Adblock Usage in Web Advertisement in Poland

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Abstract. Research concerning users blocking advertisements constitutes a new research area both in the scope of analysis of collected data regarding that topic, determinants concerning users blocking advertisements and IT tools. The paper refers to this and systematizes knowledge in the scope of types of online advertisements and methods for blocking them using an adblock, and it identifies reasons and main categories of reasons for users blocking advertisements. The research presented in the paper was confronted with results of an analysis of application of adblocks. The obtained results will facilitate conducting further, more thorough research. Considerations included in the paper can constitute a set of recommendations for publishers displaying advertisements on websites and they can be useful for drawing conclusions and preparing guidelines for projects supporting sustainable development in the scope of online advertising.

Keywords: Adblock · Ads blocking · Web advertisement

1 Introduction

During the early years of development of the internet, advertisements displayed on websites were not considered as invasive. Usually, they were presented in the form of static or dynamic banners which included graphic designs. As technology developed and IT solutions became more available, the manner in which advertisements were shown on websites also developed. Currently, there are numerous new advertising formats available, most of which are considered as invasive, i.e. they affect the reception of content displayed in a web browser. Such advertisement formats include automatically displayed advertisements, formats of pictures covering the entire screen or expandable graphic advertisements.

Development of modern technologies on the internet, in particular tracking the activity of users of web browsers and displaying advertisements for such users causes an increase of users' social interest in the development and use of tools enabling prevention of tracking and display of advertisements. This prevents online content from being surrounded with advertisements which may distract the reader and, at the same time, scripts tracking web browser user's activity are turned off or their operation is limited. These tools ensure that consumption of online content remains attractive,

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websites are not loaded with advertising items and user's privacy is better protected. The conducted study is aimed at getting acquainted with the activity of online browser users in the scope of use of software which blocks the display of advertisements and limits the tracking of user's activity.

Additional programs which may be installed as an extension of the basic set of functions offered by a web browser, which add the function of blocking unwanted advertisements are becoming increasingly popular among users. Users use such programs not only to block displayed advertisements but also to improve the protection of data stored in a web browser and to increase the comfort of use and the performance of web browsers. Thus, the empirical objective of the paper is to identify the reasons for blocking online advertisements. The methodological objective of the paper is to identify IT technologies supporting advertisement blocking and criteria for their selection. The practical objective of the paper is to study adblock usage in Poland based on research.

The three research questions were formulated:

- RQ1: What are the reasons for users blocking advertisements?
- RQ2: What are the methods for blocking web advertisements?
- RQ3: What is the state of adblock usage in Poland?

The objectives of the paper were achieved as a result of application of the following research methodology: study of literature, comparative analyses of reports and a survey analysis.

First, we introduce the theoretical justification of the ads blocking problem and systematize knowledge in the scope of reasons for blocking online advertisements using an adblock.

Second, we identify methods and tools for blocking advertisements in web browsers. Adblock programs offer a broad range of options for adjusting them to user's preferences and creating one's own set of functions which are launched by default as well as preferences for blocking advertisements. Many users use the possibility to configure advertisement blocking programs and adjust their functions to their preferences.

Third, we analyze dataset collected through a survey. There were 774 participants in the exploratory research project. The participants responded to 14 questions in a survey concerning the use of software for blocking advertisements (adblock programs).

The paper contains a literature review, a presentation of methodology used for the study and an analysis of obtained results. The paper includes final conclusions from the conducted study and directions for further research in the area of blocking displayed advertisements and privacy protection.

2 Related Work

Over the course of recent years there were several studies conducted with regard to the use of adblock programs by internet users. They involved, inter alia, an analysis of legal measures which can be undertaken by content publishers who are fighting off the activity of adblock programs. Content publishers lose advertising income which they could have

generated, if their advertisements were displayed or clicked by users [11, 28]. Also, the possibility to expand the functions of extensions for blocking advertisements [13] and the influence of functions blocking advertisements on battery performance in mobile devices [16] or a decrease of internet connection load [15] was examined. The researchers have also studied the manner in which content publishers detect the use of adblock programs and how many of them do it [14]. The research also shows that adblock programs can be used to reduce the tracking of personal data [3] and do not leave any trace of their use [17]. Some of the researchers have conducted surveys on students at a single university [19] or extensive research involving numerous countries and thousands of respondents [21, 22]. A state of the art analysis was conducted in 2009 as well. However, many things have changed since then with regard to advertisement display technology and development of user tracking scripts [20].

