Examining the Relationship between User Behavior and Attitudes towards Data Privacy in Targeted Personalized Digital Advertising

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Abstract

This research paper examines the tradeoffs made by consumers when exposed to personalized digital advertising in today's digital age. It focuses on the willingness of users to disclose personal information in the context of digital advertising and the impact of benefit incentives on their decision-making process. The authors use conjoint analysis to test the attributes of data collection methods, benefits offered, and level of personalization to understand user attitudes toward data privacy and information outflow. The findings reveal that users consider "Action taken to disclose information" and "Benefits offered" as important attributes in their decision-making process. Furthermore, users showed a preference for financial incentives, such as discounts, over other benefits. The study also identified a segment of users who prefer non-personalized ads and showed privacy concerns. These findings help marketers to create better-targeted and less invasive campaigns, and policymakers to develop more effective privacy and data laws.

Keywords:

Data privacy, trade-offs, personalized advertising, consumer attitudes, targeted ads

Introduction

In today's digital age, personalized advertising has become increasingly prevalent. Digital advertising has become an integral part of modern marketing strategies, providing businesses with a powerful tool for reaching their target audience. With the vast amount of data available to companies, they can tailor ads to individual consumers based on their preferences and behaviors. However, the effectiveness of personalized and targeted advertising relies heavily on the collection and use of consumer data, raising concerns about data privacy. As consumers are exposed to increasing levels of personalized advertising, they are faced with a tradeoff between the benefits of personalized advertising and their desire for data privacy.

Consumer attitudes toward personalized ads are often mixed. While some appreciate the convenience of seeing ads for products or services that align with their interests, others are wary of the potential privacy implications. Consumers are wary that their personal information is being collected and used for marketing purposes, which can potentially lead to privacy infringement, identity theft, or other forms of cybercrime. Additionally, consumers may worry about the possibility of their data being shared with third-party companies, resulting in unwanted solicitations and spam messages. While the decision to share information is influenced by various factors, including the consumer's attitudes toward data privacy, their level of trust in businesses, and their perceptions of the benefits and risks associated with sharing personal information. The extent to which consumers are willing to make these tradeoffs varies among individuals and can have significant implications for businesses and advertisers.

But would consumers choose privacy over convenience if given the option? The purpose of this research paper is to examine the relationship between user behavior and attitudes toward data privacy in targeted personalized digital advertising.

The motivation for this research question stems from three aspects. The first aspect is the increasing importance of ad revenue for online platforms. The online ads revenue has increased from 31.7 to 189.3 billion U.S. dollars from 2011 to 2021 and the impact keeps increasing. Targeted personalized digital advertising is becoming increasingly popular as it allows advertisers to deliver ads that are more relevant to the user, thus increasing the likelihood of conversion. According to a Statistica survey "Search, Display, digital video ads were biggest contributors to Ads revenue with a major chunk coming from the performance-based pricing model like CPC, sales, and leads." This goes on to show that consumers today respond to ads thus offering ads as a lucrative option for advertisers to keep exploring.

The increasing revenue from online ads shows that people are responding positively to the ads they see online and are clicking on them. However, it is also important to understand the negative consequences for users. Luguri et al. (2021) present evidence of the power of dark patterns i.e user interfaces designed to manipulate users into taking certain actions or revealing personal information by signing up for services or subscriptions. While we don't necessarily deep dive into dark patterns in this study, it is important to acknowledge that it is correlated to our question in terms of action taken by the user.

The third aspect is the role of user behavior in determining the effectiveness of targeted personalized digital advertising, as users' actions provide valuable data that advertisers can use to target ads based on demographics, interests, and past interactions with ads. Therefore, understanding the actions users take to share information becomes a critical factor in comprehending the dynamics of targeted advertising.

The earlier research in this area focuses on several factors that influence consumers' willingness to share personal information for personalized advertising, including the strength of the consumer-brand relationship, perceived risks and benefits of data collection, and the credibility of the company. However, very few studies explore the impact of users' actions in the decision-making process that drives the sharing of personal information. While the study by Beke et al. (2023) investigates the effects of information/data collection (as part of distributive fairness), from the perspective of companies gaining access to information, it does not consider the viewpoint of consumers as decision-makers in sharing information. This highlights the need for further research to better understand the role of users' actions and decision-making in the process of sharing personal information for targeted personalized digital advertising.

Therefore, our research contributes to existing marketing research knowledge by focusing on understanding the action that users take to share information, which ultimately leads to targeted advertising. Testing attributes like data collection methods, benefits offered, and level of personalization in conjoint analysis can add to existing research by providing a more realistic and nuanced understanding of users' attitudes toward data privacy in targeted personalized digital advertising.

As highlighted by Strycharz et al. (2019), practitioners are well aware of the constraints that arise due to mismatches, skepticism towards advertising, and data privacy concerns. However, despite being aware of these concerns, there is a lack of effective tools to address them. There is a need for further research to develop tools and strategies that can effectively address these concerns and strike a balance between personalized marketing and data privacy.

