COOKIES IN ONLINE ADVERTISING AND THEIR IMPACT ON SHOPPING BEHAVIORS

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ABSTRACT

In this research paper, a novel study on the perception of the users regarding the role of cookies, online advertisements, and their impact on users' shopping behavior is conducted. Cookies are text files used to collect customers' information, especially by E-commerce websites, and for providing better services to online customers. The results of this research will provide online businesses an insight into online advertisements and how to target customers more effectively. This research presents that older people tend to perceive advertisements delivered to them as less relevant and therefore less effective in changing their online behavior.

Keywords: Cookies, Online Advertisement, Shopping Behavior

INTRODUCTION

Cookies are created by web servers through their exchange with clients' web browsers. E-commerce websites do this by tracking user's movements and clicks through their browsers from site to site; this data is then collected and put together to generate a personal advertisement for the user, which is why they are so important. Cookies are not just a delicious treat that everyone loves to consume, they are also used to track movements through web browsers. Cookies are web files that various companies store on a computer's hard drive, to track a users' movement from site to site to gather data about what a user has been searching for. All the users' behavior from clicking a link to searching a specific product or a news article on a website are stored. The data collected from these cookies is used in various ways. Companies curate personalized ads based on the data gathered from tracking a user's cookies. There is a way around this. Enabling a private browser is a good way to prevent your computer from gathering a history of your site visits, and therefore cookies become irrelevant. Typically, users do not enable a private browser, as it can be time-consuming and most individuals just want to shop for their favorite products. For those users that enable a private browser, usually on their mobile device, there is still a way that the cookies are used; and that way is through social media.

LITERATURE REVIEW

In the following paragraphs, a critical review of the past literature on the role of cookies in online advertisements is conducted.

Furger explains what cookies are and how they work in her article titled "Who's Watching You on the Web?". She published her article in the *Consumer Watch* journal back in 2000, when the Internet was just beginning to gain popularity and momentum. The Internet was new, and cookies were making their way into the world; because of this, not much was known on how effective and efficient cookies were. She poses many theories about cookies throughout the article. She states that the cookies are generated by third-party advertising companies that are hired by web browsers, such as Google or Bing, and various companies, especially E-commerce entities. Furger, also believes that cookies are invasive, and some people agree with her. However, she states that cookies, themselves, don't provide companies with personal information, such as name, age, email, and interests; this information is collected from the sites that are visited. She ultimately believes that it is up to the user to determine if they want their data shared and their privacy interrupted (Furger, 2000).

In Knox's article, "Social Media: Too Much of a Good Thing", from *Information Today*, she explains how information is collected for social media platforms through widgets that are placed on various websites. Usually, these widgets are seen at the bottom of the page. Widgets can track users' movement, behavior, and interests more easily than plain cookies; social networking widgets have made it easier to target direct consumers and produce ads that attract their attention. Just like cookies, to some users, widgets can seem invasive and gather their personal information. For users that want to keep their information private and disable the cookies, there are a few tools that can be used to control the information they provide. Disconnect Inc. provides two tools to control the information users share, Disconnect, and Collision, these tools block cookies and widgets from being used on users' browsers. The theory she portrays is that the cookies and widgets, especially when combined, are invasive and should be controlled by the users (Knox, 2010). Knox's article is relevant to the research being conducted because she mentions how information is gathered by social media platforms such as Twitter and Facebook, two of the most popular, gather information, and display advertisements based on websites the users view and their social media interests. On the other hand, the article's deficiency is that it does not provide a quantitative measure of how effective the widgets are at producing effective advertisements. The article is mainly addressing how invasive they are and emphasizes methods to block the widgets and cookies, and maintain your privacy. Just keep in mind that this blocks a third-party advertisement company from tracking your movement through the sites, not the individual company tracking your movement through their site, by giving recommendations (Knox, 2010).

Null developed and implemented a few tests to determine how effective social media advertising is. He summarizes his results in his article "How Well Does Social Media Advertising Work?". Based on the results of the tests he believes that social media ads weren't as effective as they had been thought. However, the tests were developed for business buyers and investors rather than general consumers. He believes that the best way to maximize the return on your investment in the ad on social media sites is to search for companies that offer the lowest cost-per-click. This article contributes to the current research project because the author provides information based on tests designed to judge how effective social media advertisements can be. The tests performed for the article were designed for those purchasing and investing in other businesses and not for general consumers. If the tests were designed for general consumers and contained personal and interesting ads, the results would have been much different (Null, 2013).

In the article "Chrome Killed the Cookie. Now What?", Slefo discusses the idea that Google Chrome is considering removing the cookies from their browsers due to the fact that people consider them invasive and disruptive of their privacy. The theory the article pursues is that a cookies-less world could be a great opportunity for us to start from scratch, and develop a new method to advertise, a more private method. This is one of the most recent articles on the disruptive role of cookies on users' privacy. It argues that cookies disrupt our privacy and should be removed from various browsers and replaced by a more private targeting method. Firefox and Safari have both removed cookies from their browsers, especially with Safari being dominantly 'surfed' by those with iPhones, as a way to become my private (Slefo, 2020).

