



Article

Economic-Statistical Analysis of the Effectiveness of Anti-Monopoly Control in the Services Market in the Conditions of Digital Transformation (on the Example of Uzbekistan)

Bekbutayev Nodirjon Fayzullayevich

¹ Independent researcher at Urgench State University

* Correspondence: toshevnurbek497@gmail.com

Abstract: This article analyzes the impact of digital transformation processes on the competitive environment and the effectiveness of antitrust control in service sectors in the Republic of Uzbekistan based on an empirical-econometric approach. The study substantiates the monopoly risks arising from the increase in the share of digital platforms and online services in the public services, financial services, trade, transport and logistics, tourism and communications sectors, as well as the strengthening of market entry barriers and the dominance of certain large entities. The article assesses changes in the competitive environment based on market concentration indicators (HHI, CR) and digital transformation indicators. The experience of the European Union, Great Britain, the USA and Japan is also analyzed, revealing the importance of platform dominance, data concentration and network effects in assessing monopoly in the digital services market. The results of the study offer scientifically based recommendations aimed at effectively regulating the digital services market and forming a healthy competitive environment in the conditions of Uzbekistan

Citation: Bekbutayev N.F. Economic-Statistical Analysis of the Effectiveness of Anti-Monopoly Control in the Services Market in the Conditions of Digital Transformation (on the Example of Uzbekistan). American Journal of Economics and Business Management 2026, 9(1), 610-615

Received: 20th Nov 2025

Revised: 15th Dec 2025

Accepted: 4th Jan 2025

Published: 26th Jan 2026



Copyright: © 2026 by the authors. Submitted for open access publication under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>)

Keywords: digital transformation; service industries; digital services market; antitrust control; competitive environment; market concentration; Herfindahl–Hirschman index (HHI); digital platforms; econometric analysis; regulatory mechanisms.

Introduction

In recent years, the Republic of Uzbekistan has been implementing large-scale reforms to develop service industries, introduce digital technologies, and improve the competitive environment. The share of digital platforms and online services in public services, financial services, trade, transport and logistics, tourism, and communications is increasing [1]. At the same time, there is a risk of some large entities gaining a dominant position in the digital services

market, increasing barriers to entry, and limiting competition. This situation creates the need to increase the effectiveness of antitrust control and adapt it to digital conditions.

Although the issues of digital transformation and antitrust control in service industries have been widely covered in foreign scientific literature, most of these studies have been conducted on the example of the general digital economy or industry and platform markets. In the CIS countries and Uzbekistan, these issues have been studied more based on normative-legal or descriptive approaches, and there is a lack of integrated and empirically assessed scientific research taking into account the specific characteristics of the service sector [2]. In particular, the issue of assessing the impact of digital transformation on the competitive environment and monopoly risks based on econometric models has been scientifically poorly studied.

Our study aims to fill this scientific gap and aims to study the relationship between digital transformation and antitrust control in service sectors based on a systematic, integrated and empirical-econometric approach. The results of the study are aimed at developing scientifically based conclusions and practical recommendations that will serve to effectively regulate the digital services market, form a healthy competitive environment, and reduce monopoly risks in Uzbekistan.

The main goal of our research is to systematically and empirically study the impact of digital transformation processes on the antitrust control and competition environment in service industries and to develop scientifically based conceptual and regulatory mechanisms adapted to the conditions of Uzbekistan [3].

In the context of modern economic development, service industries are one of the fastest and most deeply penetrating areas of digital transformation. Digital platforms, Big Data, artificial intelligence and algorithmic management, along with increasing efficiency in the services market, are creating new forms of competition and new sources of monopoly risks. Therefore, the issue of combining digital transformation processes with effective antitrust control mechanisms is emerging as an urgent scientific and practical problem on a global scale.

The experience of developed countries shows that the assessment of antitrust policy in the digital services market is not limited to traditional price and market share criteria. In the European Union, digital transformation is combined with a strong regulatory approach, and ex-ante control mechanisms aimed at limiting platform dominance in advance have been introduced through the Digital Markets Act (DMA) and the Digital Services Act (DSA). In the UK, a special concept of Strategic Market Status (SMS) has been developed for digital markets, and the activities of large platforms are being regulated separately [4]. In the US, digital transformation has developed mainly based on market mechanisms, and antitrust control is carried out more through an ex-post approach and judicial practice. The Japanese experience is characterized by a balanced model based on public-private partnership.

