Awareness of people to online Advertising bias and privacy

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ABSTRACT

This research is designed for the purpose of studying the influence of the bias of the advertising system on the user experience, primarily concerning the privacy and discrimination aspects with relevance to online advertising. The data collected through the interview analyzed how users perceive the frequency of advertisements, trust issues, and excessive exposure of personal information. In fact, based on the research conclusion, most of the interviewees are confronted with negative experiences owing to excessive repetitive advertisement, which could raise recent issues on the intrusion of privacy threat. For example, personalization of target advertisements might be useful to the users because they would help the users save their time while searching for more suitable information for products or services, on the other hand it contributes to anxiety that arises from the excessive collection of personal information. Furthermore, this study notes that advertisements can affect users if they have specific targets such as race and gender. To address these issues, measures that should be embraced on online platforms include the following: the laws on the privacy of the users should be enhanced and there should be clear privacy use policies that should be enforced to enhance the user options among others. This research also offers guidelines for the amelioration of platforms and other organizations like introducing the reliability of the online advertisement, increasing the protection for users' personal information and being clear about the use of users' personal information. This will also help rebuild user confidence also help to make the advertising a more positive and efficient process.

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1. INTRODUCTION

Personalization for the online advertisement raises serious privacy problems. Private and potentially sensitive data regarding a user's preferences and previous and present actions is necessary for personalized services (Hardt & Nath, 2012). However, this personalized approach often could lead to biased results and make trouble for users (Ali, 2021). This advertisement delivery method creates privacy issues since it usually requires accessing user profiles to determine their attributes, which makes people reluctant to interact with these kinds of services (Wang et al., 2015). Also, according to Sweeney (2013), some specific population groups could receive certain types of advertisements more often than other groups, which implies that advertising platforms can use a user's race, gender, region, or other population characteristics to target or exclude certain user groups. According to Sweeney (2013), When Google ads were used to study discrimination against black and white names in search results, the results revealed which product advertisements appeared more frequently when searching for black names.

By offering consumers individualized material that is tailored to their interests and choices, social media, personalized web searches, and other online platforms frequently restrict the amount of information that is available. Users can receive more in-depth information about their beliefs and points of view thanks to this tailored material, but it may also keep them from being exposed to a range of thoughts and points of view. Online advertising may become biased as a result of this phenomenon. For example, users could be challenged to obtain information about new products or services since the platform only delivers the information for the brands or products that they are already known and interested in, which could result in online advertisement bias in certain directions.

The objective of this study is to analyze people's awareness of privacy issues and discrimination resulting from online advertising bias. The customer perspectives of advertising in an online environment, especially to understand the impact of privacy awareness on advertising, will be elaborated. Therefore, the study aims to explore the interaction between online advertising bias and privacy awareness, and to investigate the relationship between advertising results and customer responses to enhance understanding of customer awareness in online environments.
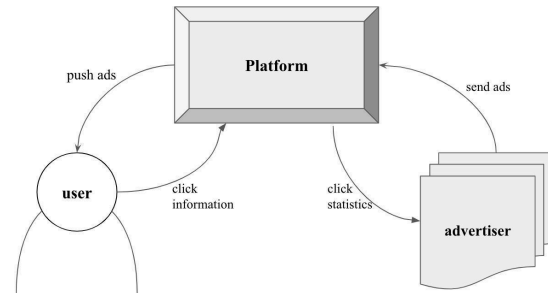
Research Questions are following:

1. How does privacy impact on the customer reaction or perspective for the online advertising algorithms?

2. How can the race discrimination caused by online advertising bias affect the awareness of customers?

2. THEORETICAL FRAMEWORK

2.1 Concern to privacy in social media

Figure 1: advertising architecture (Wang et al., 2015)

Figure 1 shows the structure in which advertisers deliver advertisements to users through the platform and collect user response data again. Advertisers can reach target users through platforms (e.g., Google's AdWords), and increase advertising efficiency by analyzing users' click data. In this process, the user's privacy could be violated when the user's information is excessively collected, or the platform shares the collected data with a third party. Personal information protection not only appears in various forms, but also has various meanings in legal, philosophical, and social aspects. Solove (2008) suggests that understanding this complexity is important for privacy policy and practice.

