

CS 564 Case Study Report

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Executive summary

1. Research question	Research Question 1: What effect do advertisements have on a user's reading experience of the website article? Research Question 2: Do web advertisements affect users' desire to buy?
2. Propositions	Proposition 1: Will the website layouts affect the ads' effect? (What website layouts are the best for effective advertisements?) Proposition 2: Does the relevancy of a web ad to the website it is displayed on affect how likely a user stops or clicks on it? If so, how? Proposition 3: How do users react when an ad is obtrusive to them reading their article?
3. Units of analysis.	Each student we observe will be their unit of analysis.
4. Type of case study	1. Exploratory 2. Single Embedded Case Study
5. Data collected.	1. Three observations based on roommates of group members. 2. Four interviews based on roommates of group members.
6. Code Set Origins	We choose to use the hypothetical model designed by Johye Hwang and others [1] based on Figure 1.

I. Introduction

In daily life, people browse many web pages every day, and correspondingly, they will also be exposed to a large number of advertisements on the web pages. According to the paper “Structural effects of cognitive and affective responses to web advertisements, website and brand attitudes, and purchase intentions: The case of casual-dining restaurants” written by Johye Hwang, Yoo-Shik Yoon, and No-Hyeun Park in 2011. The authors said that “Internet advertising is one kind of digital advertisement that has become an effective means of marketing communication because Internet access is widespread, and the number of users continues to grow.” [1]. We are curious about how people will react to the adverts that keep appearing when they browse different websites and how they will affect the websites, the users themselves, and the advertised products. To obtain those answers, we start our research.

According to the paper, the authors considered that “ Because electronic commerce applications, such as online advertising, have become a general and dominant business model [2], it is important to understand how customers perceive or react to web advertising and what components affect their attitudes and behaviors toward products and services advertised online.” [1] Then, to better get the answers we thought of, we summarized the research questions and propositions that make our research have more specific data and information. It can help us more directly analyze the data information we need.

1. The relationship between Research Question(s) and Proposition(s):

a. Research Question 1: What effect do advertisements have on a user’s reading experience of the website article?

i. Proposition(s):

- 1) Will the website layouts affect the ads’ effect? (What website layouts are the best for effective advertisements?)
- 2) How do users react when an ad is obtrusive to them reading their article?

b. Research Question 2: Do web advertisements affect users’ desire to buy?

i. Proposition(s):

- 1) Will the website layouts affect the ads’ effect? (What website layouts are the best for effective advertisements?)
- 2) Does the relevancy of a web ad to the website it is displayed on affect how likely a user stops or clicks on it? If so, how?

For the first research questions, we will answer the information about the impact of advertising on the user’s reading experience. Then we divided more details into propositions. In the propositions, we tried to figure out if the website will affect the advertisements. For example, When an advertisement impacts users, is it the reason for the layout of the website, such as there are a large number of places placed by advertisements on a web page. What is more, we detailed the users’ reactions. We tried to focus on one of the user’s responses.

Regarding the second research question, we think the first proposition (Will the website layouts affect the ads’ effect?) still have some influence in this research question. Then, we have studied advertisements’ specific effects and whether the advertisements on the web page will purchase related products together. We then provided a possible influencing factor as proposed in the proposal and studied it according to this conjecture to see what impact will be caused.

II. Methods and case study design

1. Describe the “Case”

The primary situation we studied this time is whether users will be affected by web page advertisements when browsing the web (including reading experience, desire to buy, etc.).

Besides, due to the impact of Covid-19, we chose to use the roommates of group members as observation objects and interview objects to collect necessary data.

2. Research Question(s) and Proposition(s)

a. Research Question(s):

- i. **Research Question 1:** What effect do advertisements have on a user’s reading experience of the website article?
- ii. **Research Question 2:** Do web advertisements affect users' desire to buy?

b. Proposition(s):

- i. **Proposition 1:** Will the website layouts affect the ads’ effect? (What website layouts are the best for effective advertisements?)
- ii. **Proposition 2:** Does the relevancy of a web ad to the website it is displayed on affect how likely a user stops or clicks on it? If so, how?
- iii. **Proposition 3:** How do users react when an ad is obtrusive to them reading their article?

3. Logic tying your data to your research questions

a. The Figure 1 shows the how data connects to the RQs & Propositions.

