

# *Research on the Abuse of Digital Platform Addictive Technology and Antitrust Supervision*

**He Jiaqi**

*Krirk University, Bangkok, Thailand*

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**Abstract:** With the help of the advantages of big data and algorithms, digital platforms induce users to overuse their services through addictive technologies such as infinite pull-down refresh and personalized push, which not only damages consumers' autonomy, but also causes problems such as addictive monopoly of platforms. In view of this, we should break out of the traditional anti-monopoly analysis paradigm, introduce the perspective of legal psychology, and bring the addiction into the competition evaluation system. In the systematic governance structure, the anti-monopoly law should play an important role. By strengthening the regulation of attention exploitation, mergers and acquisitions, and collusion, we should warn and curb the abuse of addictive technologies, break the biological hegemony of platforms, and safeguard the interests of consumers and social fairness.

## **1. Introduction**

With the development of the mobile Internet, the monopoly position of the head digital platform in their respective market segments is becoming increasingly stable. Academic common concern platform cross network externalities, data and algorithm advantage factors to monopoly, but often ignore another potential reason, that is the platform using addictive technology manipulation of consumer psychology, induce excessive use of platform services, and produce huge user viscosity, let competitors to shake its market power [1].

With the advancement of algorithms and big data technologies, digital platforms have mastered the unprecedented "biological power" to gain insight into and predict consumer behavior and psychological states. Some platforms begin to take advantage of this ability, hire professional teams to continuously optimize the algorithm recommendation model, and develop a variety of highly hidden psychological manipulation and induction technologies, such as infinite pull-down refresh, personalized push, etc., the purpose is to induce users to indulge in the platform and maximize the occupation of users' attention to realize traffic realization. This behavior of using algorithm power to exploit users' attention not only odes consumers' autonomy and affects their physical and mental health, but also induces problems such as platform monopoly and information cocoon.

Unfortunately, the traditional competition law theory and law enforcement practice have not fully realized the negative impact of digital addiction on the competition pattern of the platform market. The traditional analysis paradigm often focuses on the platform's price strategy, merger and other observable behaviors, and lacks insight and the perspective and ability to evaluate the

manipulation of secret algorithms. In this regard, it is necessary to jump out of the traditional competition analysis framework and re-examine the characteristics of the platform market from the perspective of law and psychology.

On the basis of previous research, this paper intends to sort out the causes, methods and harms of the abuse of addictive technologies by digital platforms, compare the governance paths of different legal fields, and highlight the unique function of anti-monopoly law to dealing with such problems. On this basis, the countermeasures and suggestions are put forward to curb the abuse of addictive technology and prevent the addictive monopoly of the platform, in order to provide a useful reference for the theoretical innovation and practice of anti-monopoly law enforcement to cope with the new challenges of the digital era.

## **2. Theoretical interpretation and technical display of digital platform for inducing consumer addiction**

### **2.1 Theoretical explanations from surveillance capitalism to fringe capitalism**

With the development of digital economy, some scholars have begun to pay attention to the behavior of digital platforms that collect user data on a large scale and use it to them for commercial gain. Zubov proposed the concept of "surveillance capitalism", which points out that large platforms make huge returns by continuously tracking users' online behavior, refining user portraits, and monetizing user data based on personalized ads. This theory reveals some of the connotation of the platform business model, but the more critical point is that today's head platforms are not satisfied with simple data monetization, but more eager to occupy [2], a scarce resource of users' attention. In this regard, Marx put forward the concept of "marginal capitalism", pointing out that digital platforms try to push users to extreme states through algorithmic manipulation, inducing users to highly participate in platform activities, so as to maximize their attention, and then realize the traffic realization of advertising and other means. In order to achieve the above goals, the platform often takes advantage of its human weaknesses to induce users to have psychological dependence on the platform services through various addictive technologies. Thus, fringe capitalism reveals the inherent logic of today's head platforms trying to monopolize users' attention.

### **2.2 Typing analysis of typical addictive technologies of digital platforms**

The head digital platform has top technical talents and massive amounts of user data, which can gain insight into human weaknesses and design targeted algorithms to lure users to become addicted to [3] on the platform services. The typical addictive techniques adopted can be summarized into the following categories:

(1) Infinite pull-down refresh. Many audio, video and social platforms use the interactive design of unlimited drop-down lists, allowing users to constantly acquire new content by gently pulling down, but never reach the bottom of the list. This design takes advantage of people's desire to complete, luring users to constantly refresh in order to complete the list browsing, but because of endless and can not stop.

