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**What is Search Engine Optimisation (SEO)?**

**Abstract**

*Search Engine Optimization is a method to reach out to a wider set of crowds by comping in the top few search results of the search engines. There are various ways to do so, majorly including the White hat techniques and Search Engine Marketing (SEM). While there are certain steps that are off limit while optimising the web page, there are few steps, if worked upon can work wonders for the web page ranking, which is given by the Search engines.*

**Keywords:** Search Engine Marketing (SEM), Search Engine Optimisation (SEO), White hat, Black hat, Grey hat, Factors for SEO

1. **Introduction**

To provide the right information or let’s say desired information to the 4.1 billion internet users out of 1.8 billion webpages, seems tougher than finding a needle in the haystack. In today’s date, internet is available to maximum of the crowd, be it on their phone, on their laptop or even on their television. It’s no more a place where people just go for entertainment, it’s the biggest business platform where search is business to someone. When the user searches for any information on the internet, they expect that they find the result in few of their top searches, and to do so the search engine has to filter through immense number of pages, go through their articles, find the best match to the related information needed by the user, and all of this has to be done in the matter of few seconds.

Every search engine has few particular criteria to judge a page and rank it accordingly after the query is submitted for the same. It might be possible that a particular webpage finds the pattern and misuse it to rank its page above the rest even though it does not contain the valid result. Just to avoid it, the search engines have to continuously change their algorithm, so as to no one can copy it and their search still produces the best of the result. Google currently is the largest search engine in town and it uses more than 200 attributes to rank a page, and there is a special team to continuously change these factors so as to rank the page to provide the best result.

Search engine marketing (SEM) is one of the methods to do the promotions of the pages they want to. Its working methodology is different when we compare it to the Search Engine Optimisation techniques. Here you have to pay the search engine a particular amount of money, so that they will advertise your page on other popular pages, by providing a certain section of area from the page. The amount to be paid increases with the degree of advertisement done for the particular page. The search engine charges the allotment fees depending on the price of relevant keywords, which is quantified by cost per click (CPC) [1], and further by the number of users clicking the advertisement and viewing the particular page. All this comes under the category of pay per click (PPC) [1]. In some cases, the page that are sponsored are being put at the top of the query search, although that does not confirm the fact that the users would click your page first. According to few researches, users tend to ignore the sponsored pages and prefer clicking on the pages that are being optimized using the organic method.

Search Engine Optimisation (SEO) is responsible for optimising the page in the organic manner, and these ways come under the *white hat optimisation* techniques.

Going through the SEO method takes time to bring a page in the ranking table, but its beneficial for the longer run of the page, so as to it promises the fact that although search engines keep on changing their criteria to rank a page, they would still mainly revolve around the basic of the white hat techniques, and therefore these pages can never go out of the picture. There are a lot of web pages which do not wait for the time taken by the white hat technique, so they end up using ill ways to promote their page and are categorized under *black hat optimisation* techniques. If the search engine gets to know about these pages there are severe punishments for the same including, bringing down their page from the ranking table or internet.

This paper talks about what search engine optimisation (SEO) is, how search engine marketing (SEM) works and the different ways to optimise the page to improve the ranking.

1. **What is a Search Engine?**

The main function of the search engines is to traverse through the data of different web pages and index them, in this way every time a user inputs a query, the search engine takes help of the database, finds the relevant information for the user. The search engine collects the data of the web page which includes the URL of the webpage, few of the important or the keywords which define the page. Dividing these pages into further keywords and submitting into database is called *indexing* of the webpage [2]. This reduces the burden of the webpage o go through the text document pf the webpage every time a query is submitted and it makes the search faster. The data from the database matches the most with the submitted query is displayed according to their rank on the search engine result page. To carry out all these tasks, the search engine relies on different software it has, which mainly include spider, crawlers, bots etc. The function of these programs is to crawl through the web pages using the structure of hyperlink [2]. This search is done on a periodic basis and every time the program crawls through the web page, it looks for any change or update that has been done to the web page and similarly updates it to the index in the database. The database that the search engine has is very wide to store immense data. At times search engine like Google, end up keeping a record of the different web pages the user visit, the preferences the user has and accordingly use the information to pop up sponsored ads which would match the choice of the user. All this takes a lot of data space of the search engines. All this while, the most important thing is the algorithm that the search engine uses to sort the pages and rank them accordingly whenever a query is being submitted.