The characterized advertisements, despite their great popularity, are no longer as efficient as they used to be during the initial period of development of the internet. This is mainly due to the fact that users became resistant to various "persistent" forms of promotion of products or services. Reaching potential clients with advertisements is becoming more complicated and creators of advertisements must consider limited access through the online marketing channel. Poland is one of the leaders in the global ranking of countries with the highest percentage of internet users blocking advertisements using plugins containing adblock software. A less aggressive solution with regard to previously used, conventional advertisements, which addresses the needs of advertisers, is native advertising, i.e. interesting and unobtrusive advertising material intertwined with the content of an article posted on a blog, in social media or on a website.

3 Systematization

3.1 Identification of Factors Determining the Adblock Usage

Blocking advertisements is a complex problem in the contemporary world, which requires the following:

- Firstly, aspects connected with privacy [3], security [30], user experience (pace of work, comfort, quality and other factors) [15, 19] as well as economic aspects should be integrated.
- Secondly, the issue of balance between them and advertisements should be analyzed.

Thus, it is necessary to mention the sustainable development theory (the term was defined for the first time in a report of the World Commission for Environment and Development at the UN: Our Common Future in 1987 [18]), because it is not about publishers and users "getting in each other's way", but rather about them starting to cooperate with each other. Their common good should motivate such activities.

Numerous discussions among internet users include descriptions of cases [10] in which website publishers tried to prevent users from blocking advertisements, e.g.

- On the basis of legal regulations (online publishers wanted to introduce a ban on users blocking advertisements using programs for blocking them by invoking the right to maintain the integrity of their work or, in other words, the right to inviolability of content and form of their work. The act of blocking advertisements was interpreted as introducing changes to the work) [11, 28].
- By establishing cooperation with creators of programs for blocking advertisements (the cooperation allowed the publishers to create advertisements which users were unable to filter). To use an adblock, it needs to be installed first, and then a filter subscription must be added.

According to the sustainable development principle, the following principles should be thus adopted:

- Publishers and users, as well as advertisers should jointly attempt to guarantee the best solutions by ensuring that none of the components constitutes a threat to others.
- Publishers should use users' knowledge and experience and propose advertisements, if they constitute their source of income, but they need to ensure that they do not disturb user's work and allow users to decide what they want to view and which form suits them as well as to choose their form.
- Appropriate conditions should be ensured to allow users to perceive advertisements in a manner different than the current one (as invasive, ubiquitous, badly adjusted, not interesting, harassing and heavy on processing power).

Relationships between factors of the problem being the blocking of advertisements by internet users are nonlinear and they are in the form of feedback loops. On the one hand, there are website owners who want users to avoid blocking advertisements. They offer free access to their content but expect users to view advertisements apart from the primary content. The number of views of the publisher's website grows, just as advertising income grows (positive feedback). Viewing advertisements in that case can be considered as a type of an online currency. Advertisements allow publishers to generate income. However, some users do not want to view advertisements, and thus they block them. If users block advertisements, publishers are forced to introduce paid access to content (negative feedback). As the number of website visitors drops, its popularity decreases, and thus publishers receive fewer advertising orders. To undertake activities aimed at compensating for the negative feedback, one should identify reasons for blocking advertisements.

According to PageFair-2017 report [22], the main reason for blocking advertisements using an adblock was security (Fig. 1). Women usually mentioned that they were afraid of viruses and malware. On the other hand, men claimed that the greatest nuisance was the interference of advertising in continuous browsing of online content. Over 70% of respondents chose more than one reason as "the most important one" in connection with their use of an adblock. Apart from security and interference, users' motivation was not significantly different with regard to users' age.

The largest number of internet users in Europe who block advertisements is in Greece, Poland and Germany (Fig. 2).

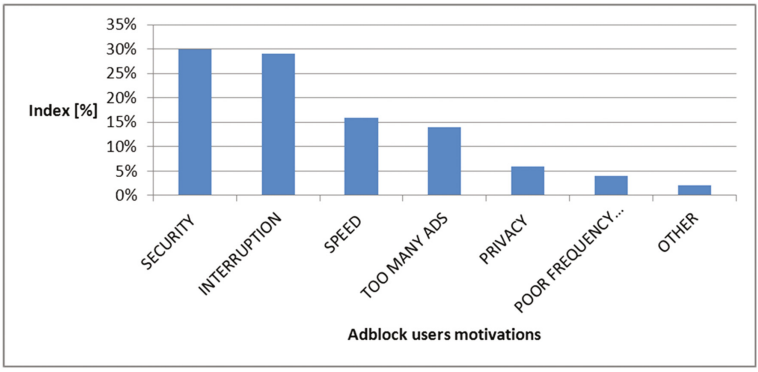

Fig. 1. Motivation behind adblock usage [22].

