

# *Investigation of Users' Experience of Social Media's Personalized Recommendation — The Case of Xiaohongshu*

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**Abstract:** This research was conducted on Chinese participants between 18 and 25. A self-administered questionnaire was developed and distributed to 475 Xiaohongshu users. This research investigated how are Chinese young adults affected by what the Personalized Recommendations of Xiaohongshu show them and how Xiaohongshu is engineering its platform so that its users “trust” it. This research also explored whether Xiaohongshu’s users want to opt out of their AI bubble or do they prefer the way the platform tailors the world to their interests. The results suggested that participants tended to accept the homogeneity content pushed by Xiaohongshu and ignore the information missing because of the personalized recommendation. This research also indicated that users could not wholly jump out of the filter bubbles, though some of them are willing to do it. This research was an addition to the literature on the tension in social media between product promotion and privacy.

**Keywords:** Xiaohongshu, Personalized Recommendation, Users’ experience, Homogeneity content.

## 1. Introduction

Xiaohongshu is a product promotion application (app) in China that aggregates users’ feedback and Key Opinion Leaders (KOL) recommendations on various consumer categories, such as cosmetics, food, and travel. During the Spring Festival in 2022, at its peak, there are about 20 million Daily Active Users (DAU) sharing their lifestyles through text, photographs, and videos in this online community — Xiaohongshu [1]. Sarah Yam, the co-founder of Red Digital China, a digital marketing agency, said in an Insider interview: “Xiaohongshu is kind of like Instagram, Etsy, and Amazon rolled into one [2].” And Nancy Cao (2020) claimed that the advantage of Xiaohongshu is that based on users’ frequent interaction in its community, Xiaohongshu provides customers with an efficient technique to identify the right brands for them, which successfully leads to consumption [3]. Personalized algorithms show users more relevant information and provide more convenient and customized services, promoting more frequent interaction in the Xiaohongshu community.

The present generation of Internet filtering apps hones their filtering by machine learning, gathering data about what users seem to like, what they have done, or what other people with similar tastes prefer. These prediction engines constantly construct and refine their model of who individual users are and what users — and users “like them” — will do and want next. These

engines generate individualized profiles of information. Pariser (2011) dubbed this new world a “filter bubble,” a seemingly open but radically modified environment where users encounter pre-selected ideas and information [4]. Pariser wrote: “In the filter bubble, there is less room for chance encounters that bring insight and learning [4].”

The “Personalized Recommendation Algorithm Description” of Xiaohongshu acknowledges the existence of a personalized algorithm. It recommends content that may be attractive to specific users by technology-assisted computers based on the user’s personal information. Indeed, as is the case with most sales and advertising-supported sites, the more data on users that Xiaohongshu gathers, the more targeted its recommendation engine becomes, which leads to more excellent user retention [5].

When binding people together on social media, filter bubbles are stunningly effective. They are created via such binary tools as recommendation mechanisms and push notifications. Weber, Shirazi, and Henze (2015) pointed out that push notifications are essentially pop-up text messages (with or without an image) that actively communicate with a targeted user directly from applications or websites that the user has either now encountered or that are in some ways similar [6,7]. In December 2020, Gavilan et al. illustrated that news push notifications are about more than just news items being “read” or “seen.” With each input, users are expected to “do” something: evoke, envision, feel, or otherwise complete the shown information. To be more specific, news push notifications interact with users’ thoughts rather than only spreading the report [7].

Analogous to news push notifications, the content-based Personalized Recommendation simply sends information; it’s also about connecting with the users via images, videos, and headline phrasing. Using vivid images and headline wording will positively influence click-through rates [7]. Users can be connected with the explicit and fascinating content by clicking on it, which will be recorded into the social platform’s back-end system and eventually form a personalized profile.

This study investigates the content-based Personalized Recommendations, which are designed to improve users’ experience, and the targeted users will, to some degree, appreciate these recommendations for their practicability. Ezgi and Sona (2014) investigated the factors impacting users’ intention to utilize social media. They revealed that if users enjoy social media and facilitating conditions of the social media satisfy their needs, users can believe that social media is beneficial and have more intention to make the best use of it. Facilitating conditions increase users’ trust in social platforms [8].