To sum up, the basic job of the search engine is to make its program regularly crawl through the webpage, index them accordingly, look for any updates, and whenever a query is being submitted to the search engine, use the database to search and pick for the most valid or closest result and using the algorithm sort the pages and display them in the search results of the web page.

1. **Requirement of Search Engine Optimisation (SEO)**

In today’s world everybody has the access to immense amount of data. Be it an article on SEO or buying a makeup product, all these can be available to the user through the search engine. Any user, when on a hunt for any requirement would not like to scroll down on the result page, or go to the next page for the information. They would want that the information that they are looking is present in the first few top results. For any web developer to reach out the maximum audience, they need to design the web page in such a manner so that the search engine provides their web page in the top few results. Achieving so is not a heavy task, all it requires is for the web developer to follow few of the optimisation rules, which would organically improve the web search ranking. It is expected from the web page that information that is being provided is put out in an organised manner. Web interface plays a major role. If the particular information is placed in a structured way, it would attract the users as well as it would be easier for them to navigate the page, making the user stay on the page for a longer period of time and would also help in managing the traffic of the page. If a customer is satisfied, the page would be recommended to other people and this way the traffic of the page would increasing, improving its rank, making it much more easily accessible on web result page. [2]

The use of keywords, in the right way can help search engine optimisation and bring the rank above for the page. Keywords play a very important role while optimising, for the reason being that whenever the user needs to find any result. It has to enter certain keywords in the query itself so that the search engine can show the particular result, even if any page uses advertisement, there would still remain pages on the search result pages which uses much more relevant information, ad much more keyword match then the sponsored pages. This would make the traffic divert to the pages where the user finds more matches with the keyword.[2] So, at any point of time, apart from following the basic of the optimisation rules, the developer should always keep in mind of the keywords that are being used in the web site, and how replacing certain words with the words which carry more value (for example: instead of using the word “shoes”, if the page uses “Nike shoes”, it would carry much more importance) optimises the page. Apart from all this, the technical details regarding the optimisation process should not be ignored, because it also carries equal importance in the process.

To summarise the benefits of Search engine optimisation (SEO):

* 1. **Popularity**

It helps in increasing the popularity of page, so that it can reach wider set of people.

* 1. **Increase Visibility**

After optimisation, it will help improve the rank of the web page and attract more users to that particular page.

* 1. **Targeted Traffic**

Using the targeted keywords, it can help increase the traffic for people searching regarding that keyword to the web page.

* 1. **High ROI (Return of Investments)**

If the reach of the web page increases, then it promises higher return in investment then any other method and has a direct impact on the sales.

* 1. **Online Marketing and Promotion**

It is one of the best ways to reach out to the maximum amount of crowd possible. [4]

1. **Search Engine Marketing (SEM)**

While Search engine optimisation (SEO) does help in optimising the page, but it takes its own time. For a page to come up in the list of web search result, and is following the optimisation rules, might have to wait for a certain period of time, after which the traffic and the ranking for the page would increase. There are a lot of web developers who would want instant growth, and therefore for such pages, search engine has the option of marketing the web page, if certain amount of money is being paid to the search engine. This is categorized under, Search Engine Marketing (SEM). [5] In this process the search engine, advertise the page in two ways. One of them being, by providing a certain advertisement area for the particular page on different other pages. It creates an out link for the webpage, and if more highly ranked webpages out link a website, then that helps in increasing the web search result rank for the page also provide a larger audience to the page, as there might be few users who would traverse from the main page to the advertise page, just because they saw something of their interest. Second way for advertising the page would be, by directly placing the page on the top of web search result list of webpages. It would come under the different category of sponsored list of pages and would be kept above the organic search result pages.

We are now aware of the fact that certain keywords carry more value than others. For search engine marketing (SEM), the search engine charges broadly on two factors, first being the number of pages it would advertising the website o the other pages. If the website is being promoted on web pages which has a high amount of traffic and holds a good page rank, then the payment cost would also increase, for the soul reason being that the search engines are directly connecting you to a much larger audience without any hard work on optimising the web page in the organic fashion. The second factor is when web page is places above the organic search result pages and under the category of sponsored pages during a web result for any query. The page has to select a certain keyword, so as to when these keywords are submitted as query, the particular web page would come under the sponsored list category. If the webpage selects keyword with higher value, then the cost for advertising the web page increases. [5]