Routledge discusses the effect of social media advertising on various social media platforms. It proposes the determining factor of how effective an advertisement, placed on any social media platform, is. Advertisements placed on social media platforms tend to be designed to fit individual desires rather than a one-size-fits-all method. "Advertisements placed on Social media sites and the internet, that target the general public versus targeting specific individuals or groups of people tend to plan poorly at attracting attention than those that do" (Voorveld, 2018). Some sites get positive feedback from general advertisements such as YouTube and Pinterest, as they are not seen as networking and socialization platforms. Social networking platforms such as Instagram, Facebook, Snapchat, and LinkedIn are able to target users more easily. The research article was published a few years ago, using current information, which makes it a viable source of information.

Hoban and Bucklin conducted an experiment in their article, "Effects of Internet Display Advertising in the Purchase Funnel: Model-Based Insights from a Randomized Field Experiment", wherein social media advertisements were displayed to users who were at various points in a company's purchase funnel. These different points included visitors to the site, non-visitors to the site, and authenticated users. The goal of this study was to prove whether cookie-based advertisements would be better served to authenticated users to the site or the category of visitors and non-visitors. The researchers discovered that serving the advertisements to authenticated users yielded a higher number of transactions and impressions to their website, better identifying the ideal audience for this company's advertisements

(Hoban & Bucklin, 2015). That article contributes to the hypothesis of our research because Hoban mentions that, the advertisements served to users are positively related to the cookies stored in their web browser. A case study like this paper shows the effectiveness of storing cookies in a web browser for catering advertisements to social media users who also browse these company's websites. The visitor/non-visitor/authenticated user method of identifying individuals who may be more likely to click on the advertisements is a unique way to better cater advertisements to consumers of a particular service or brand.

In "Opportunities for Innovation in Social Media Analytics"*,* Moe and Schweidel examined several reasons why social media analytics are so beneficial, and also provide solutions to the way these analytics can be better utilized. Moe and Schweidel's main premises in this article are that social media can serve two purposes in the world of marketing and advertising: to promote and to serve as a source for marketing research. The two researchers capitalize on the fact that most available data on social media platforms is often given freely by social media users since these individuals often give honest and direct feedback about a product or service. This allows market researchers a gateway to a more authentic consumer response than if they were asked about a product or service in a field survey. It also contributes to the research being conducted, because it provides a good basis as to what social media analytics are capable of. It shows how groups of individuals in the realm of market researchers have used these analytics to track consumer responses to various products and services. In turn, these are the market researchers behind the curated advertisements social media users see on a day to day basis. Moe and Schweidel stated, "Social media allows for two-way communications between companies and their customers," and this method of communication must be well-understood before conducting this study (Moe & Schweidel, 2017).

Information about consumers is gathered so fast and frequently through the web and personal devices; many individuals question if we even have privacy at all. In an article published by *The New Yorker,* several examples of cases of privacy being interrupted and the outcomes of each. Each case was different, although they all involved data collection, of personal information demographic information, with the users' knowledge or consistent. It's hard to keep everything private these days with the idea of IoT, Internet of Things; which is the idea, or theory, of connecting as much as you possibly can. It's not so much that users are worried about companies collecting private information through cookies; they are more worried about what they will do with their information. Privacy is a fighting game that we may never win, information about us individuals is collected through so many devices and techniques. (Menand, 2018)

DATA COLLECTION

For this study, a survey was conducted to see if users who enabled cookies perceived them to be relevant to their personal interests and previous browsing history. These advertisements would ideally match their interests based on browsing habits gathered by cookies saved to the users' devices, potentially drawing the user to click on the advertisement. We wanted to make sure the survey was comprehensive, ensuring we collected information about the types of social media platforms used as well as how relevant the users being served the advertisements perceived them to be.

Our survey was constructed using the Qualtrics online survey platform. Respondents were asked a variety of questions including the demographics of the individual, social media platforms they use on a daily basis, whether or not they choose to enable cookies on websites, if and how much they spend on sites they see in the advertisements, and whether or not the advertisements they see are relevant to them. Most questions on the survey were formatted as multiple choice. We included a series of five Likert-scale questions to gauge the respondents' perceptions of the advertisements served to them on social media. The Likert-scale was a five-point "Strongly Disagree" to "Strongly Agree" scale, allowing respondents a concise range of options when gauging perceptions on how relevant advertisements are to them and if the respondents felt advertisements were too invasive or not.

This survey was distributed using an anonymous link wherein any respondent 18 years of age or older could take the survey. The survey was distributed via the Ball State University internal Communications Center, as well as personal channels including Facebook, Snapchat, and Instagram. We felt these channels were appropriate distribution methods, given the survey was gathering data on users who primarily utilized these platforms.

