

Search Engine Optimization (SEO): Improving Website Ranking

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Abstract: - As web popularity increases day by day, millions of people use search engines to discover information. The most important single component of this communication network is the Search Engine (SE). Successful Websites rank high in Search Engine hits, whereas unsuccessful Websites may not rank at all. The users of search engine are always interested in the top few result pages. So increasing the ranking of a website in search engine result is a major task in website development. Search Engine Optimization (SEO) is the activity of optimizing individual web pages or the entire website to acquire higher ranking in search results. The mostly used search engines such as Google, Yahoo etc. rank web pages based on different factors that affect its ranking. By taking these factors into consideration, the optimized websites can obtain better ranks, and hence get a higher number of visitors.

Keywords:

Search Engine Optimization (SEO), ranking, Page Rank (PR), search engine, Google, terms of SEO, crawling, white hat and black hat SEO, onsite and offsite optimization.

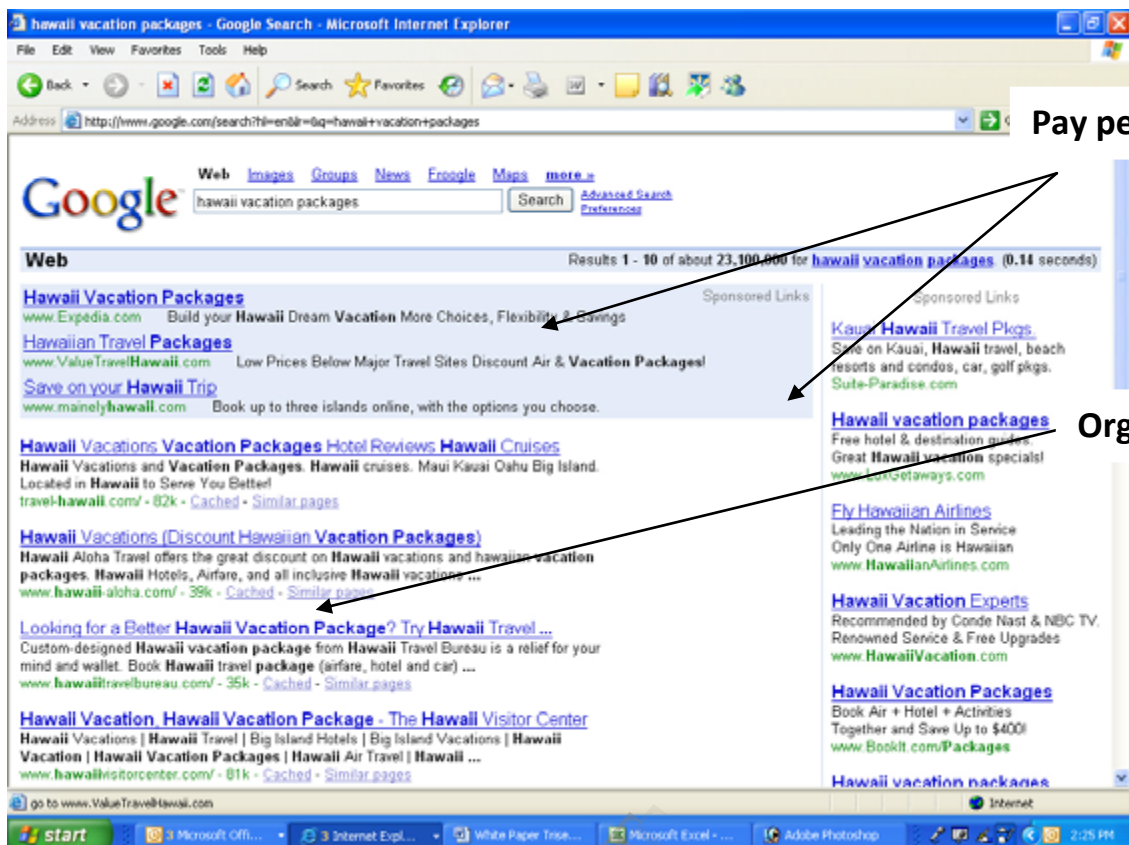
I. INTRODUCTION

As we know today, that the huge content of the internet has made it difficult to find relevant information on a particular subject. So finding methods to improve the retrieved information has become very important nowadays. Hence the search engine becomes an integral part in everyone's life to search information. So we rely on search engines to provide right information at right time. Search engines must satisfy the users by finding and filtering the most relevant information matching the search term given by the user and displaying that information. Major search engines like Google rely on page relevancy and page importance for ranking the pages of a website or the overall website.