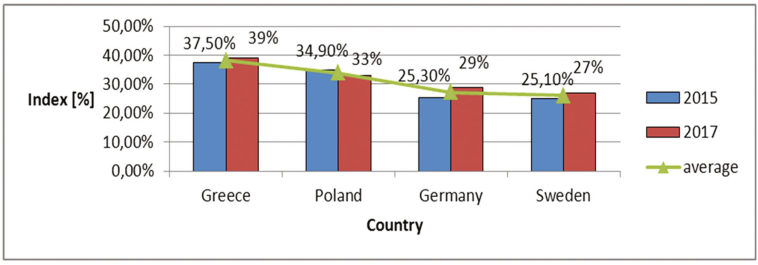

Fig. 2. Usage of ad blocking software in selected European countries [21, 22].

According to PageFair's report [21, 22], the index for Poland in 2015 amounted to 34.9%, while in 2017 it maintains the level of 33%. Apparently, the reason for this phenomenon is that websites are overloaded with advertisements. Users who do not like advertisements simply block them in advance. Others indicate protection of their privacy and security as the reason for doing so.

The general conclusion of the reports was as follows: the growing use of adblock programs is fuelled by particular problems connected with provision of online advertisements by publishers rather than digital advertising itself. It was interesting that it was indicated that users do not mind advertisements as such, and they are bothered rather by their aggressive form, such as a sudden sound or an advertisement suddenly covering the browsed content and, additionally, the advertisement not allowing to be skipped or closed. The obtained results allow us to evaluate which problems are most frequently faced by users when advertisements are displayed.

Users increasingly frequently care for privacy of their data and confidentiality of their online activities, and due to that personalised advertisements are perceived as a threat, while aggressive advertisements or those which put them at risk of additional costs (using data transmission packages), are simply blocked. Therefore, it is necessary to look for new ways for users to stop blocking advertisements.

3.2 Methods for Blocking Online Advertisements

To counteract the growing trend of invasive advertising, software developers have independently started creating additional solutions for already existing basic web browser functions [13]. Their objective is to block advertisements displayed on the currently opened website. Such web browser extensions are configured by default (without any modification required on the part of the user), and thus they do not block some formats of advertisements displayed on websites. This concerns advertisements which are referred to as nonintrusive ones [12].

Nonintrusive advertisements meet certain criteria regarding: location, contrast and size of the advertising unit [29]. The location means that the advertisement cannot disturb the natural reading process. The advertisement must be above, beside or under the primary content. Contrast means that an advertisement must stand out from the remaining content and be recognizable as an advertisement. It should be marked with the word "advertisement" or its equivalent. Size means that the amount of space occupied by an advertisement above the line break cannot exceed 15%. Also, the surface occupied by the advertisement below the line break can amount to 25% at most [5].

An example of nonintrusive advertisements is advertisements in search engine search results. The advertisements appear only after a user enters a query in the search engine and receives results. Such a set of advertisements is usually connected with the query entered by the user. Large companies (e.g. Google) providing advertisements pay for such advertising units not being blocked in their advertising networks. Other large companies which pay for being included on the list of acceptable advertisements are Microsoft, Amazon and Taboola advertising network. One of such companies anonymously stated that it pays for not blocking them approx. 30% of what it earns on them being displayed [9].

The most common web browser plugins which block advertisements currently include AdBlock, Adblock Plus, uBlock and uBlock Origin. The common term for such web browser plugins is adblock software.

- AdBlock [2] is currently being developed by a group of programmers and maintained using user donations. AdBlock is available for users of the following web browsers: Chrome, Safari, Opera, Firefox and Edge. Currently, it is being used by 40 million users.
- Adblock Plus [1] is developed by Eyeo GmbH and it is available for the following web browsers: Firefox, Chrome, Opera, Safari, Internet Explorer and their Android and iOS versions. The Adblock Plus extension does not block nonintrusive advertisements by default. The extension is active on over 100 million devices.
- uBlock Origin [25] is being developed by the creator who was previously involved in the creation of uBlock. uBlock Origin is currently being used by 10 million users. The authors of the project do not accept any donations for its development. uBlock blocks advertisements as well as tracking scripts and malicious websites [17]. Its features include engaging less processing power compared to Adblock Plus [26].
- uBlock [27] is currently being developed by a group of programmers and its income is derived from user donations. uBlock is available for Chrome, Safari and Firefox users. Its features include not only blocking advertisements, but also malicious scripts.