DATA ANALYSIS

For data analysis, we surveyed the entire Ball State campus including faculty members, staff, and students to assess their perception of cookies and advertisements. The objective was to use a qualitative method to assess the relevance of cookies and advertisements from the perspective of the users. Our survey sample consisted of 120 records. 20 of these records were not complete and therefore were excluded from our data collection and analysis. We found that 25.8% of those surveyed did not have cookies enabled, 67.0% percent had cookies enabled, and 7.2% percent were unsure. All users that had cookies enabled, or were unsure if they were enabled saw advertisements on their social media. Within this group, 61.1% had purchased an item from such commercialization; even further within this group, 68.2% believed that the advertisements, generated from cookies, are relevant to them and their interests. In other words, they believe the advertisement was something they wanted/needed. The results are shown in Figure1.
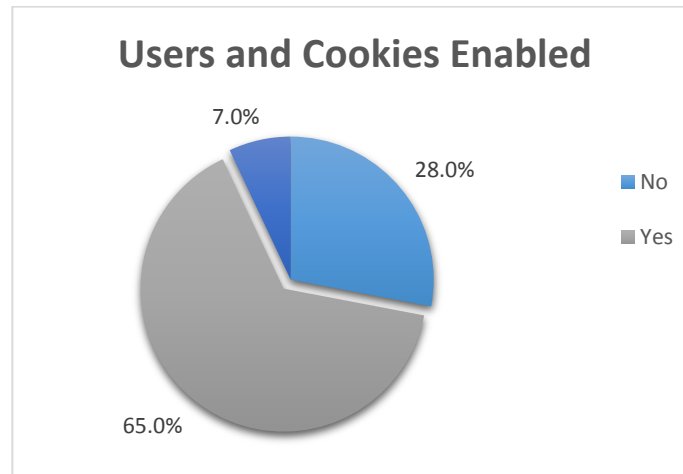

Figure1. Number of users enabled cookies

Due to the survey closing for respondents that disable cookies before be asked perception questions, we compared data from the "Yes" and "Unsure" categories with our Likert-scale question. We found that age played a factor in the perception of cookies. When respondents asked if ads on social media are relevant to them, we found that this decreased with age. Whether the user finds that advertisements are too relevant and invade privacy and the user's belief that cookies and ads are related also decreases with age. Interestingly, whether a user clicks on at least one advertisement a day while browsing social media increases with age. At the 95% confidence level, we can say that as age increases, users are less likely to believe that advertisements from social media are relevant to them. We can again conclude that age affects cookie-generated advertisement perceptions; as age increases, beliefs on privacy invasion regarding cookies decrease.

However, these findings raise a few questions. Do older people recognize that they are clicking on an advertisement? Or do they believe that they are looking at another page in their Facebook feed, for example? We also ponder if our survey played an impact on user perceptions of whether cookies and advertisements are related to each other, as we explained this concept to assist those that may not be familiar with the concept.

Another analysis we conducted was based on counts in a pivot table using the number of social media platforms, age group, and whether online purchases from social media advertisements were made. We found that users in the 18 – 24 age group held the greatest number of social media platforms and also made the most purchases. We also found that Facebook was the most popular platform amongst all age groups.

Table1. Survey results

Row Labels	Count of Facebook	Count of Twitter	Count of Instagram	Count of Snapchat	Count of YouTube	Count of TikTok	Sum of Purchases ? Recoded
18 - 24	25	18	24	25	21	13	16
25 - 34	5	4	4	3	5	3	3
35 - 44	13	7	10	5	10	2	10
45 - 54	12	6	6	7	11	3	6
55 - 64	8	2	1		5		5
65 - 74	1				1		1
Grand Total	**64**	**37**	**45**	**40**	**53**	**21**	**41**

We can safely assume that as people use more social media platforms and have cookies enabled, more cookies are being created simply because of usage time. We found that users aged 18 – 24 utilized the most platforms and purchased the most from social media advertisements; we were curious to see if the number of accounts had an impact on money spent and the number of purchases.

We believe that web users who enable cookies tend to be more likely to purchase items on the internet than users who don't enable cookies. In addition to this, we believe that the users who enable cookies and receive advertisements on their social media platforms, and web browser, find those advertisements to be relevant to them. In our research, we found that there is a strategy on how companies and web browsers design and deploy cookies. You need to be proficient in the platform you choose to deploy cookies; this allows the deployer to gain a background on how the platform operates and where the most traffic is. The individuals who enable cookies are willing to receive advertisements on their devices at random; which is why you need to strategically target individuals and groups to make the ads relevant to the users. For the users who disable cookies, qualitative results show that they disable it for privacy and interruption issues.

CONCLUSION

Through conducting this study, we have shown how users perceive cookies and advertisements according to age, as well as what habits they have when it comes to clicking and making purchases from these advertisements. We theorize that individuals of older age tend to perceive advertisements delivered to them as less relevant, possibly due to a lack of technical literacy within this age group. These individuals may perceive advertisements as just simply a part of their web browsing experience and are more likely to interact with these ads, supporting the increase in clicks we reported on. As more and more users in our younger demographic join more social media and share more about themselves, it is more pertinent than individuals of this age group follow close browsing habits and increase their own individual technical literacy when browsing the web to make the important decision whether a site should be allowed to garner information about them or not.

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