A Study on Various Search Engine Optimization Techniques

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ABSTRACT: Information technology is being drastically developed in recent years, using search engines to search information has become an evident part of one's everyday life. The positioning of a web site in the first place in the search results of a search engine is a tedious job, to make this easy we use various search engine optimization techniques. These techniques help us to increase the ranking of our web site and make it visible to the search engine. Based on the rankings our web site will be positioned in the search results. Our aim is to make our web site be visible in the first ten positions of the search result. In order to improve their visibility quantity of a website, SEO make use of better ranking in the search result using the keyword selection and usage, high quality back links, rational website constitution, meta tags and rich content. In this paper we discuss many optimization tactics used for the development of a website. The techniques studied in this paper are ON Page SEO, OFF Page SEO, Black Hat, White Hat and Grey hat techniques.

KEYWORDS: ranking, ON Page SEO, OFF Page SEO, Black Hat, White Hat and Grey hat techniques.

I. INTRODUCTION

Search engines mainly operate on two functions ,crawling and indexing and providing answers. Crawling is done with the usage of robots called crawlers or spiders. Robots finds webpage and decipher the code from them storing the code in the massive drivers. When a query is submitted it is searched from the stored code. The result are provided based on the relevance and importance. The relevance is determined based on the mathematical equations and algorithm ,often referred to as ranking factors. When a query is submitted to a search engine, the results are expected to be displayed in no time. Although search engines use many algorithms and techniques to produce the results on time, it is difficult to crawl around billions and billions of pages. To help the search engines retrieve the results faster the website developers use many search engine optimization tactics.

Search engine optimization (SEO) is a process of making a website easy for both user and search engines robots to understand in [11]. The activities that are performed by SEO to increase the amount of targeted traffic that comes to a webite through a search engine. It includes things like making changes to the text and the HTML code. It also includes direct communication with the search engine by making requests for listings or links. SEO is a technique which helps all search engines to find a site and rank them higher than the millions of other sites in response to the given search term. By which SEO helps to get traffic from search engines. The most important SEO element for every search engine is the *keyword* with which the search strings are matched. Choosing the right keyword is the first and the most critical step to a successful SEO.

Even though search engines have been increasingly sophisticated in many ways, it cannot see and understand a webpage as the human does. To overcome this problem we go to various search engine optimization techniques. The most common SEO technique is the On page and Off page SEO. The On page SEO deals with the keyword analysis, how a specific keyword is to be used and the competition level of the keyword used. It also includes writing Meta tags, the purpose of meta tag is to provide a description to the search engine about the content of a web page. The Meta tags include meta title, meta keyword and meta description. The Off page SEO deals with link building with which a web

site is promoted to other web sites. It also includes back links which is helpful to check the interestingness of the users who visit the web site.

II. TECHNIQUES USED FOR SEO

A. *On Page SEO:*

On Page search engine optimization is the most vital part in the process of SEO. If an on page SEO is done perfectly 70% of the SEO job is done and the rest depends on off page SEO in [4]. On-page SEO mainly makes use of the SEO factors that web designers have direct influence in [1]. These SEO factors are analyzed more by search engines, than to off-page factors, to determine search result rankings. The factors include content, HTML code, and architecture of website. This SEO factor enhances the opportunity for marketers to increase the chances of having their website at the top of a search results page. On-page SEO comprises of all the techniques that are used in the overall design and development of a website. This makes the website transparent and easily ranked by the Internet search engines, and it always focuses on increasing a website's rank in the natural search results for a particular set of search terms. On page optimization also refers to the corrective measures that can be taken directly within a website in order to improve its position in the search rankings in [10].

On Page SEO is the art of rearranging the contents of a website such that it becomes search engine friendly. This technique includes the optimization of texts, graphics, HTML tags, URL structure, hyper links, headings etc. Optimizing anything in the website for search engine that is uploaded to the website's domain is termed as on page SEO. For instance selecting the proper ALT tag keyword for an image on a webpage. In a simple definition On Page Optimization is what that can be done on the webpage's of a website in order to make it more friendlier search engine to achieve good search engine ranking for targeted keywords.

