

Search Engine Optimization Techniques To Enhance The Website Performance

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Abstract - A search engine is a software program on the Internet that searches documents and files for particular keywords and returns the result of any files containing those keywords. The search will be done according to the keywords given by the users. The ranking functions are typically learned to rank search results based on features of individual documents i.e., point-wise features. This will increase the website visibility and make the user to get the information what they are actually looking for. Optimization of a web page has lot of advantages. It's not only optimizing the search time but also effort done by the user for searching a web page. Search engine optimization (SEO) is a technique to take the web pages in top search results provided by search engines. Websites need to be optimized in order to attract audience and to sell products and services. This paper will give an overview of search engine optimization, its elements and tools used in the search engine optimization.

Keywords - Search Engine Optimization, On page Optimization, Off page Optimization, Keyword optimization, Link optimization.

1. Introduction

A search engine is a software program on the Internet that searches documents and files for particular keywords and returns the result of any files containing those keywords. Search engines help us to find specific information and content on the vast expanse of WWW (World Wide Web). Without the help of search engines, it could be virtually impossible to discover anything on the Web without knowing a particular URL. Today, there are hundreds of different search engines on the Internet, and all are having their abilities and features. There are multiple methods used by these search engines to gather data. Google, Yahoo, Ask, MSN and Bing are five among many search engines. A huge number of websites are

submitted everyday to the global search engines, local search engines and they are indexed. The web marketing through websites is used by almost all the organizations today. Today everyone creates website to advertise their business, personal use etc. And the reason behind is either to earn some additional revenue or to advertise their products online. In order to achieve these business or personal objectives, either paid or unpaid organic traffic is required. SEO is an abbreviation of the word Search Engine Optimization which means preparing Website for the search engine. This is among the famous terms what is used to draw traffic to a website. In other terms, it indicates getting people interested to click onto the hyperlink for the website. Basically all that it involved is choosing the keywords that you want to rank for, getting your site presented in the correct way and then building links to the site. The word SEO means friendship between website and Search Engine, the friendship of search Engine has rules and basics on that anyone can prepare the website for it. In order to reach the most effective results, one need to prepare the website for Search Engine using methods of SEO science, choosing appropriate words, and preparing the pages of one's website in accordance with the Search Engine rules.

1.1. How Search Engine Works

Search engines carry out numerous activities to be able to deliver search results. Those activities are shown below
Crawling - is the procedure of fetching all of the web pages associated with the web site. This particular task is carried out by software, known as a crawler.

Indexing - is the procedure of developing index for those fetched web pages as well as maintaining them in to a

giant database through where it could later always be retrieved. Essentially, the entire process of indexing is identifying the words as well as expressions in which best summarize the actual page as well as assigning the particular page in order to particular keywords.

Processing - Whenever a search request comes, the particular search engine processes this i.e., it measures up the search string within the search request while using the indexed pages within the database.

Calculating Relevancy - Because it is likely more and more than one pages provides the search string, therefore the search engine begins calculating the particular relevancy of each and every from the pages in the index towards the search string. **Retrieving Results** - The final part of search engines' activities is actually retrieving the very best matched results. Essentially, it can be activities like simply displaying them in the browser. There are basically two types of search engines that collect information in different ways:

1.1.1 Crawler-Based Search Engines

Search engines are complex software applications that are automated to survey ("crawl" or "spider") the Internet to find websites. A Search Engine crawler is also referred to as "robot" or "boot" (Ex: Google and AltaVista). Crawler-based search engines take into account numerous factors whenever indexing websites. Search engines are created to look for and rank the very best websites (i.e. almost usable, almost informative, almost credible). Essentially the most important techniques for any search engine to rank the site are in order to consider the number as well as quality of websites in which hyperlink to your website.

1.1.2 Human-Powered Directories

Human-powered directories are directories that are compiled by human reviewers, who review, examine and evaluate short descriptions of websites provided by people which would really like their particular websites listed online. Human-powered search engines, also known as Web directories, are usually popular mainly because of the particular higher quality associated with links submitted and also the caliber from the sites hand-picked for being contained in the index.