This study has the potential to bring significant improvements and benefits to multiple stakeholders. Marketers will be able to balance personalized marketing with consumer privacy by understanding how different attributes and benefits influence consumer preferences. Companies can gain a better understanding of consumer attitudes and create more effective and less invasive marketing campaigns that align with consumer preferences. Ad platforms can provide advertisers with a more user-friendly experience while offering effective targeting tools, such as better targeting options and algorithms. Finally, government policymakers can develop more effective privacy and data laws by gaining a deeper understanding of consumers' attitudes toward personalized digital advertising.

Research background

Several research streams are relevant to our research question, and Table 1 shows how we integrate them and how our paper is different from previous studies

Stream	Study	Method	Factors Evaluated
Ads Privacy	(Hayes et al. 2021) https://doi.org/10.1016/j.intmar.2021.01.001	Ad stimuli	Perceived Risks, Benefits, Data Collection - Covert and Overt, Value of disclosure, and Willingness to use personal information
Ads Privacy	(Aguirre et al. 2015) https://doi.org/10.1016/j.jretai.2014.09.005	Experiments	Personalization (less Vs more), collection(overt/covert), Credibility, Perceived vulnerability, intentions
Ads Privacy	(Hann et al. 2007) https://doi.org/10.2753/MIS0742-1222240202	Conjoint Analysis	Monetary reward, visitor frequency/time-saving, unauthorized use, improper access
Personal Data Tradeoffs	(Beke et al. 2022) https://doi.org/10.1016/j.ijresmar.2021.05.005.	Multiple	Financial, performance, time, psychological, social, and security dimensions and considers both Costs (negative) and benefits (positive) of data-driven offering for Offline & Online
Personal Data Tradeoffs	(Acquisti et al. 2013) http://www.jstor.org/stable/10.1086/671754	Offline	Willingness to accept, willingness to pay.
Privacy Concerns	(Kehr 2015) https://onlinelibrary.wiley.com/doi/10.1111/isj.12062	-	Situational factors, general institutional trust, perceived risks, perceived benefits
Privacy Concerns	(Xu et al. 2012) https://www.tandfonline.com/doi/abs/10.2753/MIS0742-1222290305	-	-
Privacy Concerns	(Knijnenburg et al. 2013) https://www.sciencedirect.com/science/article/abs/pii/S0167923612002741	-	-
Personal Data Tradeoffs & Privacy Concerns	(Beke et al. 2023) https://doi.org/10.1177/10949968221140061	Online	Distributive fairness (i.e., information collection, storage, use) and procedural fairness (i.e., transparency, control)
Personal Data Tradeoffs & Privacy Concerns	Our Study	Online	Action that leads to data collection, benefits offered, and level of personalization

Table 1: Prior Research

The first research stream is personal data tradeoffs. The concept of personal data tradeoffs involves weighing the costs and benefits of sharing personal data for offline and online offerings. Several

researchers have studied the various dimensions of personal data tradeoffs, including financial, performance, time, psychological, social, and security aspects. For instance, Beke et al. (2022) have proposed a multiple-dimension framework that considers both the positive and negative aspects of data-driven offerings. Additionally, Acquisti et al. (2013) have studied the willingness of individuals to accept or pay for offline data collection, highlighting the importance of understanding the economic value of personal data.

The second research stream is privacy concerns. This stream focuses on the factors that influence users' privacy concerns and how these concerns affect their behavior. Kehr et al. (2015) study has identified several factors that can influence users' privacy concerns and highlight how situational factors, such as the context and purpose of data collection, can significantly affect users' perceptions of privacy risks and benefits. For instance, Xu et al. (2012) examined the role of information sensitivity and privacy awareness in shaping users' privacy concerns. They found that users' privacy concerns were higher when the information collected was sensitive and when they had a higher level of privacy awareness. Similarly, Knijnenburg et al. 2013) explored the impact of context on users' privacy concerns and found that users were more willing to share information in social contexts compared to commercial contexts.

The third research stream is ad privacy. This stream focuses specifically on users' attitudes toward privacy in the context of digital advertising. Research by Hayes et al. (2021) and Aguirre et al. (2015) explored the impact of different ad stimuli, such as personalization, collection (overt/covert), and credibility, on users' perceived risks, benefits, and willingness to disclose personal information. The studies revealed that users are more willing to disclose personal information when they perceive a high value in doing so and when they trust the advertiser.

Conceptual development

In the context of advertising, control of personal information refers to the ability of individuals to manage the collection and sharing of their personal information with advertisers. This control can be exercised in several ways, including through the use of privacy settings, opt-in/opt-out mechanisms, and consent forms. Managing the outflow of information means taking steps to limit the amount and type of personal information that is shared with advertisers in the first place. This can involve being selective about which websites are visited or which apps are downloaded, as well as setting privacy preferences on social media platforms or web browsers. Subsequent disclosure of information refers to how personal information is used and shared by advertisers once it has been collected.

