

HCIN5100 Assignment 2: Understanding and perceptions of online targeted advertising

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1 ABSTRACT

This user study aimed to investigate people's attitudes, perceptions, and behaviours regarding online behavioural advertising (OBA) as an emerging form of advertising with growing privacy-related concerns. The study was conducted using survey and interview methodology to answer key research questions regarding the nature of participants' perceptions, aspects that may shape these perceptions, and how they consequently influence privacy-related behaviour. Results indicated a divide in participant responses regarding the importance and concerns over OBA privacy violations, technical understandings of how OBAs function, and users' behaviours in interacting with them. This points to the complex nature of OBAs as a part of the current online environment.

2 INTRODUCTION

While commercial advertising has existed throughout history, online behavioural advertising (OBA) is a relatively new method of advertising. This form of advertising involves tracking users' online activities to deliver ads targeted to their inferred interests [5].

To the advertiser, this offers an unprecedented degree of efficiency in ensuring their ads are delivered directly to their target market, vastly increasing their return on investment. To the end-user, this results in a highly targeted and curated ad experience that takes their personal interests, demographic background, previous web browsing and purchasing history (among other aspects) into account.

As OBA has evolved, its ethical and privacy implications have sparked concern within public discourse. OBAs are largely delivered over social media platforms such as Facebook and its 2.9 billion wide user-base [3], which further complicates ethical privacy concerns. Infamously, Facebook came under public scrutiny during the contentious 2016 US presidential elections when Cambridge Analytica misused a Facebook API, allowing political actors to collect information from users to target political ads [1].

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Accurate information regarding OBAs and the ways that online platforms implement them are often convoluted and opaque. This can result in serious implications regarding users' informed consent to allowing their personal information (PI) to be mis/handled. However, from the end-users' perspective, privacy decisions may be incredibly subjective. What makes one person uncomfortable may not register as an issue to another, be it due to confusion/lack of awareness, dis/interest, or dis/trust in platforms that deliver OBAs. This user study aimed to better understand people's personal perceptions and behaviours when engaging with OBAs. We therefore outline three research questions:

(Q1) What are people's attitudes towards online behavioural advertising?

(Q2) Why do they hold those attitudes?

(Q3) How do their attitudes affect their online behaviour and privacy decisions?

To address these questions, we developed and conducted a user study consisting of a survey followed by an interview session conducted by the researchers.

3 METHODS

3.1 Participants

The study sample consisted of 8 participants (4 male, 3 female, 1 non-binary), between the ages of 18 - 34, with varying occupations (Figure 1). On a scale of 0 - 10 regarding their level of understanding of OBAs, 1 being below average and 10 being above average, the sample self-described as mostly above average ($M = 6.25$, $SD = 1.09$; Figure 2).

What is your occupation or field of study?

Occupation: Decision Specialist, FoS: Sociology

Data Analyst/Engineer in Renewable energy

Robotics Engineering

Research

Technician/ technologist (biomedical)

Computer Science

Softwares Engineer

Master's student in Computing

Fig. 1. Participant occupations.

Q3 - On a scale of 1 to 10, please rate your level of understanding regarding online behavioural advertising.

#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	1	5.00	8.00	6.25	1.09	1.19	8

Fig. 2. Participants' level of understanding regarding OBAs.

3.2 Materials and Design

3.2.1 Survey. The study included a 16-item, structured survey containing basic demographic items, and items on participants' perceptions and experiences with OBAs. It was constructed and administered online using Qualtrics (see Section 4.1 for survey questions, or click [here](#) to preview the Qualtrics survey). It began with a study information letter, followed by a consent form. Participants could only progress to the survey if they consented to participate.

3.2.2 Interview. The interviews followed a semi-structured format consisting of 6 questions on participants' perceptions and experiences with OBAs, supported by follow-up prompts if needed (see Section 7: Appendix, Figure 14 for full interview guide). Interview sessions were approximately 20-minutes long and conducted using Zoom video call, or in-person. Sessions were recorded using Zoom's recording feature, or Google Recorder using a smartphone. Audio recordings were transcribed using Trint transcription software or Google Recorder's in-built transcription feature.

3.3 Procedure

Participants were sent a link to the Qualtrics survey 10 minutes prior to each scheduled interview, which they were instructed to complete before the start of the interview sessions. A Zoom link was also shared (if the interview was conducted remotely).

Interview sessions started with describing the aim of the study ("The purpose of this study is to understand people's level of understanding and perceptions of online behavioural advertising"). Participants were informed about the approximate duration of the interview and answered any clarifying questions, after which the researcher started the recording and began the interview.