Personalization proponents present a vision of a world that is perfectly customized to users to satisfy their needs in every aspect. Users will hardly be frustrated if social media perfectly mirrors their interests and desires [4]. Steven Levy commented on Pariser’s book by stating that “Personalization” sounds not only benign but desirable [4]. But “Personalization” can lead to unrealistic experiences. “Personalization” prevents users from seeing what they don’t know. “Personalization” doesn’t allow for serendipity. “Personalization” prevents users from seeing what isn’t recommended by the platforms.

This paper investigated the Xiaohongshu users’ experience of the Personalized Recommendation function in three parts. Firstly, the study focuses on why Xiaohongshu is unique and why today’s users trust and love it; Second, the study will discuss Xiaohongshu users’ perception and acceptance of homogeneity of content; Finally, this study will explore Xiaohongshu users’ perception and acceptance of Personalized Recommendation, and whether they are willing to turn the personalized push off.

## 2. Literature Review

Many people are “entirely unaware” of the phenomenon of filter bubbles [9]. As The Guardian noted, quoting a 2015 study by Motahhare Eslami et al.: “more than 60% of Facebook users are

entirely unaware of any curation on Facebook at all, believing instead that every single story from their friends and followed pages appeared in their news feed [10].”

Social media and search engines like Facebook and Google utilize personalization algorithms without their users’ permission to show users similar types of thoughts and ideas while excluding competing viewpoints [11]. The Personalized Recommendation pushed content based on their previous interactions with the system, which may result in a monoculture. In other words, users may form homogeneous cocoons around themselves due to social platform recommendation systems that enable individualized content filtering [12].

Personalized Recommendations can effectively relieve users from information overload. Nevertheless, it is more likely that people will only be exposed to information they are already interested in since all “extraneous” data is filtered out of their social media feeds. Social media’s excessive reliance on Personalized Recommendations can create an information environment that confines users to a narrow range of information, trapping them inside that “range.” While some users may be aware that an algorithm filters their data, few actively comprehend what these platforms cause in their lives [13].

Companies throughout the digital advertising ecosystem (such as social media platforms, advertising exchanges, programmatic advertising agencies, or brand companies) are vacuuming up every post, click, search, and share of each user to feed into machine-learning algorithms. Social media platforms, for instance, gather user data to generate Personalized Recommendation algorithms, which are now considered essential to enhance marketing’s impact. These platforms deduce users’ preferences and forecast what they will see next to predict their behavior [14,15]. The more data these corporations collect, the more targeted the algorithm can be. The targeting attracts more users, who generate more data [16]. In 1992, Xerox created the first recommendation system, Tapestry. In so doing, Xerox introduced the concept of collaborative filtering — a technology that analyzes similarities of users’ behaviors based on their already shown signs of sharing interests in interconnected things. Social media could then predict what users could develop claims based on advantageous collecting ability and thus recommend such content to them [17].

User reactions (including their behaviors) have become significant data sources [18]. Users’ engagement on social media or online can be assessed, influencing the design of a new system and better satisfying users’ needs [19]. Successful applications are not only used but also interact with users to inspire user engagement. Users employ technology to satisfy pragmatic and hedonic demands, investing time, attention, and emotion [20].

The prevalence of opaque and undetectable algorithms is increasing. Difficult ethical questions about users’ privacy are also aroused [11]. It also has prompted concerns regarding their presence and operation, how aware users are and should be, how a user’s correct interpretation of an algorithm influences their behavior, and the platforms’ responsibility to educate their users about their tracking algorithms [21].

The acknowledgment of the data the company owns should be transparent to the users to win their trust [22]. As Eli Pariser noted in this book “The Filter Bubble: What The Internet Is Hiding From You,” quoting a 2011 interview by himself with The Wall Street Journal:

*We need the companies that power the filter bubble to take responsibility for the immense power they now have – the ability to determine what we see and do not see, what we know and do not know.*

Nowadays, users should require companies to ensure continued access to public discourse and common good sense. A world built simply on what we “Like” is far from complete and pluralistic [11]. The user will be aware that personalization occurs if the explicit user information is collected, and they will be able to tailor the feedback to their needs [23].