Much of the existing research on data privacy and personalized advertising has focused on consumer attitudes toward data privacy and the extent to which they are willing to share their personal information. Heyes et al. (2021) highlight how overt data collection significantly lowered perceived risks. The study also evaluated factors like benefits, data collection method as covert vs overt, value of disclosure, and willingness to use personal information. Aguirre et al. (2015) Links personalization to the credibility of the site and perceived vulnerability and showcases that click-

through rates intentions are higher when companies engage in overt data and how negative outcomes can be mitigated by posting ads on trusted websites.

Beke et al. (2022) Showcases a prical index and elaborates on how the literature on privacy concern has largely ignored the benefits consumers enjoy from information collection. The real-world events of 2021, particularly the social media uproar over WhatsApp's data policies, offer further evidence of the trade-offs that consumers make concerning data privacy and the benefits they receive. The response of users to the WhatsApp data breach was to switch to alternative apps such as Telegram and Signal, but they eventually returned to WhatsApp due to social acceptance and connectivity challenges.

However, these research studies often neglect to consider the specific choices that consumers have in terms of the data collection options presented to them. For example, consumers might be concerned about their data privacy, but unaware of the specific actions they take (or choose not to take) when presented with data collection options such as accepting cookies, signing up via social media, or engaging with pages on social media.

This is an important gap in the literature, as understanding the specific actions that consumers take concerning data collection options is essential for understanding their attitudes toward data privacy trade-offs. For instance, a consumer may be willing to accept cookies to receive a more personalized experience but may not want to engage with pages on social media or sign up via Facebook or Gmail. It is also important to understand whether consumers are aware that certain ads are being targeted to them based on these actions.

Figure 1 visualizes our conceptual model. First, key context is provided in the prior user action that led to the data collection. Next, the user considers benefits such as free subscription, % discount ($$ off), or the lack of advertising. Third, the users experience personalization.

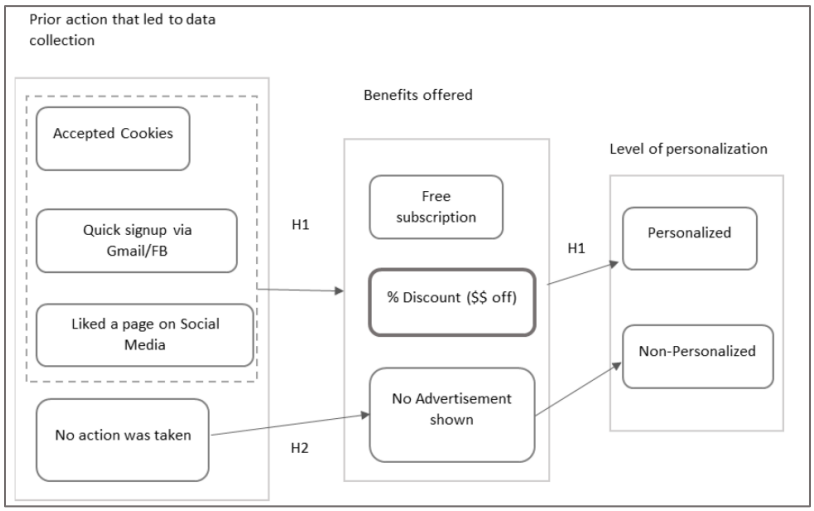

Figure 1: Conceptual model

Our study expands on the work of Hann et al. (2007) who utilized a conjoint study to assess factors such as monetary incentives, visitor frequency or time-saving benefits, unauthorized use, and

improper access. While Hann's study emphasized privacy risks, our focus is on information outflow, specifically examining how users' actions and willingness to share information are linked to the benefits they receive. The results from the study show that financial gains and convenience are valued by customers and tend to increase motivational scores. Indicating that these incentives are effective in influencing user behavior.

Building on the findings from Hann et al. (2007) study and Acquisti et al. (2013) research, our study aims to investigate the influence of financial incentives and convenience on users' willingness to share personal information. We hypothesize that when users perceive a tangible benefit, such as a discount or savings, they are motivated to share their personal information. This suggests that the promise of financial gains or convenience may be effective in influencing user behavior toward sharing personal information.

H1: Users are most likely to take action sharing personal information when offered a Discount

H1 can be explained by the concept of exchange theory in psychology. According to this theory, individuals make rational decisions based on the expected rewards and costs of an action. In the context of targeted personalized digital advertising, users are presented with various benefits such as free subscriptions, discounts, and no advertisements in exchange for sharing their personal information. The perceived value of these benefits will vary for each user, and the decision to share personal information will depend on their assessment of the benefits against the perceived costs such as privacy risks and trust concerns.

The individual assessment of privacy is a key contributor to determining the willingness to act and share information. We hypothesize that there may be a segment of users who prioritize their privacy concerns over the perceived benefits or rewards offered in exchange for their personal information. This segment of users may have a higher level of privacy awareness or may hold strong privacy values, leading them to be less willing to share their personal information, even when offered benefits or rewards. Numerous studies have shown that privacy concerns are a significant factor influencing users' willingness to share personal information online Malhotra et al. (2004), Xu et al. (2012), etc. Users who are more privacy-conscious or have higher levels of privacy concerns may be less willing to share their personal information

H2: A substantial segment of users are unwilling to share their personal information, even when offered benefits or rewards, due to privacy concerns.

