

Search Engine Optimization

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ABSTRACT

The initial criteria for evaluating a researcher's output is the number of papers published. Furthermore, for the measurement of author's research quality, the number of citations is significant. Typically, citations are directly linked with the visibility of a research paper. Many researches had shown that the visibility of a research paper can be improved further by using the search engine optimization techniques. In addition, some research already proved that the visibility of an article could improve the citation results. In this article, we analysed the impact of search engine optimization techniques that can improve the visibility of a research paper. Furthermore, this paper also proposing some strategies that can help and making the research publication visible to a large number of users.

Keywords : H-Index, Research Impact, Search Engine Optimization, Citations, Research Marketing, Research Visibility.

I. INTRODUCTION

Search engine optimization (SEO) is the process of increasing the quality and quantity of website traffic by increasing the visibility of a website or a web page to users of a web search engine. SEO refers to the improvement of unpaid results (known as natural or organic results) and excludes direct traffic/visitors and the purchase of paid placement. SEO may target different kinds of searches, including image search, video search, academic search, news search, and industry-specific vertical search engines.

Optimizing a website may involve editing its content, adding content, and modifying HTML and associated coding to both increase its relevance to specific keywords and remove barriers to the indexing activities of search engines. Promoting a site to increase the number of backlinks, or inbound links, is

another SEO tactic. By May 2015, mobile search had surpassed desktop search.

As an Internet marketing strategy, SEO considers how search engines work, the computer-programmed algorithms that dictate search engine behavior, what people search for, the actual search terms or keywords typed into search engines, and which search engines are preferred by their targeted audience. SEO is performed because a website will receive more visitors from a search engine the higher the website ranks in the search engine results page (SERP). These visitors can then be converted into customers.

SEO differs from local search engine optimization in that the latter is focused on optimizing a business' online presence so that its web pages will be displayed by search engines when a user enters a local search for

its products or services. The former instead is more focused on national or international searches.



Fig: -1.1 Search Engine Optimization

II. METHODS AND MATERIAL

Search engines are classified into the following three categories based on how it works.

1. Crawler based search engines
2. Human powered directories
3. Hybrid search engines

1. Other special search engines

Let us discuss all types of search engines in detail in the following sections.

1. Crawler Based Search Engines: All crawler based search engines use a crawler or bot or spider for crawling and indexing new content to the search database. There are four basic steps, every crawler-based search engine follows before displaying any sites in the search results.

1. Crawling
2. Indexing
3. Calculating Relevancy
4. Retrieving the Result

1. Crawling: Search engines crawl the whole web to fetch the web pages available. A piece of software

called *crawler* or *bot* or *spider*, performsthe crawling of the entire web. The crawling frequency depends on the search engine and it may take few days between crawls. This is the reason sometimes you can see your old or deleted page content is showing in the search results. The search results will show the new updated content, once the search engines crawl your site again.

2. Indexing: Indexing is next step after crawling which is a process of identifying the words and expressions that best describe the page. The identified words are referred as keywords and the page is assigned to the identified keywords. Sometimes when the crawler does not understand the meaning of your page, your site may rank lower on the search results. Here you need to optimize your pages for search engine crawlers to make sure the content is easily understandable. Once the crawler's pickup correct keywords your page will be assigned to those keywords and rank high on search results.

3. Calculating Relevancy: -Search engine compares the search string in the search request with the indexed pages from the database. Since it is likely that more than one page contains the search string, search engine starts calculating the relevancy of each of the pages in its index with the search string.

There are various algorithms to calculate relevancy. Each of these algorithms has different relative weights for common factors like keyword density, links, or meta tags. That is why different search engines give different search results pages for the same search string. It is a known fact that all major search engines periodically change their algorithms. If you want to keep your site at the top, you also need to adapt your pages to the latest changes. This is one reason to devote permanent efforts to SEO, if you like to be at the top.

4. Retrieving Results: -The last step in search engines' activity is retrieving the results. Basically, it is simply displaying them in the browser in an order. Search engines sort the endless pages of search results in the order of most relevant to the least relevant sites.

