

SEO in Serbian websites

Jana Knezevic, Jovana Panovic, Nikola Savanovic, Miodrag Zivkovic

Abstract—Search Engine Optimization, well known as SEO, strives to improve sites' visibility on search engines. It is some sort of guidance on how to become the first result in search results. In its practice is to improve/make the most of quality and quantity of website traffic. It is important to emphasize that SEO is all about understanding what people are interested in and what they seek to find. Because Global network and optimization techniques keep changing dynamically and the new ones are appearing, it is very important to keep up with the latest SEO news. We found some of the most important factors that might help improving the position in organic search results. With this in mind, we have aimed to discover the most common mistakes when it comes to our (Serbian) sites. This study will be beneficial to website developers, webmasters and any other person who participate in creating our websites. While doing this research, not to mention that we were testing and validating all results. The last part of our article concludes the whole story of our SEO research and gives further recommendations.

Index Terms—search engine optimization, search engines, SEO, page rank, website

I. INTRODUCTION

Search engine optimization is a series of modifications and techniques that should lead a site to be on the first page of search engines. Which one will be used, depends on the target of SEO, the type of website and website owner's main goals. SEO is more about improvements of unpaid results, known as "natural" or "organic" results and less about the purchase of paid placement. SEO aspires to help search engines to understand and present content, but it is more focused on users experience. Since Google started in 1998, their mission has always been to organize the world's information and make it universally accessible and useful. Under those circumstances, it is equally important to be focused on both Google's algorithm and users needs. There is no secret formula to be on the top of the first page and, of course, no one outside the Google knows the exact algorithm. Some studies showed that 95% of people never go further than the first page, nearly 75% of searchers start their searches on Google and the first five results on Google get 67% of all

Jana Knezevic is with the Faculty of Informatics and Computing, Singidunum University, Danijelova 32, Belgrade, Serbia (e-mail: jana.knezevic.18@singimail.rs).

Jovana Panovic is with the Faculty of Informatics and Computing, Singidunum University, Danijelova 32, Belgrade, Serbia (e-mail: jovana.panovic.18@singimail.rs).

Nikola Savanovic is with the Faculty of Informatics and Computing, Singidunum University, Danijelova 32, Belgrade, Serbia (e-mail: nsavanovic@singidunum.ac.rs).

Miodrag Zivkovic is with the Faculty of Informatics and Computing, Singidunum University, Danijelova 32, Belgrade, Serbia (e-mail: mzivkovic@singidunum.ac.rs).

clicks [1].

With all this in mind, this study's purpose is to explore and disclose some of the top ranking factors and besides that, to demonstrate some of the most frequent mistakes with a tendency of making improvements.

II. SEARCH ENGINE OPTIMIZATION

As it is mentioned earlier, search Engine Optimization (SEO) is a long-term strategy, which should lead to a higher ranking on search results page and, subsequently, bring higher traffic to a website.

The working process of search engine optimization has three steps. Firstly, spiders crawl the web as they visit web pages, then they add optimized pages to their index and sort them so Google can show the best results based on what people search for.

The most popular search engines, Google, Bing and Yahoo!, use crawlers to help them find pages for their algorithmic search results. Each of these search engines are the answers machines and their main goals are to find, understand and sort the information only because of the mission we have mentioned before.

Equally important is search engine results pages, referred to as "SERPs". These are web pages that users see when they look up for something while using a search engine.

Not to mention there are large quantities of pages on the web, but none of them are more important to all types of profession than SERPs. Also, because the SEO techniques are user oriented, it is understandable why the answer boxes have become very popular lately.

There are two types of SEO. On-page SEO directs to the things on your site that you can optimize it is also under direct control of a developer. Main elements of On-page SEO are: title, content, URL structure, headings. Off page SEO is influenced by some external factors, such as readers, other developers, publishers and visitors. These factors can boost traffic of a site and its main elements are: blog, forums, social networks and so on... Off-page SEO makes reference to some actions that are not taken on your site and it is about creating good site reputation through high quality content.

SEO techniques can be sorted into two main categories [2].

- Techniques that search engine companies recommend, also known as white hat. White hat advice is generally summed up as creating content for users, not for search engines, and then making that content easily accessible to the online "spider" algorithms.
- Techniques that search engine companies does not approve, known as black hat. Black hat SEO tries to improve rankings in ways that are not approved by the

search engines.