The reluctance to share personal information can stem from various factors such as concerns about the potential misuse of data, lack of trust in the company collecting the data, or a desire to maintain privacy. We assume that the segment wary of sharing personal information would consist of older individuals and people who are well aware of privacy risks. Through the conjoint analysis, we aim to identify this segment of users based on their age, occupation, and gender.

Methodology

The conjoint analysis methodology is a widely used research technique for understanding how people make trade-offs between different attributes. It is particularly well-suited for studying consumer behavior and preferences in the context of personalized digital advertising, as it allows us to investigate the relative importance of different attributes (e.g., data collection methods, benefit offers, level of personalization) and how they interact to influence users' attitudes towards data privacy.

By using conjoint analysis, our study aims to address this gap in the literature by examining the specific choices that consumers make when presented with different data collection options and the benefits offered, as well as their level of personalization. This will provide a more nuanced understanding of consumer attitudes toward data privacy trade-offs and the factors that influence these trade-offs.

Previous research in this area has often focused on scenarios that do not reflect the complexity of real-world decision-making. By contrast, conjoint analysis allows researchers to investigate how users make trade-offs between multiple attributes more realistically and dynamically. user actions are what drive information being shared and ultimately lead to targeted ads.

Moreover, by testing attributes like data collection methods and benefit offers, conjoint analysis can provide insights into the types of actions that users are willing to take to receive personalized advertising.

Data Collection via:	Accepted Cookies	Quick signup via Gmail/FB	Liked a page on Social Media	No action was taken
Benefit offered:	Free subscription	% Discount ($$ off)	No Advertisement shown	
Level of Personalization:	Personalized	Non-Personalized		

Table 2: Attributes and levels used for conjoint analysis.

We analyzed the conjoint data to identify the relative importance of different parameters and their impact on users' willingness to share personal information. Overall, the methodology for this research paper aims to provide a comprehensive understanding of the factors that influence users' willingness to share personal information online.

For our study, we used a conjoint survey to collect the responses from 102 people and offered them $1.4 for their participation. The respondents were asked to take the survey, detailed in the Appendix in the below order:

- Rate the attribute and levels on a scale of 0 to 100 based on the importance placed by the individual on that factor.

- 24 scenarios were presented in a random format and respondents were asked to rate the scenarios from 0-100.
- General questions followed by demographic details like age, occupation, and gender.

After the responses were recorded, the results were evaluated using a conjoint package in R to find the utilities of attributes and levels. We measured the utilities for overall data along with the utilities for individual respondents. The segments/clusters were formed based on the responses.

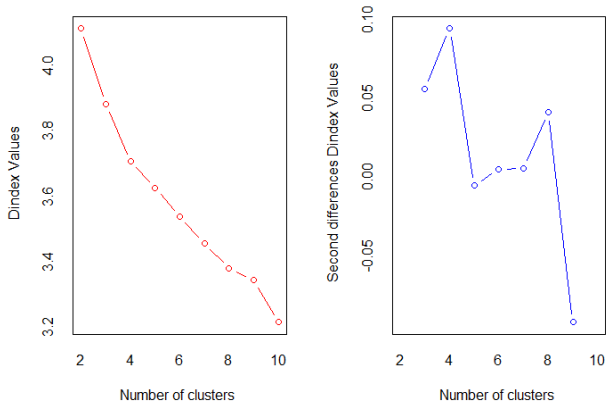

Figure 2: Optimal number of clusters.

A hierarchical clustering method was used to find the optimal number (see Figure 2) of clusters (in our study the value came out to be 4). Based on this the responses were further evaluated to gain insights into the relationship between demographic data and privacy preferences.

Findings

It is evident from Table 3 and Figure 4 that respondents placed high importance on "Action taken to disclose information" as an attribute followed by the "Benefits offered". This indicates that users consider both the action they need to take (e.g., providing personal information) and the benefits they receive as significant factors in their decision-making process.

Furthermore, when examining the utilities (i.e., preference scores) for different levels of the attributes, we found that the Discount offered level had a positive utility score of 1.26. This score was significantly higher than the utility score of 0.92 for the Subscription level and the negative utility score for the No ads shown level. *These results provide support for H1*, which suggests that the most lucrative benefit in terms of prompting users to share their personal information is a discount or cost savings.

The findings imply that users are more motivated to take action and share their personal information when offered a financial incentive such as a discount. This aligns with the concept of exchange theory, where users weigh the perceived benefits against the perceived costs in their decision-making process. The positive utility score for the Discount offered level indicates that users perceive this benefit as valuable.

