

Technical and Social Reasons for Blocking Web Advertising in the Context of Sustainable Development of E-Business

Edyta Abramek¹, Anna Soltysik-Piorunkiewicz², Artur Strzelecki³

^{1,2,3} Department of Informatics, University of Economics in Katowice, Katowice, POLAND
{edyta.abramek, anna.soltysik-piorunkiewicz,
artur.strzelecki}@ue.katowice.pl

Abstract. The article focuses on the complex problem of synergy of the expectations of recipients of web content - users with the expectations of content creators – publishers, who make them available free of charge but at the same time complement them with web advertisements. The article presents the results of author's research of users' reasons to block web advertisements through special adblock programs, thus condemning publishers' in e-business to failure. The results of empirical research prove that users do not interfere with advertising sensu stricto, but the way in which they are delivered to internet users. The results will be useful for developers of solutions, models or information systems for sustainable development in the area of e-business, in particular in the area of e-marketing.

Keywords: Adblock, E-business, Sustainable development, Web advertisement.

1 Introduction

Nowadays, computer science supports the complexity of both the system configuration level and the use of them. The blocking of advertisements from content displayed on websites is a particularly important problem nowadays. From the point of view of the content publisher or advertiser, the blocking of advertisements by users of portals or websites can contribute to the failure of their online business. In turn, users blocking the reception of advertisements limit their access to content of portals or websites. Publishers have IT tools that effectively detect programs that block advertisements and then prevent access to the content of the website in case such software is installed and active on the user's computer.

In connection with the striving to achieve the best result in terms of sustainable development in e-business, a compromise between three groups of stakeholders, i.e. recipients of content and at the same time ads, publishers and advertisers is necessary. Based on a short debate on blocking advertisement, the goal of this research is to

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examine the technical and social reasons why user are more and more using adblock software.

The thesis and research objectives adopted in the work determined its character and structure, as well as the applied research methods. The first chapter shows the introduction. The second chapter is devoted to the characteristics of online advertising, ways of blocking advertisements and relations between publishers (content providers) and their recipients in the context of sustainable development in the area of e-business. The third chapter characterizes reasons or reasons for blocking advertisements by users of portals and websites. The fourth chapter presents the results of empirical research, including the division into technical and social factors blocking advertisements on the Internet. The work ends the chapter fifth with a summary presenting the conclusions.

2 Related Works

2.1 Characteristics of Web Advertising and Ways of Blocking them

Referring to the report [1], Poland is one of the leading countries where Internet advertising is blocked. The phenomenon is not conducive to the development of the electronic business of companies that earn money by displaying ads. The perspective of charging instead of advertising is not beneficial either for publishers or for content recipients.

Some descriptions of cases are characterized in internet by the users [2] in context of prevented users by website publisher [3] from blocking advertisements. The first one is based on the basis of legal regulations and the right to maintain the integrity of r website publisher work, or the right to not allowing the ads blocking, because it is the beginning of change of the content and form of website publisher work [4], [5]. The second point of view of publisher is to establish cooperation with creators of programs for blocking advertisements [6] and to create advertisements which users were unable to filter because of usage blocking software [7].

Nowadays, programming techniques allow to detect mechanisms blocking advertisements very effectively, and then prevent access to the website when adblock programs are active and set to block advertisements [8][9]. With blocking ads, you can effectively fight at the technology level [10]. Mastering the phenomenon at the social level is not so easy. Companies that offer content on the Internet understand that you cannot resort to the simplest method, i.e. a total ban on access to content, because Internet users will look for content on other, free websites [11]. Therefore, a better solution is to deliver ads in a form adapted to the expectations of Internet users. A surfer should be able to decide and choose how he wants to receive advertisements. According to the report [1], users of websites or websites oppose only the methods and ways in which advertisements are made available to them, delivered. It is therefore necessary to create IT solutions that will reconcile the expectations of publishers and internauts blocking advertisements.

