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# A look at the possible impact of Apple's new policy on third-party apps and the data food chain of iOS users

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## Abstract

**The research presents and discusses that Apple's new policy of applying the privacy application framework "App Tracking Transparency" to Apple's IOS14 system has implications for third-party companies in the data food chain as well as users. Users has paid attention to private information including consumption habits, spending power, product preferences, price sensitivity. We found that Apple's new Privacy Application Framework gives Apple absolute dominance in the data food chain of smart media users, Apple and the Apple ecosystem, third-party application platforms, and downstream marketing companies that provide data mining analysis for third-party applications, changing the traditional equal relationship between third-party application platforms and their direct access to user data.**

## Keywords

**Apple, smartphones, big data.**

## 1. Introduction

With the use of smartphones and the popularity of mobile terminal media, mobile communication technology is rapidly developing and smartphones are rapidly penetrating into people's lives. People as users leave a lot of data traces when they use smartphones in social media for their daily online activities. Mobile media involves the privacy information of smartphone users is also gradually increasing, and more and more unregulated platforms and malicious applications bring very serious privacy leakage risks to mobile terminal media users. Mobile Internet users struggle to achieve privacy in the online era [1]. Users share information related to themselves by improving their profiles and posting information on social networks, which may be a privacy leakage risk for the users [2]. Smartphone users posting shared messages, short comments, clocking-in, browsing, etc. on social media inevitably generate a lot of private data for others to view, which gives many clues to explore the user's personality tags as well as preferences. The paper will focus on the reasons for Apple's new policy, the impact of Apple's new policy on enterprises and individuals, and the analysis of the data food chain in Apple and Apple's system. Using case studies, this paper presents a case study of the restaurant industry's scan code ordering to obtain user profiles and privacy data, and speculates on how the discourse of third-party applications, smartphone users, and Apple in the data food chain will shift after Apple's new privacy application framework is implemented.

## 2. Background

U.S. market research firm International Data Corporation[3]reported in May 2021 that smartphone manufacturing is expected to reach 1.38 billion units in 2021, up 7.7% from 2020. The popularity of smartphones has brought about the widespread use of technologies such as the Internet, big data and artificial intelligence, which have penetrated into people's lives. As an intermediate carrier, smartphones have helped users construct a digital information space and changed many people's production and lifestyle. From socializing, education, entertainment,

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shopping and transportation, people are increasingly relying on online platforms. While this change has enabled the digital industry to generate revenue and technological innovation to grow, it has also brought many new concerns and challenges. For the many Internet smartphone users living in the digital era, digital literacy means how to better face the digitization of their way of living and life patterns.

IOS is a mobile operating system developed by Apple for mobile media devices such as the iPhone, iTouch, iPad, iPod, iWatch, etc. There are many versions of IOS, with an annual update [4]. Unlike the Android operating system, ISO is responsible for all development in the system, and innovation and maintenance are the sole responsibility of Apple. In May 2021, a new privacy application framework "App Tracking Transparency" was introduced to Apple's IOS14 system. When a user first opens an App, a user prompt pops up asking if the App is allowed to track the user's activity on other Apps and websites [5]. The reason for this is to show users more relevant and exciting content and to reduce irrelevant advertisement recommendations. It is claimed that "users should have an informed choice about what data is collected about them and how it is used by third-party platforms and Apple" [6]. Apple's and third-party Apps and websites' tracking policies are not transparent to the average user. This extension shows users the possibility of what is actually being tracked when they allow an App to access their data.

## 3. The Impact of Apple's New Policy on Enterprises and Individuals

Data can be understood as the raw material of information [7]. Many people have argued that the value of integrated data is greater than the sum of its parts, allowing decision makers to gain further insight through the potential connections of integrated data [8]. Big data is characterized by abundant quantity, various forms of decision making, amazing speed and its own data value [9]. In the era of Big Data, new Internet science and technology have solved the huge amount of data that people could not handle before. The large amount of data is also bound to help people uncover more valuable information. Take the medical industry as an example, if a doctor wants to judge whether a patient has a tumor or not, the doctor's judgment must be based on the cases he or she has received in the past or the cases his or her colleagues have contacted, but the source of these cases may only be a certain city or town. If all the cases in the world are integrated through Internet technology, the doctors' judgment on tumor will be more accurate, which will help society save more lives. There is no doubt that big data plays an important role in such issues. Over the past many years, the increasing maturity of social networks social media, the growth of e-commerce, and the continuous development and advancement of algorithms and data collection techniques have gradually changed the shape and role of data in the supply chain [10,11]. It can also be said that the data itself has no value, it is the algorithm that gives value to the data and thus generates big data. Brinch has argued that the value creation of big data depends on the ability to make decisions, both strategic and operational, using the information generated by big data and algorithms [12]. Users' data is a source of huge profits for others, and if the data is in the wrong hands, there will be a huge cost to people as users [13].

