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THE IMPACT OF ARTIFICIAL INTELLIGENCE ON COMPETITION IN THE EU DIGITAL MARKET: AN ANALYSIS OF REGULATORY CHALLENGES AND OPPORTUNITIES

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Abstract
The rapid development and deployment of artificial intelligence (AI) across digital markets is reshaping competitive dynamics in the European Union. This article examines the legal implications of AI-driven transformations for EU competition law, with a focus on both risks and regulatory opportunities. As dominant digital platforms increasingly integrate AI into pricing, ranking, and decision-making systems, concerns arise regarding market concentration, algorithmic collusion, and abuse of dominance. The paper explores how the existing legal framework – centered around Articles 101 and 102 TFEU – interacts with emerging instruments such as the Digital Markets Act and the AI Act. It further assesses the adequacy of current enforcement tools in addressing the opaque and autonomous nature of AI systems. It also explores the impact of the digital economy on the nature of competition, which is undergoing profound changes, particularly due to the unique features and applications of artificial intelligence.
By analyzing the intersection of competition law and digital regulation, the study identifies key legal gaps and proposes policy recommendations aimed at fostering a fair, innovative, and competitive digital environment in the EU.
Keywords: *competition law; digital market; legal framework*.
JEL Classification: K21; K23; L40; L41.

1. INTRODUCTION

In recent decades, rapid technological advancement has fundamentally reshaped the functioning of global markets. Among the most transformative innovations, artificial intelligence (AI) stands out as a disruptive force with the potential to profoundly influence both economic structures and the dynamics of market competition. Within the European Union's (EU) digital market**,** AI raises critical questions about how to balance the promotion of innovation with the preservation of fair and effective competition.

Competition is a cornerstone of market economies and a central pillar of the EU's economic policy framework. It fosters innovation, increases efficiency, and offers consumers greater choice and better prices. Moreover, robust competition

prevents the formation of monopolies and the abuse of dominant positions, thus supporting the fair and efficient functioning of the internal market.

2. ARTIFICIAL INTELLIGENCE AND COMPETITION LAW: KEY CONCEPT DEFINITION

In the context of the rapid evolution of information technologies and the exponential growth of online economic activities, the concept of the „digital market" is becoming increasingly important in the analysis of competition law and consumer protection. Although European Union legislation does not provide an exhaustive definition of this notion, the existing regulatory framework allows for the development of an operational understanding of the concept of the digital market.

An essential reference point is Regulation (EU) 2022/1925 on digital markets, known as the Digital Markets Act (DMA), which aims to ensure fairness and contestability in digital markets where platforms act as „gatekeepers". 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 and amending Directives (EU) 2019/1937 and (EU) 2020/1828 began to apply from the date of May 2, 2023. The preamble to the legislative act states that: „core digital platforms have become key players in the internal market, playing a systemic role between businesses and consumers." Thus, the digital market is conceived as a regulated economic space in which commercial and competitive interactions are mediated by digital platforms, covering a wide range of activities: „social networks, payment systems, price comparison sites, online commerce, mass media, application platforms, search engines, etc." (Digital Markets Act, 2022).

However, the Digital Markets Act does not define the concept of a digital market, but simply states in point 1 of the preamble that „Digital services in general and online platforms in particular play an increasingly important role in the economy, in particular in the internal market, by enabling businesses to reach users throughout the Union, by facilitating cross-border trade and by opening entirely new business opportunities to a large number of companies in the Union to the benefit of consumers in the Union". Therefore, although the DMA does not provide an explicit definition of a „digital market," it defines the legal framework for online gatekeeper platforms that operate in digital markets and exert significant influence over access for other businesses and consumers (Irinescu, 2024).

A digital market refers to an economic environment in which goods, services, or platforms are accessed, delivered, or mediated through digital technologies – especially online platforms, algorithms, and data-driven processes.

Although the term „digital market" is frequently used in EU legislation and policy documents – particularly in the context of the *Digital Markets Act* and the *Digital Single Market Strategy* – there is no single, universally accepted

definition of it in official EU sources. In the absence of an explicit legal definition, I consulted ChatGPT (version GPT-4o, OpenAI, 2025) to obtain a working interpretation of the term, which provided the following working definition: „*A digital market is an economic environment in which the exchange of goods, services, or value is enabled, facilitated, or mediated through digital technologies – particularly the internet, data infrastructures, and software platforms. It typically involves interactions between businesses, consumers, and digital intermediaries (such as online platforms or marketplaces), and is characterized by features like network effects, data-driven personalization, and algorithmic decision-making."*

This definition aligns with how the term is implicitly used in EU digital regulation and offers a useful conceptual framework for analyzing the impact of artificial intelligence on competition (Bostoen, 2025).

Artificial intelligence is defined for the first time in the Artificial Intelligence Act (adopted by the European Parliament and the Council on June 13, 2024, which will be fully applicable from August 2, 2026), in Article 3(1) as „*a machine-based system that is designed to operate with varying levels of autonomy and that may exhibit adaptiveness after deployment, and that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments"* (Artificial Intelligence Act, 2024).