The most popular forms of online advertisements are banners, which are referred to as “conventional advertisements”. They consist in placing graphic elements of various forms and sizes on a website. The elements redirect the interested party to the advertiser's website. Such a form of advertising allows a company to establish its online presence and enhance its image. The many types of banner advertisements include main banners, pop-ups, pop-unders, expand banners, skyscraper, rectangle and scroll banners or floating banners. Apart from banner advertisements, there are also the following types of advertisements:

- top layer - advertisements displayed only once in the form of an animation with its sound on by default,
- landmark - it is a variety of a pop-up advertisement,
- interstitial - an advertisement displayed as a 10-second full-screen animation,
- floating ad - a specific type of a moving advertisement which floats over the website and browsed content, encouraging users to click on it (it can be perceived as a harassment),
- watermark - a form of an online advertisement displayed as a background,
- trick banner - an advertisement which is actually a form of deception or fraud. It contains a text encouraging the user to click it and which takes the user to a different, infected website.

Nowadays the internet users are more and more resistant to different forms of advertisement than before. They have become better prepared for receiving the internet promotion of products and services. They seem to be better focused on reviewing the certain criteria of advertisement, i.e. location, contrast and size of the advertising unit [12] then during the initial period of internet development. The advertisements' forms are still very popular but no longer as efficient as they used to be. The content providers and publishers are still interested in making progress with their marketing campaigns. There are two different kind of “conventional advertisement” usage in sustainable business development: the first one is the less aggressive solution of “conventional advertisement”, and another is more aggressive one. A less aggressive “conventional advertisement” is characterizing as the native advertising, i.e. interesting content of an article is posted on a blog, in social media or on a website by web company. To promote the product or service offers is very difficult so that is the reason why advertising is becoming more and more aggressive (they obscure the picture, they start the sound, they pop up suddenly, etc.) The aggressive usage of “conventional advertisement” makes that the users are more and more ready to use the web browser plug-ins as adblocking software so cold adblocks. The term adblock is using as well as a construct of group of programs for blocking online advertisements. There are four different types of web browser plug-ins [13, 14] which block advertisements: Adblock, Adblock Plus, uBlock and uBlock Origin.

There is also performing so-called non-intrusive advertising. Examples of non-intrusive advertisements are advertisements in search engine search results. The advertisements appear only after a user enters a query in the search engine and receives results.

2.2 Relation between Content Publishers and their Recipients for the Sustainable Development of E-Business in the Field of Web Advertising

The shape and nature of sustainable development in business is determined by the relations of the producer (manufacturer, content creator, sender) with stakeholders (users, customers, recipients of content) (Fig. 1). The higher the value of stakeholders gathered around the company, the greater the likelihood that the company will survive on the market [15]. Social sustainability requires responding to the needs of society. Therefore, in the world of internet advertising, the point is not that publishers and recipients of the content mutually overwhelm each other, but they started to cooperate with each other. According to the PageFair-2017 report [1], users are not disturbed by advertisements as such, but rather by the way they are displayed.

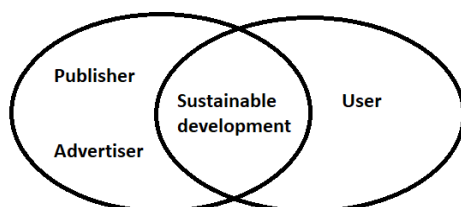


Fig. 1. Sustainable development in web advertisement

There are some relations between publisher, advertiser and user according to the sustainable development principle in web advertisement context in e-business. The following principles should be adopted:

- The publishers should use users' knowledge and experience in case of form of advertisement and propose advertisements, if they constitute their source of income.
- The publishers and advertisers should allow users, i.e. the recipients of content, portals or websites, to make the decision in case of invasive or not interesting advertisement.

There are already programs on the market that combine the ability to detect an advertisement blocker and deactivate it, and at the same time deliver them in a form suited to the expectations of Internet users.

3 Investigating the Reasons for Blocking Web Advertising

There are different reasons connecting with blocking web advertisement. The research shows, that the users' privacy [16] of their data and confidentiality of their online activities is the most important factor, and due to that personalized advertisements are perceived as a threat, and unknown advertisements usage can be the source of a risk of additional costs (using data transmission packages), so that is the main reason that they are simply blocked by users [17, 18]. Therefore, it is necessary to find the proper strategy based on investigated reason to stop blocking advertisements in sustainable development of e-business.