Nissenbaum (2004) points out that the existing privacy theory focuses only on the amount and type of information and does not take into account the context in which it is shared. When information sharing is done in certain social, cultural, and technical contexts, the understanding of the privacy of information varies.

In order to protect the privacy of an individual in each information sharing situation, action must be taken in consideration of the social, cultural, and technical context of the situation. This approach enables more effective privacy protection by taking into account the environment in which information is shared and its impact, not just the type or quantity of information. In addition, privacy protection measures that take this context into account help you take appropriate measures for each information sharing situation.

Privacy is a sensitive topic, and a variety of ethical considerations arise when collecting, storing, and processing information. This relates to the purpose and scope of information collection, the security and safety of the information, and the use and disclosure of the information (Christians,2010).

The privacy protection problem from research of Shekhawat, Chauhan and Muthiah (2019) is related to

Google's ad setting system targeting advertisements using the user's gender information. It means that using your personal information such as gender for advertising targeting has raised concerns about your privacy. The user's gender information is considered one of the user's sensitive personal information, and using it for advertising targeting can be problematic in terms of privacy. Users might worry about their personal information being used to target advertisements, which can lead to privacy concerns.

Bozdag (2013) deals with the possible effects of bias in algorithmic filtering and personalization on users in many aspects. Algorithmic filtering and personalization can limit users from contacting different opinions and viewpoints, as they can expose specific types of information to users, and can prevent users from being exposed to different types of information. In addition, when exposed to only certain types of information, users may be more inclined to act or think based on that information, which can affect their social impact.

2.2 Online advertising bias

According to Pariser (2011), personalized web searches, social media, and other online platforms limit users' information supply by providing filtered content according to their interests and preferences. Such filtering raises concerns that users can strengthen their opinions and viewpoints without being exposed to various opinions and viewpoints. In other words, consumers might be exposed to more brands that they are already familiar with or interested in, which could limit variety and make it more challenging to obtain information about new goods and services. Online advertising may become biased as a result of this phenomenon. Marvin (1967) stated that repeated exposure raised awareness, but it took longer for attitudes to change. At first, repeated messages had the power to dramatically alter views, but this effect stabilized and even went the other way when repeated too often, possibly creating resistance or aversion. This suggests that while repetition can improve message recall, excessive exposure can reduce the persuasive impact and effectiveness of messages. When the same advertising was ascribed to a well-known and familiar brand, repetition wear out was delayed, whereas repetition of advertising attributed to an unfamiliar brand showed decreasing effectiveness. According to Campbell (2003), repetition has been demonstrated to elicit unfavorable feelings about the tactic's inappropriateness, especially when utilized in an advertisement for an unfamiliar brand. Repetition is no longer as effective as it once was. Consumers who are repeatedly exposed to a promoted product initially have a more positive attitude and perception of it; however, the effect diminishes with each exposure. Above-average repetition can wear things

down, irritate people, and lessen the impact of commercials (Chae et al., 2019).

2.3 discrimination by online advertisement bias
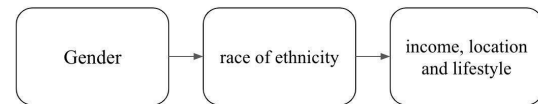
Figure 2: forms of discrimination (Dabo et al., 2022)

There is widespread bias and discrimination in digital platforms, which mainly stems from problems arising in algorithm design and data collection processes (Dabo et al., 2022). Digital discrimination includes gender, race, ethnicity, income, location, and lifestyle as illustrated in figure 2. Ali et al (2019) found that Facebook's advertisement delivery system has the potential to disproportionately deliver advertisements to specific population groups by being optimized using user characteristics and behavior data. Experiments have demonstrated a situation in which the system automatically exposes more advertisements to a specific population group even if advertisers do not explicitly target it. Consequently, in order to alleviate this systemic discrimination, platforms need to take additional measures to increase the transparency of advertisement delivery and prevent discriminatory results. It is also important to strengthen fairness and transparency in the design and operation of algorithms. Moreover, users feel considerable discomfort and distrust when they recognize discrimination in online target advertisements. Many users feel that their personal information is being overused, and this feeling leads to a negative attitude toward online advertisements. In particular, there were many cases where there was a strong perception that certain population groups were treated differently in target advertisements (Pane et al., 2017).