Higher the Page Rank (PR) value, more popular the website is. Many strategies are used by website designers to score a higher rank in search engine results. Search Engine Optimization (SEO) is the activity of optimizing individual web pages or the entire website to acquire higher ranking in search results. Search Engine Optimization (SEO) improves the quality and volume of traffic to a site for some targeted keywords via natural search results. Regarding SEO we can say that "If Content is King then definitely Quality is Queen" [1]. They both go hand in hand. Content becomes worthless if it is not of good Quality. Search Engines (SEs) are the tools used to find this content and SEs can be classified into three major groups:

- ❖ **General SEs:** e.g. Google, Yahoo, Bing, Ask etc.
- ❖ **Vertical Search SEs:** It focuses mainly on specific resources and reduces the number of irrelevant hits. E.g. Travelocity and Expedia.
- ❖ **Location Based SEs:** They use geographical information such as, IP addresses and zip codes, about the users to get more relevant results.

Search engine does not only provide convenience for users in gathering useful information, but it is also an effective tool for understanding web user's behavior. Efficient search engine allows users to find the relevant target information quickly and accurately. Search engine optimization relates to the activity of improving the ranking of individual web-pages or the website to get higher position in the search results. The SEO technique entails two processes: on-site optimization and off-site optimization. On-site optimization are the practices which are used during the development of a website. Off-site optimization are the practices through which the contents of a website are propagated over the Internet to increase its traffic which in turn helps enhance ranking of the website[2].



II. TERMS RELATED TO SEO

Ranking: The actual placement or position of a website on the free listings section of a search engine for a particular search term or phrase. A website's rank becomes meaningless without specifying which search term or phrase it is ranked on.

PageRank (PR): It is the most important factor for specifying a webpage's importance.

Keywords: These are the words or phrases that properly define what a webpage contains, and are found in variety of places on web pages. When the user enters a search term or phrase into Google, it tries to find those web pages whose keywords best match the term or phrase.

Page Title: The text contained between the <TITLE></TITLE> tags at the top of an HTML file and it is displayed in the top bar of a browser window.

III. HOW GOOGLE WORKS

Like other search engines, Google also uses automated software to read, analyze, compare and rank our web pages. The visual elements like layout, color, Flash etc which matter to us are ignored by Google while analyzing the web pages. When searching for a term or phrase, the most relevant and important web pages are listed in descending

order. Here page relevance for Google means how well a web page "matches" a specific word search and page importance is dependent on quantity and quality of links that point to our webpage from other web pages.

Google visits our site using automated programs called spiders or robots. These programs read each and every page of our website starting typically from the homepage and then moves to the other pages of our website. When a search engine spider or robot visits our site, it is said to spider or crawl our site. Google will not add a webpage to its index unless it is linked to atleast one of the web pages which have been indexed by Google earlier.

Google has two types of crawl:

❖ **Deep (main) crawl:** It is done at the end of each month when each page is crawled. It is performed by the main Google spider called Googlebot. Google updates its main index once a month after the deep crawl is completed for all websites. Rankings fluctuate during this period and these monthly fluctuations are termed as Google dance.

❖ **Fresh crawl:** It is done several times a week (sometimes daily for some sites), but only certain pages are crawled. News sites and highly ranked sites can get crawled daily. Fresh crawl is performed by a different Google spider called Freshbot. Freshbot looks for new pages and those pages whose content has been recently updated. New pages are included in search results and they are kept in a temporary index

and then ranked. Daily fluctuations in search results caused by new pages being crawled by Freshbot and then ranked are termed the everflux.

