



The Negative Impacts of Personalized Recommendations on Consumers: A Survey-Based Study

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Abstract. In recent years, personalized recommendation systems have been widely adopted by major e-commerce platforms, providing greater convenience for consumers. However, the potential negative impacts of personalized recommendations are also emerging. Current studies primarily emphasize the positive effects of personalized recommendations, while empirical analysis of their potential privacy risks and impacts on consumer behavior remains limited. Therefore, this study collected 203 valid responses and used the Likert 4-point scale to analyze the impact of personalized recommendations on consumers' emotional responses, privacy concerns, attitudes toward platforms, and consumption behavior. The findings of the research indicate that highly accurate personalized recommendations can lead to discomfort and privacy concerns of the consumers, thereby influencing the credibility of the platform to the consumers' willingness to disclose personal information. However, the personalized recommendations have a comparatively small effect on real usage and consumption patterns of the users of the platform. At the same time, consumers would desire to have greater control over personalized recommendations. Thus, platforms should enhance privacy protection features and the convenience of personalized recommendations to improve user experience and boost the user retention rates.

Keywords: Personalized Recommendation, Privacy Concerns, Consumer Perceptions.

1 Introduction

With the accelerated evolution of artificial intelligence (AI) and information technology, the functions of personalized recommendations have become more precise, and today, the largest platforms are strongly supported in terms of enhancing the user experience and competition in the market [1]. As AI algorithms are improved, the level of personalized recommendation systems can become more advanced to monitor and analyze user behaviors, thus, on the one hand, improving accuracy and increasing the proximity to user requirements, and on the other hand, providing users with considerable convenience in the performance of information acquisition and content matching [2]. The effect of personalized marketing, however, does not have only positive influences. In case personalized recommendation contents are taken excessively, and the

corresponding content is too specific, it may surpass the psychological tolerance of the users and become over-personalized recommendations, which may have adverse effects on users. The feeling of insecurity caused by such over-personalized recommendations, besides the fact that they lower the satisfaction of users, make a considerable impact when it comes to the buying behavior of the consumers.

The current literature is mostly examining the positive impacts of personalized recommendations [3,4], and the literature that examines the negative effects that it may have on consumers is relatively scarce. This research gathered information through online questionnaires to further investigate the negative impact of personalized recommendations on the users and their purchasing habit hence giving further enlightenment and data on the negative part of personalized marketing in research.

2 Literature Review

The personalized recommendation system is a technological system that can narrow down the products, services, and information that users might require among a large number of options based on some strategies, including content filtering and collaborative filtering [5]. It is commonly utilized in the movie, music, and online shopping sectors. The development of technology, including AI, makes personalized recommendation systems more advanced [1]. The application of deep learning technology in feature extraction and user behavior modeling has significantly improved the prediction accuracy and recommendation efficiency of personalized recommendation systems. Therefore, in the current e-commerce environment, major e-commerce platforms such as JD.com, Taobao, and Amazon generally employ personalized recommendation systems to analyze customers' historical behavioral preferences in order to improve user satisfaction, enhance user stickiness, and thus enhance the overall competitiveness of the platform [6].

However, though personalized recommendation systems are convenient to the general public and businesses, they might have certain negative effects and hidden threats as well. In the past few years, these negative impacts and hidden risks have also started to attract the attention of consumers and the academic community. Since personalized recommendations inevitably require the collection of consumers' personal information and behavioral records, the issue of privacy violations has drawn significant scrutiny, and consumers who value personal privacy will be concerned about this [7]. Several studies have pointed out that personalized recommendations may even lead some consumers to feel that they are being constantly monitored, thus making them less trusting of the platforms engaging personalized recommendation systems and less likely to consume on such platforms in the future [8]. At the same time, the lack of transparency in the data collection process may raise concerns among consumers about whether the platform has gathered information outside of its permitted scope, and whether the platform has used this personal information for unauthorized purposes [9,10].

The researcher of this study will explore the effects of personalized recommendation systems and further analyze the negative effects of personalized recommendations and their impacts on consumer behaviors based on the survey data.

3 Research Methods

This research primarily investigates whether personalized recommendations influence consumers in terms of privacy, emotional reactions, behavioral intentions, and whether they influence consumers' attitudes towards the platform and subsequent consumption behavior. The method used in this study is quantitative, with data gathered through an online questionnaire survey. The online questionnaire platform Wenjuanxing was used to distribute an online questionnaire titled "Personalized Recommendation Questionnaire". This online questionnaire was distributed to respondents from multiple provinces across China via various channels, and a total of 203 valid questionnaires were collected. The questionnaire mainly asked participants whether they had paid attention to personalized recommendations, whether they felt that over-personalized recommendations were more likely to violate their privacy, whether their consumption willingness and behavior would be affected to some degree, and their attitudes toward personalized recommendations and platforms that use recommendation systems.