(2) Personalized push. The platform uses machine learning and other technologies to model and analyze massive user data, accurately depict the characteristics of users' interests, and push tailored content to them accordingly, so that users can have a strong sense of participation and freshness, which is difficult to give up in the long run.

(3) Variable rewards. The platform often randomly issues virtual rewards such as points and coupons to active users, but there is great uncertainties about the distribution time and content. This irregularity of reward is more dependent than a fixed reward. Combined with personalized push,

variable rewards further strengthen the "addictive attribute" of the platform.

(4) Loss of early warning. When users reduce the frequency of using the platform, the platform will push private retention prompts to them, including good memories and friend dynamics on the platform in the past, to arouse users' "sense of belonging" and promote them to be active again. As table 1 shows classification and characteristics of digital platform addictive technologies.

Table 1: Classification and characteristics of digital platform addictive technologies

Addiction Technology Type	Leading Feature	Representative Application Scenarios
Unlimited Drop-Down Refresh	Use People's Desire To Complete, Induce Users To Constantly Refresh	Short Video Platform News Information App
Personalized Push	According To The User Portrait To Cast Its Good, Create a Sense Of Participation	e-Commerce Platform Social Networking Platform
Variability Reward	Irregular Rewards, Using The User's Gambler Psychology	Game Platform Live-Broadcasting Platform
Loss Of Early Warning	Arouse The Sense Of Belonging Of Lost Users And Promote Their Active Again	Social Networking Platform Content Platform

### 2.3 Brief analysis of the mechanism and harmfulness of addictive technology

The above addictive technologies often make clever use of human weaknesses to meet the needs of users through algorithms, while improving the short-term use experience and making users gradually rely on the platform services. To be specific, infinite pull-down satisfies users' desire to complete, personalized push caters to cognitive preferences, variable rewards take advantage of people's gambler psychology, and loss warning appeals to users' sense of belonging. Over time, it is difficult for users to get rid of the platform induction, fall into the cycle of use-satisfaction-reuse, and become the "prisoner" in the eyes of the platform.

The digital addiction problem caused by addictive technology has multiple hazards. At the individual level, the addiction platform wastes time and may lead to decreased attention and self-control; at the market level, the head platform further consolidate its monopoly position, competitors even provide the same service; at the social level, the algorithm push leads to the "information cocoon" problem, users only receive a single perspective information, the society is split. The platform's excessive demand of users' attention causes moral and ethical problems.

## 3. Legal response to digital addiction: a comparison of regulatory paths in different fields

### 3.1 Regulation path of anti-monopoly law: contribution, limitation and perfection

The anti-monopoly law aims to maintain fair competition in the market and curb monopoly behavior. It can regulate the use of addictive technologies to consolidate monopoly by prohibiting the abuse of dominant market position. If it believes that the platform guides users to overuse its services through algorithms and prevents competitors from entering the relevant market, it can constitute an abuse of the dominant market position; if the purpose of the platform acquiring start-ups is to acquire their addictive technologies and consolidate its monopoly position, it can

constitute a merger and acquisition that restricts competition. This provides a ready legal tool to confront the problem of digital addiction. However, the traditional anti-monopoly theory focuses on observable price, production and other factors, and lacks insight into covert algorithmic manipulation. Law enforcers should jump out of the traditional analysis framework, induce addiction into the market power evaluation system, and regulate the exploitation of user attention as a kind of anti-competitive behavior. At the same time, the technical investment should be strengthened to improve the review ability of the algorithm [4].

### **3.2 Regulation path of Consumer Rights Protection Law: contribution, limitation and perfection**

The Law on the Protection of Consumer Rights and Interests emphasizes the obligation of information disclosure of enterprises and consumers' right to know, which helps to reveal the existence and risks of addictive technologies and provides users with necessary notification. For example, the platform is required to introduce the addiction risk prompt function into its algorithm, or push warning information after users reach a certain period of time. This is conducive to awakening consumer vigilance and suppressing the platform-induced addiction impulse. However, the consumer protection law emphasizes more post-relief rather than pre-prevention. In the face of information asymmetry, it highly relies on the self-protection consciousness of consumers, and has limited role in curbing platform monopoly. In the future, we should strengthen the cooperation between consumer protection law and anti-monopoly law, strengthen the information disclosure and risk warning obligations of the platform, and provide consumers with the option to remove the algorithm bias [5].