Chinese researchers have become increasingly interested in the relationship between the platform Xiaohongshu and its users. Most of the research in China discusses the commercial development of Xiaohongshu. Wei and Tang (2016) deeply analyzed the relationship between the platform Xiaohongshu, UGC features, and users' purchase intention [24]. Xu (2017) went deep into the management mode of each stage of Xiaohongshu's development, discussed its management strategy, and predicted its future development direction [25]. Zhu (2018) analyzed the successful experience of the closed-loop operation of the Xiaohongshu cross-border e-commerce platform [26]. Zhu (2021) studied the self-branding and personal marketing of KOLs using Xiaohongshu as an example [27]. The marketing strategy of Xiaohongshu is worth exploring. But to identify the targeted customers, the personalized recommendation function plays a crucial role in connecting users and products. However, few researchers have looked into the user-personalized recommendation relationship. This study investigates the users' perception and experience of personalized recommendation functions.

### 3. Research Questions

1. To explain Xiaohongshu's uniqueness and why today users trust and use it.
2. To explore Xiaohongshu users' awareness and acceptance of homogeneity of content on Xiaohongshu.
3. To discuss Xiaohongshu users' perception and acceptance of the collection of personal data and the Personalized Recommendation function. And to understand their attitudes and behaviors.

### 4. Methodology

This article is exploratory research that conducts online surveys, using 18 to 25-year-old Chinese Xiaohongshu users as a specific sample. Koenig indicated that college students had a basic understanding of algorithmic platforms, but their knowledge was superficial [13]. Even if users are aware that they are in filter bubbles, they will still immerse their minds in themes they are interested in rather than looking for other content. Users would inevitably develop their levels of dependency and addiction to these familiar contents. This study will supplement some data on the perception and acceptance of personalized recommendation algorithms among young adults and college students aged 18 to 25. And this study will explore the connection between Xiaohongshu users aged 18 to 25 and Personalized Recommendations.

#### 4.1. Online Survey

The researcher of this article took an online survey as data collection. The researcher handled anonymized data carefully. Online surveys can be administered time-efficiently, minimizing the time it takes to get a study into the field and data collection [28]. Due to the brief period of this study, an online survey was an appropriate method of data collection. Question Star was the tool for publishing the questionnaire to respondents. The questionnaires included five parts that discussed the user experience on the platform Xiaohongshu: demographic information, motivation for using Xiaohongshu, usage habits, awareness of the personalized algorithms, and attitudes toward the customized algorithms. The part about the acceptance of the personalized recommendation function's settings and the repercussions it brings about was answered on a scale. The scale presented participants' complex attitudes, which can be used to analyze better how the users' emotions at different degrees affect user behavior on social platforms.

The survey was released on March 9, 2022. Within less than 24 hours, 558 valid questionnaires were collected. Because of the insufficient number of other age group samples, this study paid a particular focus on 475 participants who used the platform Xiaohongshu aged from 18 to 25, among

the total 558 valid samples. Relatively sufficient samples of this age group can help to support further study.

According to the data acquired from the surveys, shown in Table 1, 475 young adults (18 to 25-year-old participants) completed the online survey, and 88 participants were willing to attend the interview to share their viewpoints and experience. The vast majority (77.48%) of the participants resided in Mainland China during the survey period. Others lived in Taiwan (9.05%), Macao (8.21%), Hongkong (0.21%), and overseas (5.05%). All participants are Chinese and utilize the app Xiaohongshu, which guarantees that the targeted participants' responses could reflect some features of young Chinese users' behavior on Xiaohongshu.

Table 1: Demographic data information for subjects of this survey (users aged 18-25).

Category	Item	Count	Percentage
Gender	Man	122	25.68%
	Woman	353	74.32%
Educational Background	Below High School	0	0%
	High School	10	2.11%
	College	436	91.79%
	Master or above	29	6.11%
Using Hours on Xiaohongshu	>8 hours/day	2	0.42%
	6-8 hours/day	7	1.47%
	3-5 hours/day	46	9.68%
	1-2 hours/day	146	30.74%
	0.5-1 hour/day	115	24.21%
	<0.5 hour/day	159	33.47%
Valid questionnaires		475	