4 Research Results and Discussion

The "Personalized Recommendation Questionnaire" distributed by this research obtained 203 valid responses. Among the participants, there were 132 female respondents, accounting for approximately 65.02% of the total, significantly higher than the male population (34.98%). In terms of age, the majority of participants were young people aged 18-25, totaling 95 people and accounting for 46.8% of the total. Participants aged 46 and above are the second largest age group, accounting for approximately 28.08%. Furthermore, the participants' weekly usage time on e-commerce platforms and short video platforms such as Taobao and Douyin, which commonly employ personalized recommendation algorithms on these platforms, was concentrated in two ranges: "less than 5 hours" (approximately 36.95%) and "5-10 hours" (approximately 28.08%), indicating that the majority of users in this sample are light to moderate users.

Note: This study used the Likert 4-point scale to measure and calculate the variables: Strongly Disagree=1, Disagree=2, Agree=3, Strongly Agree=4

That is: Mean Value= [(1*Count of Strongly Disagree) + (2*Count of Disagree) + (3*Count of Agree) + (4*Count of Strongly Agree)]/ Total responses

Table 1. Exposure level to personalized recommendations.

	Strongly Disagree	Disagree	Agree	Strongly Agree	Mean
Q4. Do you often receive recommendations that match your personal preference closely?	10 (4.93%)	41 (20.20%)	125 (61.58%)	27 (13.30%)	2.83

Q5. Have you ever experienced receiving related ads/recommendations immediately after discussing or searching for a topic?	10 (4.93%)	27 (13.30%)	120 (59.11%)	46 (22.66%)	3.00
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The data in Table 1 (Exposure level to personalized recommendation) shows that the average values of the results from Question 4 and Question 5 are approximately 2.83 and 3.00, respectively, with an overall mean of approximately 2.91. Both are significantly higher than the median value of 2.5, indicating that consumers generally have some exposure to personalized recommendations while using e-commerce platforms.

Table 2. Privacy Intrusion and Privacy Concerns.

	Strongly Disagree	Disagree	Agree	Strongly Agree	Mean
Q6. I feel like these recommendations “know me too well”	12 (5.91%)	43 (21.18%)	122 (60.10%)	26 (12.81%)	2.80
Q7. The recommended content made me feel like I was being monitored	7 (3.45%)	34 (16.75%)	118 (58.13%)	44 (21.67%)	2.98
Q8. I would feel that my privacy has been violated	8 (3.94%)	42 (20.69%)	116 (57.14%)	37 (18.23%)	2.90
Q9. I am concerned that the platform collect too much my personal data	5 (2.46%)	31 (15.27%)	113 (55.67%)	54 (26.60%)	3.06

In the four questions regarding consumers' emotional responses, the overall mean value for all four questions was approximately 2.93, and the mean value for each question was higher than the median value of 2.5 (see Table 2). This indicates that most participants are concerned about potential privacy issues arising from personalized recommendations.

Table 3. Discomfort and Surveillance Feelings Triggered by Over-Personalized Recommendations.

	Strongly Disagree	Disagree	Agree	Strongly Agree	Mean
Q10. I feel uncomfortable with these "overly accurate" recommendations	8 (3.94%)	53 (26.11%)	114 (56.16%)	28 (13.79%)	2.80
Q11. These overly accurate recommendations make me feel like I'm being watched or listened to	4 (1.97%)	39 (19.21%)	113 (55.67%)	47 (23.15%)	3.00

Table 4. Trust Decline and Willingness to Share Personal Information.

	Strongly Disagree	Disagree	Agree	Strongly Agree	Mean
Q12. When I see over-personalized recommendations on the platform, my trust in the platform will decrease	8 (3.94%)	65 (32.02%)	105 (51.72%)	25 (12.32%)	2.72

Q13. I would suspect that the platform is collecting information without permission	4 (1.97%)	36 (17.73%)	119 (58.62%)	44 (21.67%)	3.00
Q14. My willingness to share personal information on that platform will decrease	4 (1.97%)	42 (20.69%)	123 (60.59%)	34 (16.75%)	2.92

The mean values of the two questions in Table 3 are approximately 2.80 and 3.00, respectively, with an overall mean of approximately 2.90. The overall mean of the three questions in Table 4 is approximately 2.88. The mean values of questions 10-14 are all noticeably higher than the median value of 2.5, further confirming that excessive personalized recommendations can cause uncomfortable feelings and privacy concerns for consumers, and lead to a decline in consumers' trust in the platform.