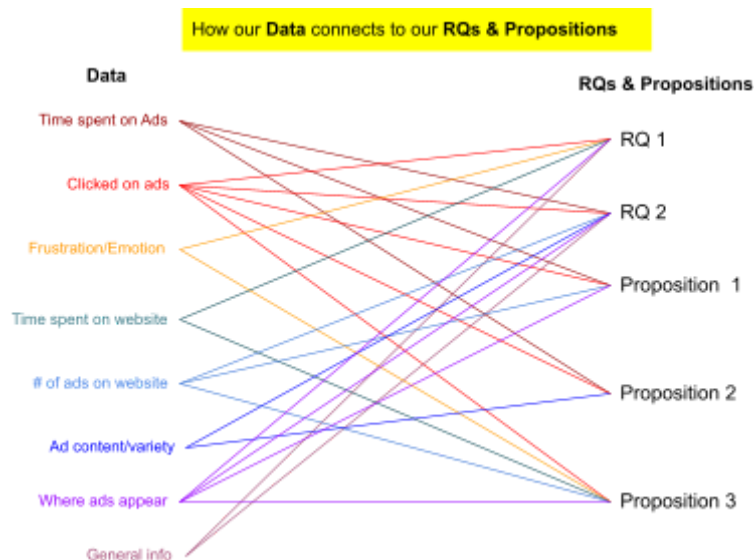


Figure 1: How data connects to the RQs & Propositions

(Note: The brief description of each data can be found in Part b of "5. Detail what data you collected and your procedures for collecting it")

b. The Figure 2 shows how the Code set connects to the RQs & Propositions.

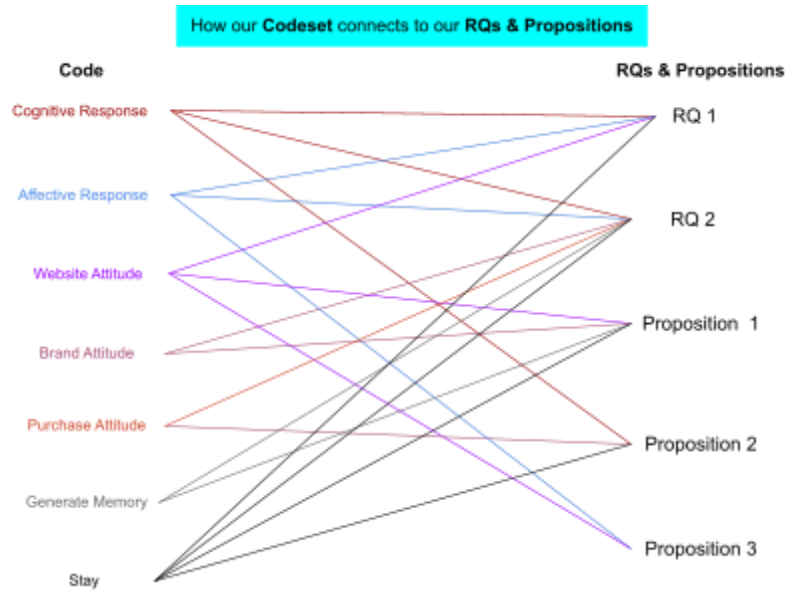


Figure 2: How the codeset connects to the RQs & Propositions

c. The Figure 3 shows the logic model that we propose.