Reviewers rate this content associated with submissions utilizing criteria which might be usually unfamiliar towards the public. Examples are Yahoo Directory and Business.com.

2. Related Work

2.1 Search Engine Optimization (SEO)

Search engine optimization (SEO) is the process of editing a web site's content and code in order to improve visibility within one or more search engines. Mostly, SEO depends on how your webpage is designed and its behavior varies from website to website. The search engine marketing includes SEO plus various paid advertising options that involve search engines. Its aim is to achieve high ranking among search engines. Various searching techniques are involved. They are Ad-hoc search, Known item search and Named page search.

2.1.1 Ad-Hoc Search

The ad hoc search is a in which SEOs are most likely probably the most acquainted with, although we may not understand the label for this. By having an Ad Hoc search, the particular searcher's goal is to locate as numerous relevant documents as is possible with regards to a topic, since the need arises.

The ad hoc search is definitely informational naturally, since searcher will be using a "fishing expedition" with regard to information regarding the subject. The particular searcher may possibly or even may possibly not have previous knowledge about this issue but really wants to read or find out more about it.

2.1.2 Known-Item Search

A known-item search is related to an ad hoc search however the target on the search is usually a specific document, or even a small group of documents, which the searcher understands to be able to exist as well as would like to find again.

Quite simply, which has a known-item search, the actual searcher knows a specific web page exists however doesn't necessarily know or even remember where it can be.

2.1.3 Named Page Search

Which has a named page search, the actual web searcher wishes to attend a particular page within a website, a page which the searcher recalls seeing or even visiting with a prior time. Being an SEO professional, we often test the particular effectiveness associated with site optimization simply by performing named page searches.

2.1.4 Social Media Optimization

Social media optimization (SMO) is the procedure of increasing the particular understanding the product, brand or even event simply by using a number of social media outlets as well as communities in order to generate viral publicity.

2.2 Techniques for Search Engine Optimization

In the fast-changing world of web technology, there were only minor changes in the past year. Online market is growing rapidly and it will continue to grow in much more better. Therefore, it is important to be aware of the latest trends and techniques for maximum visibility of the website in the SEO field.

2.2.1 Keyword Optimization

To boost the page rank of the website one technique is to separate the website from all the websites in the same field. All major search engines (Academic) follow one basic concept for searching i.e. Keyword based searching. The content of the website needs to be different that is added to the website and use top quality keywords to make this achievable. The more concentration given on keywords and content, the simpler it will be to increase the page rank. Including the keyword selection and optimization of the keywords related with the theme and content of the web site to obtain higher ranking in various search engines.

2.2.2 Link Optimization

Link building is focused on creating a string of relationships through the websites. It describes the steps aimed at increasing the quantity along with the quality of inbound links to a page. The ranking of a page is determined by the number of high-quality links voting for the website. Though it is slightly time consuming, but it is an essential step for high SEO rankings and boosts the web presence. The hyperlink is really a method of telling the Search Engine that the linked website contains valuable resources and information.

2.2.3 Website Content Optimization

Quality content is the new king of kings online. Search engines rank top quality, original content higher than any other forms of content today. The point behind publishing content to a website is to attract visitors and to supply an informative, captivating or entertaining element to those

that come to the site; the main focus of website content writing is to fulfill all of these elements. And unique content is really the only solution to establish the website or brand as an expert on the market.

2.2.4 Website Structure Optimization

The website structure can be explained as the overall hierarchical framework, inside which the data is presented in a format which is easy to go through and understood by everybody who visits the website. Brainstorming must be done while the development of the structure of the website. This is because, it includes a bearing on what successful the website will become. The structure of the directories which is basically their arrangement on the web server is also important. Ideally, every section present on the website must have its personal directory folder.