IV. HOW GOOGLE RANKS WEBSITES

Google uses a sophisticated and proprietary algorithm for ranking websites that uses different criteria for calculation which have a specific weighting which can change over time. Google algorithm can be divided into two groups of factors:

- ❖ **Keyword (textual) factors:** They determine page relevance. These factors involve how, when and where these keywords are used, how well our website is optimized for the chosen keywords and whether those keywords appear in links which point to pages of our website.

Google determines the most relevant web pages based on a hypertext search and analysis of our site and of other sites that contain links to our site. Mostly it checks the text of the link that points to our site, title of the linking page and other content on the linking page also contain the keywords.

- ❖ **Link (PageRank) factors:** They determine page importance. These factors include the quality, quantity and strength of links that point to our site from other sites. This algorithm is also known as the Google PageRank (PR).

Google looks for links that point to our site from other websites. A link from website A to website B is a "vote" for the importance of website B. These votes accumulated from a website helps in increasing the PageRank (PR) value of our website. Each page on our site has a PageRank (PR) value. Usually the homepage of our site has the highest PR value because everyone links to the homepage rather than any other page of our site. The more the web pages that link to our site, the more important Google thinks our site is and hence higher the PR value can be. All links are not valued the same, the quality and quantity of links matter. Sites that are highly optimized for particular keywords can outrank sites that are less optimized but have higher PageRank (PR) values. PR value is assigned after comparing every page on every site in the Google index against one another. PageRank does not factor in keywords or phrases used on our site.

V. TO IMPROVE RANKING IN GOOGLE

Five aspects or elements to improve ranking in Google [4]:

1. Keywords used between the <TITLE> </TITLE> tags of our page.

2. Keywords used in the headings <H1> and in the first paragraph of our pages.
3. Keywords used in link text, both on our and on other websites.
4. The PageRank (PR) value of our pages.
5. Pages that contain atleast 200 words of relevant text context and the more the pages the better.

VI. SEARCH ENGINE OPTIMIZATION (SEO)

SEO Concept: Generally people visit a website to find out information according to their needs. But if they did not find accurate content, they became frustrated and immediately move away from site. So in order to retain those people and bring them back maximum number of times, website is built up with proper target and quality content. It fulfills user need and henceforth improves rank position in search engines result list. Search Engine Optimization (SEO) is the activity of optimizing individual web pages or the entire website to acquire higher ranking in search results. Search engine optimizers build a website such that it can be found easily by search engine crawler with relevant keywords. SEO help the web site designer to get top ranking position in search result list, attract more online visitors and finally improve the marketing capability of site.

White hat SEO: These techniques are ethical in nature and follows search engine's rules and policies. Using white hat SEO techniques, search engine returns quality content. These techniques are beneficial to both the users as well as the search engines. SEO include major two factors: On-site optimization and Offsite Optimization[3].

- **On-site Optimization techniques:** On-site optimization is the practice which is used during the development of a website. It includes website design elements such as keyword formatting, keyword in Meta tag, keyword in title tag, position of keywords, external link, keyword density etc., which are controlled by site itself. Search engine crawler checks whether keyword appears in <title> tag, <header> tag, <alt> tag, <meta> tag, <body> tag, in anchor text, in URL etc. It includes the following techniques:

- **Title tag:** Title is the biggest ranking factor. Most search engine use the website's title tag as main factor for sites listing in search result pages.
- **Keyword in URL:** If the keyword is included in URL, then the website will be found more easily by search engine crawlers. Search engine has different priorities for domain name suffixes like edu or gov. Also shorter length URL is preferred in Search Engine Optimization.
- **Keyword in Meta tag:** The meta description tag contains description of page that is not visible when

page is displayed in the browser. The description is informative and reflects the content of web page. The website will be indexed if related keywords are found in meta description tag.

- **Keyword density:** Density of Keyword is the frequency of the keyword present on web page compared to the total number of words on the page. Frequency of keyword in title tag and frequency of keyword in body tag should be strong optimization factor. Density of keyword should be within 2% -8% for good website ranking.