The third category is grey hat SEO and it is totally based on improving search engine rankings, as shown in Fig. 1.

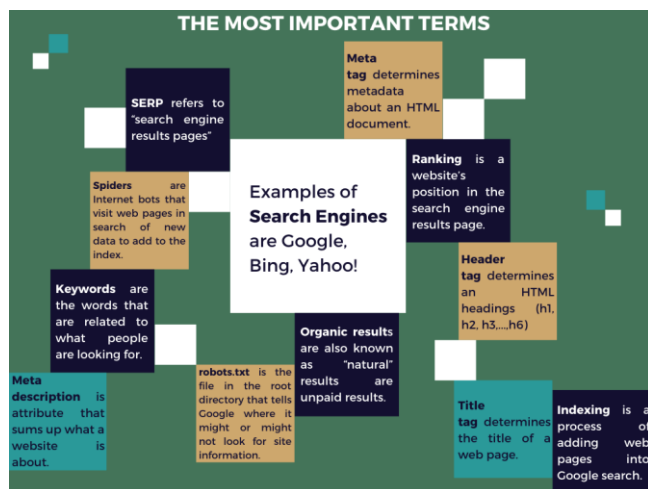


Fig. 1. The most important terms in SEO

III. TOP RANKING FACTORS

Between the months of July and August we have been working on this project. The main purpose was to validate top 30 Serbian sites. The process of validation was simple. We have used the most recommended CSS and HTML validator. We have copied URL addresses in these validators, and by clicking on the option validate, errors would appear. Also, because of the privacy terms, we would not name any specific site. There were many errors, but we have summed up the most repeated ones.

First thing to remember and very important to be aware of, as we have mentioned earlier, is that there is no secret formula to be on the top of the first page. Not to mention that SEO ranking factors keep changing during the time and with that in mind, it is necessary to maintain and improve the knowledge all over again.

However, here are some authors [3] recommendations on how to boost traffic through site that we have explored and described.

A. A secure and accessible website

A secure and accessible website.

Google needs to see site's URL and look at the content in order to understand what the page is about. For this, one will need:

- A website created with a well-coded website builder
- A robots.txt file
- A sitemap that lists all your pages

B. Page Speed

Google wants to improve experience of users. If your site does not load fast on mobile devices, then it could be penalized. So, in that case, use Google's mobile testing tool to see how your site stacks up. One can start using Google

Search Console in order to update site's performance, including speed.

C. Mobile friendliness

Nowadays more and more people uses mobile devices rather than desktops. If one's site is not mobile-optimized, the risk of getting needlessly under-ranked is high.

D. Domain Age, URL and Authority

Very few younger sites achieve ranking such as some older sites do (three years old and more)

Authority. It is a combination of great content and off-page SEO signals like inbound links and social shares.

E. Optimized content

LSI keywords - latent semantic indexing keywords. Word association, for example when you type "liverpool" there will be results for football club - Liverpool F.C. instead of the city in UK.

You should understand users' search intent in order to optimize well your content.

Other ways to optimize well:

- Content over 2k words
- Answer boxes
- Using videos

F. Author's suggestions

Here are some suggestions when it comes to importance of getting the code right:

- Add keyword phrases in page titles, which is where Google first look to determine which content is relevant to which search. One of the best tool for finding the relevant keywords is platform called *ahrefs*.
- Use header tags to show content hierarchy starting with your title at h1 and then use h2 or h3 for subheads
- Create a meta description that both entices readers and includes your keyword phrases
- Keep those meta descriptions short and catchy at around 160 characters
- Use keyword phrases in image alt tags to show how those images are relevant to the main content
- Use schema markup to tell Google what kind of content you are producing.

G. User experience

Man-made intelligence is used to better rank web pages and it includes:

- Click-through rate (CTR) - the number of users who click on your site after Google shows them their search result
- Bounce rate - it is almost the same as the previous one, but the difference is that people go back quickly to their search results
- Dwell time - it is the time visitors stay on your website.

H. Links

Off-page SEO often refers to Link Building. That is the process of getting other websites to link to your webpages units, as shown in Fig. 2.