2.2.5 Webpage Optimization

For optimization of your WebPages are to try to improve constantly the position of websites in search engine results.

3. Proposed Elements

Optimizing a page involves editing contents & HTML codes in order to increase its relevance to specific keywords and proper indexing in search engines .The contents and coding are edited corresponding to the indexing pattern of the search engines which are done by a crawler named Googlebot in Google. It is the most powerful way to reach the customer as we meet them when they are in need.

3.1 Page Rank

It is an algorithm used by Google which assigns numerical weight to the URL of web documents to measure its relevance. The particular numerical weight which it assigns in order to any kind of given element E is known as the particular Page Rank of E and denoted through PR (E).

3.2 On Page Optimization

It's the initial step which usually every webmaster need to concentrate, relates to the alterations carried out page to be able to improve visibility as well as rank. On-page Optimization is actually optimizing your website in a way that it might rank better in search engines as well as

improve visitor satisfaction. This particular optimization technique depends upon nature as well as business in our website. It is advisable in order to update the particular belongings in our website as well as optimize this content every time because these factors tend to be directly related towards the content as well as structure on the website. Ex. Modifying Title, Body text, Hyperlinks, URL. When proper on page optimization is performed, brings about drastic improvement in the rank as well as readability with the website.

3.3 Off Page Optimization

This is actually the work which can be done aside from the website to enhance the visibility & ranking of the page. Off page search engine optimization is actually supposedly the particular complement associated with Onpage Optimization. This mainly concentrates within creating back links & social media marketing. It is extremely novel practice to obtain links from the webpage which includes good rank as well as visibility.

3.4 How to Optimize A Website

An SEO strategy is made up of three major factors:

1. Keyword Research (Choosing the keywords potential clients are searching)
2. On-site Factors (Changes made to the actual website)
3. Off-site Factors (Efforts made to get other sites to link to our site and talk about us).

There are following steps which can help to optimize a website algorithm:

1. Firstly, we must create approximately listing of keywords as well as check their competitor's rate. After that evaluate chances up against the competition and choose words which might be popular enough and have absolutely average competition rate.
2. Next, begin creating text with regard to site. Quality as well as attractiveness of the particular text is an essential attribute of the page. When the textual content is a great one, quite simply to obtain incoming links as well as visitors.
3. In this particular step, we must begin using the HTML Analyzer module to produce the particular necessary keyword density. Each and every page will be optimized to its own keyword.
4. Next the site is listed in numerous directories.

5. After these types of initial steps tend to be completed, we need to wait as well as check search engine optimization indexation to make certain that various search engines is actually processing the site.
6. Within this step, we can easily continue to look into the positions from the site for the keywords. These types of positions give some useful information to begin with fine tuning SEO work.
7. Then make use of the Link Popularity Checker module to be able to and work with increasing the link popularity.
8. Utilize the Log Analyzer module to evaluate the particular number of visitors as well as work towards increasing it. We have to periodically repeat 6th & 8th steps.

3.2 SEO Elements

Search engine optimization has many elements (over 200 hundred), some of the elements analyzed in this paper are:

- Clean URL
- Meta description
- Sitemap
- Title tag

3.3 Tools Used

- **Google webmaster tool:** It allows webmasters to check indexing status and optimize visibility of their websites.
- **Meta Tag analyzer tool:** See how search engine robots analyze your or your competitor's website, receive tips on how to improve your Meta Tags
- **Link popularity check tool:** This tool shows how many other sites are linking to the site
- **Sitemap submission tool:** This tool is helpful in submitting sitemap to various search engines.
- **Keyword Traffic estimator:** This tool shows us approximately how many daily searches our keywords would get.
- **SEO dictionary:** It is the list of SEO related keywords with their definitions.
- **Page rank checker:** This tool is used to check the rank of the page so that further actions can be taken to improve the rank of a page.

4. Experimental Analysis

Depending on data in which we have collected through Google Analytics, we are able to see some data consists of

web visit, origin country on the visitors, and so on. Table 1 below shows the actual number of optimized web visit to the particular both websites throughout the four months.