Keyword density= (Number of occurrences/Total number of words)*100

- **Keyword in alt text:** They specify alternative text for images. Alt tags are short and descriptive which reflect the body text that describes the image.
- **Keyword in anchor text:** Ensuring the keyword Anchor text is when the words that are used in your linking structure should be Keywords. They are called 'Anchor' text when they are used as the phrases that they are linked to and tell the search engine what the user is searching for based on the 'click' action. This is the key factor used for in search engine optimization. Pages using link text based on search keywords often rank higher.
- **Title Length:** The most important on-site factor is appropriate use of the keyword in title tag. Website title should be such that it reflects the subject of website. Using title name user understands brief information within website at first glance. Title length should not be too long.
- **URL (Uniform Resource Locator) Length:** URL represents the address of site on internet. Search keywords are included in URL so that crawler can find it easily. Short length URL's are usually preferred by search engines.
- **Outgoing Link:** Mostly webpage contain links to other related websites. Related outgoing links provide useful information to user. More number of unique outbound links improves ranking of website.
- **Off-site Optimization Techniques:** Off-site optimizations are the practices through which the contents of a website are propagated over the Internet to increase its traffic which in turn helps enhance ranking of the website. Off-site optimization mainly revolves around the links that point to the site from other web pages. These links back to the site are called back links. Sites with maximum back links will come out on top. Offsite optimization includes the following techniques:

- **Link Reputation:** Web pages and websites with more number of back links improve ranking in search engine result. But the quality of external links is also very important. External links must have good reputation, relevant or similar content. Also it should have key phrases similar to search term.
- **Click Popularity:** More number of clicks to the site is known as click popularity. It is also a significant factor to increase website ranking. If visitor clicks the website, search engine provides certain value to that site. But Search Engine also keeps track of who is clicking by tracking their IP address. So user cannot click to his site hundreds of times to improve click popularity as clicks from single IP address will be considered as only once.
- **Inbound Link:** High quality external links pointing to a website are called inbound links. Total number of inbound links is called as link popularity. In Google, page rank of website is determined according to quantity and quality of inbound links. It is also a major ranking factor to promote a site. Inbound links in textual form and not in graphic form like banners, advertisements and images which are not preferred by search engines.

Black hat SEO: Promoting a website in search engine result list is one of the key factors to make profit by producing web site. Sometimes to get higher ranking in search engine result listing, SEO techniques are used in an unethical manner called spamming. Such black hat SEO techniques break search engine's rules and regulations and place the undeserving site on top list. Such technique not only misleads the search engine algorithms but also lowers the quality of search results and increase traffic. Also these techniques will not have any benefit to user[3].

VII. METHODS TO IMPROVE WEBSITE RANKING

Apart from meta tags already discussed, link building is one of the methods to improve website ranking and visibility. Link building is a process of increasing SE ranking and traffic by generating inbound links to a particular Website. SE algorithms regard each link as a vote, therefore, sites with the greatest number of high quality inbound links appear the highest in SERPs. The factors for improving ranking are as follows [1]:

- Make the page titles unique and accurate.
- Improve the structure of URLs.
- Make website easier to navigate.
- We should offer quality content and services.
- We should make use of the "description" meta tag.

- Use heading tags appropriately.
- Optimize use of images.
- Make effective use of robots.txt.
- Write better anchor text.
- Promote Website in the right ways.
- Use Google Website optimizer.
- Make use of free Webmaster tools.
- We should be aware of rel= "nofollow" for links.

VIII. CONCLUSION

Search Engine Optimization (SEO) has many factors that affect the performance of a website ranking within the Search Engines. It is important to tailor a strategy for each search engine you wish to get high rankings in. Researching keywords is important in declaring to the search engines what type of website you own. There are a number of approaches that can be taken to optimize a website. To increase traffic to a site, build more links online. 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 is based on search engine optimization techniques, and methods to improve ranking of a website. Website ranking is strongly dependent on how SEO is implemented. White hat SEO techniques return quality content. These techniques give slow results but for long time. These are beneficial to both users as well as search engines. Black hat SEO techniques provide quick results but for short time and if search engine find out the unethical activities of the site, then site can also be penalized[3]. The goal of paper is provide awareness and stimulate further research in this area.

IX. FUTURE WORK

Based on this research, we intend to develop an effective, accurate and trustworthy system for search engine optimization for obtaining a higher rank for the websites in the search results.

X. REFERENCES

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