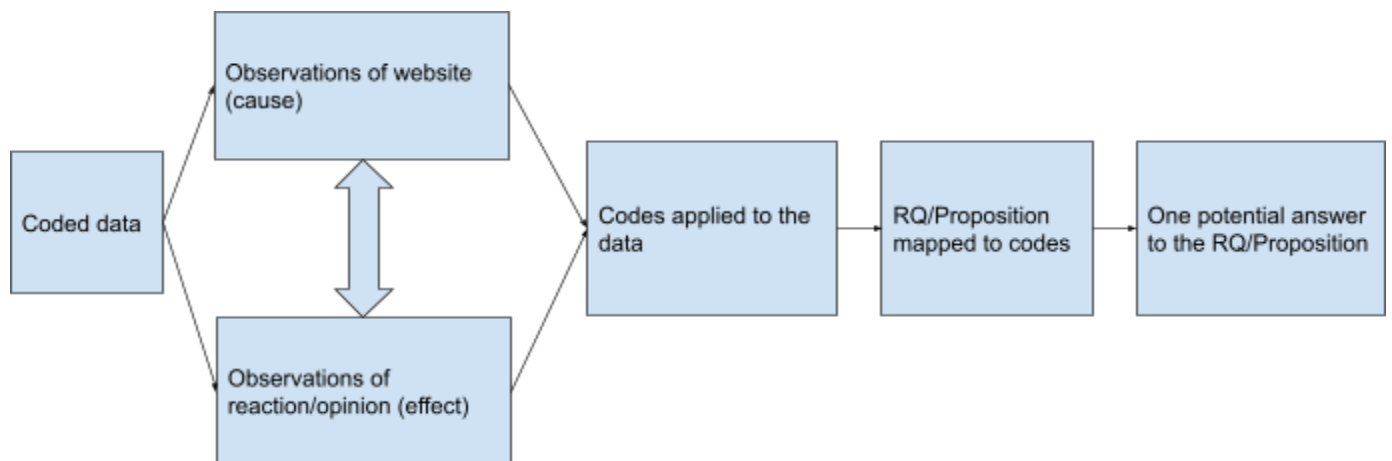


Figure 3: The logic model

d. Additional explanation:

- i. As mentioned in the Introduction, the two research questions can lead to different propositions. Among them, Research Question 1 is related to Proposition 1 & 3, and Research Question 2 is related to Proposition 1 & 2.
- ii. Regarding the first research question, the proposition of question 1 conducts a more detailed study of question 1. We mainly focus on the influence of website layout on the reading experience and the influence on the effect of advertising. What is more, we also recorded the specific reactions of users when their reading experience was affected. So that we can summarize what impact different types of advertisements will have on users. Then, according to those data to have a possible answer.
- iii. For the second research question, the first proposition (Will the website layouts affect the ads' effect?) still has some influence in this research question. Because the impact here might change the user's desire to buy. Then, we provide a possible influencing factor in the proposition. And according to our data to have a potential answer.

4. Detail the units of analysis

Regarding the current environmental impact, we chose to set the units of analysis (Users who browse the web) to each student we observe.

5. Detail what data you collected and your procedures for collecting it

a. Date to be collected:

- i. Observe the users browsing the web directly, such as observing the user's browsing status, facial expressions, and reactions when facing advertisements, etc.
- ii. Record the abnormal state (such as anxiousness, surprise, etc.) of the user while browsing the web, record the web page's content, and the name of the advertisements (such as YouTube, Best Buy, etc.) that caused the user to produce such state.
- iii. Semi-structured interviews with users were included in the study (records of interviews are shown in the Appendix section). The purpose of semi-structured interviews is based on Observation to understand further users' actual impact on web advertisements (such as efficiency, etc.) while browsing the web.

(Note 1: The accessible links of all interview records are displayed in the Appendix section → Part 1)

(Note 2: The main semi-structured interview questions are manifested in the Appendix section → Part 2)

b. Brief description of the data collected:

- i. The time that different students spend on ads.

- 1) See if they stop on the ad, and take note if they stop on the ad for an exceptionally long time.
- ii. When they click on ads (do they ever accidentally click on ads).
 - 1) If they immediately go back from the page, it was likely an accident (but we can ask them if unsure).
- iii. Any visible frustration (or other emotion) they may experience.
 - 1) We will create a list of emotions (like happy, frustrated, neutral) and note if they are visibly any of those. We can also ask them how they feel if we are unsure.
- iv. How long they spend on the website.
 - 1) Do they immediately click off the website after coming across an ad? Do they tend to spend more time on websites with fewer ads?
- v. How many ads there are on that website.
 - 1) Count the number; how much of the page are advertisements compared to the content of the website?
- vi. What kind of ads appear?
 - 1) Create a list of keywords that describe the ad and compare them with the keywords of the website.
- vii. Where the ads appear on the web page.
 - 1) How is the website laid out overall? Where are the ads? Are they embedded into the article, in the end, off to the side, etc?
- viii. General information about the user and the setting.
 - 1) What does the user look like, where are they browsing the web, what time of day, where are they.

6. The database structure

We conducted two data collection methods, observations, and interviews. The observation data is the notes written by our teammates during the inspection. And we record the interview videos and write the script down to be our data. Thus, the structure table (Table 1) is given below:

Resource	Type
Notes of observations	Text
Interview	Text & Audio/Video record

Table 1: The structure table

(Note: Links to all collected data resources are displayed in the Appendix section)

7. Segmentation

a. Segment ideas:

- i. Due to the current impact of the COVID-19 pandemic, our main data sources are the records of face-to-face interviews and observations with roommates conducted by three group members, which recorded the participants' facial expressions and body movements while browsing the web, and also recorded the participants' personal views on the advertisements displayed on the webpage, etc. Besides, the reason for choosing roommates as survey subjects is that roommates are easier to observe and get the data we need.