Once participants had completed the interview and clarified any additional questions with the researcher, the recording was stopped and participants were thanked for their time.

3.4 Analysis

Survey results were summarized and graphed using Qualtrics' 'summary report' feature to obtain overall trends in responses.

Researchers conducted a rudimentary thematic analysis of the interviews (responses were not coded) by discussing any patterns or outliers that emerged in the responses; four key themes were created to categorize the responses.

4 RESULTS

4.1 Survey

The 16-item survey questions encapsulated four general topics: aspects of targeted ads, use of online personal information, payment for online services/platforms, and OBA regulations.

4.1.1 Aspects of Targeted Ads. The three items in this group and their results were as follows:

I prefer to see online advertisements that are targeted to my personal interests (based on my behavioural data), rather than generalized advertisements such as TV commercials, magazine ads, billboards, etc.

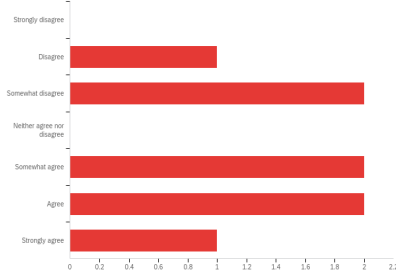


Fig. 3. Preference for OBAs over general ads.

How relevant are the advertisements you typically see online?

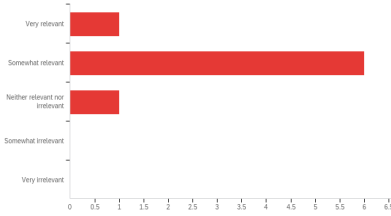


Fig. 4. Relevance of advertisements.

Have you ever taken any of the following measures to influence your online ad experience? Please select all that apply.

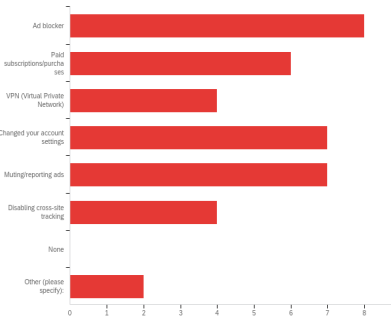


Fig. 5. Measures to influence ad experience.

Unlike any other survey-item results, responses on preference for OBAs over general ads (Figure 3) followed a roughly bi-modal distribution; 3 participants endorsed preference for general ads, while 5 endorsed preference for OBAs. Regarding relevance of advertisements (Figure 4), responses largely indicated ads to be ‘very relevant’ or ‘somewhat relevant.’ Regarding measures used to influence participants’ ad experience (Figure 5), every participant reported using an ad blocker. Two participants listed additional methods (“browser with integrated ad blocking (Brave)” and “purposely given false personal information to avoid the collection of sensitive data”).

4.1.2 *Use of Personal Information (PI)*. The four items in this group and their results were as follows:

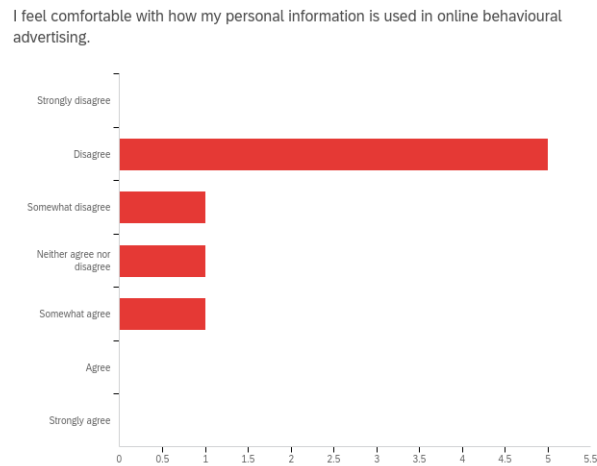


Fig. 6. Comfort with the use of PI in OBAs.

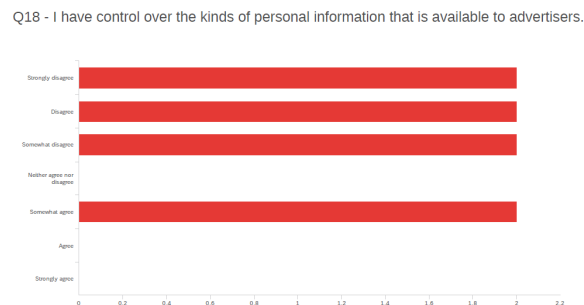


Fig. 7. Sense of control over access to PI.