In addition, according to Datta et al. (2018), online advertising systems have the potential to cause discrimination in nature, which is deeply rooted in the way they are designed and operated. To solve these problems, advertisers and platforms must work together.

3. RESEARCH DESIGN

In order to thoroughly investigate the research questions, interview-based research approach is used in this study. Interviews present several chances to elicit from participants rich, in-depth insights that enable a comprehensive comprehension of their viewpoints and experiences.

Participants who will participate in the interview would be selected through a convenience sampling method. This is because in the current generation, most people are closely related to the bias of online advertising, regardless of the presence or absence of special background knowledge. For this reason, we would like to survey participants from various backgrounds. This diversity is expected to improve the elasticity of research results and provide a more comprehensive perspective. This method of selecting participants is expected to increase the completeness of the study and the validity of the results. Thus, the interviewees would be any people who have used social media and seen online advertisements.

Various indicators would be used during the interview to assess participants' perspectives on the responses of privacy issues that may be considered regarding online advertising and the impact of discrimination due to online advertising bias on advertising outcomes. These indicators might include participants' perceptions, attitudes, beliefs, and experiences related to discrimination due to privacy issues and advertising bias. The data collection process would be conducted through one-to-one interviews and group interviews with selected participants. Interviews consist of questions that can explore participants' opinions, experiences, and insights into online advertising bias and privacy issues. Interviews consist of questions that can explore participants' opinions, experiences, and insights on online advertising bias and privacy issues. To this end, the interview questions were based on existing literature and theoretical frameworks, including Solove (2008) and Nissenbaum (2004)'s theory of privacy complexity, Pariser (2011)'s customized web content filtering, Marvin (1967) and Campbell (2003)'s ads' repeated exposure effects, Bozdag (2013)'s potential bias in algorithmic filtering, and Ali et al. (2019)'s digital discrimination study. Interviews are recorded with the consent of the interview participants in order to catch the answers accurately. The data from recorded interviews would be completely transcribed and subjected to theme analysis methods. Finding recurrent themes, patterns, and categories in the interview replies about the effects of advertising bias and privacy is part of this process. Finding similarities, differences, and subtleties in the participants' viewpoints would be possible through analysis of the interview transcripts, which will enable a thorough comprehension of the research issues.

This thesis started with gathering data from 15 interviewees to design trustworthy qualitative research. The interviewees will be conducted with people who are non-expertised for the online advertisement process and have used social media. Through social media, phone calls, and emails, possible interview subjects were contacted and invited for an interview. Table 1 shows the demographic characteristics of the interviewers who were anonymized.

Demographic Characteristics	Sub – Level Count	(n=15)	%
Gender	Male	5	0.33
	Female	10	0.67
Age	18-23	7	0.47
	24-29	6	0.4
	30-	2	0.13
Living country	Netherlands	7	0.47
	South Korea	6	0.4
	Australia	1	0.07
	Japan	1	0.07
Occupation	Student	12	0.8
	Self-employed	1	0.07
	Office job	2	0.13

Table 1: Demographic Analysis Interviewees

The interview questions could be modified based on the interviewee's response or circumstances. The most important thing when creating an interview question was to consider whether the questions were related to the subject and whether the experience or perception of the bias in online advertising could be well understood with the questions.

First, the relationship with the subject was based on the theoretical framework statements and the hypotheses that were thought of. The hypotheses are that 'Users will not be very sensitive to advertising bias. And if they find out that their personal information is leaked, they will have a negative view of the advertisement'. In addition, the above questions were asked to explore the interviewees' detailed experiences, such as their experiences of actually feeling biased or actually knowing the risk of personal information leakage, and their perceptions of bias and privacy issues.