The application and popularity of algorithms may affect users' daily life and consumption decisions. When users open a shopping platform or shopping App, their desired products can be quickly found from a list of recommended products; when browsing news or short videos on a news App or platform, they can always receive recommendations for content that matches their interests; when choosing a restaurant, they can tap on the food section on their smartphone Apps to see a list of their favorite recommendations. As consumers, many people are not new to this experience. With the continuous development of digital media and information technology, algorithms covering many fields such as travel, transportation and accommodation, online shopping, ordering food and takeaway, are becoming more and more

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popular, affecting users' consumption decisions and lives every moment. Generally speaking, algorithms are an emerging technological tool. Algorithms shape an increasing number of everyday activities, especially online media consumption [14]. Algorithms also enable Internet media platforms to quickly and accurately match user needs and services with the help of comprehensive data (big data), such as profile information and usage habits of some consumers. Such matching greatly reduces the cost of obtaining data and information dissemination, provides more Internet users/consumers with access to online products and services, and makes the operation of Internet society more accurate and efficient through big data algorithms.

It is also important to see that there are still violations of consumer rights in the market due to the improper use of algorithms by third parties or operational service providers. For example, third-party platforms excessively collect personal information of Internet users, resulting in violation of personal privacy, setting different price for different customers via big data, improper manipulation of traffic distribution on Internet platforms, and interference with Internet as well as third-party platform merchant operations. The collection, analysis, and application of this privacy data is profitable for third-party companies. Apple has implemented the privacy application framework "App Tracking Transparency" into Apple's IOS14 system. This new policy has implications for third-party companies in the data food chain as well as users.

In the Apple ecosystem, the data food chain is made up of three parts. The first part is the big data algorithm that collects personal data and preferences of users, the second part is Apple, and the third part is the third-party application platform that provides services to users. Apple's new policy empowers smartphone users; as users, Apple gives them the option to choose whether or not to allow third-party applications to collect their personal data. Prior to Apple's new policy, third-party applications received personal data and information from users and analyzed it to influence their spending decisions. With Apple's new policy, if users consent to the collection of their own data by third-party applications, the relationship remains that Apple, as the provider, is the sender of personal information about users' data. The third-party application platform is the recipient of this private data. The third-party platform then analyzes and organizes this data, which ultimately reflects on the Internet platform users and influences their media consumption decisions. However, if a user refuses to have his or her data collected by a third-party application, the third-party application platform will need to request authorization from Apple's data collection platform as a way to obtain user data. App developers' ability to publish interest-based advertisements is severely limited by the existence of data tracking policies. App developers are unable to effectively measure the success of their commercial advertising practices [15]. Third-party platforms are not the only ones affected by Apple's new policy; some third-party App store platforms may not have the ability to integrate and analyze data. As a result, the dissemination of data may not be limited from consumer users to third-party App platforms or from consumers to Apple. Some downstream data mining and analysis companies of shopping decision platforms and tourism platforms will also be affected by Apple's new policy. Some data mining companies provide data mining and analysis for third-party platforms that entrust their services to develop decision making solutions, which is also an affected industry. Apple's action consolidates the company's absolute dominance in the App market as well as in the supplier service chain. This seemingly value-added service has also increased the cost and expense of Apple's service system customers switching to other server systems, such as Android.

The new policy in the context of Apple Corporation and the Apple ecosystem also has a relevant impact on users. Users will be able to avoid leakage of their phone numbers, contacts, messages and browsing history through the integration of new data privacy technology on their smartphones with IOS14, which encrypts personal information on their smartphones. The system will also ensure the security of a multi-layered protection mechanism consisting of

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hardware support and software safeguards. This will prevent a third-party App that briefly gains access from exploiting an end-user's browsing data, even if that third-party platform has access to some of the browsing data left by Internet users on that platform. But, since the tracking data policy does not touch the combination of first-party data, Apple still has the most data for now [15]. It may seem that users now have the right to make private data decisions about whether to share their data with third-party applications, but if mobile media end-users refuse to share it with third-party platforms, this right is then returned to Apple. It can also be argued that Apple has taken away the end-user's control over their data [15]. If third-party Apps can no longer provide recommendations to end-users due to a lack of information on user preferences, this can also lead to end-users choosing applications that Apple service providers partner with for consumption. However, this action would deprive the consumer (end-user) of his or her own choice for the consumer.