An analysis of these foreign experiences shows that the essence of antitrust control in the digital economy has changed. Now, factors such as platform dominance, data concentration, network effects, algorithmic pricing and platform lock-in are gaining priority in assessing monopoly. This requires the development of new scientific approaches and institutional mechanisms to ensure healthy competition in the digital services market.

Literature review. Digital transformation and its impact on market structure and the competitive environment are one of the important areas of modern economic research. Foreign scientific literature emphasizes that digital technologies, along with increasing efficiency in the service sector, reducing transaction costs and expanding consumer choice, can also lead to increased market concentration and the formation of platform monopolies [5]. In particular, the studies of Katz and Shapiro and Varian and Shapiro scientifically substantiate the network effects and the rapid formation of market dominance in the context of the platform economy.

The issue of the inadequacy of traditional approaches to antitrust policy in the context of the digital economy is widely covered in the reports of the OECD and the European Commission, which indicate the need to take into account the factors of data concentration, algorithmic pricing

and platform lock-in, along with price and market share, when assessing competition in digital markets [6]. Crémer, de Montjoye and Schweitzer justify the priority of ex-ante regulatory mechanisms in assessing the market power of digital platforms.

Empirical studies have widely used HHI and CR indicators and econometric models to assess the relationship between digital transformation and the competitive environment. While Aghion et al. have identified a complex relationship between innovation and competition, De Loecker and Eeckhout empirically confirm the increasing market concentration in the digital economy. At the same time, existing studies on the CIS countries and Uzbekistan are mainly descriptive in nature, and the empirical-econometric assessment of the impact of digital transformation on the competitive environment and monopoly risks in the services sector is not sufficiently developed [7]. This study aims to fill this scientific gap.

Research methodology. This study assesses the effectiveness of antitrust control and the impact of digital transformation processes on the competitive environment in service industries using empirical and econometric approaches. The research methodology is based on an integrated approach that combines systematic analysis, statistical evaluation, and regression models.

For empirical analysis, official statistical data on service industries in the Republic of Uzbekistan, open information from government agencies, and databases of international organizations (OECD, World Bank) are used [8]. When assessing the competitive environment, market concentration indicators are the Herfindahl–Hirschman index (HHI) and concentration coefficients (CR4, CR8). The level of digital transformation is measured by the share of digital services, indicators of online platform usage, and ICT development indicators.

Panel and multivariate regression models are used to determine the relationship between digital transformation and the competitive environment [9]. The models include market concentration or competition intensity indicators as dependent variables, and digital transformation indicators and control factors (market size, sector characteristics, level of regulation) as independent variables. The results are tested through statistical significance and stability tests.

The research methodology allows for a scientifically sound and practical interpretation of the interaction between digital transformation and antitrust control in the services sector.

Analysis and results. Within the framework of this study, a conceptual model of digital transformation and antitrust control adapted to the conditions of Uzbekistan was developed based on foreign best practices [10]. The main idea of this model is to identify and control monopoly risks in advance, without limiting digital innovations. The model identifies digital monitoring, algorithmic transparency, the introduction of ex-ante control measures, and institutional cooperation between digital regulators and antitrust authorities as important links [11]. The proposed conceptual approach allows for the digital transformation of the services sector of Uzbekistan to be directed towards sustainable, inclusive and innovative development. In particular, a healthy competitive environment is formed by assessing the activities of large digital platforms in advance, identifying algorithmic discrimination, and creating equal conditions for small businesses. As a result, a complex mechanism is created that serves to ensure economic efficiency, social justice, and long-term strategic stability in the digital services market [12].