Important Components of On-Page SEO
* H1 tags for title
* ALT Tags with proper description for images
* Structure of the URL
* Meta Tags
* Density of the keyword
* XML sitemap
* Unique Content
* Internal Linking from home page
* Right HTML and CSS
* Title Tags

B. *Off Page SEO:*

Off page Search engine optimization almost holds 30% of the overall SEO process. Off-page SEO comprises many techniques that are used for creating inbound links to a webpage to increase the anticipated popularity of the page with regard to search engine algorithms. The goal lies in moving the search result position for the page to the top level in the natural search results for a specific set of search query. Off page optimization is a process which includes all the measures that are to be taken outside the website in order to improve its position in search results. These are measures that assist to create as many high-quality back links (incoming links) as possible. Off-page optimization (off-page SEO) is what can be done off the pages of a website to maximize its performance in the search engines for targeted keywords related to the on-page content and keywords in off-page direct-links. Off page optimization is mainly controlling how the internet portrays a website.

A professional off-page SEO will be able to employ their own resources to control how search engines view a website and thereby control the ranking. Most off-page SEO techniques done well, will result in very high Return on Investment and high ranking in MSN, Google, Bing and Yahoo in [2]. Off page SEO is defined as the things done offline to a website in order to achieve good search engine positioning. In simple definition off page optimization does

not involve any optimization with the contents of the webpage instead it is the optimization which is done offsite the web contents. For instance building quality links to improve the page rank of your website is such type of optimization.

Important components of Off Page SEO
- Link Building
- Article Writing
- Blog Publishing
- Social Media Bookmarking

This means how active is the website among various social media like Digg, Facebook, Google+, Twitter, Linked and many other. The active presence of a website over popular social media increases the brand value as well as reputation of the website.
- Directory Submission Sites
- Forum Postings

Forum posting impacts a lot in offsite optimization. Participate in forum posting and posting questions or answering to any question is getting a chance to get a good quality link from the forum to the website which improves the page ranking.

C. *Black Hat Technique*:

In search engine optimization nomenclature, black hat SEO is termed as the usage of combative SEO strategies, techniques and tactics that concentrate only on search engines and not on the users, and usually does not obey search engines prototype. Few examples of black hat SEO techniques include keyword stuffing, invisible text, doorway pages, adding unrelated keywords to the webpage or page swapping (changing the website completely after it has been ranked by search engines).Black hat SEO is more generally used by the people who are looking for a quick ROI on their Web site, rather than a long-term investment in [6]. Black hat SEO can possibly lead to the Web site being banned from a search engine, however since the focus is usually on quick high return business models. Most experts who use Black Hat SEO tactics consider being banned from search engines is a somewhat irrelevant risk. Unethical, shady, or just over the line SEO is tempting; after all, these tricks actually do work, temporarily. They do end up getting sites higher search rankings; that is, until these same sites get banned for using unethical practices.

Efficient search engine optimization techniques is to be used to get a site ranked higher, and stay away from anything that even looks like it might not be in the rules that search engines set out for webmasters."Black Hat" search engine optimization is consistently defined as techniques that are used to get higher search rankings in an unethical manner. These black hat SEO techniques usually include one or more of the following characteristics:
- breaks search engine rules and regulations
- creates a poor user experience directly because of the SEO techniques utilized on the Web site
- unethically presents content in a different visual or non-visual way to search engine spiders and search engine users.

A lot of what is known as black hat SEO actually used to be legitimate, but a few people go a bit overboard and now these techniques are frowned upon by the general SEO community at large. These practices will actually provide short-term gains in terms of rankings, but if it is discovered that utilizing these spam techniques on our Web site, then it is the risk of being penalized by search engines.

Techniques to Avoid
- Keyword stuffing

Packing more number of keywords beyond the limit that is being specified by the search engine guidelines.
- Invisible text

This is putting lists of keywords in white text on a white background in hopes of attracting more search engine spider.
- Doorway Pages

A doorway page is basically a "fake" page that the user will never see. It is purely for search engine spiders, and attempts to trick them into indexing the site higher.

D. *White Hat Technique*:

In search engine optimization nomenclature, white hat SEO refers to the usage of optimization strategies, techniques and tactics that focus on a user opposed to search engines and completely follows search engine guidelines and policies in [6]. For instance, a website that is optimized for search engines, yet focuses on relevancy and organic ranking is considered to be optimized using White Hat SEO practices. Few examples of White Hat SEO techniques include using keywords and keyword analysis, back linking, meta tags, site map, robots, link building to improve link popularity, and writing content for human readers. White Hat SEO is more frequently used by those who intend to make a long-term investment on their website.