4. INTERVIEW RESULT

4.1 Experience of online advertisement

Interviewees presented a variety of opinions on the frequency, repeatability, and customized advertisements of online advertisements. One respondent said that the noise marketing of online advertisements was impressive, and mentioned a positive experience as an advertisement that reflected the trend well. However, most other respondents found the pop-up advertisements and algorithm-based recommendation advertisements that frequently appear when using social media or

Google to be annoying and uncomfortable. In particular, they answered that although there were too many cosmetic or co-purchase advertisements that aroused their curiosity, they had little experience in actual use.

Three respondents said that Instagram's story ads were tempting because they perfectly understood individual tastes, but at the same time, push-alarm advertisements were too frequent and overly tempting, making them unpleasant. One respondent said, "I think I encounter a lot of Instagram ads, but the advertisement that comes out when I turn over the story is an advertisement that fully understands my taste and needs, so I have been tempted a lot." However, there have been cases where these customized advertisements have become too personalized and are perceived as an invasion of privacy. For example, another respondent said, "Card news-type advertisements based on specific age and local information felt too eerie."

In particular, experiences related to shopping apps were often mentioned. One respondent said, "I installed and used an app called Temu because I found out that there were many pretty clothes in advertisements, so I actually installed the app. However, there were more strange Chinese items and no clothes than I thought." Another respondent commented, "I made my first order after seeing an app called Temu advertised on Instagram, but unlike exaggerated advertisements, I had an unsatisfactory experience." These experiences also caused the credibility of online advertisements to deteriorate.

Based on the interview results, it was found that repetitive advertisements result in an increase in antipathy toward the product or company and lower reliability. One respondent said, "Advertising advertisements that appear repeatedly more often than I thought will be a little negative. If the same advertisement continues to appear repeatedly, I think there will be an antipathy toward the product or company." The older generation also said that they tend not to trust online advertisements and prefer to see and choose things for themselves. There were also opinions that "the older generation like me cannot trust online advertisements because they tend to think that they have to choose things for themselves."

In addition, the issue of trust in online advertisements was also highlighted in interviews. Some respondents said that the products purchased through online advertisements did not meet expectations and that they were annoyed by sensational or exaggerated advertisements. In particular, this experience reinforced the negative perception of online advertisements, as advertisements that specifically mention personal information were perceived as an invasion of privacy. "When an advertisement that completely shoots me, that is, an advertisement that accurately fits my information, appears as an algorithm, it feels very scary and my privacy seems to be violated," said one of the respondents.

Overall, the respondents in this study mainly expressed negative feelings about online advertising, which seems to have been attributed to reasons such as the frequency of advertising, lack of trust, and personal information infringement. These results suggest that online platforms need to operate more reliably and transparently even though these are the perceptions of people who do not know how ads are delivered. It will be possible to improve user experience by adjusting the frequency of advertisements, stopping exaggerated advertisements, and resolving concerns about personal information protection.

4.2 Relevance of advertisement to individuals' interests

When examining whether advertising can help individual interests, respondents noted that online advertising is sometimes useful and can be highly related to interests. Some respondents considered it useful because they had the experience of related advertisements appearing after talking about a specific theme or product. For example, one respondent said that after talking about "Capsosiphon fulvescens (Maesaengi)" with a friend, related advertisements appeared and used it useful when needed. This suggests that online advertisements can be customized to reflect users' conversations or interests. Another respondent mentioned the appearance of ramen advertisements after having a conversation related to "Ochama," explaining that they were able to purchase the necessary products in a timely manner. In addition, there were cases where advertising for a particular service or product was directly useful. For example, one respondent said he saw an advertisement for a currency exchange service called "Transfer" or "UTransfer" and started using it. In some cases, such direct promotional advertisements led to the actual use of the service. In other cases, some respondents shared their experience of the appearance of related advertisements after talking to their friends about plastic surgery. This shows that advertisements can reflect this when users are interested in a particular subject.

