On-Page and Off-Page Optimization Techniques for Search Engine Results Page (SERP)

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Abstract - As popularity of web increases, millions of people use search engines to discover information. But search engine users are interested only in top few result pages. So promoting a website in search engine result is a major task in website development. Search engine optimization (SEO) is to complete this work. The core methodology used in SEO is to upgrade both content and associated coding of the website to improve its visibility and prominence in organic searches made by the search engines. The optimized websites obtain better ranks, and typically get a higher number of visitors. This paper describes the role, importance and working of search engine. And also describe about the concept and overview of search engine optimization and its types. Finally, this paper puts forward some On-Page and Off-Page optimization guidelines for optimizing the websites.

Keywords—Search Engine Optimization (SEO), On-Page SEO, Off-Page SEO, Search Engines, SERP

I. INTRODUCTION

A web search engine is an answer machine. It is a software system that is designed to search for information on the World Wide Web. Search engine is a web software program or web based script available over the Internet that searches documents and files for keywords and returns the list of results containing those keywords. Today, there are numbers of different search engines available on the Internet, each with their own techniques and specialties. Search Engine Optimization is a technique to improve visibility of a website in search engine.

A. How Search Engine Operates

Search engines have two major functions: crawling and building an index, and providing search users with a ranked list of the websites they've determined are the most relevant. Links allow the search engines' automated robots, called "crawlers" or "spiders," to reach the many billions of interconnected documents on the web. Once the engines find these pages, they decipher the code from them and store selected pieces in massive databases, to be recalled later when needed for a search query. To accomplish the monumental task of holding billions of pages that can be accessed in a fraction of a second, the search engine companies have constructed datacenters all over the world. These monstrous storage facilities hold thousands of machines processing large quantities of information very quickly. When a person performs a search at any of the major engines, they demand results instantaneously; even a one- or two-second delay can cause dissatisfaction, so the engines work hard to provide answers as fast as possible.

When a person performs an online search, the search engine scours its corpus of billions of documents and does two things: first, it returns only those results that are relevant or useful to the searcher's query; second, it ranks those results according to the popularity of the websites serving the information. It is both relevance and popularity that the process of SEO is meant to influence.

B. How do search engines determine relevance and popularity?

To a search engine, relevance means more than finding a page with the right words. In the early days of the web, search engines didn't go much further than this simplistic step, and search results were of limited value. Over the years, smart engineers have devised better ways to match results to searchers' queries. Search engines typically assume that the more popular a site, page, or document, the more valuable the information it contains must be. This assumption has proven fairly successful in terms of user satisfaction with search results. Popularity and relevance aren't determined manually. Instead, the engines employ mathematical equations (algorithms) to sort the wheat from the chaff (relevance), and then to rank the wheat in order of quality (popularity). These algorithms often comprise hundreds of variables. In the search marketing field, it is referred to as "ranking factors."

II. INTRODUCTION TO SEO

Search Engine Optimization is the process of improving the visibility of a website on organic search engine result pages (SERPs), by incorporating search engine friendly elements into a website. A successful search engine optimization campaign will have, as part of the improvements, carefully select, relevant, keywords which the on-page

optimization will be designed to make prominent for search engine algorithms. Search engine optimization is broken down into two basic areas: on-page, and off-page optimization. On-page optimization refers to website elements which comprise a web page, such as HTML code, textual content, and images. Off-page optimization refers, predominantly, to backlinks (links pointing to the site which is being optimized, from other relevant websites).

A. Why optimise the web site?

In today's competitive market SEO is more important than ever. Search engines serve millions of users per day looking for answers to their questions or for solutions to their problems.

Search engine optimization is essential because:

- The majority of search engines users are more likely to choose one of the top 5 suggestions in the results page. So it is necessary to rank the website as higher as possible.
- Good SEO practices improve the user experience and usability of a web site.
- User's trust search engines and having a presence in the top positions for the keywords the user is searching increases the web site's trust.
- SEO is also good for the social promotion of the web site. People who find the web site by searching Google or Yahoo are more likely to promote it on Facebook, Twitter, Google+ or other social media channels.
- SEO is also important for the smooth running of a big web site. Web sites with more than one author can benefit from SEO in a direct and indirect way. Their direct benefit is increase in search engine traffic and their indirect benefit is having a common framework (checklists) to use before publishing content on the site.
- SEO can put a website ahead of the competition. If two web sites are selling the same thing, the search engine optimized web site is more likely to have more customers and make more sales.
- Success is biased at being top of the rankings. The top-ranked site for a search does better than #2, and the top few get many times more visits than the results at the bottom of the first page, which in turn get many times more clicks than results on page 2 etc. etc.

The skew is so great that the benefit of getting higher up the rankings far outweighs the costs. To get high rankings, websites should be optimized.

B. Main Stages of the Search Engine Optimization Process

SEO can be broken down into 2 main stages:

On-Page SEO: What rules to apply on the site to make it search engine friendly and

Off-Page SEO: How to promote the web site or blog so that it can rank better in search results.