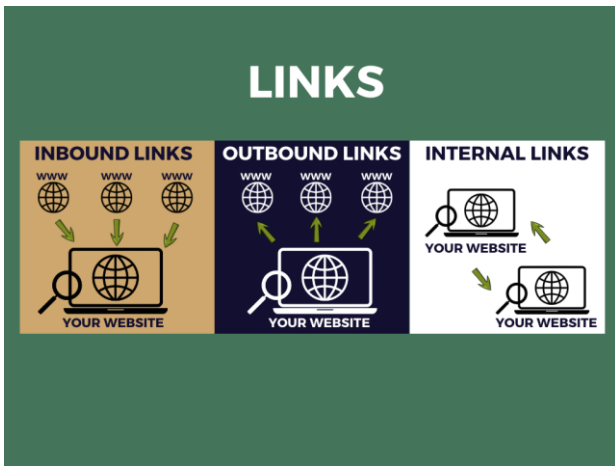


Fig. 2. Process of Link Buildings

I. Social media and signals

Of course, it is important for your content to be shared between people; it means it is precious and worthy. Therefore, the best advice is to start a blog. That can and will help your customers to solve problems. There we have some tools to help us with that, such as Smash Balloon and OptinMonster.

Social media, such as Instagram or Youtube, are a huge part of Global network, especially when it comes to search results. Whenever one is searching for their favorite movie star or hotel, the very first results are Instagram pages/profiles. Youtube videos are also the first thing that pops up when one is searching for some tutorials or, for example, cooking recipes.

IV. STATISTICS

We have put twenty-three of the most visited Serbian sites under validation [4]. The main purpose of this experiment was to find out whether their HTML and CSS codes are written by the standards or not. The most repeated errors will be described in the next few graphs. When it comes to the process of validation it was quite simple. We have selected the most recommended HTML validator (<https://validator.w3.org/>) and copied sites URL. Afterwards, all the errors and warnings were listed and put into our statistics, as shown in Fig. 3 and Fig. 4.

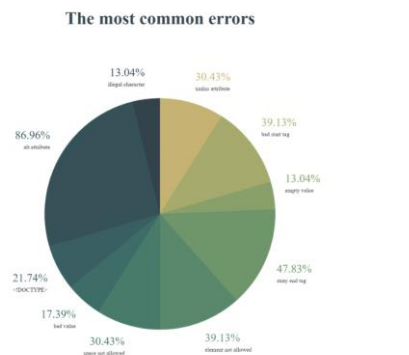


Fig. 3. Figure shows the most common errors during analysis

The most common errors

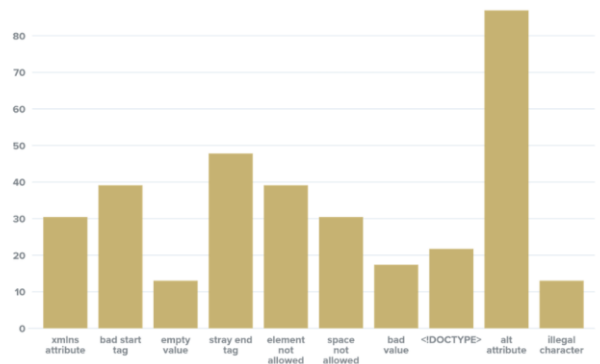


Fig. 4. Chart of the most common errors on Serbian websites

The next part represents the explanation of the top 10 most repeated errors.

1. *Xmlns attribute* - this error appears in quite many site codes, but the *xmlns* attributes are not allowed in meta tags.
2. `` tag - cannot be in head. In that case, you should move it to body. Bad start tag in *img* in head.
3. Alt attribute - every *img* tag must have alt attribute
4. Stray end tag - in some codes, tags are not opened and closed properly
5. Element not allowed - element x not allowed as child of element y in this context. Depending on which element is being used, there are various types of context for each of those elements.
6. Space not allowed - in some tags, links have space between words, which is not allowed. But on the other hand, some tags do not have space between attributes and that is necessary.
7. Bad value - in this case the problem is that HTML tags cannot have CSS attributes. Value must be a digit.
8. `<!doctype>` - many codes do not have properly written *doctype* tag.
9. Empty value - element option without attribute label must not be empty.
10. Illegal character - when it comes to the *href* tags and values, some characters are not allowed.