Coefficients:	Estimate
Intercept	51.83211
Factor(x$Action)1	-1.45792
Factor(x$Action)2	-3.16708
Factor(x$Action)3	-1.09355
Factor(x$Benefit)1	0.92157
Factor(x$Benefit)2	1.26716
Factor(x$Personalization)1	-0.06577

Table 3: Results from Conjoint Model

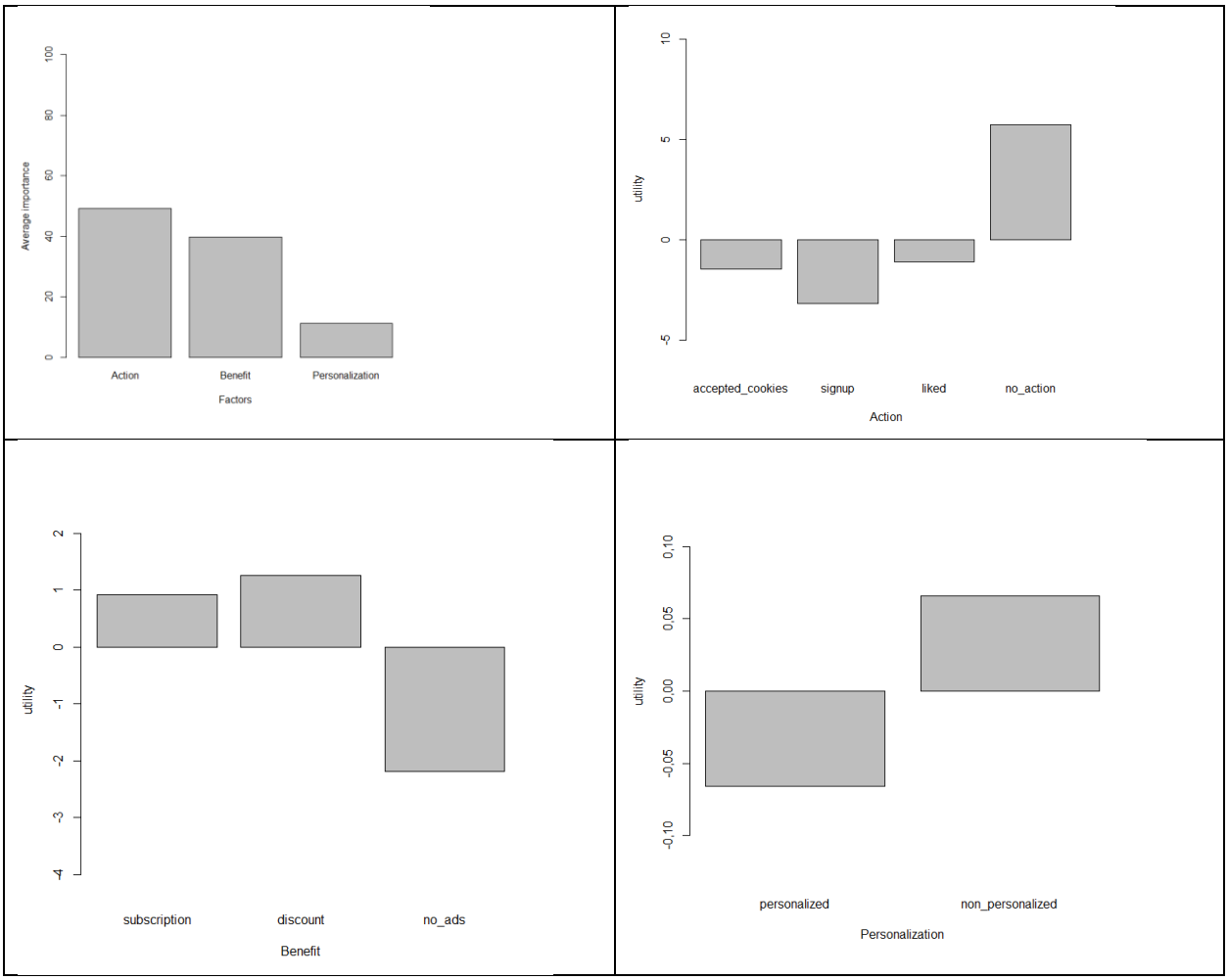

Figure 3: Graphical representation of utilities for Attributes and levels

Another interesting finding was to see that when it comes to personalization, users prefer non-personalized ads over personalized ones. We evaluated the data further by segmenting it and understanding which segments prefer personalization over non-personalization of ads.

The findings from the segmentation analysis provide *support for hypothesis H2*. Cluster 1 as seen in Figure 4, consistently placed high importance on "No action taken," "No ads shown," and "Non-personalized ads", and rated them positively (see Table 4). This indicates that users in this specific cluster prefer not disclosing personal information, not seeing ads, and receiving non-personalized ads, which suggest strong privacy concerns.

Figure 4: Clusters formed from conjoint data segmentation.

Cluster	Like a page on Social Media	No Action Taken	Free subscription	% Discount ($$ off)	No Advertisement shown	Personalized Ads	Non-Personalized Ads	Do you like a personalized experience	How active are you on social media
1	**31.71**	**53.10**	**42.05**	**42.62**	**80.52**	**17.71**	**38.33**	**1.81**	5
2	37.18	19.5	43.36	58.32	33.29	35.68	24.11	4.32	4.89
3	55.83	52.74	74.39	76.91	60.13	49.17	36.48	4.74	5.87
4	37.97	42.2	66.00	54.80	68.43	39.93	34.47	4.13	6.07

Table 4: Mean ratings for questions based on the importance of levels and attributes.