Have you ever tried to view the lists of your of personal interests that an online service/platform collects in order to target advertisements at you?

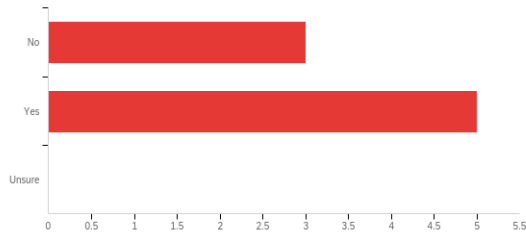


Fig. 8. Viewing personal ad profiles.

How accurate did you find the listed interests?

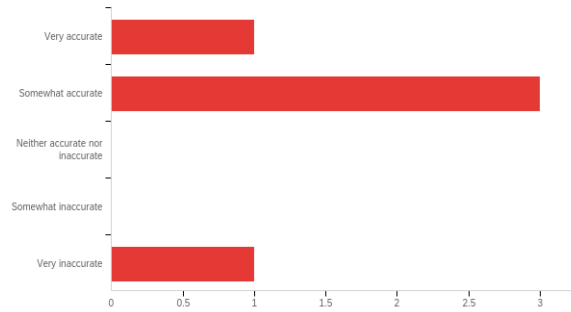


Fig. 9. Accuracy of ad profiles.

Regarding comfort with the use of PI in OBIs (Figure 6), participants largely disagreed. Only 1 participant agreed that they were comfortable with how their personal information was used in OBAs; others were neutral or disagreed. Regarding participants' sense of control over advertisers' access to their PI (Figure 7), 2 'somewhat agreed' in indicating some amount of control, while others largely disagreed. 5 participants reported having viewed their personal ad profiles (i.e. lists of PI tags used to target ads; Figure 8); only 1 indicated them to be 'very inaccurate' (Figure 9).

4.1.3 *Payment for Online Platforms/Services.* The two items in this group and their results were as follows:

When using an online platform or service, I would prefer to see ads while using the platform/service than to pay for it.

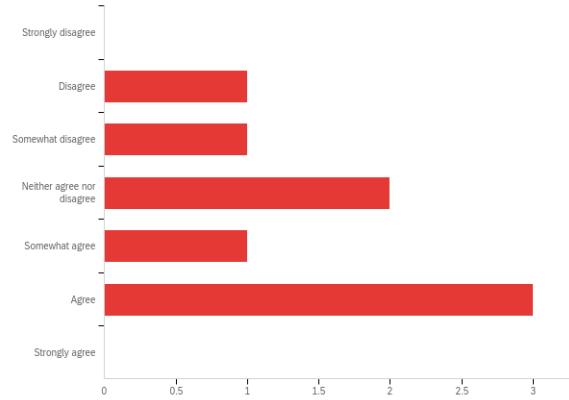


Fig. 10. Preference to view ads over paying for platform/service.

I would prefer that a platform/service collect my personal information than pay to access the it.

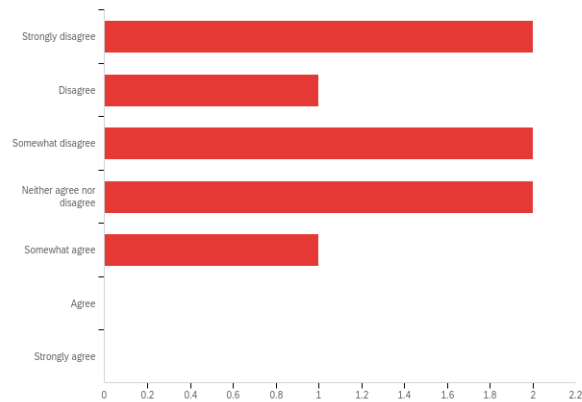


Fig. 11. Preference for PI collection over paying for platform/service.

Responses regarding preference to view ads while using an online platform/service rather than paying to use (Figure 10), 4 'agreed' or 'somewhat agreed,' while 2 'neither agreed nor disagreed.' Interestingly however, regarding preference for the collection of PI rather than paying to access a platform/service (Figure 11), participants largely disagreed.

4.1.4 *OBA Regulation.* The two items in this group and their results were as follows:

Q13 - Online advertising is sufficiently regulated to protect people's personal information.