advertisements on social media platforms, especially Instagram, were found useful by many respondents. They mentioned that Instagram advertisements suit their needs and tastes. For example, after searching Coupang, related advertisements appeared as banners on other websites such as Naver, which led to unconscious viewing. This shows that advertisements based on user search records can be useful in conjunction with interests. Another respondent also mentioned that after using the travel

reservation site, related airline ticket advertisements appeared on Facebook or YouTube, which was useful. This shows that advertisements based on search records can help meet users' current needs. However, some respondents mentioned a lack of trust in online advertising and said they prefer to check and purchase products directly, which can suggest that exaggerated information on online advertising can cause trust problems.

4.3 Specified Trend Type of Advertising

The specific patterns and trends that respondents are aware of in online advertising were personalization and targeting advertising, visual and content changes in advertising, trend-sensitive advertising, and an increase in participatory advertising.
As mentioned above, almost all respondents experienced frequent advertisements related to what they searched or talked about. For instance, one respondent searched Google and observed a pattern in which related advertisements continued to appear on YouTube or advertisements related to what he liked or saw on Instagram. And 3 out of 15 respondents pointed out that recent advertisements have changed to a more eye-catching way with catchphrases, more diverse illustrations, and acting. One interviewee provided an example, "In the past, advertisements that simply show products and prices were the main ones, but now advertisements are composed of various illustrations, model-wearing photos, and short gameplay videos, attracting users' attention." In addition, there are many advertisements emphasizing positive feedback through reviews and interviews and attempts to build a good image through messages such as "You can be beautiful too" are increasing. Respondents also noted that if a particular trend occurs, the trend affects all advertisements. For example, as retro trends became popular, various products such as cameras, glasses, and clothing were advertised in retro style. This shows that trends are one of the crucial factors in determining the subject of advertising. Finally, in the case of increased participatory advertising, many respondents noted that shopping apps have started advertising that provides opportunities to purchase luxury goods by lottery. This has the effect of inducing user participation and increasing app usage time. This method is being adopted not only by large apps such as Music and Cream but also by small apps.

Looking at the perception of customized advertisements, most acknowledged that personalized advertisements are useful, but concerns about personal information infringement were expressed at the same time. Personalized advertising is tailored to your needs and interests and makes you feel useful. For example, one

respondent said that after referring to certain foods, related advertisements appeared at good prices and were useful. This shows that personalized advertising learns user search patterns and preferences and provides more accurate recommendations. And personalized advertising can help discover new products. For example, personalized advertising can discover good products that are unexpected through personalized advertising, and personalized advertising can provide new purchasing opportunities for consumers.

However, there were many comments that personalized advertisements were inconvenient because they felt like they violated their private lives. In detail, many respondents were displeased with target advertisements' excessive use of their personal information. For example, one respondent noted that it was unpleasant for related advertisements to appear suddenly during a conversation. Another respondent said he felt like his personal information was leaked when he saw in the advertisement that he was a "woman living in Daegu born in 1997. This reflects anxiety about how target advertisements collect and utilize personal information through user actions. In addition, respondents expressed various concerns about cookies and consent procedures, the usefulness and inconvenience of target advertisements, attempts to block advertisements, and the development of target advertisements. The cookie consent pop-up, which appears every time you visit a new website, gives you anxiety, and some say that you will be careful when logging in because it feels like your personal information is being sold just by agreeing to cookies. He mentioned that target advertising is useful but also an invasion of privacy. For example, one respondent said that after referring to ramen, related advertisements appeared at a good price and were useful, but at the same time, it felt like an invasion of privacy. For this reason, some respondents said they were trying to block advertisements to prevent personal information infringement of target advertisements, and one respondent said they would try to block all advertisements. On the other hand, some respondents recognize target advertising as a natural development of AI technology, indicating that target advertising is accepted as part of technology development. One respondent said "I've thought about the impact of targeted advertising on my online experience or privacy, but I don't find it particularly creepy. I just see it as a natural part of AI development".