Furthermore, the scenario-based conjoint analysis also revealed that users in Cluster 1 consistently made the same choices, indicating a consistent preference for the non-disclosure of personal information and non-personalized ads across different scenarios.

The high importance placed on the attribute of "Action is taken to disclose information" could be due to the utility associated with the level of "no action." Similarly, the most preferred “Benefit” is “No Ads” and high utility is shown for “non-personalized" ads. (See Tables 5 and 6)

Cluster	Segment Size (% of Sample)	Action	Benefit	Personalization
1	20.58%	58.40	27.92	13.69
2	27.45%	41.87	47.56	10.56
3	22.54%	44.59	45.53	9.88
4	29.41%	53.06	36.04	10.91

Table 5: Mean ratings for questions based on twenty-four scenarios of conjoint analysis (attributes)

Accept Cookies	Signup	Liked	No Action	Subscription	Discount	No Ads	Personalized	Non-Personalized
-0.20	-9.83	-7.33	17.36	-4.30	-3.63	7.93	-3.09	3.09
-0.87	3.18	1.56	-3.87	2.32	7.14	-9.46	0.86	-0.86
0.89	-1.84	-4.13	5.08	2.75	4.71	-7.45	1.02	-1.02
-4.68	-5.45	3.12	7.00	1.87	-3.41	1.54	0.36	-0.36

Table 6: Mean ratings for questions based on twenty-four scenarios of conjoint analysis (levels)

This supports the hypothesis that there may be a segment of users who are hesitant to disclose personal information due to privacy concerns and highlights the importance of considering individual differences in willingness to share personal information in the context of benefit incentives in personalized advertising.

This emphasizes the need for companies to respect the privacy preferences of these users and provide them with alternative options to benefit from their services without compromising their personal information. The control of personal information requires both the management of outflow and subsequent disclosure of that information. By providing users with a range of options for data collection and benefits, companies can empower them to make informed decisions about their personal information and maintain their trust in digital advertising practices.

Cluster	Age Range	Mean Age	Occupation with Internet/ computer exposure
1	20 - 70	39.57	**12 out of 21 are related to the internet/computer** (Not related to the internet include retired, homemakers, pharmaceutical and sales)
2	21-80	38.04	12 out of 28 have an occupation related to the internet/computer
3	19-64	31.04	**6 out of 23 have occupations related to the internet** /computer (Not related to the internet include retired, unemployed, food service, homemaker, warehouse staff, etc)
4	20-58	33.43	16 out of 30 have an occupation related to the Internet/computer (Not related to the Internet include

Table 7: Demographic findings for clusters

How can we best describe the respondents in Cluster 1, the substantial segment that values privacy above all? First, both the age range and the average age are the highest for Cluster 1 versus the other clusters. 19% of Cluster 1 respondents are 60 or more years old (see Table 7). This finding suggests that older individuals may be more likely to prioritize privacy in their advertising

preferences compared to younger individuals, as they may have different attitudes and concerns about data privacy and online advertising.

Second, Cluster 1 also has the highest percentage (57%) of respondents working in the fields related to the Internet or computers. Therefore, they may have more knowledge of how companies are collecting and using online data. People who work in computer-related fields may be aware of the privacy risks and hence prefer to opt for non-personalized ads or no ads.

In contrast, cluster 3 shows a preference for personalization and action that leads to data collection. Respondents in this cluster have the lowest average age and the lowest percentage of people who work in fields related to the internet/computer (26%).

Discussion

When it comes to privacy strategy, firms are often hesitant to align their approach with consumer preferences. Instead, they tend to focus solely on meeting legal requirements. Our study showcases which aspects consumers value the most and their willingness to trade off information. We believe that understanding this trade-off is essential for firms to tailor their privacy strategies to meet consumer needs effectively. By relying solely on legal requirements, firms may miss out on opportunities to build trust with consumers and gain a competitive advantage. Therefore, our analysis can help firms develop a more comprehensive approach to privacy that aligns with consumer preferences and expectations.

The findings of this research highlight the importance of understanding users' preferences and concerns when designing personalized advertising strategies. The preference for financial incentives, such as discounts, over other benefits suggest that offering cost savings or discounts may be an effective way to motivate users to share their personal information. However, the segmentation analysis also reveals that there may be a segment of users who are less willing to disclose their personal information due to privacy concerns.

Users who are more knowledgeable about data privacy issues are more likely to take proactive measures to protect their personal information, such as using ad blockers or adjusting their privacy settings. Users who have a greater concern for their privacy are less likely to engage with targeted personalized ads, even when the ads are relevant to their interests. Therefore, companies should consider providing alternative options, such as non-personalized ads or non-disclosure of personal information, to cater to the preferences of these users. This could involve implementing a privacy-by-design approach, where users are given control over their personal information and offered transparent choices in the data collection and usage process.