Thus, it was assumed that the term adblock should be construed as a group of programs for blocking online advertisements (Fig. 3).

Additionally, Table 1 presents types and methods of used blockades which are the subject of considerations included in the present paper [8, 23–25].

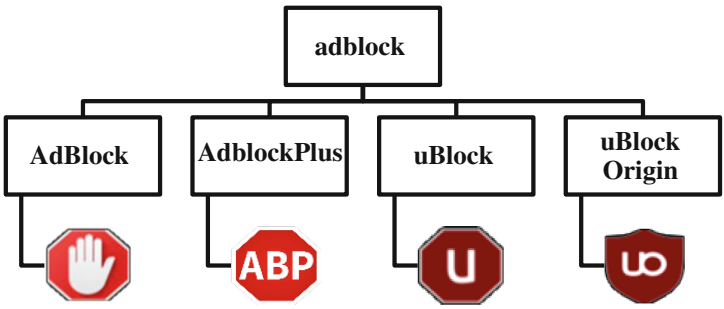

Fig. 3. Adblock tree.

Table 1. Key data about most popular adblocks

	AdBlock	AdblockPlus	uBlock	uBlock Origin
Founder	Developers	Eyeo GmbH	Developers	Raymond Hill
Supported browsers	FireFox Opera Chrome Safari Edge	FireFox Opera Chrome Safari Edge And others	FireFox Chrome Safari	FireFox Chrome Safari Edge
Financing	Donation	Advertisers	Donation	Without payments
Block Type				
Ads	(+)	(+)	(+)	(+)
Malware	(−)	(−)	(+)	(+)
Privacy	(−)	(−)	(+)	(+)
Users	40 m	100 m	640 k	10 m

(+) active by default; (−) no active by default

The common feature of all the presented programs is using lists of filtered resources and URLs. The lists containing information about types and names of advertisements, the point of origin of these advertisements and many other filtered elements are created and updated by a community centered around the topic of blocking advertisements. The lists can be used by several adblocks, such as e.g. the EasyList [7], which provides sets of filtered advertisements for aforementioned programs.

Adblocks enable creating own sets of blocked resources and URLs, as well as making them available to other users. They are made available by creating files and

publishing them on the internet. An example of such an individual set is AlleBlock, a set of filters for the greatest auction and trading platform in Poland [4] or the list published under the Certyficate.IT project, which includes the most popular portals in Poland, which filters advertisements displayed on them [6].

4 Dataset and Results

The authors have conducted studies in Poland which concerned the reasons for using adblock programs. The introduction to the study was based on interviews. Their objective was to assess selected aspects concerning the use of advertisement blocking programs. The increasing interest in the area of advertisement blocking and limitation of users' personal data exposure makes it an excellent research subject.

During the first stage of the study the authors have developed empirical assumptions for the survey and conducted an analysis of the current state of adblock programs and possibilities for their configuration and effective use. During the second stage of the study the authors have focused on examining the reasons for using and ways in which adblock programs are used in Poland.

In order to become acquainted with the activity of Polish users of programs for blocking advertisements in web browsers, a questionnaire was developed. The questionnaire served as a basis for conducting a survey in which 774 respondents participated. An invitation to fill in the survey was posted on several profiles and groups in social media and it was sent by e-mail as well. Having clicked the hyperlink in the invitation, participants were transferred to a website with the questionnaire.

The survey started with the following question: *Are you using an adblock?* For users who responded negatively to the qualifying question this was the end of their involvement in the study. Remaining users were asked to indicate the way in which they use the adblock and the reasons for using the adblock as well as their level of acceptance of advertisements being displayed on the internet. The users have also provided their age, sex and level of education. The subsequent part of the study involved considering responses given by 596 respondents.

As many as 56.1% of respondents in the group were men and the majority of respondents were people aged 18–24. Respondents aged 25–34 placed second, i.e. they comprised 32.8% of respondents. There were 9% of respondents aged 35–44. As many as 55.3% of respondents had higher education, while 44.5% indicated high school education.