WORKING PROCESS- I

A. Understanding how search engines work is only the first step of the process in improving a site's search rankings. Actually, improving a site's rank involves leveraging various SEO techniques to optimize the site for search:

1. **Keyword Research** - Keyword research is often the starting point for SEO and involves looking at what keywords a site is already ranking for, what keywords competitors rank for, and what other keywords potential customers are searching for. Identifying the terms that searchers use in Google search and other search engines provides direction on what existing content can be optimized and what new content can be created.
2. **Content Marketing** - Once potential keywords are identified, content marketing comes into play. This can be updating existing content or creating brand new pieces of content. Because Google and other search engines place a premium on high-quality content, it's important to research what content is already out there and create a compelling piece of content that provides a positive user experience and has a chance of ranking highly in the search engine results. Good content also has a greater chance of being shared on social media and attracting links.
3. **Link Building** - Because links from external websites (called "backlinks" in SEO parlance) are one of the core ranking factors in Google and other major search engines, obtaining high-quality backlinks is one of the main levers that SEOs have. This can involve promoting good content, reaching out to other websites and building relationships with webmasters, submitting websites to relevant web directories, and getting press to attract links from other websites.
 - a) **On-Page Optimization** - In addition to off-page factors such as links, the improving the actual structure of the page can have tremendous benefits for SEO, and is a factor that is entirely in the

control of the webmaster. Common on-page optimization techniques include optimizing the URL of the page to incorporate keywords, updating the title tag of the page to use relevant search terms, and using the alt attribute to describe images. Updating a page's meta tags (such as the meta description tag) can also be beneficial-- these tags don't have a direct impact on search rankings, but can increase click-through rate from the SERPs.

- b) **Site Architecture Optimization** - External links are not the only thing that matters for SEO, internal links (the links within one's own website) play a large role in SEO as well. Thus, a search engine optimizer can improve a site's SEO by making sure key pages are being linked to and that relevant anchor text is being used in those links to help improve a page's relevance for specific terms. Creating and XML sitemap can also be a good way for larger pages to help search engines discover and crawl all of the site's pages.
- c) **Semantic Mark-up** - Another SEO strategy that SEO experts utilize optimizing a website's semantic mark-up. Semantic mark-up (such as Schema.org) is used to describe the meaning behind the content on a page, such as helping to identify who the author of a piece of content is or the topic and type of content on a page. Using semantic mark-up can help with getting rich snippets displayed in the search results page, such as extra text, review stars, and even images. Rich snippets in the SERPs doesn't have an impact on search rankings, but can improve CTR from search, resulting in an increase in organic traffic.

B. TYPES OF SEO

There are four main types of SEO or search engine optimization, all aimed at helping you earn greater visibility in search results:

- a) White Hat;
- b) Black Hat;

- c) Grey Hat; and
- d) Negative SEO.

The main differences have to do with how closely SEO tactics align with Google guidelines and then long it takes before you begin to see results (time), how much it costs, how risky it is, and ultimately, the value the tactics deliver to the client. Google guidelines (Google Webmaster Guidelines) spell out what Google considers good (white hat) and bad (black hat) SEO. They are meant to help you understand what can help and hurt your rankings. While they are not laws with legal consequences, they should be taken seriously and SEOs should let clients know if they plan to violate Google Guidelines.

a) **White hat SEO** techniques, on the other hand, adhere to Google Webmaster Guidelines but usually take longer and cost more to carry out. White hat SEO carries far less risk and tends to deliver lasting and compounding value over time. You'll find most of the respected SEO and content marketing companies like Moz, Search Engine Journal, Search Engine Watch, Search Engine Land, Search Engine Roundtable, the SEM Post, Stone Temple, GSQI, and Philadelphia-area Seer Interactive and SEMrush all use and recommend white hat SEO tools and techniques.

b) **Black hat SEO** will get you where you want to go faster. It is usually less costly because you are taking shortcuts to the top by going against published Google Webmaster Guidelines. In fact, many black hat SEO tactics are specifically spelled out in the guidelines as things you should NOT do. As such, they carry the risk that your website and/or content will rank lower, be banned from search results, or demoted the next time Google updates its ranking algorithm. That is no small concern. Google updates its ranking algorithm roughly 500-600 times a year. Black hat SEO returns value quickly, but there is a risk the value cannot and will not be sustained.

c) **Grey hat SEO** falls somewhere in the middle as these tactics are not specifically called out in Google's Guidelines. You should be cautious about taking this

path as it is not safe to assume that just because a specific technique isn't labelled or mentioned as being deceptive and one that will get you into trouble, that it will not interfere negatively with your rankings.

d) **Negative SEO** is the practice of implementing black or grey hat SEO techniques on someone else's website with the intent of causing harm. Harming your competitors makes room for you to move up in search results.

