code analysis, input-output testing, and simulation to examine how algorithms work. Full access to source code or training data to use this method is needed to find anticompetitive behaviour.

4 A Reference to Vietnam's Situation

4.1. Current Status of Legal Regulations

The digital economy in Vietnam has experienced rapid growth over the last decade. A report by Google, Temasek, and Bain & Company states that Vietnam's digital economy was valued at $23 billion in 2022, and is projected to reach $49 billion by 2025.[49] E-commerce, smartphone payments, online ride-hailing services, and social media platforms are becoming a significant part of people's lives and how businesses operate. However, the rapid growth of the internet economy also makes it challenging for Vietnam's competition authority to fulfill its responsibilities.

The 2018 Competition Law (CL 2018) in Vietnam is significantly improved over the 2004 version, but it still has several issues related to the digital economy. Rules on relevant markets, dominant positions, and abusive behaviour are primarily based on old ideas about how markets work. The Vietnam National Competition Commission (NCC) is also struggling with limited resources and technological expertise when addressing matters involving digital platforms and complex algorithms.

48 OECD, *Algorithms and Collusion: Competition Policy in the Digital Age* (Paris: OECD Publishing, 2017).

49 Google, Temasek, and Bain & Company, *e-Conomy SEA 2022: Thriving in a Booming Digital Decade*. 2022.

4.1.1. On Anti-Competitive Practices in the Digital Economy

There has not been an official inquiry into algorithmic collusion in Vietnam yet. However, it may have occurred in online booking, e-commerce, and ride-hailing services, where dynamic pricing algorithms are commonly used. Vietnam's Competition Law 2018 (CL 2018) states that agreements that harm competition are illegal (Art. 3(4), but it does not specify how to address algorithmic collusion. Several major platforms in Vietnam, including Shopee, Lazada, and Grab, have amassed extensive information about Vietnamese customers. There are no clear rules in the CL 2018 regarding the abuse of data power, and this behavior has not been examined yet. Self-preferential behavior can occur on large e-commerce sites, such as Shopee, Lazada, and Tiki, when they operate both the platform and sell their private label goods. There are no specific rules in the CL 2018 regarding this type of behavior, and no official inquiry is currently underway. The CL 2018 uses market share and asset thresholds to determine which economic concentrations require reporting when a company acquires a prospective competitor, also with the determination of adverse effects on competition of an economic concentration (Arts. 30-31). This might mean not acquiring new firms with limited revenue and market share, but instead focusing on those with significant potential to compete in the future.

4.1.2. On the Challenges in Regulating Anti-Competitive Practices

The CL 2018 defines that the relevant market is "a market of goods and services that can be substituted for each other in terms of characteristics, purposes of use and prices in a specific geographical area with specific competitive conditions that are significantly different from those of neighbouring areas" (Art. 3(7)). This concept primarily focuses on the ability to replace anything in terms of function and price. However, this may not entirely align with the characteristics of the digital economy, such as free services, network effects, and multi-sided markets. The CL 2018 has broadened the definition of abuse of a dominant market position to include actions that do not include price, such as "imposing unfavourable transaction conditions on customers" and "obstructing the entry or expansion of other businesses into the market." (Art. 27). Still, there is no clear direction on how to evaluate non-price competition factors in the digital economy. When developing a new digital competition framework, this is

another big hole that needs to be filled: there is no clear way to measure consumer welfare in "free" digital services.

As Vietnam's digital economy continues to grow rapidly, it is becoming increasingly necessary to strike the right balance between protecting competition and fostering new ideas. On the one hand, the new market needs to be protected from actions that harm competition, allowing it to grow healthily. On the other hand, a legal framework that is too stringent can hinder the growth of startups and innovative ideas. The CL 2018 is more effective in addressing the challenges of the digital economy than the 2004 version. For example, it has broadened the scope of regulation and altered the definition of "abuse of dominant position" (Art. 7(5). The legal system, on the other hand, remains insufficiently flexible to keep pace with the rapid evolution of new technology and business models, particularly in e-commerce and digital platforms. The NCC is currently facing challenges with its resources and technical capabilities. Although efforts have been made to enhance capacity through training and collaboration with other countries, a significant gap remains between current capabilities and the requirements for regulating competition in a rapidly evolving digital economy. The CL 2018 granted the NCC greater authority to investigate, but it remains challenging to identify and gather evidence of infractions in the digital world. The lack of advanced analytical tools, technical expertise, and effective mechanisms for countries to collaborate is a major problems that need to be addressed.

Vietnam is still in the early stages of understanding how algorithms and AI impact competition. The NCC lacks the necessary tools and personnel to examine complex algorithms, which hinders its ability to investigate infractions related to algorithms.