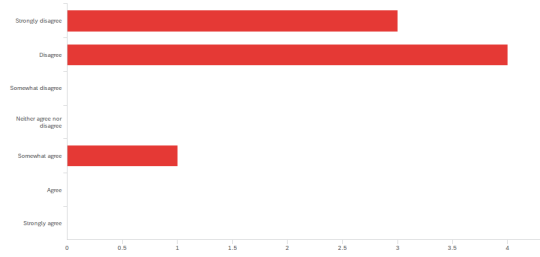


Fig. 12. Sufficient regulation of PI.

Q17 - Which of the following policies are you familiar with? Please select all that apply.

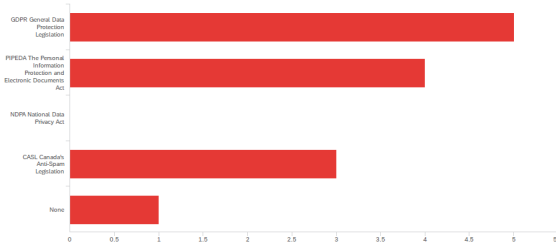


Fig. 13. Familiarity of PI protection policies.

Participants largely disagreed regarding the sufficient regulation of PI (Figure 12). The item regarding familiarity with the list of policies contained one fake item (NDPA) to detect potential demand characteristics (Figure 13). 1 participant was not familiar with any, 5 were familiar with GDPR, 4 with PIPEDA, and 3 with CASL. Nobody selected the fake policy option.

4.2 Interviews

Four themes emerged in the interviews conducted:

4.2.1 Theme 1: Importance of Privacy as a Personal Value.

The interviews were somewhat divided regarding concerns on violations of personal privacy for the purposes of OBAs. While some participants expressed deep concerns regarding the importance of online privacy, others were neutral or less concerned (e.g., P2: “I’m honestly not that concerned about tracking”). One participant in particular (P4) described privacy and the right to anonymity as a “central value,” and expressed desire for a more egalitarian Internet. Importantly, they view “the move for more privacy, more anonymity...in direct conflict with the interests of

advertisers.” The collection of users’ PI is described as “unpaid labour” that should be “fairly compensated.” In particular, P4 reminisced about an earlier, less centralized era of the Internet (early 2000s), after which they describe having to increasingly put in more effort to “keep a level of privacy that I’m happy with.” P5 and P8 also expressed similar concerns about discomfort with the inability to avoid privacy violations, not wanting their entire lives to be accessible online.

4.2.2 Theme 2: Perceptions of Targeted Ads.

Perceptions regarding targeted ads were similarly divided; while some perceived them in a positive light or “useful,” others perceived them more negatively, as “creepy,” “invasive” or harmful (e.g. P5: “...I feel like there must be some scary precedence even for undocumented immigrants...”). Regarding positive perceptions, P2 described liking Facebook ads in particular, and finds them “super interesting... I’ve gotten something out of them.” P3 similarly described practical aspects in terms of ads providing a method to access services they were previously unafford paying for to access.

However, P4 described this idea of providing PI for targeted ads in exchange for access to websites as “especially egregious.” OBAs were described as “coercive,” “encouraging impulsivity,” and “shaping human behaviour.” Interestingly, P5 and P7 characterized their own behaviours in this way when interacting with OBAs; as a “slippery slope to buying things you don’t need,” and “feeling like a rodent with a button” when making online purchases.

4.2.3 Theme 3: Technical understanding.

There was also a divide in our participants when it came to their understanding of data collection. Surveillance of text or audio conversations was a common fear amongst participants, particularly with the idea that “my phone is listening to me”. However, some participants believed that this was a misconception about OBAs (e.g. P1: “I know lots of people think that their phone is listening to them, but from my understanding, that’s not how it works”).

This divide was also present in the resulting consequences of OBAs. The most common concerns amongst participants were that personally identifying information was easily accessible, along with concerns of cross-site tracking of their PI. Conversely, some participants identified a greater concern regarding the impact of data collection on communities/marginalized groups, and suggested that it would be difficult and pointless to identify individuals using OBA targeting data sets.

4.2.4 Theme 4: Ad-related/privacy behaviours.

Regarding specific privacy behaviours, patterns emerged referencing malicious engagement (i.e. protest behaviours), and ad-influencing behaviours. Curiously, participants in the former had negative perceptions of OBAs, but instead of efforts to restrict them, described engaging in protest behaviours to “throw things off balance.” P5 described falsifying or using fake data when they could not disable cookies, and P6 described that when tagging people in photos on social media, they “often tag people, but to the wrong people.”