Fig. 1 Main Stages of the Search Engine Optimization Process

III.   ON PAGE SEO

On Page SEO refers to settings that can apply on the website so that it is optimized for search engines. The most important on Page SEO techniques are:

- Optimized titles and descriptions
- Proper URL Structures
- User friendly navigation (breadcrumbs, user sitemaps)
- Optimized internal links
- Text Formatting (use of h1,h2,bold etc)
- Image optimization (image size, proper image names, use of ALT tag)
- User friendly pages
- Fast loading pages
- Google Authorship verification for all pages
- Top quality fresh content
- External links

Fig.2 On – Page SEO Techniques

A. Content comes first

A website with brilliant content can do great with or without SEO, a website with bad content will not survive with or without SEO, a website with good content can become even better with SEO!

1) *Original Content*: No copies or re-writes of existing articles, text, images, videos, presentations, infographics, comments etc.
2) *Content published on the website first*: If the content already published on another website then it's not good for the site.
3) *Content that includes text as well*: Try to have text to accompany with non-text content. For example if any videos are posted on the website try to add a text description as well. If images are added try to describe in words what the image is all about.
4) *Content that is useful*: Don't publish content for the sake of publishing. Before hitting the publish button make sure that what goes live adds value to the website.
5) *Content that is well researched:* Users don't want to read quickly prepared posts and neither does search engines. Make sure that the content is justified and covers both sides of a story. Long articles are proven to rank better than short articles.
6) *Posting frequency:* 2 things are important when it comes to posting frequency. First is to have fresh content and second to establish a publishing strategy and stick to it.

B. Page titles, description and formatting

When search engines are reading the pages among the things they check includes the page title, the description of the page, the major headings and images. They do so because they need to understand what the page is all about and then based on other factors as well (off page SEO, domain authority, competition etc.), they will place the page in a position in their index.

1) *Page titles:* Each page must have a unique title that will help both search engines and users understand what the page is about. A page with title "On Page SEO Tips" is better than a page with title "index.html".
2) *Descriptions:* The page description is what the searcher will see in the search engine results page. So it has to be descriptive, up to 150 characters and unique for each page.
3) *Formatting:* A page needs to be properly formatted. Think of it like a report which needs to have a heading (h1) and sub headings (h2). Important parts of the report are highlighted with **bold,** underline or *italics.* Do not just throw text on the page but make sure that it is readable as well. It is also need to use a good size font (at least 12px) and split the text into small paragraphs (max 4-5 lines).
4) *Images:* Images are important but these should not increase the loading time of the website. Best practices for using images:

Use original images: If you need to use an existing image from the web you need to reference the source.
Optimize the size of the images: The smaller the size (in bytes) of the image the better. Use yahoo smush **it** to reduce the size of an image without sacrificing the quality.
Use ALT tag to describe the image: This helps search engines understand what the image is about.
Use descriptive filenames: Don't just name your image 'image1.jpg' but try to use descriptive filenames, for example 'Man doing push-ups'.
Use a Content Delivery Network: If you have a lot of images in a single page you can use a CDN service (from Amazon or Google) that will make your page load faster. In simple terms your images will be hosted and served by a number of servers and this speeds up the loading process.

C. URL Structure

The URL structure is an important part of on-page SEO.

1) *Permanent links* – Permanent links are the URL's of each page. Good URLs should be less than 255 characters and use hyphens to '-'separate the different parts.
For example a good URL is:

https://www.reliablesoft.net/seo-tips-for-beginners-15-ways-to-google-boost-your-web-site/

A bad URL is:

https://www.reliablesoft.net/p?165 or

https://www.reliablesoft.net/seotipsforbeginners/ or

2) Categories – Group the pages into categories to help users and search engines find what they want faster. It's like having a warehouse with lots of uncategorized items versus a warehouse with all the items assigned to a dedicated category.

3) Breadcrumb – A breadcrumb is also important for all the pages because it allows users to navigate the website in a structured way since they always know where they are and how deep below the home page.

4) User Sitemap: One of the options in the main menu should be the User Sitemap. This is an html file that represents the structure of the website. Visit **my sitemap** for an example.

D. Internal linking

Linking to pages within the website is very important for SEO. Just as search engines need to see content in order to list pages in their massive keyword-based indexes, they also need to see links in order to find the content in the first place. A crawlable link structure—one that lets the crawlers browse the pathways of a website—is vital to them finding all of the pages on a website. Hundreds of thousands of sites make the critical mistake of structuring their navigation in ways that search engines cannot access, hindering their ability to get pages listed in the search engines' indexes.