Exploring the reasons for blocking online advertising is a complex topic [19][20]. Advertisement blocking is a topic which should be considered from multiple perspectives. The last PageFair-2017 report showed [1], that the main reason for blocking advertisements using an adblock was [2]: security, interruption, speed, too many ads, privacy, poor frequency capping and other. Comparing user gender women usually mentioned that they were afraid of viruses and malware, and men claimed that the greatest nuisance was the interference of advertising in continuous browsing of online content. There is more than one reason of blocking the advertisement. Over 70% of respondents chose more than one reason as “the most important one” in connection with their use of an adblock.

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 PageFair’s report index of blocking ads for Poland in 2017 amounted to 33%, while in 2015 it maintains the level of 34,9% [1]. The other study published in 2018 showed that 61,2% Polish internet users are using adblock software [21]. Currently, it is estimated that it is as much as 38% of internet users. Countries where ads are blocked are also Greece, Germany and Sweden. Apparently, the reasons for this phenomenon are overloaded with advertisements.

Table 1 presents the main reasons for blocking advertisements, taking into account two categories: technological reasons - specific for the website, for advertising and the type of device and social reasons - specific for users of websites.

Table 1. Reasons of ads blocking grouped by categories

Main categories of reasons		The reasons for blocking ads by users
Technical	Website	Virus and malware protection, slow loading website, slow down web browser, content interrupted by ads
	Advertisement	Use of interactive advertising, too many ads on the website, advertising takes up the whole screen, automatic, suddenly playing sound, difficult closing advertising - the X button can’t be found, overlay other content by advertising, obstruction in receiving content, no ability to filter ads,
	Device (computer, smartphone, tablet)	Transfer fees on mobile devices, need to increase internet link bandwidth to play ads
Social	People and relationship (website-user)	Privacy protection, phishing protection, protection against tracking by unknown sites

Source: Own authors.

3.1 Research Methodology, Objectives and Area of the Research

Due to the fact that the research was focused on data mining, the quantitative method was used. In order to identify the reasons for blocking advertisements by people, a questionnaire was built, and statistical methods of data processing were used. The survey was conducted electronically in 2017 in Poland. The research methodology included the following steps:

- analysis of the literature on the subject,
- selecting a research gap,
- creating a research model,
- formulation of the research thesis,
- conducting proper tests,
- data analysis,
- conclusions from research,
- enriching the theory with test results,
- indication of the limitations of the tests carried out,
- conditions for further research.

The main idea of the considerations there is a thesis that the reason for blocking advertisements by people is not advertising *sensu stricto* but the manner and frequency of their delivery to Internet users and the risks associated with it. The theoretical, methodological and practical goals were distinguished in the paper.

The epistemological purpose of the work is:

- determination of relations between stakeholders in the area of internet advertising, in the context of sustainable development in e-business,
- analysis of technical and social reasons for blocking internet advertising by website users.

The methodical aim is:

- development of guidelines / guidelines for stakeholders in the area of internet advertising for sustainable development.

Purposes utilitarian/practical relate to:

- diagnosis of the reasons for blocking advertisements based on the conducted study,
- developing recommendations in the area of internet advertising for the sustainable development of companies in e-business and synergy of the expectations of publishers, advertisers and users of portals or websites.

3.2 Advertising blocking factors - results of scientific research

In order to recognize the activity of users of computer programs blocking the content of online advertisements, an electronic questionnaire was developed. The study was conducted in 2018. The target group of the study included the people of

different ages. In total, responses were collected from 774 surveys. The results are characterized by the following categories:

- gender and age,
- use of advertising and sources of knowledge about advertising,
- reasons for blocking online advertisements with their division into technical and social reasons.

The most of the respondents were men, i.e. 56.1%. The men are blocking the advertisements more often than women. There was 55.3% of higher education graduated people in among group of people who completed the survey. The secondary education accounted for 44.5%. There were also people with vocational education. The largest group of respondents was people with age of 18-24 (Table 2) and as it turns out, they most often block advertisements.

Table 2. Blocking ads divided into age groups

Age group	Number of respondents	Percentage of respondents	Using adblock program's index
18-24	436	56,30%	80,30%
25-34	254	32,80%	75,60%
35-44	70	9,00%	69,00%
Others	15	1,90%	43,00%
Summary	774	100,00%	-

The 77% of respondents admitted that they use a program to block online advertisements, but there are also people who do not know about the existence of such a program (Table 3).