### **3.3 Digital legal regulation path: contribution, limitation and improvement**

In the era of big data, platforms master massive user data and manipulate user behavior based on algorithms to trigger new regulatory demands. Countries have formulated digital laws to regulate data collection and use. For example, the EU Digital Service Law and the Digital Market Law regulate large platforms from the aspects of platform responsibility and algorithm transparency. China's Data Safety Law and Personal Information Protection Law prohibit excessive collection of user information in principle. The legislation can help limit the willfulness of platforms in using data and algorithms. However, digital legislation focuses on the data level, still lacks substantial regulation on the use of algorithms, and has a limited role in cutting off the data sources of addictive technologies. In the future, the algorithm audit should be strengthened while strengthening the data governance, especially focusing on the algorithm with the risk of inducing addiction. Anti-monopoly law, consumer protection law and digital law respectively provide legal paths for regulating digital addiction from different perspectives, such as curbing monopoly, protecting consumers and regulating the use of data, but each has its own emphasis and limitations. In terms of the possible platform monopoly problem caused by addictive technology, the anti-monopoly law should undoubtedly be the most direct regulation tool. The anti-monopoly law has mature monopoly identification standards and control measures, such as market dominance and abuse behavior, which can provide an existing analytical framework for digital addiction problems. Although the traditional competition analysis paradigm has cognitive limitations in the face of algorithm manipulation, the anti-monopoly law is expected to become a powerful grasp [6] to break the vicious circle of digital addiction by including the competition evaluation system, supplemented by the functional supplement of consumer protection method and digital law. Comparison of the paths to regulate digital addiction in different fields is shown in table 2.

Table 2: Comparison of the paths to regulate digital addiction in different fields

Regulation Path	The Main Focus	Superiority	Limit	Improve The Suggestion
Antimonopoly Law	To Restrain The Behavior Of Making a Monopoly	There Are Mature Monopoly Identification Standards And Control Measures	Traditional Analytical Paradigm Is Difficult To Gain Insight Into Algorithmic Manipulation	Inclusion Of User Addiction Risk Assessment For Enhanced Algorithm Review
The Consumer Rights And Interests Protection Law	Emphasis On Information Disclosure And The Right To Know	Helhelps Reveal Addiction Risk And Provide Users To Users	Focus On Post-Relief, In The Containment Of Monopoly Limited	Strengthen The Platform Risk Warning Obligation To Provide Users With The Option To Remove The Algorithm Bias
Digital Method	Standardize The Data Collection And Use	The Emphasis On Platform Responsibility Helps To Limit The Abuse Of Algorithms	Lack Of Substantial Regulation Of The Use Of Algorithms	Strengthen Data Governance While Strengthening Algorithm Audit

#### 4. Countermeasures and suggestions to curb the abuse of addictive technologies from the perspective of anti-monopoly law

##### 4.1 Establish the perspective of legal psychology, and bring addiction into the framework of competition analysis

Traditional antitrust analysis focuses on market share, price and other indicators, and it is difficult to gain insight into covert algorithmic manipulation. In the era of big data, platforms use algorithms to guide user behavior, which may not only improve efficiency and user experience, but also induce use addiction and damage the interests of consumers. Therefore, when evaluating the market forces of platforms, it is necessary to jump out of the traditional analytical paradigm and examine their business models and competitive behavior from the intersection perspective of law and psychology.

Specifically, law enforcers need to pay attention to whether the algorithm design of the platform has the tendency to induce users to overuse, whether the use time and frequency of users on the platform is obviously different from that of other similar platforms, and whether the platform has a stable early warning mechanism for user loss. When measuring the market position of the platform, in addition to examining its market share, profit and other factors, the average use duration and use frequency of users on the platform should also be included in the evaluation system. For the platforms suspected of inducing user addiction through algorithm manipulation, the data sources and algorithm parameters behind them should be examined to determine whether they use addiction to consolidate their market position. This requires law enforcement to increase technology investment and improve the background knowledge and analytical ability of algorithms.