V. CONCLUSION

Search Engine Optimization, now known as SEO, strives to improve sites' visibility on search engines. Altogether, our study showed many different SEO techniques for improving websites, of course, according to SEO standards and principles. We have strived to give quick and suitable/convenient suggestions and what is more important, easy understandable for ones who experience all the terms above for the first time.

The errors we have mentioned up above are not cardinal

errors, but just very frequent. [7][8] Taking this into account, using validators, such as HTML and CSS validators, is something that should not be avoided. It is not only about the reduction of errors, but it also shows professionalism and provides guarantee that one's site will be valid in the future [9]. We recommend a few tools that we consider very useful. In the comment section of the article, one can find many tools, but we have selected some of the most interested [10]:

- SERP Volatility Tools - MozCast, Ayima Pulse etc.
- Forums and Blogs - Webmasters Help Community
- Google Update History - Google: Algorithm updates, Google Algorithm Updates History.

Generally speaking, while doing this research we have come to a few conclusions and restatement ideas. There are many factors for ranking on the web. As can be seen, it takes a lot of time and effort to become the first result. Although there is no guarantee for that, there are few steps that can be taken, that we have mentioned before. The right mix of off-page and on-page optimization techniques is extremely vital.

When it comes to question "Should one strive to please its audience or to please Google?"

The answer is both. Each part of SEO needs to be in place in order to rank well. Advice: Create awesome content that users will love.

When it comes to experimental part of our work the conclusion we have come to, as has been noted, is that the most img tags do not have alt attributes. So that is the first one of our top three most repeated errors. If the site is not loading well, in that case, alt attributes are necessary. The example of code for this error is [5]:

```

```

The second most repeated error is that some tags have "stray end tag". The main problem is that tags are not opened and closed properly. To be precise, eleven out of twenty-three sites have this error.

Stray end tag noscript.

```
<noscript>
```

```
<img height = "... " width = "... " src = "#">
</noscript>
```

And finally, nine out of twenty-three sites have bad start in tags. For example, img tags or any other tag cannot have CSS attributes.

```

```

In this case, also cannot have closed tag.

REFERENCES

References should be typed in 8 pt text. Reference numbers should be indented and justified, like in the examples below (Style "References"). The reference numbers are on the line, enclosed in square brackets. In all references, the given name of the author or editor is abbreviated to the initial only and precedes the last name. Please write the names of *all* authors; do not use "et al". Do not combine references: there must be only one reference with one number. If there is a URL, it can be included at the end of the reference. Always write full titles. Abbreviate the names of the journals. Examples of different kinds of references (journal articles, books, book sections, patents, etc.) are given below.

- [1] SEO Made Simple: A Step-by-Step Guide for 2020 (online): <https://neilpatel.com/what-is-seo>
- [2] Search engine optimization (online): https://en.wikipedia.org/wiki/Search_engine_optimization
- [3] 10 Crucial SEO Ranking Factors You Need to Know (online): <https://optinmonster.com/seo-ranking-factors>
- [4] Top Sites in Serbia (online): <https://www.alexa.com/topsites/countries/RS>
- [5] HTML alt Attribute (online): https://www.w3schools.com/tags/att_img_alt.asp
- [6] Search Engine Optimization (SEO) Starter Guide (online): <https://support.google.com/webmasters/answer/7451184?hl=en>
- [7] A. Elsadai, M. Tair, N. Savanović, "The Evaluation of The Technical Quality of Web Sites With Contents in Arabic and Serbian Languages," in Sinteza 2019 - International Scientific Conference on Information Technology and Data Related Research, Belgrade
- [8] Kittisak Chotikitpat, Prachyanun Nilsook, Sunantha Sodsee, Techniques for Improving Website Rankings with Search Engine Optimization (SEO)
- [9] Why Validate? (online): <https://validator.w3.org/docs/why.html>
- [10] Becoming Better SEO Scientists, Mark TraphagenJuly (online): <https://moz.com/blog/becoming-better-seo-scientists-whiteboard-friday>
- [11] SEO inside Newsrooms: Reports from the Field Dimitrios Giomelakis, Christina Karypidou and Andreas Veglis