Table 3. The respondents' diversity of using of the adblock program

The respondents' diversity	Number of respondents	Percentage of respondents
The people who use the adblock program	596	77,00%
The people who do not use the adblock program	165	21,30%
The people who do not know about the adblock program	13	1,70%
Summary	774	100,00%

The respondents learned on the possibility of blocking advertisements in the following ways: from friends (31.5%), from the Internet (22.7%), from the browser settings (8.7%). At the same time, 35.4% of people do not remember where they found out about adblock computer programs.

The results presented in the further part of the work concern only people who use the adblock program, i.e. 596 respondents (out of 774). Each of the 596 people (100%) has an adblock program installed on a desktop computer, 99 people (16.6%) on a smartphone, and 54 people (9.1%) on a tablet. The most people, i.e. 400 (67.1%) use the default adblock settings, and the rest of the people configure the program according to their needs. Out of 596 respondents, only 77 people (12.9%) do not exclude this program. Most people, i.e. 519 (87.1%) actively disable the program to gain access to blocked content.

There are at least two reasons why users of content blockers temporarily disable them:

- firstly, there is a need to temporarily use content that is unavailable or invisible due to adblock activity (301 people, 58%),
- secondly, it's about permanently turning off adblock for a selected website or adding it to the list of exceptions (218 people, 42%).

After encountering adblock-wall, the majority of respondents (517 people, 55.5%) disables adblock, or add a website to exceptions and use its content. Fig. 2 shows the most important reasons, why users block advertisements?

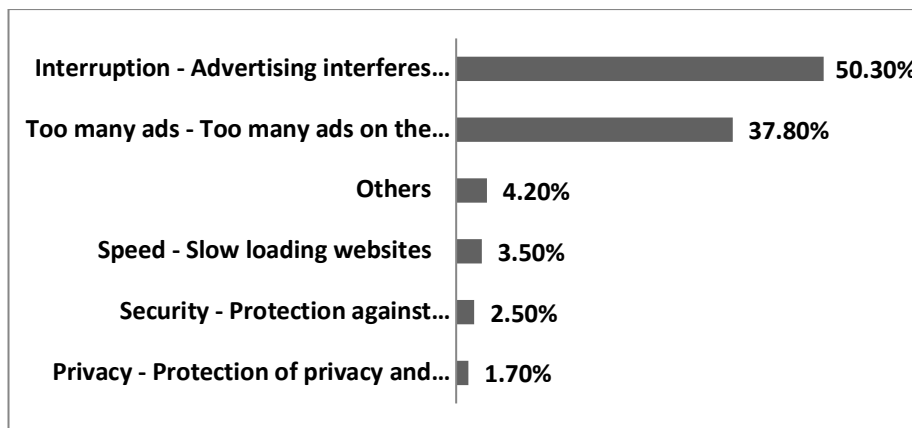


Fig. 2. Motivation of adblock usage

As has already been mentioned, Poland is at the forefront of countries that block advertisements. As a result of the survey, the biggest problem for Internet users is successively: interruption (50,3%), too many ads (37,80%), speed (3,50%), security (2,50%). For comparison, the results of the Page-Fair-2017 report differ. The main reason for blocking ads according to the said report were successively: security, interruption, speed, too many ads and privacy.

As a result of the research, it was also determined which type of advertising causes the greatest reluctance of the recipient. Respondents asked about what form of advertising they accept or which they do not accept answered the answers, provided the answers presented in the table 4.

Table 4. User-preferred types of ads

Type of advertisement	I accept	I do not accept
Static graphic or text banners	77,20%	22,80%
Video ads - skippable	48,20%	51,80%
Native ads	36,40%	63,65%
Audio ads	1,00%	99,00%
Video ads - you cannot omit them	3,90%	96,10%

If we divide the group according to gender, it turns out that all males know what adblock is and either use it (78,3%) or not. Among females, 13 respondents answered that they did not know what adblock was. Within that group, 75,2% use adblock.

When it comes to using adblock and the education of the respondents, both the group with secondary and higher education have the same percentage of adblock users (78,3%).

Further analysis will consist of more detailed presentation of the results in two most widely represented age groups who use adblock. Everyone uses adblock on an ordinary computer. Interestingly enough, within the 25-34 age group, it is more frequently installed on smartphones and tablets as well - 17,7% and 12,5% respectively, and within the 18-24 age group the numbers are - 14,6% and 4,5%. Despite of the fact that the 18-24 age group is most widely represented in the research, using adblock on mobile devices is less widespread here than in the 25-34 age group.