WORKING PROCESS – II



Fig: -1.2 SEO process

SEO is an acronym that stands for search engine optimization, which is the process of optimizing your website to get organic, or un-paid, traffic from the search engine results page. In other words, SEO involves making certain changes to your website design and content that make your site more attractive to a search engine. You do this in hopes that the search engine will display your website as a top result on the search engine results page.

Though search engine optimization can get quite complex when it comes to all the different factors that impact your ranking, the basic process is not as difficult to understand. Search engines want to

provide the best service for their users. This means delivering results on the search engine pages that are not only high quality but also relevant to what the searcher is looking for. In order to do this, search engines will scan, or crawl, different websites to better understand what the site is about. This helps them deliver more relevant results to those who are searching for certain topics or keywords. Similarly, the search engines will scan the site to determine how easy it is to navigate and read, rewarding user-friendly sites with higher rankings on the search engine results page.

SEO is the process that organizations go through to help make sure that their site ranks high in the search engines for relevant keywords and phrases. For instance, let's say that you have an article about how to build a birdhouse.

In order to get your content in front of the right people, you want to try to optimize this blog post so that it will show up as a top result for anyone who searches for the phrase "build a birdhouse."

There are many benefits of SEO for your business. By improving your SEO, you can work to expand your visibility on the search engines. This helps you reach and engage more potential customers. By creating more engaging and effective SEO-focused content, you can increase your chances of bringing in more targeted organic traffic.

IMPORTANCE OF SEO

Search engine optimization is important because:

1. The majority of search engine users (more than 65% – see graph below) are more likely to click on one of the top 5 suggestions in the search engine results pages (SERPS). To take advantage of this and gain visitors to your web site or customers to your online store, your website needs to appear in one of the top positions.

2. SEO is not only about search engines but good SEO practices improve the user experience and usability of a web site.
3. Users trust search engines and having a presence in the top positions for the keywords the user is searching, increases the web site's trust.
4. SEO is good for the social promotion of your web site. People who find your web site by searching Google or Yahoo are more likely to promote it on Facebook, Twitter, or other social media channels.
5. SEO is 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 an increase in search engine traffic and their indirect benefit is having a common framework (checklists) to use before publishing content on the site.
6. SEO can put you ahead of the competition. If two web sites are selling the same thing, the search engine optimized website is more likely to have more customers and make more sales.

III. LITERATURE REVIEW

As popularity of WWW increases incrementally, millions of people use various search engines to discover information for the various web servers. But majority of users are interested only in few top listed result pages. Here comes the role of Search Engine optimization and hence promoting a website in search engine result page is a major task in website development and maintenance. Website ranking in search result strongly depends on how Search engine optimization (SEO) is implemented. Search engine becomes an integral part of everyone's life to search information. The users rely on search engines to provide us right information at right time. To satisfy users need search engine must find and filter most relevant information matching a user query and display that information to the user. Search Engine Optimization (SEO) is a process/activity that relates with of optimizing websites/web-pages to achieve higher ranking in the SERP.

We have discussed many techniques in this paper, which can be used to increase the presence of a webpage on the internet.

IV. CONCLUSION

From this research study, we can conclude that it is possible that a research article may not be written extraordinarily and may not be published in a leading journal, but by applying the appropriate SEO and other techniques for improving visibility, the paper still can get sufficient citations and worldwide acknowledgment. The author should learn the techniques of using SEO, Social media and other tools to enhance the visibility of their research work. Once author successfully increased the visibility of research article using proposed methods the citations will rise at a notable rate. Therefore, a little hard work and some simple SEO techniques can improve the article's visibility.

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