Other participants engaged in ad-influencing behaviour and spoke more to a desire to curate the advertisements they encounter, either to restrict/eliminate or to enhance. With restricting, most wished to avoid annoying ads (e.g. auto-play videos) using ad-blockers, or tweaked settings/site preferences to mitigate the occurrence of ads. A small set of participants wished to see ads that they deemed useful and selectively permitted ads on certain platforms that they deemed “better” at accurately targeting ads.

5 DISCUSSION

5.0.1 Study and results.

The survey results primarily addressed our first research question; i.e. what are people's attitudes towards online behavioural advertising? The survey responses largely seemed to trend in one general direction for most items, expressing general agreement between participants. However, some interesting contradictory results did emerge. In particular, responses were roughly divided regarding the preference for OBAs over general ads. Upon conducting the interviews, it was found that participants' attitudes were not in fact as homogeneous as the survey suggested. In particular, while some participants did prefer OBAs over general ads, this was not necessarily an enthusiastic endorsement, but seen more as a "last resort" attitude if they could not avoid ads entirely.

On the other hand, interview results addressed the "how" and "why" aspects of the research questions in explaining privacy attitudes. In general, the most striking part of the results is the contradiction both between and within participants' attitudes and behaviors. The Privacy Paradox refers to a phenomenon where people state concerns related to their privacy online but their behaviors do not demonstrate any effort to ameliorate the situation [2].

Interestingly, P5 and P8 described awareness of this paradox in their desire for privacy and their behaviours, which they described as "hypocrisy" (P5: "I can't pretend to clutch my pearls about that when I willingly have social media").

Some participants engaged in protest behaviours rather than choosing to simply restrict OBAs. This is a fascinating - but apparently uncommon - deviation from the expected behavior associated with concerned users in the privacy paradox narrative. Future work should try to understand these behaviours and deepen our understanding of why they are carried out.

Additionally, of the participants who were uncomfortable with OBAs, the overarching fear seemed to be that individuals could suffer personal consequences due to data collection. Floridi made a point of identifying that the key to improving everyone's data privacy is to re-frame the focus on individual privacy. Rather, privacy issues are in fact communal issues [4]. Unfortunately, our study seems to indicate that many people have yet to break from the individualized model of data privacy.

5.0.2 Research process.

With respect to the survey item on policy awareness (Figure), there seemed to be a disconnect between survey and interview responses. Possible reasons include demand effects and searching up the policies to answer the survey item, or vague wording of the item that did not differentiate between mere recognition, and a deeper understanding of the policies (the latter of which was our aim to capture). It would be prudent to include a follow up question wherein participants can further detail what they know about the policies.

Another improvement could have come from conducting our interviews as a pair. Due to the temporal and logistical constraint of the project we decided it would be best to agree on a script and conduct our interviews independently. As Max's first time conducting an academic research interview, he was more rigid than necessary in terms of strictly adhering to the script. Kazma was more proficient in conducting the interview, but believes that there may have been some demand characteristics at play. The participants in her interviews were familiar with her personal views on privacy and OBAs, and believes that responses may have been consequently tailored. In the future it would be prudent to have multiple interviewers present for consistency between interviews, and/or recruiting an unbiased sample.

6 CONCLUSION

This user study on privacy-related perceptions, attitudes, and behaviours regarding OBAs drew upon a number of key insights. Largely, the interviews suggested an intriguing division in privacy-related concerns and perceptions, which was not directly captured through the survey. Additionally, results seem to suggest that the privacy paradox still seems to hold true. Importantly, the results of this study have sparked additional research questions for further investigating, in particular on the paradoxical notion of privacy protest behaviours.

7 APPENDIX

Interview

1. In your opinion, what are some of the positive and negative aspects of online behavioural advertising?
 - a. Prompt: Are these different from traditional advertisements?
2. How do you think websites collect data about you?
 - a. Prompt: What information do you think is collected, who is collecting in and how is it shared?
3. Why have you taken the steps you have to avoid online behavioural advertising? / Why haven't you taken any steps to avoid online behavioural advertising
 - a. Prompt: if mentions of restricting ads, ask if the issue is more with seeing ads, or with the personal information collection
4. What types of personal information are you comfortable with giving a site access to in order to use the site? (i.e. name, location, search history, purchase history)
 - a. Prompt: Why are you uncomfortable with sharing certain information over others?
5. Can you describe a time when ads you were being shown seemed "invasive" in terms of what they appeared to know about you?
 - a. Prompt: Can you describe a time when ads seemed to know about someone you're close to?
 - b. Prompt: Which makes you most uncomfortable, why?
6. Do you have any other thoughts/feelings/concerns about online behavioural advertising that we haven't touched upon yet?

Fig. 14. Study interview guide.

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