In addition, our interview records are presented in text/audio/video forms. Therefore, in order to form a complete data record, we made segments based on the written text recorded by the observation results and the audio/video content recorded by the interviewer during the interview (Note: mainly contains the participants' answers to the questions raised by the interviewer). Each sentence of the participant's answer was broken into its own code. In addition, there are a series of facial expressions and body movements in the segmentations. The purpose of the above is to match the "Codes" (Table 3). Among them, the "Codes" in Table 3 are derived from a hypothetical model designed by Johye Hwang and others [1].

b. The segment excerpt:

- i. Table 2 shows part of the data excerpt from the Interview 1:

Example: Part of the data excerpt from the Interview 1

Z: Zehao Du

R: Roommate (Jimmy)

Z: Ok, do you always watch websites?

R: Not too much, cause I only browse the website when I need to search for some information or some resources.

Z: Ok, so you know we just browse some websites right? What do you feel about those websites and advertisements?

R: For me, umm... I don't like any of the advertisements, but those websites I think the greatest one is that there's a video on the website that can focus, ummm... I mean force yourself to watch the advertisement. I think that is a good one but I don't like it. Because I don't like any advertisements.

Z: Yes, you mean you prefer the website has no advertisements, right?

R: Yeal, but.

Z: But still with some advertisements like pop up one which can catch your attention, a good one, but not...

R: Yes, yes, yes... ummm, that's a good one, but I don't like it.

Z: Ok, cool, thank you. And do you have any experience like after you watching some advertisements? You like, oh, maybe you want it, I will buy it.

R: You mean from the websites? no, ummm... cause I don't... I just buy what I want. I don't think I will buy something after I browse some other ads.

Z: So you mean advertisements can not have any influence on you?

R: Yeal, for me, yes.

Table 2: Part of the data excerpt from the Interview 1

c. Spreadsheet:

- i. The link of the spreadsheet is shown in the Appendix section → Part 3.

8. Code set origins and rationale

We choose to use the hypothetical model designed by Johye Hwang and others [1] based on Figure 4. The model is mainly divided into five parts: Cognitive Response; Affective Response; Website Attitude; Brand Attitude and Purchase Intention, which are used to judge the user's advertisement when browsing the web. The effect (such as whether it affects the user's desire to buy, etc.) and the user's emotional response when the advertisement appears. In addition, since we are interested in whether web advertisements affect users' reading experience, we also pay attention to the authenticity of the advertisement content, positive/negative feelings, and other factors.

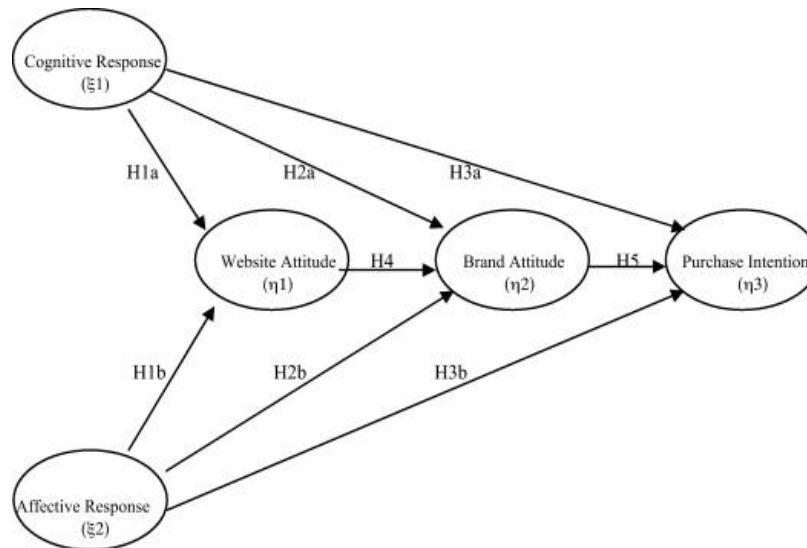


Figure 4: The hypothetical model designed by Johye Hwang and others [1]

In addition, based on the above hypothetical model, we found a problem. Johye Hwang and others [1] did not record whether users are willing to view the content of the advertisement and stay on the advertisement interface and whether they can remember the general ad content at the beginning of the design. Therefore, on the basis of the codeset provided by Johye, we added two codes "Generate memory" and "Stay" to improve the quality and logic of our research.