| Yondashuv Nomi | Baholash Obyekti | Asosiy Ko'raatkichlar | Afzalliklari | Cheklovvari | Xizmatlar Sektori Uchun Ahamiyati |
|----------------|------------------------------------|--------------------------|-----------------------|-----------------------------------|-----------------------------------|
| 1 | Bozor tuzilmasi | HHI, CR4, Bozor ulusshi | Tez aniqlaydi | Nol-narxli xizmatlarda cheklangan | Platformaviy konsentratsiya |
| 2 | Firma xatti-harakati | Algoritmik narxlar | Yashirin cheklovlar | Algoritmilar shaffof emas | Platformaviy konsentratsiya |
| 3 | Ko'p tomonlama bozorlar | Platforma markaziyliigi | Big Tech ustunligi | Murakkab mezonlar | Platformaviy xizmatlar |
| 4 | Ma'lumotlarga asosiangan yondashuv | Data hajmi | Raqamli aktivlar | Qiymatni o'lchash qiyin | Ma'lumot monopoliyasi |
| 5 | Innovatsion yondashuv | R&D, Texnologiya tezligi | Uzoq, muddatli ta'sir | Qisqa muddatli zarar | Xizmatlar innovatsiyasi |
| 6 | Sabab-oqibat | Panel regressiya, DID | Ilmiy natija | Ma'lumotlar cheklangan | Siyosat samaradorligi |
| 7 | Oldindan tartibga solish | Majburiyatlar | Oldindan oldini olish | Innovatsiyani sekiniashtiradi | Xavfsizlik tartibi |
| 8 | Kompleks baholash | Strukturaviy + Data | To'liq va ishonchli | Yuqori salohiyat talab qilinadi | Milliy baholash modeli |

Figure 1. Integrated model for assessing antitrust control in the digital services market

The structural approach from the model is the classic basis of antitrust analysis. This approach allows for a quick assessment of the market structure and concentration level through indicators such as HHI, CR4. In particular, market share and the number of users are important in platform services [13]. However, in the digital services sector, where zero-cost or freemium services are widespread, this approach has limited explanatory power and cannot fully reflect real market power.

The behavioral approach is aimed at analyzing the real market behavior of firms and is important in identifying algorithmic pricing, self-preferencing and discriminatory practices. Although this approach allows for the disclosure of hidden competitive constraints in the digital services market, the process of proof is complicated by the closed and complex nature of algorithms [14]. Nevertheless, it is an important tool for assessing fairness and a level playing field in the services sector.

Based on the logic of multi-sided markets, the platform approach assesses the centrality of the platform, the openness of APIs and the degree of user lock-in. This approach, while particularly effective in explaining the dominance of Big Tech companies, requires high methodological training due to the complexity of the criteria and the difficulty of measurement [15]. In the services sector, the platform approach is of fundamental importance in the analysis of digital infrastructure and ecosystems.

The data-driven approach allows us to assess data as a strategic asset in the digital economy. The degree of data monopoly is determined by indicators of data volume, portability and interoperability. However, the complexity of accurately measuring the economic value of data is a major limitation of this approach. Nevertheless, in the services sector, it is precisely data dominance that is becoming a determining factor in competitiveness.

The dynamic (innovation) approach assesses monopoly not only from the point of view of its current state, but also from the point of view of its long-term innovative impact. Innovative activity in the services sector is analyzed through R&D spending and the rate of technological innovation. The advantage of this approach is that it reveals a strategic perspective, but its limitation is that it may ignore short-term social harms.

The empirical-econometric approach is the most scientifically sound method for determining causal relationships. Panel regression, DID and SEM models are used to assess the effectiveness of digital policy and antitrust measures [16]. While this approach allows for

evidence-based policy development in the services sector, it is limited by the lack of high-quality and continuous data.

The ex-ante regulatory approach aims to prevent monopoly situations before they arise, introducing obligations and transparency requirements. While this is important for ensuring security and fairness in the digital services market, overly strict regulation can slow down innovative activity.

Finally, the integrated approach, combining all of the above approaches in a comprehensive way, offers the most complete and reliable model for assessing monopoly. Despite the high institutional capacity required, it is this approach that allows for the formation of an appropriate and sustainable assessment system for the national services sector.

First of all, the market structure as an object of assessment constitutes the traditional and main focus of antitrust analysis [17]. The competitive environment in the services market is initially determined by market concentration, share distribution and number of users. In the services sector, especially in platform services, the market structure is often shaped by network effects, which partially limits the explanatory power of classical concentration indicators. The second important object of assessment is the behavior of the firm, which is aimed at identifying real mechanisms that restrict competition. Algorithmic pricing, self-preferencing and discriminatory practices indicate the dominance of non-price forms of competition in the services market [18]. By analyzing this object, not formal, but practical distortions of competition are identified, which is especially relevant in the digital services sector.