4.4 Awareness to the advertisement bias

9 out of 15 respondents said that they felt tired as related advertisements continued to appear after searching for certain products, and for example, one respondent said that after searching for underwear once, the feed was filled with underwear advertisements. This shows that personalized advertisements can appear repeatedly and

cause user fatigue. Another respondent pointed out that personalized advertising only focuses on certain interests and prevents them from exploring other interests. This suggests that algorithms can limit users' interests by providing only advertisements tailored to users' specific interests. Repeated advertising exposure causes boredom and irritation to users, and some respondents said that these advertisements can feel like brainwashing. Repeated advertising can make you feel tired of a particular product or service and make you feel like you're buying a product that you don't need. In addition, repeated advertising exposure can lead to a lack of diversity, preventing other types of content from being seen, and reducing confidence in advertising. These experiences show the importance of advertising display methods and adjustment of exposure frequency, emphasizing that users should be designed to maintain interest through various types of content and advertisements and not experience advertising fatigue due to continuous repetition.

4 respondents said that the site always clicks "I don't agree" when requesting cookie consent, which shows doubts and displeasure about the collection and use of personal information. Some respondents were anxious because it was not clear how personal information would be used and worried that personal information would be exposed to others. In addition, some respondents expressed concern about the use of personal information by algorithms and the personalization of advertisements and expressed concern that such personalized advertisements could manipulate users' behavior or adjust consumption behavior. Some of the respondents said that basic personal information is fine, but they do not want to share sensitive information such as contacts, and that some information was suitable for sharing, while others should be protected personally. In addition, some respondents said they would refuse to share personal information with other platforms or sites, and were concerned that the information provided by one platform would be used on other platforms. To sum up, respondents agreed that it was important for online platforms to balance the need for personalized advertising with concerns about the protection of users' personal information. In particular, respondents argued that there should be more options for users to clearly choose the number of advertisements and the degree of sharing personal information, and that basic personal information can be used for advertising targeting, but sensitive information should be protected. He also stressed the need for prior agreement on the collection of personal information and the use of advertisements, suggesting that users should present clear terms and conditions when subscribing to the service and clarify the purpose and authority of using personal information. Overall, the online platform emphasizes the need to strengthen users' choices, reach an agreement on the use of basic personal information, and maintain a balance

between personalized advertising and user privacy protection through transparency and agreement.

4.5 Efforts for the Protection of Personal Information

The online platform takes various measures to protect users' personal information, and the efforts and measures to protect users' personal information are as follows: First of all, there is a measure to set a personal information storage period. Many websites implement policies to delete personal information provided by users after a certain period of time to prevent unnecessary retention of personal information. The App Store operates a policy that allows users to provide marketing consent or delete personal information, and marketing-related information is also deleted after a certain period of time. Compliance with regulations related to personal information protection is also an important measure, and it was mentioned that compliance with regulations on cookie consent or marketing consent contributes to protecting user options. Encryption and security measures are also important, but these measures are implemented when developing or managing websites to protect users' personal information safely.

In addition, various efforts, and measures that the online platform wants to strengthen transparency and responsibility through online advertising practices have been proposed. First, it is necessary to strengthen laws to protect personal information, prevent abuse, and provide users with a safe online environment. Second, the purpose of using personal information should be clearly disclosed so that users can choose how to use the information. Third, it is important to inform the user of the fact that the user's personal information is deleted after a certain period of time through the setting of the personal information storage period and the deletion guide. Fourth, anonymity should be strengthened to minimize the collection of user personal information to ensure anonymity. Finally, a personal information protection policy is needed to strengthen user choices to provide a clear choice on how personal information is used and to explain it in an easy-to-understand manner. Through these measures, online platforms will be able to increase transparency and reliability in protecting users' personal information and providing personalized advertisements.