Table 1: Actual Number of Optimized Web Visit

Month (2014)	Optimized website	Normal Website
June	0	0
July	261	0
August	335	86
September	219	47
total	815	133

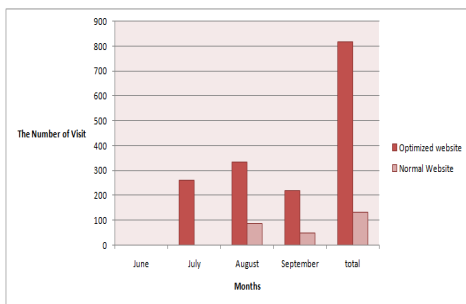


Figure1: shows the number of website visited

We as well examine our website content ranking within the Google search engine. We observed which the contents associated with optimized website acquire higher ranking within the Google search engine compared to contents of normal website. As an example, normal website has only one content within the first rank within the Google search engine, although the particular optimized website places their two contents within the first rank. Table 2 below summarizes the particular comparison associated with normal website as well as optimized website within term from the position with their contents from the Google search engine. With regard to simplicity, we present just the comparison for that top-5 rank within the search engine. This particular confirms in which through the use of appropriate keywords, our website could be more identified by search engines.

Table 2 summarizes the particular comparison

Rank in Search Engine	Normal Website	Optimized Website
1	1	2
2	3	8
3	2	6
4	7	10
5	4	14

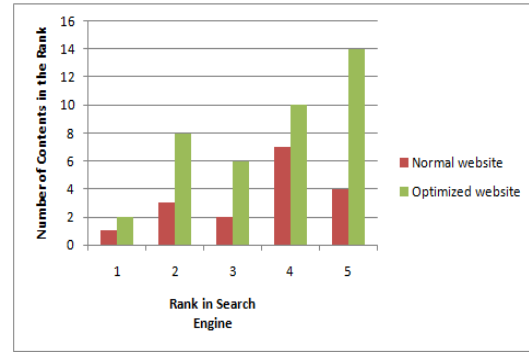


Figure 2 comparison normal and optimized website

5. Conclusion

Search engine optimization process is a vital part of the broad and vast procedure of internet marketing. The process of internet marketing is incomplete without proper and ample web site optimization. The main goal of any website is to attain a certain maximum level of user traffic and this is not possible unless and until that particular website has good visibility which is achieved only with the search engine optimization. This paper provides the strategy to optimize a website so that to improve its rank in search engine and thus to attain maximum of internet customers.

References

- [1] Oliver Chapelle, Quoc V Le Alex Smolaa., Choon Hui Teo., "Optimization of Ranking Measures", Journal of Machine Learning Research 1 (2999), 2000.
- [2] Xiangfu Meng, Z.M. Ma, Ranran Cheng, Xing Wang, "A Context-Sensitive Approach for Web Database Query Results Ranking," wi-iat, vol. 1, pp.836-839, InternationalConference on Web Intelligence and Intelligent Agent Technology, 2008.
- [3] Yen, Neil Y., Shih, Timothy K., Chao, Louis R. and Jin, Qun. "Ranking Metrics and Search Guidance for Learning Object Repository", TLT 3-Technical Manual, no. 3 2010.
- [4] Alexa. Top sites. Available at www.alexa.com/topsits/global.
- [5] J.Rognerud, Ultimate guide to Search Engine Optimization: Drive Traffic, Boost Conversion Rates, and Make Lots of Money, 2nd ed. Irvine, CA: Entrepreneur Press, 2011.
- [6] J. Grappone andG. Couzin, Search Engine Optimization: An Hour a Day, 3rd ed. Hoboken, NJ: Wiley, 2011.
- [7] Mowshowitz and A. Kawaguchi, "Measuring search engine bias," Inf. Process. Manage., vol. 41, no. 5, pp. 1193-1205, 2005.