To improve a Web page's position in a Search Engine Result Page (SERP), it is mandatory to know how search engines work. Search engines categorize Web pages based on keywords -- important terms that are relevant to the content of the page. Most search engines use computer programs called spiders or crawlers to search the Web and analyze individual pages. These programs read Web pages and index them according to the terms that show up often and in important sections of the page. There's no way for a search engine spider to know about the webpage unless the right keywords are used in the right places.

Keyword placement strategy:
* Keywords should be placed definitely in the title of the Web page.
* The next right place to use the keyword is in headers.
* The best place to use the keywords is in the meta tags, which will be the first thing that will be crawled by a search engine crawler.
* Keywords can also be used as an alternate text to images.

Keywords are not only the important factor search engines take into consideration when generating SERPs. Just because a site uses keywords well it does not mean that it is one of the best resources on the Web. To determine the quality of a Web page, most automated search engines use link analysis. Link analysis means the search engine looks to see how many other Web pages link to the page in question. If a search engine sees that hundreds of other Web pages related to our web page are linking to their Web page, the engine will give the page a higher rank.
Search engines like Google weigh the importance of links based on the rank of the linking pages. In other words, if the pages linking to a site are themselves ranked high in Google's system, they boost the page's rank more than lesser-ranked pages. To get sites to link to a webpage, first we should make sure that the page is a destination people want to link to. Another way is to offer link exchanges with other sites that cover material related to the content.

E. *Grey Hat Technique*:

Grey Hat Technique is somewhere in between of white hat and black hat in [9]. This technique if used by a professional, can still be effective. Grey Hat approach can be used only when we are sure about all the tactics and the way it should be used otherwise it could lead to malfunctioning.

Grey hat consists of techniques such as:
* Cloaking

Cloaking is a practice that shows the user a different result than that to the search engine. For Google, it is considered to be a high-risk practice that is in violation of its rules. Cloaking should be introduced in the black hat category, but the jury's still out in certain parts of the SEO community where it actually falls. Cloaking can be achieved by altering meta information, so that it does not reflect the content and tampering with the IP address of a site. Doorway pages can also be considered a form of cloaking and are large sets of pages which are each optimized for a keyword or phrase in order to direct the user to one site. Again, they are designed to manipulate bots and trick users into visiting a site they did not intend to.
* Old Domains

The web is a font of old domains that have been abandoned and those that the owners don't use much and these are often used as a way to create back links in order to improve rankings. Generally, these tend to be authoritative domains so that the link appears to be of a good quality.
* Duplicate Content

It is the king pin of the internet and all SEO efforts. Whilst a small proportion of these can be effective, it is still a very dodgy idea to use them.

- Purchasing Links

It is buying the links for money but it is not recommended because if it is found out by the search engine then the site would be penalized and all the effort put would become a waste. However, we can list our site on relevant industry directories as this is approved. There have been a lot of scare stories relating to guest posting and if this constitutes buying links, but if no cash is exchanged, then this is irrelevant. However, links can be exchanged and this is OK.

- Social Media Automation and Buying Followers

These are legitimate tools that help to save time when we are managing multiple accounts. However, you can get other tools that auto-follow and unfollow 1000s of social media users without lifting a finger for as little as a fiver for 5000. This is one of the few here that can be called strictly grey hat as it is not made it to Google's blacklist yet, possibly as social signals are only just becoming important to search engines. Buying followers may seem like a great idea to make it look like we are in the crowd, but all it actually means is no engagement and the risk of infecting any true followers with malware in some instances. There is no positives to it and it is easy to tell those that have, as they have a Twitter following filled with faceless profiles. Finally obtaining a following isn't necessarily an overnight affair, but it is worth it in the end.

III. CONCLUSION

Search engine optimization is the best process to attract the internet users and gain traffic to a website. It is also useful in positioning a site to the top level in the search engine result page. The different techniques helps the web site designers and promoters to make their site's visible to the search engine. If all these techniques are followed in a correct manner the web site will be promoted among a vast range of people and the return on investment for the site would also be high. Search engine optimization is an effective practice when it is followed correctly.

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