## 5. Finding

### 5.1. Xiaohongshu and their Users' Preference

The mission of Xiaohongshu is to “inspire lives, share and discover the wonderful world.” The study reveals that the top three main reasons that users are enormous fans of Xiaohongshu are that they are keen on the content pushed on Xiaohongshu (73.47%), they believe the content of Xiaohongshu is trustworthy (62.11%), and Xiaohongshu's page setup is simple and easy to get started (42.74%). Nearly 42% of participants were inspired by Xiaohongshu's high-quality and high-value information. More than 20% of them identify the narrative ecology of Xiaohongshu's comments section as friendlier and more comfortable than other platforms. (This question was multiple-choice, so the total percentage exceeded 100%.) The uniqueness of Xiaohongshu as a lifestyle community stems from the fact that most Internet communities rely on online virtual or anonymous identities to express their viewpoints. Simultaneously, most of the content posted by Xiaohongshu's users is from real life. Users post their personal life experiences through “online

sharing,” containing content like shopping guides, trendy restaurant recommendations, and learning experience sharing, resulting in “community engagement.” In other words, the content of Xiaohongshu is closely tied to scenes of everyday life, and users are more willing to believe the platform’s content is trustworthy; hefty users of Xiaohongshu, who accounted for 35% of participants, and 70% of the considered the content of Xiaohongshu to be highly believable.

In terms of the design of the Xiaohongshu pages, there are three setting types: Recommendation Page, Subscription Page, and Nearby Page. Firstly, the Recommendation Page is a page setting based on algorithmic recommendations. According to the “Personalized Recommendation Algorithm Description” of Xiaohongshu, app developers use computer algorithms to calculate and evaluate mobile device information, geolocation information automatically, user browsing records, and click operation records. They use the data to extract the personalized characteristics of users and recommend content that may be attractive to them on the recommendation page. Secondly, the Subscription Page is a page setting that shows the content posted by the content creators whom users have followed or subscribed to. The last one is the nearby page. This is a page setting where posts were recommended based on the locations. The potential nearby content creators and posts will be recommended on this page.

As for the preferences on different pages, almost 80% of participants prefer the Recommendation Page over the Subscription Page and Nearby Page. The goal of push notifications is always to achieve an immediate behavioral response [7]. Personalized Recommendations of Xiaohongshu have the same intention. The average time participants spent browsing the Recommendation Page was about 58 minutes per day, while the average spent browsing the Subscription page was 32 minutes per day. Almost two-thirds of participants seldom or even never browsed through all the bloggers’ updates they followed. In the case of instant gratification, Harris, and Laibson (2004) pointed out that individuals prefer things that are present in the moment rather than temporarily delaying future consumption [29]. Xiaohongshu users are attracted by concise and convenient pages, instantly updated content, and precise recommendations on the recommendation pages, and they tend to enjoy them immediately.

## 5.2. Homogeneity of Recommended Content on Xiaohongshu

Bakshy et al. (2015) analyzed 10 million Facebook newsfeeds from citizens in the United States. According to their findings, the Facebook algorithm is less likely to offer cross-cutting information [30]. Facebook let the users themselves take primary responsibility for receiving similar content because their content was based on their political beliefs, which were their personal choices [12]. This study displayed that the Xiaohongshu algorithm is similar to the Facebook one. The content recommended by the algorithm will cause a certain amount of content homogenization. Over two-thirds of participants frankly expressed that after they clicked on specific content, they would see similar content later in the “recommended” section. When respondents were asked how receptive they were to the frequent pushing of the same type of content by Xiaohongshu, the study provided a scale from 0 to 100, with “0” being “not at all acceptable” and “100” being “completely acceptable.” The result shown in Figure 1 appears that the average score is about 56, and the median score is 60, revealing that users tend to accept the setting of pushing homogeneous content by Xiaohongshu.