9. Code set

a. The Code set (Table 3) we used is as follows

Code	Description & Rule	Examples
Cognitive Response	Users' views on the content of web advertisements. In the sentence, also including the user's positive/negative feedback on advertising) and the mention of the advertisement in the sentence is related to the information on the web page.	This extract from our data: "Q: According to the observation before you said the North Storm one, it's good because you don't think there are any ads, right? A: Maybe there are some ads that I didn't. ummm... I didn't recognize that it is an ad, I think that's good because you don't think that is an ad but that is an ad."
Affective Response	Whether users will have any emotional reactions when they close the website or browse the web when they encounter an advertisement (Note: Some "broad" adjectives cannot represent any emotional changes the user has made to the advertisement, such as good).	This extract from our data: "More and more ads pop up. (after three websites) He looked a little impatient."
Website attitude	The user's impression of the webpage they browsed (although there may be some ads). Including the layouts or tools of ads. The sentence may also cover what the user wants from the web page or accomplish its purpose.	This extract from our data: "There will be more or less inconvenience. However, as long as it is not too much, I think it will be fine."
Brand attitude	Describe the user's impression of the brand in the ad. The sentence should include the brand name or any other type of product derivatives.	This extract from our data: "He thinks "Best Buy" is reassuring when buying household appliances."
Purchase intention	Describe whether users will be	This extract from our data:

	attracted by advertisements to buy when they browse the web. (Note: Users may mention any product-related events in the sentence, such as future purchase ideas.)	“My roommate asked whether want to eat some after viewing the fast food advertisement, he feels that the above product looks good.”
Generate memory	After browsing the ads (not ignoring), whether the user can remember the content or other details of the advertisements encountered while browsing the web. In the sentence, the user needs to have clear feedback showing that he/she has an impression of an advertisement, etc.	This extract from our data: “Not really, but I remember it is about Microsoft.”
Stay	Describe whether the user will choose to view the ad content or choose to close the ad directly when browsing the web. Besides, it emphasizes that the user may have any actions to stay or choose to leave in the sentence.	This extract from our data: “If ads are shown in an interesting way (like a funny joke) or he is interested in the product (such a game), he will finish the ad.”

Table 3: The Code Set

III. Results section(s)

We were able to generate several hypotheses about each of our propositions that would be worth further investigating. Most of these hypotheses were single instances where a particular factor played an important role in the research question or proposition being studied. None of them can be generalized, however, they can be used to form a list of factors that merit further investigation.

1. **Proposition 1: Will the website layouts affect the ads' effect? (What website layouts are the best for effective advertisements?)**

a. **Hypothesis 1: Websites that use lots of Pop-up and Embedded ads are particularly effective at catching a reader's attention.**

- i. In data segments 156-160 we found that a user that ignored almost all ads while browsing had their thinking interrupted by an Embedded ad, and a pop-up ad.

I.e.

- 1) I will just ignore it, emmm... and maybe close it if I can. **(Row #157)**
- 2) because these two types of form can interrupt my reading experience. **(Row #159)**

Embedded ads and pop-up ads seem to be more intrusive and better at catching a reader's attention. These kinds of ads should be further investigated to see if they are more eye-catching to other people as well.

b. **Hypothesis 2: In websites where users are required to view timed advertisements, users typically watch the ads for the required time (instead of leaving the site).**

- i. In data segments 27-36 and 48-51 we found that one participant always watched timed video ads if they were required for them to use/view the website they were on.

I.e.

- 1) it will pop up a 30 seconds video ad and you have to watch it to get your citation. **(Row #29)**
- 2) he will basically finish watching those ads. **(Row #30)**
- 3) For me, umm... I don't like any of the advertisements, but those websites I think the greatest one is that there's a video on the website that can focus, ummm... I mean force yourself to watch the ads. **(Row #49)**

One of these websites was a citation machine where a 30 second video ad would play before the user could get their citation. The participant did not appear to be positive towards the ads. However, these were the only ads they seemed to

notice. They watched the videos, and then proceeded to do what they came on the site to do.

c. Hypothesis 3: Even though a website layout might affect how many ads the user has to look at and for how long, they do not affect the participant's opinion of those ads, or their likelihood to click on the ads.