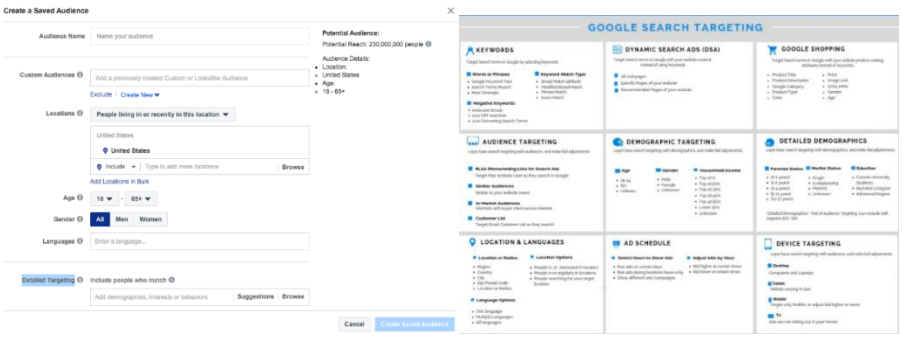

Figure 5: Controls available for targeting Ad Platforms

Our findings are in line with Beke et al. (2023) research which suggests that firms by aligning personalized advertising strategies with users' preferences and privacy concerns, companies can enhance user satisfaction and trust, leading to more effective and ethical advertising practices. By actively promoting preferred privacy practices, firms can gain a competitive advantage in the "market for privacy."

Government policymakers can use this information to advocate for privacy protection measures, such as requiring ad platforms to provide opt-out mechanisms or alternative options for users who do not want to disclose their personal information. This can prompt ad platforms to have additional targeting options based on privacy preference and frequency of ads. Marketers can then create personalized advertising strategies that align with the specific needs and preferences of their users.

Limitations and Conclusion

While this research provides valuable insights into users' preferences and concerns in the context of personalized advertising, some limitations should be acknowledged. First, the research was conducted using a hypothetical scenario-based conjoint analysis, which may not fully capture users' actual behaviors and decision-making processes in real-world settings. Future research could employ field experiments or real-world data to further validate the findings.

Second, the study did not take into account factors such as cultural and socio-economic differences that may influence users' attitudes toward data privacy. It is possible that consumers relied on heuristics or mental shortcuts to make a decision regarding their preferences instead of carefully evaluating all the information presented to them.

Finally, the research focused on a specific set of attributes and levels in personalized advertising. Future research could investigate other factors, such as the role of trust, perceived risks, or contextual factors, in users' decision-making process in personalized advertising. Overall, the findings of this research provide a foundation for further research on users' preferences and concerns in the context of personalized advertising and offer opportunities for future investigations to expand our understanding of this complex and evolving field.

In conclusion, we suggest the need for a user-centric approach to privacy in the evolving landscape of personalized advertising.

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Appendix:

The survey for participants was designed as follows:

Screen 1:

Welcome to our Survey!!

The study will take place online and will take up to 15-20 minutes to complete.

There are no foreseeable risks or discomforts to you for taking part in this study. Your part in this study will be handled in a confidential manner. Only the researchers will know that you participated in this study. Any reports or publications based on this research will use only group data and will not identify you or any individual as being of this project. The decision to participate in this research project is up to you. You do not have to participate, and you can refuse to answer any question. Even if you begin the study, you may withdraw at any time.

Thank you for your time!

Screen 2:

Through this study we wish to understand which of the following attributes do you value when it comes to personalized experiences through targeted ads. Below is the brief description of the dimension.

Attributes and levels

- Data Collection via: (Prior Actions that might have led to targeted ads)
    - Accepted Cookies: You have previously accepted cookies on the website/app. This shared personal, behavioral, and engagement data.
    - Quick signup via Gmail/FB: You signed up for a new service via your Gmail ID or Facebook signup. This shared personal, social, and demographic data.
    - Liked a Page on Social Media: You previously liked a page on social media that is associated with the website/app. This shared behavioral data.
    - No action was taken: You have not taken any prior action on the website/app that involves data sharing.
- Benefit Offered:
    - Free Subscription: You can click on an ad to receive a free subscription to the service.
    - Percentage Discount: You can click on an ad to receive a discount of a certain percentage (x%) or amount ($ off).

    - No Advertisement shown: You are not shown any ads.
- Level of Personalization:
    - Personalized: The ads are tailored to your interests and preferences based on the data shared.
    - Non-Personalized: The ads are not tailored to your interests and preferences and are displayed randomly.

Which of the following aspects is most important to you when deciding to share data. 0 is Least important and 100 is Very important.

Accept Cookies 0 to 100

Quick signup via Gmail/FB 0 to 100

Like a page on Social Media 0 to 100

No Action Taken 0 to 100

Which of the following benefits are most important to you. 0 is Least important and 100 is Very important.

Free subscription 0 to 100

% Discount ($$ off) 0 to 100

No Advertisement shown 0 to 100

When viewing ads, which aspects are more important to you. 0 is Least important and 100 is Very important.

Personalized Ads 0 to 100

Non-Personalized Ads 0 to 100

On the next screen you should see a list of choices that are described by various combinations of the above attributes.