Furthermore, the CL 2018 does not include any measures to evaluate the effects of digital market concentration on Vietnam's green transition goals. There are no requirements for the competition authority to factor in environmental considerations during merger reviews or when assessing market dominance. This gap could undermine Vietnam's commitment to reducing carbon emissions by 2050, especially given the critical role digital platforms play in promoting sustainable consumption, green logistics, and clean technology. To better align with environmental sustainability objectives, the regulatory framework should be revised so that digital competition policy actively supports, rather than impedes, progress toward these goals.

4.1.3. Impact on Vietnam's Green Transition

Vietnam's progress in the digital economy is closely linked to its commitments under the Paris Agreement and its national strategy for green growth. The substantial influence of major e-commerce platforms like Shopee and Lazada brings both advantages and challenges for sustainable consumption. On the one hand, these platforms have the potential to encourage the purchase of eco-friendly products by leveraging recommendation and ranking algorithms. On the other hand, they may prioritize fast-moving, inexpensive goods that do not align with sustainability goals. Complicating matters, the opaque nature of these algorithms makes it hard to determine whether current platform practices are advancing or hindering Vietnam's environmental objectives.

In the ride-hailing industry, leading companies such as Grab and Xanh SM are in a position to support green initiatives, for example, by promoting electric vehicles and optimizing routes to cut emissions. However, their significant market share also reduces competitive pressure, which could otherwise spur further innovation in green technology. The absence of explicit competition law provisions regarding sustainability and platform conduct highlights a notable shortcoming in Vietnam's ability to manage both its digital growth and green transition effectively.

4.2. Some Lessons Learned and Suggestions for Improving the Law

4.2.1. Lessons from International Experience

There are certain essential things that Vietnam can learn from other countries' experiences with controlling unfair competition in the digital economy.

First, a flexible and creative way to define the relevant market. The EU has shifted from a rigid definition of the market to focusing on a specific "harm theory." The UK has also focused on "competitive pressure" in addition to the usual market definition (Competition and Markets Authority 2020). This method aligns with the digital economy, where market borders are sometimes unclear and can change rapidly.

Second, rules should be based on roles instead of merely market shares. The EU has passed the Digital Markets Act (DMA), which adopts

a "gatekeeper" approach and imposes ex-ante requirements on platforms with large market shares, regardless of the market in which they operate.[50] This method helps get over the problems with traditional market analysis in the digital economy.

Third, when examining consumer welfare, consider factors beyond price. The EU and the US agree that quality, innovation, privacy, and data protection are important in marketplaces where services are "free." This is particularly essential for Vietnam, as many digital services are free there.

Fourth, competition authorities should get more technological skills and resources. Specialized groups, such as the "Digital Economy and Technology Centre" and the "Data, Technology and Analytics Unit," will facilitate an in-depth examination of matters related to digital platforms and algorithms. Vietnam should utilize this approach to strengthen the NCC.

Fifth, new tools should be used to investigate violations and gather evidence of them, such as the use of technological equipment with AI-enhanced devices. This experience can help Vietnam address the challenge of identifying and investigating data breaches.

The European Union's approach, with the Digital Markets Act (DMA), provides valuable insights for Vietnam as it navigates both digital and green transitions. Under Article 6 of the DMA, major platform operators – referred to as gatekeepers – must allow business users to access data generated from their activities on the platform. This provision is vital for developers of green technologies who rely on access to environmental and consumer data. Additionally, Article 7 of the DMA requires interoperability, which could foster the creation of digital environments where sustainable services have a fair chance to compete alongside established platform offerings. The European Commission's case against Amazon (Case AT.40462) illustrates how regulatory action can address the misuse of data advantages; Amazon was required to refrain from using non-public seller data to compete with those sellers. Applying such a standard could help protect providers of green technology from unfair data practices. Furthermore, the EU's State Aid rules for green digital transformation show how competition policy can be leveraged to promote environmental objectives while ensuring market integrity.

The EU's approach to "green digital services" under the European Green Deal illustrates how competition authorities can integrate sustainability considerations into market assessment. This includes assessing whether

50 Regulation (EU) 2022/1925, Digital Markets Act.

digital platforms promote sustainable consumption patterns, and whether their algorithms favour or discriminate against green products and services.