- i. The participants explored in the previous 2 hypotheses, as well as the participants in data segments 126-137, all noticed some ad layouts more than others, however, they always seemed to be negative reactions or a neutral reaction.

I.e.

- 1) Q: So after watching those websites and ads, what is your feeling now, do you have any change? A: I feel normal, because those websites that I always watch, so I feel normal. **(Row #126)**
- 2) Q: So what is your feeling about ads? A: I'm feeling ok, emmm... I just screw the website, I will, emmm... I will skip these ads. **(Row #129)**

The latter participant talked about a few different web ad layouts, however, they seemed to notice them only when the ads were annoying to them. The only ads they seemed positive about were based on their content when the ads were unobtrusive. For example the participant in data segments 126-137 liked a graphics card ad that was not one of the timed ads, but was frustrated by the more intrusive ads. We seem to have 2 opposing hypotheses here, first that intrusive ads catch the user's attention and therefore are effective, and second, that these kinds of ads leave a negative impression and therefore are not effective. To fully investigate this hypothesis, and those above, it would be necessary to see if ads that annoy users are effective just because they catch the user's attention, or if it is not worth the negative impression they leave on a user.

d. Questions that seem to be important in further investigating proposition 1:

- i. Are Pop-up ads, Embedded ads, and Timed ads better at catching user's attention than static ads.
- ii. Is an ad layout that frustrates a user effective, or not?

2. Proposition 2: Does the relevancy of a web ad to the website it is displayed on affect how likely a user stops or clicks on it? If so, how?

- a. **Hypothesis 1: Ads that are relevant to the website they are on are particularly effective when people are on a site looking to buy something and the ads they see are of similar products.**

- i. In data segments 161-167 the user went to a shopping website (Stockx) and saw ads. The participant seemed relatively positive about the website and the advertisements. They said the advertisements were not “boring”. While they did not click on the ads, they did notice one of the ads was a price drop. We saw this phenomenon again in data segments 57-59 when the user went to a Nordstrom website.

I.e.

- 1) I think it (ad) good for me, because it doesn't bore me to choose which shoes I like, which cloth I want to buy. **(Row #166)**
- 2) so, emmm... and also from the top, there are some deals or coupons I can choose, so I think it's good. **(Row #167)**
- 3) Q: According to the observation before you said the North Storm one, it's good because you don't think there are any ads, right? A: Maybe there are some ads that I didn't. ummm... I didn't recognize that it is an ad, I think that's good because you don't think that is an ad but that is an ad. **(Row #57)**

Here, the ads are so similar to the website's content that the participant actually becomes a little confused about which items are advertisements and which are the actual content of the website. However even when they resolve this confusion, they are still positive towards the ads. They even use the same words saying the ads on the site are not “boring”.

b. Hypothesis 2: If a user is already on a shopping site looking to buy something they are more likely to click on ads regardless of their relevance.

- i. It is unclear from data segments 161-168 and 57-59, whether the participants were more favorable towards the ads because they were already looking for products suggested by the ads, or if being on a shopping site made them more open to spending their money in general. If the latter is true then it matters less whether the ads have similar products to the shopping site and more the fact that the users are on a shopping site in general.

I.e.

- 1) Q: If the webpage you are interested in provides you with interesting ads, will you also feel bored? or whether it will attract your attention and make you want to buy some products it recommends. A: emmm... yeal, yeal,... probably not, because I only buy what I like. **(Row #168)**
- 2) I have my buying ideas, emmm... I may put the products recommended in the shopping cart, and compare the two products, to choose which one is better. **(Row #169)**
- 3) I don't think I will remember, but I will look through it because I don't think that it's an ad okay. ummm... Things that will not make me feel bored. **(Row #59)**

c. Questions that seem to be important in further investigating proposition 2:

- i. Do users find it helpful, or disruptive when they are shopping for something and are suggested ads of similar products?
- ii. Is a user more likely to click on ads when they are already thinking about buying something on the website they are on (regardless of the ad's relevancy to the site)?
- iii. Do users often confuse ads on a website with things the website is selling? Is this tactic effective at getting users to click on ads?

3. Proposition 3: How do users react when an ad is obtrusive to them reading their article?

a. Hypothesis: Users will always close ads as soon as possible, and they will always wait for the ad to allow them to close it, even if they are frustrated.