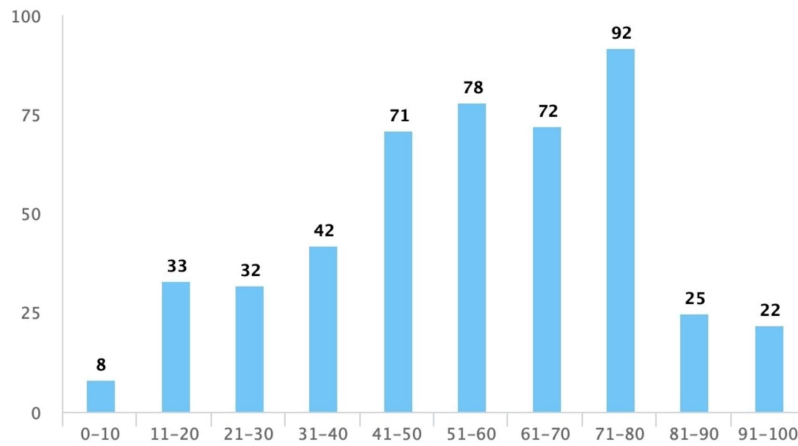


Figure 1: The scores of acceptances of frequent pushing of the same-type content

Regarding pushing homogeneous content, Table 2 shows that 53% of participants will not reduce the usage time even if they know they are in a homogeneous situation. It is worth noting that the relationship between the users' attitudes and the willingness to reduce the usage time demonstrated an interesting result. According to Figure 2, more than half of participants who often receive homogeneous content do not mitigate their usage time due to homogeneity reasons. On the other hand, most participants who seldom or never experience homogeneous content pushing are more willing to reduce their usage time. For this research, the researcher discovered that it is not that the users have not really "experienced" homogeneous content; it is simply that they are not aware they are, even when questionnaires specifically inquire about it. The majority of them are cognitively ambiguous about how homogeneous content affects their daily life and Internet usage habits.

Table 2: The result for Q14.

Do you spend less time on Xiaohongshu if it keeps pushing the same types of content?		
Options	Count	Percentage
Reduction in usage time	225	47.37%
No reduction in usage time	291	52.63%
Valid questionnaires	475	

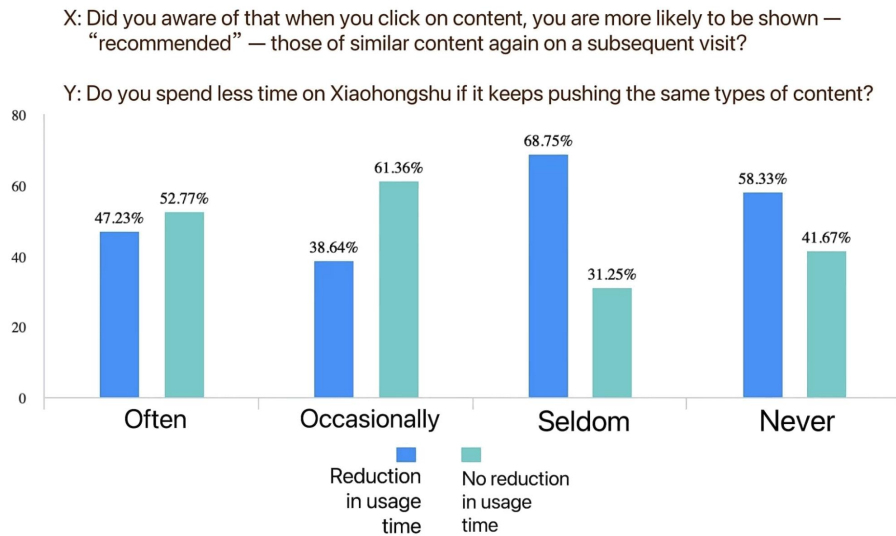


Figure 2: Cross-tabulations on Q12 and Q14.

Most users are aware that they are trapped by the same type of content. However, they do not clearly know how Xiaohongshu’s recommendation function works and how to deal with these situations effectively. Eighty percent of participants had purposely searched for new keywords instead of just randomly browsing the content pushed on the homepage. Twenty-five percent of participants often and nearly half of them occasionally substituted clicking on other different types of content for the content automatically pushed to them on the recommendation page. Although their actions seemed to be reversing the homogeneity situation, their operative norms were still based on their cognition and interest. Users cannot wholly change the phenomenon of homogenized content through their own behavior on Xiaohongshu. Xiaohongshu is still the main body that determines what content users will receive. Users may not be able to jump out of the filter bubbles completely, but some of them have the willingness to do it.

### 5.3. Users’ Experience and the Personalized Recommendations

According to this study, a striking percentage of Xiaohongshu users, almost 96%, understand that the platform gathers personal and preference data about them. Nearly 94% of participants pointed out that the content pushed to them was the most obvious reason they realized Xiaohongshu was learning about their privacy from their personal profiles. They have experienced a similar situation: when they try to search for new keywords, the “searching recommendation” on the search page would recommend the exact content they are interested in. And some of them received the same content recommendations as their friends who share the same pastime. What is impressive is that one participant disclosed that he felt like what he discussed on other social media platforms would be monitored by Xiaohongshu. But according to his completed questionnaires, he acknowledged that he was a heavy user that utilized Xiaohongshu every day at his leisure because he had experienced receiving high-value content that he needed efficiently on Xiaohongshu. There are no apps that can replace Xiaohongshu for the time being.