Therefore, in this context, we aim to highlight how the transformation of markets from traditional structures to digital ecosystems and the emergence of artificial intelligence systems can affect competition. It is becoming clear that competition law is undergoing a continuous process of transformation, determined by the complexity of economic phenomena in the digital space.

Although the regulatory architecture of the European Union, through instruments such as the TFEU, DMA, and DSA, is designed to ensure the fair functioning of the digital market, its effectiveness is often diminished by the difficulty of precisely defining the relevant markets, the lack of transparency in the functioning of algorithms that influence the economic behavior of digital actors, as well as the slow pace of the legislative process in relation to the accelerated dynamics of technological innovation.

In the context of maintaining market integrity and promoting fair competition, the intervention of institutions with responsibilities in this area plays a fundamental role, as they are responsible for balancing the economic dynamic by implementing strict regulations and preventive measures tailored to the specificities of modern markets. In this perspective, a central role falls to the competent authorities, such as the Competition Council at the national level and the European Commission at the supranational level, which are responsible for the effective enforcement of the legal regime governing anti-competitive practices

through investigation, decision-making, and sanctioning mechanisms, thus ensuring compliance with competition rules and protecting market stability.

3. ALGORITHMIC COLLUSION AND ANTICOMPETITIVE PRACTICES IN DIGITAL MARKET

The digital transformation of markets has introduced a new dimension to anti-competitive practices: the use of algorithms and artificial intelligence to coordinate the economic behavior of companies. Unlike traditional forms of collusion, which involved explicit agreements between operators, algorithmic collusion can occur in the absence of any direct communication, being generated by the autonomous interaction of digital systems programmed to maximize profit and optimize response to competition. The increasing use of algorithms and artificial intelligence in digital markets has brought both economic efficiencies and novel risks to competition. One of the most concerning developments is the emergence of algorithmic practices that may facilitate or constitute anticompetitive behavior – some of which fall outside the scope of traditional competition law enforcement tools.

Therefore, digital markets allow for a high degree of transparency, which a competitor can use to distort competition. The algorithms behind the platforms can be programmed to the detriment of competitors and consumers. For example, in the case of prices, monitoring them was difficult in the context of traditional markets, but today an algorithm can instantly analyze all competitors' prices and adopt a pricing policy by correlating them. For example, in Romania, the company Altex launched a campaign with the slogan „*The lowest price in Romania! If you find it cheaper elsewhere, you get twice the difference back"*. In fact, this could not have happened because the algorithms analyzed all competitors' prices for that product in real time and automatically adjusted the price of the product sold by Altex. In fact, consumers immediately perceived that Altex was selling products at the best prices on the market, and in such situations, consumers are tempted not to check competitors' prices and to make their purchasing decision based solely on the subliminal message of the slogan.

In November 2021, the Romanian National Authority for Consumer Protection (ANPC) sanctioned electronics retailer Altex for engaging in misleading commercial practices during a promotional campaign. The campaign, titled „*The Lowest Price in Romania! If you find a lower price elsewhere, you get double the difference*", was found to be deceptive.

ANPC's investigation revealed that Altex falsely advertised discounts on over 1,000 products during the Black Friday period. The company failed to correctly apply the reference price (the lowest price in the last 30 days), which misled consumers about the real value of the discounts. As a result, Altex was fined 50,000 lei and ANPC proposed the suspension of the company's commercial activity until the misleading practices were corrected. The campaign in question

– offering double the price difference – was suspended by ANPC, as it was not applied transparently or in accordance with consumer protection rules. Altex later complied with ANPC's recommendations and announced its commitment to improving its pricing and marketing practices. The case highlights the regulatory challenges of price transparency and algorithmically managed discount campaigns in the digital retail space.

So, it remains to be seen to what extent the algorithms behind the platforms are programmed to function in such a way as to create a competitive advantage. An algorithm can be used to sell a product more cheaply, which is to the advantage of consumers but to the disadvantage of competitors, or it can be used to raise prices, which is detrimental to consumers.

In other situations, the data that can influence how algorithms operate does not come from competitors, but from consumers. Some algorithms are designed to artificially increase the price of a product – for example, in the case of airlines – when the consumer makes multiple price inquiries. In fact, in these situations, the algorithm perceives this as an artificial increase in demand, which will lead to higher prices. These practices are known as *dynamic pricing*.

Dynamic pricing is driven by algorithms that process large volumes of real-time data to determine the „optimal" price a consumer might be willing to pay. Common inputs include search frequency and user behavior (e.g., repeated visits to a product page), geographic location and device type, purchase history and customer segmentation, supply and demand fluctuations. The rationale behind dynamic pricing is economic efficiency: it allows companies to maximize revenue**,** better manage inventory, and respond flexibly to market conditions**.** In theory, this benefits both sellers (through higher profit margins) and buyers (through more competitive pricing during low-demand periods). Notably, in the airline industry**,** it is well known that prices can increase merely as a result of repeated searches for the same route, especially from the same IP address or browser. This has led to widespread consumer suspicion and prompted recommendations such as browsing in incognito mode or clearing cookies to avoid price hikes.