4.6 Advertisements aimed at a particular gender or race

Some respondents were not very aware of advertisements targeting a particular gender or race, but eight of them said they had experience with such advertisements. They also mentioned that advertisements targeting a particular gender seem to be due to the characteristics of the

product. For example, cosmetic advertisements and sanitary napkin advertisements are mainly targeted at women, and hair loss medicine advertisements are mainly targeted at men. One respondent said, "I think sanitary napkins can be viewed as targeted advertisements for a particular gender because they are only used for one gender." Another respondent explained, "In cosmetic advertisements, for example, foundations differ for each skin type because the lake is different for each skin, and the target layer is set as this is for oily skin, that is for dry skin."

When it comes to advertisements targeting a particular race, most of the respondents said they had no experience or did not remember well. However, some respondents mentioned that they had seen advertisements targeting a particular race, which may be perceived as somewhat negative. One respondent said that he had seen an advertisement looking for Koreans to work in the Netherlands, and said, "I saw an advertisement that said, 'I'm looking for Koreans to work in the Netherlands.' Even the subtitles were in Korean. But when you go into the site, it's not even a job search site, it's just a strange site." This shows that there may be cases where advertisements targeting a particular race are inaccurate or deceptive.

Some respondents expressed concern about the possibility that advertisements targeting a particular race or gender would promote discrimination. In particular, they mentioned that if the content of the advertisement is blatantly discriminatory, it could negatively affect the brand image. For example, one respondent briefly mentioned, "If it's specific, it'll be discriminatory," and said that advertisements targeting a particular target can be perceived as discrimination. Another respondent commented, "If there's an intention of discrimination, I think I'll feel bad, I'll feel bad about the company, I'll feel bad about it, and I'll try to avoid consuming the branded products of the advertisement as much as possible."

Some respondents expressed concern about the possibility that advertisements targeting a particular race or gender would promote discrimination. In particular, they mentioned that if the content of an advertisement is blatantly discriminatory, it could negatively affect the brand's image. For example, one respondent briefly mentioned, "It would be discriminatory if it were specific," and said that advertisements targeting a particular target could be perceived as discrimination. Other respondents said, "If there is a discriminatory factor, I would feel bad," "If there is a discriminatory factor, I would feel bad about the brand," and "I think I would try not to consume the products of the advertisement's brand if possible." However, the respondents said, "I don't think I've thought about discrimination there because advertising based on gender or race is personalized advertisement anyway," or "Some

people think it could be discrimination, but rather than advertising by race or country, I think it depends on the person's algorithm."

5. CONCLUSION

5.1 Key findings

The study sought to investigate the impact of online advertising bias on privacy issues and people's perceptions of discrimination. As raised in the introduction, online advertising bias limits the diversity of information. It could have discriminatory effects due to ads tailored to specific interests or preferences. However, as a result of interviews, respondents often experienced distrust and fatigue caused by frequent exposure to advertisements and exaggerated information and did not have a clear perception of discrimination. Many respondents did not recognize or perceive that ads were targeted at a particular gender or race. And they answered that discrimination is only possible if the advertisement contains discriminatory intentions. These results show that bias in online advertising may not necessarily be perceived as discrimination by consumers. Respondents were found to have a negative perception of online advertising. Six of the respondents felt inconvenienced due to the frequency and repeatability of advertisements, especially pop-up advertisements and push notifications, which further amplified this inconvenience. The frequency and repeatability of these advertisements served as factors that gave users a feeling of fatigue and hindered overall trust. In addition, many respondents recognized that advertisements were customized based on individual interests and search records. This aroused curiosity and temptation in some respondents, but at the same time, it caused inconvenience by giving them the feeling that personal information was overexposed. In particular, advertisements specifically referring to personal information were considered privacy violations and caused discomfort.

On the other hand, ads provided on social media platforms, especially Instagram, were often targeted according to users' needs and preferences. For example, after searching for a particular product or service, related advertisements appeared and there was a response that they were useful. This shows that customized advertisements that reflect users' search records and interests can lead to actual purchasing behavior. However, respondents still expressed their overall distrust and fatigue of online advertising. This was mainly due to the frequency of advertisements and concerns over personal information infringement. Some respondents also noted that advertisements interfere with the search for various interests due to excessive concentration on certain products or services. If the

algorithm focuses only on a specific user's interests, it may limit the search for other types of content.