With respect to configuring adblock software on their own, also the group aged 25-34 demonstrates bigger activity (38% defines the way adblock functions on their own, and in the younger group the percentage is 28%).

Both groups behave in a similar way with respect to switching off the adblock software. The respondents aged between 18-24 declare that 88,2% of them switch off the adblock software and within the group aged 25-34, the procedure is followed by 88,5% of adblock users.

Both groups respond similarly to the question, why they switch off the adblock software? 59,7% of respondents aged 18-24 temporarily switch off the adblock software in order to access the content and then switches it on again, while within the group aged 25-34, the procedure is followed by 57,9% of respondents. The behavior changes when the respondents clash with adblock-wall. 81,9% of respondents aged 18-24 clash with this type of blockade while browsing websites with adblock switched on. An even bigger percentage of respondents, i.e. 93,2% within the group aged 25-34 clash with this type of blockade before accessing the content. Within the group aged 18-24, after clashing with the blockade, 35,4% of the respondents leave the website, and a vast majority switches off the adblock software and accessed the content that was not available before. With the group aged 25-34, the division is different - 49,7% of the respondents, when clashing with the blockade, leave the website and the second half of the respondents after clashing with the blockade, decide to switch off the adblock software.

3.3 Conclusions

According to the survey results, about 60% of the surveyed users aged 18-24 block ads:

- Age group 18-24 - 56,30% of Internet users block internet advertising,
- Age group 25-34 - 32,80% of Internet users block internet advertising,
- Age group 35-44 – 9% of Internet users block internet advertising.

The older the user, the less often it blocks unwanted content. Respondents aged 18-24 declare that in 88.2% they exclude adblock software to gain access to content, and in the group of people aged 25-34 - 88.5% of users disable the adblock program. Both groups of respondents react similarly to blocking advertisements. After the collision with adblock-wall, in the group of 18-24% up to 35.4% of the respondents will leave the website, and in the group of 25-34 years the website will leave as many as 49.7% of the respondents. Other people (constituting the majority) decide to disable the blockade to access the content.

The main reason for blocking ads is:

- 50.30% of Internet users complain about too often displaying advertisements,
- 37.80% of Internet users complain about excess advertising on the web.

Users mainly pay attention to the technical aspects of ad blocking (Table 5). They are able to accept 77.7% static graphic or text banners. The biggest dislike among Internet users is caused by audio advertisements (99%).

Table 5. Percentage index of reasons of ads blocking grouped by categories

Main Categories of Reasons	The Reasons for Blocking Ads by Users	% Index*
Technical	Website	Virus and malware protection.
		Slow loading website.
		Content interrupted by ads.
	Advertisement	Too many ads on the website.
Social	Human Relationship (Website-User)	Privacy protection.

* The table contains the results that were tested on a group of 596 users.

4 Summary and Future Research

As a result of the conducted research, the thesis was confirmed that *the reason for blocking advertisements by users is not advertising sensu stricto or the content of the advertisement, but the manner and frequency of delivering the advertisement to the recipient of the content.* The study showed that ads are blocked because:

- they prevent people from receiving content,

- there are too many of them on the website,
- they delay the speed of loading of websites,
- they decrease cyber security and data protection.

Therefore, if the content providers or advertisers want to convince the recipients of the content not to use blocking, they should take care of delivering the advertisement in the form adapted to the expectations and convenience of the Internet users, and not for blocking or legal solutions. It is necessary to create conditions that will not violate the convenience of browsing the web pages so that the user does not receive advertisements invasive, ubiquitous, badly adjusted, not interesting, harassing and heavy on processing power.

This paper has two major contributions. First, we described the reasons why Polish user is blocking advertisements, by using adblock software together with internet browsers. The main reason is that advertisements are annoying. Second, we described, what are the acceptable advertisement format, that user would not block if they appear in the browser. The user is mainly accepting text advertisements.

The authors are aware of the limitations of the research study. The study was mainly addressed to people who block advertisements. For activities in the field of sustainable development, it was also necessary to ask publishers (content creators), advertisers and programmers who created adblock software to discover the reasons of changing the advertisement strategy. There are still some research questions to answer in context of technological and social reasons of blocking advertisement.

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