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## *A study on Search engine and Search Engine Optimization*

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**Abstract:** *This paper provides the details about search engine and their working as well as some techniques regarding optimization. If we are aware about search engine optimization methodologies then it is beneficial to increase the visibility of website in Search engine result pages. This paper covers On Page Optimization and Off Page Optimization techniques with website ranking.*

**Keywords:** *Search Engine, SEO, Search Engine Optimization, On Page Optimization, Off Page Optimization, Website Ranking.*

### I. INTRODUCTION

Now a day's people mostly refer the search engine to get required information. Search engine is a set of program which we use for mining the data on the internet. Every search engine has its own working methodology. This paper tries to generalize this working process. It suggests some tactics for effective search engine optimization and gives an idea about website ranking.

### II. SEARCH ENGINE

A Search engine is a software system which is useful to find information on the World Wide Web using keywords. It gathers the information, process on it and displays the results to the user in a systematic manner, quickly and accurately. Some popular search engines are Google, Yahoo, Bing, MSN, and Ask.com.

#### A. *How Search Engine Works?*

It can be divided into two parts crawling and indexing respectively. Every search engine has its own crawler or spider to search the content as per the requirements. 'Robots.txt' file can be used to tell the crawler which files should be crawled and which should not be.

Then an indexing procedure comes into the picture at database level. Some spider takes a snapshot of webpage; some index every word on a page while others index the title, metadata, headings, and the first paragraph or two on a page. Then it visits the links available on website. This data is used to rank the page and to decide which pages should be shown and in what order.

### III. SEARCH ENGINE OPTIMIZATION

Search engine optimization (SEO) is the process of affecting the visibility of a website or a web page in a search engine's unpaid results - often referred to as "natural," "organic," or "earned" results (Wikipedia). It may target different types of searches like content search, video search, image search, vertical search etc. SEO is the most important part of search engine marketing. We can divide SEO into two parts, On Page SEO and Off Page SEO.

### A. On Page Optimization

In On page optimization technique we do the optimization in the coding part of WebPages. The On Page Optimization Elements are as:

1) *Keywords*: We can use those keywords which are most accurate and popular in searches. We can include these in title tag, Meta tag, and headline tag. Keyword density is the percentage of times a keyword appears on a webpage compared to the total number of words on the page. Optimum keyword density is up to 1-3%.

2) *URL*: Website URL should be relevant and unique as well as we can use country specific domain names too.

3) *Image*: Search engines can't understand images so provide alt (alternative text) in your image tag.

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4) *XML Sitemap*: HTML sitemaps are for user. It helps them to find content on the webpage easily. While an XML sitemap is for crawler. It is a structured format that tells the search engine about the pages in a website, their relative importance to each other, and how often they are updated.

5) *Redirections*: Redirections are nothing but the HTTP response status codes. When the visitor can't communicate with the server, visitor gets a standardized undesirable 404 Error page. We use 302 code; if the page is missing; it's replaced with a temporary redirect to a custom error page. 301 code is for permanent redirection.

### B. Off Page Optimization

Off Page Optimization: We do this by some promotional methods to improve the ranking of a website in the search engine result pages.

Some popular Off Page techniques are

1) *Directory Submission*: We have to submit URL and website details to these directories by category below various headings. Then website becomes visible to lot of visitors whenever they would browse through these directories.

Please take care that these directories should have good page rank. Some websites with good page rank are Yahoo, DMOZ, networkedblogs and blogtoplist.

2) *Article submission*: Submit unique articles to the directory including relevant hyperlinks which links to the website. It will generate a backlink for website. Search engine crawlers persistently visit these article directories as considering authorized sites. So you may get more visitors as the users who daily access these sites.

3) *Blog*: Upload or create a blog on website and try to keep it updated regularly. Provide link of our blog to other websites.

4) *Press release submission*: Press release is all about providing latest information or news about your website or the services provided by your company. Please take care that the content should target the people who are interested in your products or services as well as it should be compatible to the search engines. As it drives the huge traffic to your website and enhance its online visibility.

Some popular sites with good page rank are free-press-release.com, openpr.com, prsync.com, przoom.com, newsreleaser.com and so on.

5) *Social book marking*: In a social bookmarking system, users save links to web pages that they want to remember and/or share (Wikipedia). It generates quality backlinks, enhances visibility of website and increases referral traffic. Some sites with good page rank are Reddit, Delicious, Stumbleupon, Slashdot, tumblr.com.

6) *Search engine submission:* There are two basic reasons to submit a web page or website to a search engine. The first reason would be to add an entirely new web site because the site operators would rather not wait for a search engine to discover them. The second reason is to have a webpage or website updated in the respective search engine.

#### IV. ALEXA RANKING

We can check the ranking of website using alexa.com. It provides ranking by globally, country wise and category wise respectively. The ranking of a website is depends on three factors namely Bounce Rate, daily page views per visitor and daily time spent on site.

Bounce Rate is a percentage of visitors who visits the website and bounces or leaves the website without looking at other pages. High bounce rate will decrease the ranking of website. To reduce bounce rate the website should perform well. We can improve the performance of a website by keeping the landing page relevant, offering engaging content, encouraging comments, increasing internal links and etc.

#### V. CONCLUSION

The research paper provides the brief idea about search engine and their working. It also illustrates the search engine optimization techniques like On Page SEO and Off Page SEO. These methodologies show that simply submitting any article or developing any website is not important. We should take care about the page content, bounce rate, internal links and all. Because these things play a vital role in the website's ranking.

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