This study does show that users have conflicting emotions about personalized recommendations on Xiaohongshu. Over 43% of participants have both positive (such as convenient and efficient, enjoyable and interesting) and negative attitudes (such as being snooped on, unaccustomed, angry



and right violated, boredom, irritation, tiredness, aesthetic fatigue). However, ALTHOUGH 18% of participants still showed an entirely negative attitude towards personalized recommendations, the precision and usefulness of content recommendations were the sources of positive remarks regarding Xiaohongshu from most users. The majority of the negative comments stemmed from the lack of regard for their privacy Xiaohongshu and the lack of appropriate countermeasures from Xiaohongshu to protect users' privacy which had been or will be compromised.

As shown in Table 3, despite the often self-reported concerns over privacy on social media platforms, users were found to remain largely positive about using them [31]. However, this does not mean that no action is taken by social media users [32]. If they could turn off personalized recommendations, 42% would choose to do so. Personalized recommendations can cause certain negative emotions (43%), such as anxiety, fatigue, and irritation. Still, more importantly, USERS do not want other information content that might be essential to be ignored by their searching track (61%). They are afraid that homogeneous content will narrow their views (50%).

Table 3: The result for Q18.

How do you feel after receiving the personalized recommendation of content? (Multiple-choice)		
Options	Count	Percentage
Convenient and Efficient	403	75.16%
Enjoyable and Interesting	217	39.37%
Feel like being Snooped on	302	55.79%
Unaccustomed and Weird	71	13.05%
Angry and Right violated	29	5.26%
Others (Boredom, Irritation, Tiredness, Aesthetic fatigue)	26	4.63%
Valid questionnaires	475	

For this study, Table 4 shows that nearly half of the participants occasionally felt that some information was missing when they turned the Personalized Recommendation on. About 40% of them seldom or never had that feeling. To explore how the users care about the missing information, the survey provided a scale from 0 to 100 to present "entirely do not care" to "care entirely." The result shown in Figure 3 appears that the average and median score is about 41, which indicates that users are inclined to be unconcerned with the information lacking. Users prefer to receive information in their comfort zone and are less interested in receiving comprehensive information.

Table 4. The result for Q22.

Do you feel that some information is missing when you turn on the Personalized Recommendation function?		
Options	Count	Percentage
Often	62	13.05%
Occasionally	226	47.58%
Seldom	141	29.68%
Never	46	9.68%
Valid questionnaires	475	

Q17: Do you care about the information that was missing?

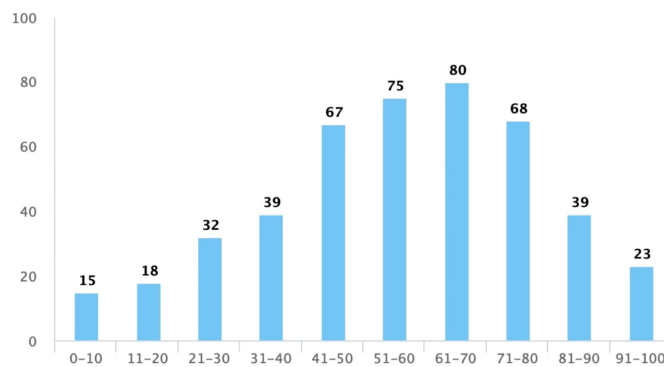


Figure 3. The scores of acceptance of phenomenon that is information missing.

## 6. Conclusion

First, Xiaohongshu plays a relatively unique and irreplaceable role on many Chinese social platforms. Xiaohongshu provides a platform for users to share their life experiences instead of speaking out through virtual or anonymous identities; because it is closer to real life, users are more inclined to believe that the content pushed by the platform is authentic and informative. Users enjoy gaining information expeditiously and efficiently by personalized recommendations to a certain extent. Still, the study also displays that users find their privacy snooped on and even generate more negative emotions. Even so, more than half of the participants preferred to keep the personalized recommendations on because they believed the customized content pushed to them based on their interests and needs would be more enjoyable.

The study's limitation is that it only includes data from Xiaohongshu users between 18 and 25, who have a stronger educational background than the Chinese average. They may have a more in-depth understanding of the recommendation system. Other age groups have fewer samples and are not included in this study, but they are still worth investigating in the future. Because of the project's time limit, the data and findings can be further explored by adding in-depth interviews.

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