4.2.2. Proposal to Improve Vietnam's Competition Law

1. The definition of the relevant market and the method for identifying it need to be revised. In particular, the CL 2018 needs to revise the definition of the relevant market to better align with the digital economy. The new definition should consider non-price factors, such as quality, innovation, and data protection, in the analysis of substitutes. It should also modify the "Supposed Price Monopoly Test" (SSNIP) method to accommodate free services, possibly by developing new methods, such as the "Supposed Quality Monopoly Test" (SSNDQ). Finally, it should recognise the idea of multi-sided markets and the complicated relationships between different user groups.
2. The rules on market dominance need to be changed. Specifically, the criteria for determining market dominance beyond market share must be expanded to include access to and control over big data, network effects and positive feedback, switching costs, the ability to "lock in" users, ecosystem advantages, and the capacity to expand into relevant markets. At the same time, we should consider adopting a "gatekeeper" approach on digital platforms that wield significant power, as the EU Digital Markets Act does.
3. There should be rules against anti-competitive behaviour that are specific to the digital economy. The CL 2018 should include specific rules against collusion through pricing algorithms, even when there are no written agreements; abuse of data power, like not sharing important data, making exclusive data agreements, and pooling data from different services; self-preferencing behaviour on digital platforms, like showing up preferentially, deep integration, and unfair terms and conditions; and killer acquisitions, which should have transaction value thresholds in addition to the ones that already exist for market share and assets.
4. Rules governing economic concentration need to be improved. To close the "enforcement gap" in controlling innovative startup acquisitions, it is suggested that a high transaction value threshold be introduced to capture high-value but low-revenue acquisitions. Guidelines for assessing the potential impacts on competition and

innovation should also be established, and the NCC should be empowered to require notification for acquisitions below the threshold that are likely to have a significant impact on competition.

5. The NCC must establish a Digital Economy Unit equipped with experts and analytical tools designed explicitly for matters related to digital platforms. This would help make enforcement more effective. Also, we need to invest in digital forensic technology and hire experts in data science and artificial intelligence. This will facilitate international cooperation in cross-border investigations and evidence collection, as well as establish guidelines for assessing the impact of algorithms and AI on competition.
6. To keep up with the fast pace of technological progress, Vietnam should use a "flexible regulation" approach with shorter response times, encourage the creation of "regulatory sandboxes" for new digital business models, and improve communication between regulators, tech companies, and universities to make sure that rules are both applicable and encourage new ideas.
7. Develop clear criteria for evaluating mergers and market dominance that explicitly account for their effects on green innovation and sustainable market growth. This should involve determining whether proposed deals would diminish competition in green technology sectors, limit access to crucial environmental data, or increase control over sustainable supply chains. Additionally, merger notifications for platforms with substantial environmental market influence should require a thorough sustainability impact assessment.
8. The NCC should mandate that dominant digital platforms grant fair and non-discriminatory access to aggregated environmental, and sustainability data essential for advancing green innovation. This access should encompass data on consumer habits related to sustainable choices, logistics information to enhance green supply chains, and energy usage statistics critical for smart grid development. Such measures would help prevent the monopolization of data that could hinder competition in green technology sectors. Additionally, the NCC ought to implement an expedited approval process for collaborations between digital platforms and green technology firms that clearly support environmental objectives, and introduce supplementary provisions for exemptions under CL Article 13. Examples include joint ventures focused on electric vehicle charging infrastructure, renewable energy trading platforms, and circular economy initiatives.

9. Mandate major digital platforms to keep detailed audit logs of algorithmic decisions that impact the visibility and accessibility of green products and services. These platforms should also be required to prove that their algorithms do not consistently disadvantage certified environmentally friendly products or sustainable service providers. The NCC should set up a specialized Digital-Green Markets Unit, staffed with professionals skilled in both digital platform regulation and environmental economics. This unit would be responsible for designing targeted assessment tools to examine how digital market power interacts with green transition goals, performing ongoing market studies on the effects of platforms on sustainability, and collaborating closely with the Ministry of Natural Resources and Environment to align competition policies with environmental objectives.

5 Conclusion

The digital economy has become integral to both global and Vietnamese economies, yet its characteristics – network effects, low marginal costs, multi-sided markets, and data centrality – complicate anti-competitive behavior regulation. Emerging practices like algorithmic collusion, data power abuse, self-preferencing, and preemptive competitor acquisitions demand new competition policy approaches. While Vietnam has advanced its competition laws, significant gaps remain for the digital economy. International experience demonstrates the necessity of flexible, relevant market definitions, emphasis on non-price competition factors, and enhanced technical capacity for enforcement agencies. Vietnam must update its competition framework across several areas: broadening dominant position criteria, introducing rules targeting specific digital anti-competitive behaviors, strengthening economic concentration controls, and building enforcement capacity. Critically, regulations must balance competition protection with innovation promotion, ensuring rules safeguard rather than stifle the startup ecosystem.

Given Vietnam's rapid digital transformation, establishing a robust, competitive legislative framework is essential. This protects consumer rights, encourages innovation and sustainable growth, and ensures fair

competition. The recommendations herein can strengthen Vietnam's legal system and enforcement capabilities for its expanding digital economy.

The convergence of digital competition policy and green transition represents a pivotal area for Vietnam's economic future. As Vietnam's digital economy develops, competition authorities must prevent market dominance from obstructing sustainable innovation. These recommendations provide a roadmap for balancing digital platform benefits against anti-competitive behaviors that could undermine environmental progress. Achieving this dual transformation requires not only technological advancement but also forward-thinking regulatory approaches that address the complex interplay between digital market power and environmental sustainability.

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