## 4. Case Study

In the catering industry, the innovation of digital technology has changed our traditional mode of ordering menus. The popularity of smartphones has allowed us to scan QR codes to order food on mobile terminals. However, this approach has also raised concerns among customers about the security of their own preference information and data privacy. Despite the variety of ways to order food in the smartphone era, there are still some businesses that force consumers to authorize personal information for online ordering through the "scan code only" method.

Most food ordering software will require attention or consumer customer authorization. Some software developers use this to collect information about users' preferences and pass this data to more third-party platforms through transactions. The code ordering is not difficult for experienced smartphone users, but for some elderly people or people who are not familiar with smartphone operating system, the code ordering does not bring convenience to their lives. There are various ways to scan the code to order food, some merchants will ask customers to follow the store WeChat official account for food ordering, and some need to enter the mobile phone number to register membership. If the customer would like to buy some tea drinks, they first need to scan the QR code for ordering, and it only takes a few seconds to enter the product page with no difference in operation at first glance. However, when the selected product is added to the shopping cart and ready for checkout, a prompt will pop up that requires WeChat one-click login, and there will be some small words on the page to indicate that "authorized login means that you have read and agreed to the *Merchant Notice* and *Privacy Agreement*". However, the average consumer will not take the time to read these instructions and agreements, so they will choose to click on the one-click login, and will find "XX merchant bill" to apply for a WeChat nickname, phone, avatar, region and other information. Some customers who choose to refuse to share this information at this point will not be able to complete the checkout and place their order. In fact, it is not the WeChat platform, nor the restaurant or takeaway merchants, but the data marketing companies downstream of the data food chain that are mining this data and creating value through algorithms. These data analytics companies are also software system developers with a "high-end customization" approach. They can develop special systems with code ordering function according to customers' needs, and use independent servers and databases, so that "the ownership and data of all the users who use the program will belong to the purchaser".

Prior to Apple's new privacy application framework "App Tracking Transparency", data marketing companies in the downstream of the data food chain made money by cashing in on this type of data mining and integrated analysis. They collected and integrated data mining and sold ownership of users' personal data to third-party platforms. However, in May 2021, after Apple has introduced a new policy, third-party platforms may have to pay Apple Corporation

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or the Apple ISO14 vendor ecosystem to buy users' data if they refuse to allow WeChat or some merchants to track their data. Apple sells data to third-party applications, so providing advertising is also one of Apple's services. This also allows Apple to benefit from the advertising market in disguise. The reason is that more and more third-party applications will buy advertising space from Apple, and the added value of these advertising spaces is targeted data on specific groups of users. Such an innovative policy by Apple would change the relationship between users and the rest of the data food chain in traditional contexts, allowing Apple to occupy an absolutely dominant position.

## 5. Conclusion

Apple's new policy of applying the privacy application framework "App Tracking Transparency" to Apple's IOS14 system has implications for third-party companies in the data food chain as well as users. Users may seem to have the right to decide where their data goes, but in reality, it is only smartphone users who are giving up their rights to Apple and even the Apple ecosystem. For smartphone consumers, who are the subject of private data in the CI context [16], the discourse remains in the hands of the service platform. This right gained by Apple brings greater commercial value to itself. Some of the smartphone user data access denied by consumers is generating greater advertising commercial profits for Apple. Apple's new Privacy Application Framework gives Apple absolute dominance in the data food chain of smart media users, Apple and the Apple ecosystem, third-party application platforms, and downstream marketing companies that provide data mining analysis for third-party applications, changing the traditional equal relationship between third-party application platforms and their direct access to user data. In the data food chain, consumers are prone to encounter the situation of "setting different prices to different customers via big data" more deeply due to the improper protection and utilization of user data by third-party application platforms. Based on the convenience of life, smartphone users have ceded some of their data rights. Privacy in the CI context includes information about users' consumption habits, spending power, product preferences, price sensitivity, etc. [16]. However, it does not mean that platforms can use and trade this data of smartphone users at will. In the information age, the existence of big data has brought many possibilities to people's lives. Technologies such as algorithms, user profiling, and accurate marketing are changing day by day, but they should all be based on the premise of protecting the interests of the public, in order to guarantee the smooth operation of the digital economy.

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