Ads typically do not force users off of websites, no matter how intrusive.

- i. In data segments 11-12, 91-97, 156-160, we saw users always closed the ads as soon as they could. Even in timed video ads such as in data segments 48-51 they watched the video to completion and/or closed the ad when they could. In this data segment they say they “focus” on the ad, then correct themselves to say they are “forced” to watch the ad. The ads clearly frustrate the users, however, none of them ever caused the users to leave the site. In data segments 156-160 they “ignored ads as much as possible,” and continued on browsing their website. We could not get very much data about advertisements that were so obtrusive that the participants could never eventually get to the content they were after. This is likely a very rare occurrence.

I.e.

- 1) the button to close the ad was too small, so he couldn't turn it off immediately. **(Row #11)**
- 2) His browsing speed is very fast, I can not fully record the advertisements. **(Row #91)**
- 3) Q: If there are many ads, I mean many ads, will you choose to briefly check their contents? A: I don't think I will. **(Row #156)**
- 4) I will just ignore it, emmm... and maybe close it if I can. **(Row #157)**

b. Questions that seem to be important in further investigating proposition 3:

- i. How long can timed ads be until users are no longer willing to sit through them to get to their desired content?
- ii. How many ads would a user be willing to close before they decide to leave a website?

4. Research Question 1: What effect do advertisements have on a user's reading experience of the website article?

a. Hypothesis: Ads seem to never be greater than minor distractions to reading a website.

- i. To answer this overall question we found the results we collected from proposition 3 as well as proposition 1 to be particularly helpful. However, we found the results to be somewhat mixed and uninteresting. On the one hand there were clear instances of users being annoyed by ads. Sometimes, ads such as pop-up, timed, and embedded ads distracted and frustrated users, however the users were never stopped from reading the content they wanted to read. For the most part users simply ignored ads when they could be ignored. These ads had little to no impact on the user's reading experience. From our data, we hypothesize that the overall effect ads have on the reading experience of users seems to be minor annoyances or distractions if there is any effect to begin with.

5. Research Question 2: Do web advertisements affect users' desire to buy?

a. Hypothesis: A user's reactions to and opinions of ads seem to be influenced by various factors of an ad and the site the ads are on, however if there is a change in desire to buy it is not a significant enough change to convince the user to buy the product immediately.

- i. In proposition 1 and 2 we found that some ad layouts were more effective at grabbing participant's attention, that there were some participants that were attracted to ads based on their content, and then some participants that liked ads on shopping sites. This seems to suggest that ads can have some impact on the user's desire to buy a product. However, it is still unclear whether a negative reaction to an ad can have a positive impact towards a user's desire to buy a product in the long run simply because the user noticed the ad. It is also unclear whether a user appearing favorable towards an ad, like some our participants seemed to be when they were on shopping sites and saw relevant ads actually would lead to an increase in desire to buy a product.

IV. Threats to validity

The study is required to do triangulation to increase the credibility of the result. One way to do this is to find a theorem to support our hypothesis. In this paper, we are trying to explore the theorem between web advertisements and users. However, it could be critical that we didn't find any theorem that can support our research questions and propositions. The reason that we don't find a theorem while creating the RQs and propositions is that we want to discuss the layouts and designs of the website. Most of the studies we found focus on the marketing field. To have better credibility, we might need to find more studies to support our result.

Our sampling bias is another potential threat to our validity. While our participants were fairly typical of website users, they were not varied enough to be representative of all people who experience web ads. We chose some of our roommates for this study because we could easily access them multiple times throughout the term, and would not have to go through video software like Zoom. However, that means all our participants were young male students at Oregon State University. This is a fairly narrow category and means, and we only had a handful of participants total. Some of the factors we thought were important and merited further study may only be relevant to the specific type of person that we chose for this study.

V. Conclusion

Digital advertising has now become ubiquitous content on various web pages. In 2020, the spending of digital advertising revenue in the United States has reached as much as \$ 356 billion and this number will amount to 460 billion U.S. dollars by 2024. The vast majority of websites provided freeing browsing advertising as a form of remuneration. According to the Statista survey, about 54% of websites leave a position in the website to provide commercial advertising services. Meanwhile, about 39% of commercial website provider services consider advertising services as the largest or even the only income. One thing is obvious, that is the number of advertisements delivered has reached a considerable amount [3]. The following question is how to improve the quality of advertisements and improve the advertisement's quality. The intent of this report is based on this question. We believe that an efficient advertisement must go through the following processes. The first is that users can notice the advertisement, which depends on the browsing website's layout. Second, if the browser sees the advertisement, the advertisement's content will increase readers' desire to purchase specific products. Based on this analysis, our research directions are focused on the layout of the advertisement on the website page and the efficiency of the advertisement itself.