The study group included 77% users who indicated that they are using an adblock program. Everyone in that group has such a program on their personal computer and, moreover, one fourth of adblock users have installed it on their mobile device, such as a smartphone or a tablet as well. A substantial majority of adblock users keep its default settings after its installation, whereas 32.9% of users configure the program on their own by adding filtering lists and turning on additional functions. As many as 87.1% of adblock users actively turn it on and off. The reason for users turning off the adblock program is mostly a need for temporary access to content which is unavailable in the browser due to the adblock's operation. Having gained access to the relevant content, the users turn the adblock on again. The second reason for turning adblock off is

turning it off permanently for a particular website or adding the website to a list of exceptions. As many as 86.7% said that they have come across an adblock wall while using a web browser. After seeing the adblock wall 44.5% of them leave the website, while 55.5% decide to turn their adblock off or add the website to exceptions and they use the content provided by the website.

Users in the analysed group came to know about the existence and the objective of adblock programs in numerous ways. As many as 31.5% of them heard about them from a friend or a relative. 22.7% read about the possibilities offered by adblock programs on the internet, e.g. while reading a news item. 8.7% found an adblock while browsing popular browser extensions. One third of respondents did not remember how they learned about the adblock. Study participants have most commonly (50.3%) indicated that advertisements are a disturbance during reception of online content as the reason for using an adblock. The other important reason for using an adblock (37.8%) was too many advertisements being displayed on a single website. Other indicated reasons for using an adblock included websites loading slowly, protection against viruses and malware, privacy protection regarding tracking of users' online activity. This question consisted in asking respondents to indicate one; main reason for using an adblock, but some of them used the comments section for the question to provide further explanation, i.e. that other listed reasons also contributed to them using an adblock.

5 Discussion

An adblock program constitutes a response to the constantly growing trend of lack of acceptance and rejection of advertisements. Currently, instead of consciously or subconsciously ignoring advertisements, users are able to install software which will prevent advertisements from being displayed. In many cases advertisements will not be downloaded at all, which saves data transfer capacity and reduces the engagement of processing power, as well as positively affects users' sense of security and limits disturbances within contents published on websites.

In conclusion, there is no legal basis for stopping the operation of advertisement blocking programs. Publisher's reaction to that is creating new advertisement formats, the main feature of which is a lack of possibility to skip them. Considering the nature of the internet, there are no legal measures for forcing users to view advertisements in which they are not interested. It is likely that there will be a product created to neutralize the operation of each newly developed technology. Publishers and internet users will always be on two opposing sides of advertising until advertisements are accepted by users and content publishers start using advertising which is acceptable for the users.

One of the main conclusions after conducting the study was the discovery of a significant difference between the percentage of population using an adblock program according to PageFair's study and own study. According to PageFair, 33% of internet users in Poland in 2017 are using the program. The study conducted in April 2017 indicated that the percentage of people using an adblock is more than twice as high and it amounts to 77%.

Such a significant difference may have been caused by inaccuracy of data collected by PageFair, which at a certain level is estimated on the basis of publicly available data. The result obtained during our study confirms the result obtained during the interview, when most of the users declared that they are using an adblock. On the other hand, such a high percentage of people using an adblock is visible in actions undertaken by advertisement publishers who are increasingly frequently employing scripts detecting adblock functionalities and limiting access to content.

Another important conclusion is the displayed awareness of users regarding advertisement publishers wanting to hide content from them. This is the reason for users actively turning adblock programs on and off or adding websites to the list of exceptions. This confirms a high level of awareness of users in the scope of independent configuration of adblock programs and using them purposefully.

6 Conclusion

The paper shows the reasons for using adblock programs and presents the current most popular programs of that type as well as their characteristics. Apart from aforementioned, a survey study was conducted involving a group of Polish internet users, which shows that they actively and consciously block the display of advertisements in their web browsers.

In this study we show how to adblock software technologies are applied in Polish environment. We discover a strong desire to block advertisements and well known ways to do this. Also in Poland there are many adapted solutions to improve adblock accuracy and coverage.

Future directions of research will concern the problem of intrusiveness of advertisements and ways for decreasing it. As it was mentioned in the paper, users are not against advertisements being displayed—they oppose the way in which they appear on their screen, e.g. by suddenly covering the viewed content. Further research will be also aimed at a quantitative analysis regarding elements blocked on websites, such as unwanted advertisements, scripts tracking user's activity and malicious activities (malware).

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