The cost for all this is calculated by the method called *pay per click* (PPC) [1], wherein the search engine charges for every click the page gets, or every view the page gets through the advertisement provided by the search engine. Search engine optimisation (SEO) is something that is recommended for every page, but it has minimalistic payment amount for the search engine. Search engine marketing (SEM) [5] on the other hand promises good share of revenue generation for the search engines, and therefore is something promoted by the engines, but the cost of doing so is high, because in the end, the search engine should not ruin its web search result list. If the user is not satisfied by the search result then they might shift to other search engines. Maintaining the quality of search result should be the top priority of the search engines, therefore they cannot advertise any page on the sponsored list, and has to make sure that authentic pages, with better promises of required information is given a chance to reached to the user in the most hustle free manner.

1. **Search Engine Optimisation Shades**

There are three major technique to go about with the optimisation of the pages, them majorly being:

* 1. **White hat**

With so many web pages out there, search engine tries to rank only those pages which are optimised in the legitimate ways, mainly called the White Hat technique in SEO, so that they are aware that they are not being misled by the webmaster. Google and other search engines have certain criteria’s through which they rank the page (which would be listed out below). Generally, the search engines keep on changing their algorithm to rank the pages so that no client can crack the algorithm and misuse it, so webmasters tries to cover major aspects, while optimising, so that at least some how their way of optimisation is considered in the ranking algorithm and being given weightage to when ranked. This process takes its own sweet time to bring the ranking of the page above but provides with the best result over the period of time. Good quality content always gets its right place in the ranking table, if optimised properly. [4]

* 1. **Black Hat**

In todays era, there are cheat codes available for almost everything. Same goes for optimising the web pages. In doing so, the page gets a better rank in less period of time. These tricks are called Black hat technique SEO. This gets dangerous if the web page has to stay for long run, as the search engines keep on changing their algorithm, and while crawling the web pages, search engines can easily detect the ill methods or spamming done to optimise the page. If any such activity is being found or reported then the search engine has the power to bring the particular page down, forever.

These techniques include, writing important keywords in white in the white background, or hiding the text behind the image so that when the crawler is searching for these words they are able to detect it and thus improve their ranking by holding important keywords, but when the user ends up going through the page they do not find the appropriate data that they are searching for. This reduces the quality of search engine and is the reason why they end up closing the web page because they are trying to cheat and bring their business down by these ill ticks. [4]

* 1. **Grey Hat**

There are few of the webmaster, who partially use the black hat techniques to optimise the web page. In this way they end up falling in the grey area. They are called Grey hat technique SEO. These techniques again help in ranking the page higher. Search engine still consider these techniques as illegal, and although there are few of the white hat techniques too, but that does not stop them from taking down the web page. Again, if the pages are present for long run, and with constant while crawling the search engine can detect them. [4]

1. **Factors of Search Engine Optimisation**

These are few of the factors that the search engines take into consideration before ranking the pages: [3]

* 1. **URL**

Having a URL, that is easier for the users to understand about the page and the different engines, is always preferred because they provide a lot of relevant information of the page, which becomes self-explanatory for users and make them click the page for the information they are looking through.

Search engines also prefer using hyphens (/) in between the words of their URL, it is preferred over using underscore (\_) or giving no spaces between the words.

It is highly important that there no special characters available in the URL, for the reason being, when the crawler crawls the URL, it feels that there is no relevant information in the page and therefore stops at that moment.

* 1. **Meta tags of Robots**

The job of the meta tag is to guide the crawler on how exactly they should proceed in the page for its processing. It will specifically instruct the crawler on wheatear it should continue with indexing of the page; the contents should be archived or if it should trace the links and find its path. If the webmaster requires no such restrictions then they should not include it.

* 1. **Usability of robots.txt**

There are few contents in the web page that we do not wish the crawler to crawl and store it in its dictionary, for some of the security reasons. In the robots.txt file it’s mentioned on about which specific part has to not be crawled and from where can the crawling start or the location and the permission to crawl the web page.

* 1. **XML Sitemap**

It’s a list of pages of websites which is accessible to the crawlers, which can either be in the form of a document which is further used for the web design as a planning tool, or a web page used for listing the pages on any particular site.

* 1. **Avoid Flashes**

It adds the beauty to the page and makes attractive for the users but it actually hampers the crawling process for most of the crawlers and make the page invisible virtually, because of which the content cannot be taken into consideration.