Our results had some expected outcomes but also pointed us in a few directions we originally were not considering. Although we did not see instances of users clicking on ads, we were able to gain valuable information about how they perceived various kinds of ads. Intrusive ads, like pop-ups, embedded ads, and timed ads were frustrating to users, but they were the best at forcing the users to pay attention.

The content of the ad itself seemed to play a role in how favorable a participant's view of an ad was, with some topics interesting enough for the participants to remember ads. This phenomenon was especially true when they were on shopping sites. However, it is still unclear whether the ads need to be relevant to the shopping site, or if the fact that they are on a shopping site is the more important factor.

Finally, we found that most of the time ads do not affect the experience that participants had on their websites outside of minor annoyances and distractions. They were never forced off a website because of ads and always waited for an obtrusive ad to end and close it. They ignored ads as best as they could and sat through any ads that they were forced to.

After this study, it would be best to further test some of the hypotheses generated here in an explanatory study. For example, whether intrusive ads were in fact more effective, even when they frustrated users, if the change in perception of ads on shopping websites generalized to a wider user base or if it was a more singular occurrence, and finally the extent to which users were willing to sit through forced and intrusive ads to get to whatever content they came to a website for.

VI. References

- [1] J. Hwang, Y.-S. Yoon, and N.-H. Park, “Structural effects of cognitive and affective responses to web advertisements, website and brand attitudes, and purchase intentions: The case of casual-dining restaurants,” *International Journal of Hospitality Management*, vol. 30, no. 4, pp. 897–907, 2011.

- [2] K. Yang, “Internet Users' Attitudes Toward and Beliefs About Internet Advertising,” *Journal of International Consumer Marketing*, vol. 15, no. 4, pp. 43–65, 2003.

- [3] Statista Research Department, “U.S. digital advertising industry - statistics & facts,” Statista, 09-Feb-2021. [Online]. Available: <http://www.statista.com/topics/1176/online-advertising>. [Accessed: 15-Mar-2021].

VII. Appendix

1. Main data sources:

a. Three observations:

- i. Observation 1
 - 1) Text form record: [The text record of Observation 1](#)
- ii. Observation 2
 - 1) Text form record: [The text record of Observation 2](#)
- iii. Observation 3
 - 1) Text form record: [The text record of Observation 3](#)

b. Four interviews:

- i. Interview 1 → Recording time: 6:52
 - 1) Text form record: [The text record of Interview 1](#)
 - 2) Video/Audio record: [The audio record of Interview 1](#)
- ii. Interview 2 → Recording time: 1:56
 - 1) Text form record: [The text record of Interview 2](#)
 - 2) Video/Audio record: [The video record of Interview 2](#)
- iii. Interview 3 → Recording time: 8:06
 - 1) Text form record: [The text record of Interview 3](#)
 - 2) Video/Audio record: [The audio record of Interview 3](#)
- iv. Interview 4 → Recording time: 6:52
 - 1) Text form record: [The text record of Interview 4](#)
 - 2) Video/Audio record: [The audio record of Interview 4](#)

2. The semi-structured interview questions:

a. The main Semi-structured interview questions are shown in Table 4 below

(Note: there will be deviations in the actual interview process)

Q1: Do you always watch websites?

Q2: Do you have any experience after you watch some advertisements?

Q3: What do you feel about the websites and advertisements?

Q3.1: Do you have any negative impressions?

Q3.2: Do you have any positive impressions?

Q4: What is your reaction when there are some advertisements that already make you annoyed? When you read some articles?

Q5: When you see the advertisements on the web page, will you choose to check the content briefly?

Q6: Will you remember the content of the advertisements?

Q7: Which layout of advertisements do you think can best draw your attention?

Q8: If the webpage you are interested in provides you with interesting ads, will you also feel bored? Or whether it will attract your attention and make you want to buy some products it or recommends?

Table 4: The main Semi-structured interview questions

3. The spreadsheet of Segmentation & Coding:

- a. Link: [The link of Segment & Coding spreadsheet](#)