Table 5. Impact of Over-Personalized Recommendations on Consumer Behavior.

	Strongly Disagree	Disagree	Agree	Strongly Agree	Mean
Q15. I would be less willing to shop or consume on that platform	16 (7.88%)	87 (42.86%)	86 (42.32%)	14 (6.90%)	2.48
Q16. I would reduce the time I spend on that platform	7 (3.45%)	84 (41.38%)	99 (48.77%)	13 (6.40%)	2.58

The means of the two questions Question15 and Question16 in Table 5 are 2.48 and 2.58, respectively. Compared with the mean values of the other questions, which are significantly higher than the median value of 2.5, the means of these two questions are

relatively low, indicating that although consumers agree that they are negatively affected by the personalized recommendations, most consumers are relatively reluctant to change their consumption habits as a result.

Table 6. Consumers' Perceptions and Attitudes Toward Personalized Recommendations.

	Strongly Disagree	Disagree	Agree	Strongly Agree	Mean
Q17. I want to be able to control the level of recommendations myself, rather than being forced by the platform	5 (2.46%)	28 (13.79%)	130 (64.04%)	40 (19.7%)	3.01
Q18. I think the platform doesn't strike a good balance between personalized recommendations and privacy protection	10 (4.93%)	37 (18.23%)	123 (60.59%)	33 (16.26%)	2.88

The survey data in this study shows that over 75% of participants felt that the platform's performance in terms of personalized recommendations and privacy protection was insufficient, while 83.7% of participants hoped to have control over the degree of personalized recommendations themselves rather than leaving it to the platform (see Table 6). The mean values of Question 17 and Question 18 are approximately 2.88 and 3.01, respectively. This indicates that consumers do indeed prefer to control the extent of information leakage themselves.

The majority of the mean values of data gathered through the online questionnaire "Personalized Recommendation Questionnaire" are above the median value of 2.5. This result implies that consumers have a significant concern over the uncomfortable feelings and privacy violations that personalized recommendations may bring to them. Respondents generally agreed that they felt some sort of being surveilled and feeling uncomfortable while facing highly accurate personalized recommendations, and this led to a certain level of distrust towards the platform. However, the proportion of participants who were willing to reduce their platform usage frequency significantly as a result

was comparatively low. This is perhaps because of the complexity and high opportunity costs of switching platforms that users are likely to incur.

5 Research Limitations and Future Research Directions

This paper explores the negative effects associated with personalized recommendations, focusing on issues such as privacy breaches and the uncomfortable feelings experienced by consumers. Moreover, it examines and confirms the impact of these negative effects of personalized recommendations on consumer psychology and behavior based on the data obtained through the online questionnaire, offers a measurable empirical basis for future research, and acts as a research contribution to the current and future academic debates in this field.

However, this study addresses the negative effects of personalized recommendations, including privacy violations, uncomfortable feelings, and a reduction in trust in the platforms. There are other possible negative effects of personalized recommendations, such as information cocoons and over-reliance, that have not been studied fully. Also, the online questionnaire primarily collected data from residents within China, and there was no data collection among consumers in areas beyond China or other platforms that were using personalized recommendation algorithms that are widely applied by this category of consumers. Future studies would examine the degree to which personalized recommendations influence consumer privacy and how other possible negative effects of personalized recommendations influence consumer behavior in a global context.

6 Conclusion

This study explores the negative impacts of personalized recommendations. By examining the data gathered as a result of the online questionnaire, this study explores the attitudes of consumers on these negative effects in a systematic way and the influence that these effects have on consumers. The result is that when the personalized recommendation contents of a platform are over-personalized, users may experience some level of privacy breach and uncomfortable feelings. This minimizes the trust of the users in that platform and lowers their likelihood of remaining and consuming on the platform. It was also revealed in this study that a majority of consumers were not satisfied with the strategies of platforms in terms of personalized recommendations and privacy protection to a significant degree. And they wished to be able to control the personalized recommendations.

In conclusion, this study demonstrates that despite the fact that there are significant conveniences that personalized recommendations would introduce to consumers in real-life scenarios, consumers are becoming more aware of the threat to their privacy posed by personalized recommendations. It leads to a loss in the willingness to consume by consumers, which is an issue that cannot be ignored. Thus, the task of increasing the accuracy of the personalized recommendation service is not an ideal decision; platforms must also pay more attention to the privacy of consumers, as well as privacy protection

and visibility of information usage. Improving the experience of users and ensuring privacy protection, as well as offering users more reasons to approve personalized recommendation levels and more options to control them, the platforms will give users more autonomy and win their long-term commitment and allies, thereby improving the competitiveness of the market.

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