* 1. **Substantive content**

Nothing can out rank the substantive content, because this is exactly what the users are looking forward too. To do so the important text should be placed at the top and the important or rather the target keywords should be used for the optimisation process. If a particular page solves a particular query in the best way, it would be visited by more users for the satisfactory results and hence further more increase the ranking.

* 1. **Text font**

If the content is easily readable for the users, then it will be comfortable for them and hence attract more users.

* 1. **Avoid Misspellings**

If the page contains a lot of misspellings, then it would tend to lose the credibility even though the content is up to the mark.

* 1. **Length of the page title**

The ideal length would be of 65 characters or less for any page title. It is expected that the page title should consist of the appropriate keywords which define the content of the page, this helps in better ranking of the page.

* 1. **Relevancy of the title**

It is recommended to have variation in your titles. The uniqueness of the title is what gives away, and majorly how relevant it is to the topic to the content that is mentioned, this helps in better categorization of the web page while ranking.

* 1. **Length of Meta description**

While getting the result, the search engines display meta description and is turns out to be too long then the extra part is cut off.

* 1. **Relevancy of the meta description**

It plays a high role in ranking of the page, as it consists of the description of the content of the page. It is used by many search engines as an abstract, so using target keywords is an important aspect too, and therefore meta description plays an important role in ranking the web page.

* 1. **Avoiding meta keywords**

A common mistake is done of using the meta keywords, as it is not used by search engines while they rank the pages.

* 1. **H1 Heading**

Headings is one of the most important part of the page and it carries weight while the search engine indexes it. As such they inform the search engine about the content of the page, it is also used for emphasizing the important content of the web page. According to the hierarchy, <h1> tag gets the highest priority and <h6> tag gets the least priority. Therefore, it is recommended to use the target keywords in the <h1> tag, as it will help in the ranking process of the web page. It is also a method to organise the web page.

Multiple use of <h1> tag, and the keywords is considered as a malpractice and is counted under Black hat technique.

* 1. **Relevancy of H1 content**

As the tag carries weightage, it is important that the target keywords are used in it, and is relevant to the content of the web page.

* 1. **Alt text content**

Alt is one of the attributes for the <img> tag that is being used in HTML. There are few times when the image of the web page does not load dur=e to some external reason, at that point of time the search engine, instead of waiting for the image to load, it ends up reading the alt attribute of the image, which is supposed to carry a short description of the image. This way, the description is taken into the account while the page is being ranked.

One more benefit of this is the fact that search engines do not differentiate between the alt text or the anchor text (which is a part of the text link). This way, by including the targeted keywords it will act as brownie points will ranking.

* 1. **Relevancy of the image content**

Of the image is visually attractive and is relevant to the content then it catches the eye of the audience, and hence help in pulling the audience.

* 1. **Avoiding parameters in URL**

The parameters, in the URL, at times lead to issues of duplication. This way the page might not even get crawled by the search engines.

* 1. **Relevancy of the URL**

If the content of the URL is relevant to the content of the web page, then it can act as direct source of advertisement for the page, no matter where it appears.

It is also stated as the ‘Permalinks of Web pages’.

* 1. **Internal links**

These are the hyperlinks that are provided for navigating inside the web page. It plays an important factor while ranking. [5]

* 1. **Density of Keyword**

One of the basic ways of calculating the rank for the web page is done through calculating the density of the keyword. It is the ratio of number of times the keyword appears in the entire web age to the total number of keywords present. [5]

* 1. **Back links**

This is a technique to show the popularity of the page. This consist of how many important pages are giving references of the particular page. It is an important factor that is used for calculating the web page rank. As the references increases, the popularity increases. [5]

* 1. **Loading time of the page**

Although it is not as important as the other criteria’s but search engines do give certain weightage amount to the loading time of the web page. If any web page takes a lot of time to load, then the user might not even stay for that long. [5]

* 1. **Duplication of content**

Duplication of content is one of the major problems the search engine face. Although they are coming up with smarter ways to overcome that, it is advised to the webmaster to not do so as it is considered as one of the Black hat techniques. [5]

1. **Conclusion**

To reach out to the targeted crowd and for different advertisement purpose, simply making a web site wont help. Different tricks have to be used, as long as it does contain any ill method, to bring out the page and have a wide spread reach. While it is important to understand the difference between Search Engine Optimisation and Search Engine Marketing (SEM), it is equally important for the webmasters to understand the difference between the White hat and Black hat techniques for SEO.

It turns out to be an important factor in deciding the future of the web page.

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