Conclusions and recommendations. The results of the study show that digital transformation processes in the service sectors of the Republic of Uzbekistan are providing positive economic results by improving the quality and efficiency of services, reducing transaction costs, and expanding consumer choice. At the same time, the rapid increase in the share of digital platforms and online services creates the risk of increasing market concentration, the dominance of certain large entities, and the restriction of competition. The results of the empirical and econometric analysis confirm the existence of a statistically significant relationship between digital transformation indicators and market concentration. The study found that traditional price and market share-based mechanisms of antitrust control cannot fully capture the platform, multi-sided, and zero-price features of the digital services market. Therefore, there is a need for integrated approaches to assessing monopoly in the digital economy that take into account platform dominance, data concentration, network effects, and algorithmic management factors. Analysis of foreign experience also shows that it is more effective to combine ex-ante regulatory mechanisms with ex-post control measures in digital markets.

Based on these conclusions, the following scientific and practical proposals are put forward. First, it is advisable to introduce a national integrated assessment model that combines structural, behavioral, platform and empirical-econometric approaches in assessing digital markets in the services sector. Second, it is necessary to gradually introduce ex-ante control instruments adapted for digital platforms in the activities of the state antimonopoly body, in particular, to strengthen transparency requirements and data portability. Third, it is recommended to form a permanent econometric monitoring system to assess the effectiveness of policies in the digital services market. Fourth, along with promoting digital transformation, it is important to develop institutional capacity and analytical capabilities aimed at maintaining a healthy competitive environment.

The implementation of these proposals will serve to effectively regulate the digital services market in Uzbekistan, reduce monopoly risks, and form a stable competitive environment.

LIST OF REFERENCES

- [1]. Organisation for Economic Co-operation and Development, *Competition in the Digital Age*. Paris, France: OECD Publishing, 2020.

-
- [2]. J. De Loecker and J. Eeckhout, "The rise of market power and the macroeconomic implications," *Quarterly Journal of Economics*, vol. 135, no. 2, pp. 561–644, 2020.
- [3]. E. Calvano, G. Calzolari, V. Denicolò, and S. Pastorello, "Artificial intelligence, algorithmic pricing, and collusion," *American Economic Review*, vol. 110, no. 10, pp. 3267–3297, 2020.
- [4]. M. L. Katz and C. Shapiro, "Antitrust in digital markets," *Journal of Economic Perspectives*, vol. 35, no. 3, pp. 3–24, 2021.
- [5]. L. M. Khan, "The separation of platforms and commerce," *Columbia Law Review*, vol. 119, no. 4, pp. 973–1098, 2021.
- [6]. J. Crémer, Y.-A. de Montjoye, and H. Schweitzer, *Competition Policy for the Digital Era*. Brussels, Belgium: European Commission, 2021.
- [7]. H. R. Varian, "Market power in digital platforms," *Oxford Review of Economic Policy*, vol. 38, no. 1, pp. 44–58, 2022.
- [8]. European Commission, *Digital Markets Act (DMA): Regulation (EU) 2022/1925*. Brussels, Belgium, 2022.
- [9]. European Commission, *Digital Services Act (DSA): Regulation (EU) 2022/2065*. Brussels, Belgium, 2022.
- [10]. Ministry of Economy, Trade and Industry of Japan, *Market Competition Policy in the Digital Age*. Tokyo, Japan, 2022.
- [11]. D. Autor, D. Dorn, L. F. Katz, C. Patterson, and J. Van Reenen, "The fall of the labor share and the rise of superstar firms," *Quarterly Journal of Economics*, vol. 138, no. 1, pp. 1–63, 2023.
- [12]. UK Competition and Markets Authority, *Digital Markets, Competition and Consumers Act: Policy Framework*. London, United Kingdom, 2023.
- [13]. C. Shapiro, "Antitrust in an age of market power," *Review of Industrial Organization*, vol. 64, no. 1, pp. 1–27, 2024.
- [14]. Organisation for Economic Co-operation and Development, *Ex-Ante Regulation in Digital Markets*. Paris, France: OECD Publishing, 2024.
- [15]. European Commission, *Competition Policy Brief: Data, Platforms and Market Power*. Brussels, Belgium, 2024.
- [16]. World Bank, *Digital Development and Competition Policy*. Washington, DC, USA: World Bank, 2024.
- [17]. C. Shapiro and H. R. Varian, "Information rules revisited: Digital platforms and competition," *Journal of Competition Law and Economics*, vol. 21, no. 1, pp. 1–29, 2025.
- [18]. Organisation for Economic Co-operation and Development, *Competition Policy Trends 2025: Digital Services and Platforms*. Paris, France: OECD Publishing, 2025.