In other cases, algorithms are used to compare prices and rank products based on the best price. Platforms such as Amazon Marketplace, Google Marketplace, and Emag use this feature. As long as this classification is accurate, we cannot identify any issues of unfair competition, but when algorithms are used to display the platform's own products first, both competitors and consumers will be affected.

In 2021, the Competition Council fined Dante International SA 32.28 million lei (approximately 6.7 million euros) for abuse of its dominant position on the market for intermediary services through online marketplace platforms and imposed a series of corrective measures on the company to restore normal competition and prevent such acts from occurring. As the owner and administrator

of the eMAG Marketplace online platform (www.eMAG.ro), it abused its dominant position between January 2013 and June 2019, in particular by positioning and displaying its own product offerings more favorably than those of partners selling on the platform and with whom it was in direct competition (Competition Council, 2020).

In addition, the competition authority required the company to adopt a series of measures regarding the algorithms used by the platform, with Dante being obliged to fully and accurately inform its partner merchants about how the algorithms work, such as those for listing and positioning products on the platform, and to limit manual interventions in the operation of the relevant algorithms.

This case highlights the risks posed by self-preferencing algorithms in digital marketplaces, where platform operators can act both as competitors and gatekeepers. It also demonstrates the increasing willingness of national competition authorities in the EU to scrutinize algorithmic conduct and impose structural remedies in the digital economy. It aligns with broader EU initiatives under the Digital Markets Act, which prohibits self-preferencing by gatekeepers and requires transparency in ranking mechanisms and data access (EU DMA (2024).

Amazon created the „Buy Box" on an Amazon product page, which allowed users to quickly add the product to their shopping cart. Since multiple merchants can sell the same product, Amazon's algorithm could automatically decide which offer appears in the Buy Box – which decisively influences sales, as most consumers buy directly from this section. In reality, only products sold by Amazon or certain sellers approved by the platform benefited from this quick purchase option.

Following an investigation launched by the European Commission in December 2022, Amazon made a series of commitments, primarily to stop using third-party merchants' data for its own retail purposes, to ensure equal treatment for all offers in the „Buy Box" and to create a second, alternative purchase box when there is another competitive offer. The commitments are binding and valid for seven years in all EU member states for a period of seven years. (European Commission, Case COMP/AT.40462 and Case COMP/AT.40703).

The E-Turas case is another example of algorithmic collusion and the use of digital platforms as tools for coordination between competitors. Eturas UAB is a Lithuanian company that ran an online booking platform for travel agencies. It let agencies manage and sell travel deals through a centralized system. E-Turas sent an automated message to all users of the platform announcing that a general limit on price discounts to a certain percentage would be implemented and, as a result, modified the software system so that agencies could no longer apply discounts above that threshold unless they made these changes manually (Surblytė-Namavičienė, 2020).

Several agencies tacitly accepted this change and did not contest it, which led to the alignment of market behavior. Therefore, although there was no communication or agreement between the agencies, they adopted the same prices as a result of a common IT system.

In this case, the Court of Justice of the European Union clarified that the administrator of a digital platform may be considered a participant in a cartel if it promotes, facilitates, or imposes coordination between competitors. The mere fact that an economic operator receives information about a practice restricting competition and does not actively reject it may be interpreted as tacit agreement if there is behavioral evidence to that effect: "where the administrator of a computer system designed to enable travel agencies to sell trips on their websites in accordance with a uniform booking method sends those economic operators, by means of a personal email, a message warning them that the discounts on products sold through that system will in future be capped and that, following the sending of that message, the system in question undergoes the technical modifications necessary to implement that measure, it may be presumed that those economic operators, from the moment they became aware of the message sent by the system administrator, participated in a concerted practice within the meaning of that provision if they did not publicly distance themselves from that practice, did not report it to the administrative authorities, or did not provide other evidence to rebut that presumption, such as evidence of a systematic application of a reduction exceeding the ceiling in question". National courts must verify whether each economic operator was aware of and accepted that practice, even passively (C-74/14).

4. CONCLUSION

Given that digital markets have opened up numerous new business opportunities for companies and provided consumers with access to an infinite range of products, regardless of the geographical area in which the trader is located, it could be argued that competition law should also adapt its policies to the new trends. We welcome the European Union's legislative initiatives to address the new challenges posed by the digitization of commerce, but competition law may undergo significant changes. A rethinking of competition law, through adaptation to innovative technology, is certainly needed. European Union member states are already making efforts to protect consumers from all competitive pressures that inevitably lead to the deterioration of their well-being.

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