According to the interview results, in order to improve the transparency and accountability of online advertisements, platforms should clearly disclose the purpose of their personal information and ensure that they are not being used for other purposes. They can increase trust by allowing users to choose which advertisements to view and know how their information is being used. In addition, at the national level, privacy laws should be strengthened to prevent misuse of personal information and sternly punish them for illegal information leakage. Online platforms should introduce a system that automatically deletes personal information after a certain period of time, allowing users to be notified that their information has been deleted. They should also ensure that only the minimum amount of essential information is collected and reduce the risk of data leakage by anonymizing personal information, including the user's real name. Finally, platforms should notify users of how to use, store, and delete information in advance, and when the information is deleted. These measures will contribute to enhancing privacy and enhancing users' trust.

Overall, this study shows that online advertising gives users a negative perception, which appears due to the frequency of advertising, lack of trust, and personal information infringement. Therefore, in order to increase the effectiveness of online advertising, efforts are needed to adjust the frequency of advertising, improve exaggerated advertising phrases, and resolve concerns about protecting personal information. These measures will improve user experience and increase the reliability and effectiveness of online advertising.

5.2 Research limitations

The main limitation is that because only a small sample of respondents was chosen for the interview, the findings could not be representative of the population as a whole. As a result, the backgrounds and experiences of respondents could not differ, which restricts how broadly the research's findings can be applied. Furthermore, given the survey was aimed at participants from a specific geographic area or cultural background, outcomes may vary within these groups. In particular, interviewees have limited knowledge of advertising, and this study dealt with advertising in general, but did not specifically deal with each brand. Therefore, respondents' perceptions and experiences may differ. And since preference or dislike for a specific brand can have a great influence on the perception of advertising, not taking this into account is a limitation.

In addition, because this study only represents respondents' perceptions at one specific moment in time, it is not possible to reliably observe how respondents' perceptions and behaviors about advertising evolve over time. If there is time to examine this further, future research will have to ascertain ways of presenting a balance that people are willing to accept between the rights of privacy in one's personal information and the right of businesses to advertise products and services specific to one's interests. Moreover, the effectiveness and perceived acceptability of online advertising by a more diverse and focused random sample and with more in-depth investigations is another area for future research.

6. ACKNOWLEDGMENTS

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7. APPENDIX

"During the preparation of this work the author used Grammarly and Chat GPT in order to check the grammar and mistakes. After using these AI tools, the author reviewed and edited the content as needed and take full responsibility for the content of the work."

<u>Appendix A: interview</u>

Interview questions
1. What do you think about your experience with online advertising?
2. Can you recall a time when you found online advertising to be particularly helpful or relevant to your interests?
3. Have you ever noticed any patterns or trends in the types of ads you see online? If so, what were they?
4. How do you feel about the idea of personalized advertising, where ads are tailored to your interests and preferences?
5. Have you ever considered the impact of targeted advertising on your online experience or privacy?
6. What are your thoughts on the use of personal information, such as gender or browsing history, to target advertisements?
7. Do you have any concerns about the way your personal information is collected and used for advertising purposes?
8. How do you think online platforms should balance the need for personalized ads with user privacy concerns?
9. Are you aware of any efforts or measures taken by online platforms to protect user privacy in advertising?
10. In your opinion, what steps could be taken to improve transparency and accountability in online advertising practices?

11. Have you ever seen an advertisement targeted at a particular race through an online advertisement? If so, what was your experience like?
12. Did you feel a change in your perception after watching the ad? If so, what was the change?
13. What do you think about seeing ads targeting a certain race in online ads? Do you think these ads could promote discrimination against minorities or certain ethnic groups?
14. Have you ever felt that among the advertisements you have been recommended so far, only the same ones keep coming out?