## **4.2 Strengthen the identification and regulation of the abuse of exploitative sexual addiction technology**

The first thing to curb addictive technology abuse is to clearly define what technology use constitutes monopoly abuse. Generally speaking, the platform inducing users to significantly increase the duration and frequency of use in a short period of time, and does not provide users with refusal options, can be preliminarily identified as abuse. If the use of relevant technologies on the platform further hinders other competitors from entering the market or locking users, and the effect of excluding and restricting competition is obvious, it can be considered to constitute a monopoly force and abuse of [7].

In the practice of law enforcement, we can refer to the following points to identify the abuse of addictive technology: the first, the interface design, inducing users to indulge by infinite pulling down and automatically playing the next video; the second, we should analyze the matching degree between the push content and the user's interest characteristics, to determine whether the situation is excessive catering; the third, the virtual incentive, we should pay attention to the uncertainty setting of points, coupons and other incentive distribution; the fourth, pay attention to the frequency and privacy of the platform to recall inactive users.

Once the platform is found to abuse the technology, the law enforcers will order it to rectify within a time limit or impose a fine or ban on senior executives according to the seriousness of the case. If the case is serious, the platform should also be required to explain to the public the use of its addictive technology, set the use time warning in a prominent position, and provide users with the option to reject personalized push.

## **4.3 Strengthen the supervision of access to addictive technologies through mergers and acquisitions**

In the antitrust review of mergers and acquisitions, law enforcers usually focus on whether the transaction has the effect of increasing price and limiting production, but often ignore the integration and impact of transactions on data and algorithmic resources. Some start-ups develop new technologies to induce user addiction, and may be acquired by head platforms through mergers and acquisitions, becoming their killer mace to consolidate their monopoly position. In this regard, when reviewing the merger and acquisition transactions involving digital platforms, in addition to the traditional economic indicators, the impact of relevant data and algorithms on the competitive advantage of the platform should also be analyzed.

If it is found that merger and acquisition transactions enable the head platform to acquire the technology with addiction risk, and have the motivation and ability to use this technology to eliminate and limit competition. Even if the transaction does not change the relevant economic indicators, it can be preliminarily identified to have anti-competitive effect, and then regulate by attaching restrictive conditions or even prohibiting transactions. This requires law enforcement to keep abreast of the development trend of cutting-edge technologies and pay more attention to start-ups.

## **4.4 Be alert to and investigate addiction technology collusion among platforms**

Nowadays, the digital economy is becoming increasingly competitive. In order to consolidate each other's monopoly position and eliminate potential competitors, different platforms may collude with each other through addictive technologies, such as synchronous behaviors in areas such as interface design and personalized push. This kind of collusion is often realized through data sharing, algorithm migration and other hidden ways, which is not easy to be detected by the traditional

anti-monopoly framework.

In order to effectively investigate and punish the addictive technology, the law enforcement should, on the one hand, pay attention to the collection of clues, and encourage insiders and the public to provide information through the mechanism of reporting and reward; on the other hand, establish a normal technical audit mechanism to spot check the data sources and algorithms, and find the similarities in time. If it is found that platforms have obvious convergence in the use of sexual addiction technologies such as infinite pull-down, and cannot provide justifiable reasons, they can further investigate whether an agreement is reached through meetings and data sharing, and it can be directly identified to constitute a monopoly agreement.

## 5. Conclusion

In the digital era, the head platform uses addictive technologies to induce users to overuse their services, exclude and restrict competition, causing multiple concerns such as consumer rights and interests and social equity and justice. As the basic law regulating the abuse of economic forces, anti-monopoly law should shoulder the responsibility of facing and governing the problem of digital addiction. Anti-monopoly law enforcers should follow the development trend of the Internet industry, jump out of the traditional analysis paradigm of simply focusing on price and output, establish the cross perspective of law and psychology, and bring the factor system of inducing user addiction into the market power of the platform. Only when the anti-monopoly law keeps pace with The Times, has a keen insight into and effectively regulates the problem of digital addiction, and creates an open, inclusive, fair and orderly digital ecology, can we achieve the sustainable and healthy development of the digital economy and benefit mankind with scientific and technological progress.

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