Screen 3:

Which of the following is the most relatable to the action you would take?

Scenario 1:	
Data Collection via:	Accepted Cookies
Benefit Offered:	Free Subscription

Level of Personalization:	Personalized
Your rating 0-100	

Scenario 2:	
Data Collection via:	Accepted Cookies
Benefit Offered:	% Discount ($$ off)
Level of Personalization:	Personalized
Your rating 0-100	

Scenario 3:	
Data Collection via:	Accepted Cookies
Benefit Offered:	No Advertisement shown
Level of Personalization:	Personalized
Your rating 0-100	

Scenario 4:	
Data Collection via:	Accepted Cookies
Benefit Offered:	Free Subscription
Level of Personalization:	Non-Personalized
Your rating 0-100	

Scenario 5:	
Data Collection via:	Accepted Cookies
Benefit Offered:	% Discount ($$ off)
Level of Personalization:	Non-Personalized
Your rating 0-100	

Scenario 6:	
Data Collection via:	Accepted Cookies
Benefit Offered:	No Advertisement shown
Level of Personalization:	Non-Personalized
Your rating 0-100	

Scenario 7:	
Data Collection via:	Quick signup via Gmail/FB
Benefit Offered:	Free Subscription
Level of Personalization:	Personalized
Your rating 0-100	

Scenario 8:	
Data Collection via:	Quick signup via Gmail/FB
Benefit Offered:	% Discount ($$ off)
Level of Personalization:	Personalized
Your rating 0-100	

Scenario 9:	
Data Collection via:	Quick signup via Gmail/FB
Benefit Offered:	No Advertisement shown
Level of Personalization:	Personalized
Your rating 0-100	

Scenario 10:	
Data Collection via:	Quick signup via Gmail/FB
Benefit Offered:	Free Subscription
Level of Personalization:	Non-Personalized
Your rating 0-100	

Scenario 11:	
Data Collection via:	Quick signup via Gmail/FB
Benefit Offered:	% Discount ($$ off)
Level of Personalization:	Non-Personalized
Your rating 0-100	

Scenario 12:	
Data Collection via:	Quick signup via Gmail/FB
Benefit Offered:	No Advertisement shown
Level of Personalization:	Non-Personalized
Your rating 0-100	

Scenario 13:	
Data Collection via:	Liked a page on Social Media
Benefit Offered:	Free Subscription
Level of Personalization:	Personalized
Your rating 0-100	

Scenario 14:	
Data Collection via:	Liked a page on Social Media
Benefit Offered:	% Discount ($$ off)
Level of Personalization:	Personalized
Your rating 0-100	

Scenario 15:	
Data Collection via:	Liked a page on Social Media
Benefit Offered:	No Advertisement shown
Level of Personalization:	Personalized
Your rating 0-100	

Scenario 16:	
Data Collection via:	Liked a page on Social Media
Benefit Offered:	Free Subscription
Level of Personalization:	Non-Personalized
Your rating 0-100	

Scenario 17:	
Data Collection via:	Liked a page on Social Media
Benefit Offered:	% Discount ($$ off)

Level of Personalization:	Non-Personalized
Your rating 0-100	

Scenario 18:	
Data Collection via:	Liked a page on Social Media
Benefit Offered:	No Advertisement shown
Level of Personalization:	Non-Personalized
Your rating 0-100	

Scenario 19:	
Data Collection via:	No action was taken
Benefit Offered:	Free Subscription
Level of Personalization:	Personalized
Your rating 0-100	

Scenario 20:	
Data Collection via:	No action was taken
Benefit Offered:	% Discount ($$ off)
Level of Personalization:	Personalized
Your rating 0-100	

Scenario 21:	
Data Collection via:	No action was taken
Benefit Offered:	No Advertisement shown
Level of Personalization:	Personalized
Your rating 0-100	

Scenario 22:	
Data Collection via:	No action was taken
Benefit Offered:	Free Subscription
Level of Personalization:	Non-Personalized
Your rating 0-100	

Scenario 23:	
Data Collection via:	No action was taken
Benefit Offered:	% Discount ($$ off)
Level of Personalization:	Non-Personalized
Your rating 0-100	

Scenario 24:	
Data Collection via:	No action was taken
Benefit Offered:	No Advertisement shown
Level of Personalization:	Non-Personalized
Your rating 0-100	

Screen 4:

1. On a scale of 1 to 9. Where 1 is Not so much and 9 is A lot. How much do you like a personalized experience when it comes to Ads?

2. On a scale of 1 to 9. Where 1 is Not so much and 9 is A lot. How active are you on social media?

3. Your wish to read an article and you visit a site, while scrolling down you notice a pop-up what do you do
    a. Accept All Cookies
    b. Customize settings/preferences

4. If you are shown a sign-up page for a new e-commerce website which of the following, will you choose?
    a. Quick sign up via Facebook/ Google login
    b. Create an new account to generate ID and Password

Screen 5:

What is your age?

<numeric field input>

What is your gender?

<dropdown field>

What is your current occupation?

<text input field>

Screen 6:

Thank you for taking the time to complete our survey!