Best practices for internal linking:

1) Don't use keywords only for internal links
2) Add internal links when they are useful for reader
3) No more than 7-8 internal links per page
4) If applicable use 'related posts' at the end of each post for internal linking

E. Speed and authorship

2 SEO techniques that are becoming more and more important are Speed and authorship.

1) *Speed:* Google is investing a huge amount of money to make the web faster. In every Google I/O someone will talk about the importance of speed and their desire to include the fastest websites in their index. In order to 'force' web site owners to take speed into account they have officially added speed as one of the ranking factors. So, we know for sure that web site speed does matter when it comes to SEO and ranking. As a webmaster your job is to make sure that your website loads as fast as possible by taking into account **Google's recommendations**.

2) *Google authorship:* Google is preparing for the next generation of Search and their effort is to rank higher webpages written by people who have authority on the particular subject. One of the ways to establish authority is by correlating the content we publish on the web with your Google+ profile. Then depending on how many followers we have and who follows us, our ranking may change.

IV.   OFF-PAGE SEO

Off-site SEO is generally known as link building. In general, search engines are trying to find the most important pages of the web and show those first when a user enters a search query. One of the factors to determine the position a web page will appear in the results is the number of incoming links. Incoming links are a signal of trust and depending from where the links are coming, they can greatly affect the ranking position (either positively if the links are coming from well-known and trusted sites or negatively if they are paid links, article directories, link farms etc.).
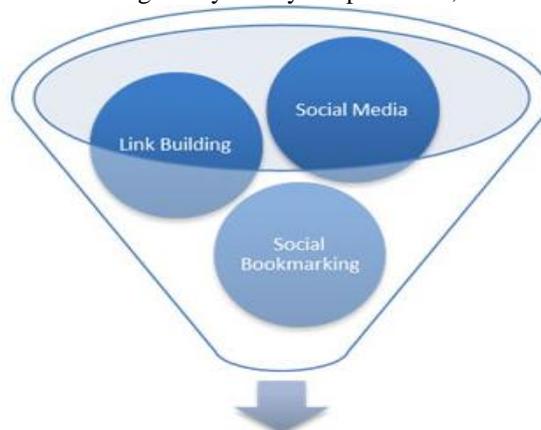

Fig 3 Off – Page SEO Techniques

Unlike On- page SEO, off-page SEO refers to activities outside the boundaries of the webpage. The most important are:

- Link Building
- Social Media
- Social bookmarking

A. Link Building

Link building is the most popular off-Page SEO method. Basically by building external links to the website, it can bypass other competitors and rank higher. For example if someone likes this article and references it from his/her website or blog, then this is like telling search engines that this page has good information.

Over the years webmasters were trying to build links to their websites so that they rank higher and they 'invented' a number of ways to increase link count. The most popular ways were:

1) *Blog Directories:* Something like yellow pages but each entry was a link back to a website.
2) *Forum Signatures:* Many people where commenting on forums for the sole purpose of getting a link back to their website.
3) *Comment link:* The same concept as forum signatures where you comment on some other website or blog in order to get a link back. Even worse, instead of using your real name you could use keywords so instead of writing 'comment by Alex Chris', you wrote 'comment by How to lose weight' or anything similar.
4) *Article Directories:* By publishing your articles on an article directory you could get a link (or 2) back to your website. Some article directories accepted only unique content while other directories accepted anything from spin articles to already published articles.
5) *Shared Content Directories:* Websites like hubpages and infobarrel allowed you to publish content and in return you could add a couple of links pointing to your websites.
6) *Link exchange schemes:* Instead of trying to publish content you could get in touch with other webmasters and exchange links. In other words I could link your website from mine and you could do the same. In some cases you could even do more complicated exchanges by doing a 3-way link, in other words I link to your website from my website but you link to my website from a different website.

B. Social Media

Social media is part of 'off-site SEO' and it's also a form of link building. It should be noted that almost all of the links you get from social media sites are "nofollow" but this does not mean that they do not have any value. Social Media mentions are gaining ground as ranking factors and proper configuration of social media profiles can also boost SEO.

C. Social Bookmarking

Social Bookmarking is the best method to organize, store, manage and search for bookmarks of online resources. The SEO players look for the related social bookmarking websites where they can bookmark their own website to get a back link from the site. When we discover a web page that we find interesting, in its place of having to remember the address of the webpage, we can basically save the address as a 'bookmark' in our browser. Social bookmarking is similar to saving favourites on our browser, except we are saving to a website that we can access from any computer in the world. But the component of social bookmarking is the 'social' element. Each one can appear at each one else bookmarks. That's mean, we are looking for the content, that people already bookmarked. We can also see how good quality different content is by how many times it's been saved by special users. Mainly social bookmarking websites will display a number next to the content representing how many times it has been saved by a different user. These sites also show a continually updated list of popular web pages. This can be a enormous technique of finding remarkable content that we might not otherwise appear across.

V.   CONCLUSION

Website ranking in search result is strongly depends on how SEO is implemented. The optimized websites appear at better ranks in search engine and ordinarily get a higher number of visitors. This research is based on reviewing different available techniques for optimizing individual web-pages or the entire website to make them search engine friendly. This paper also suggests some guideline for search engine optimization. Both on page and off page search engine optimization techniques are important for better search result.

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