

Search Engine Optimization (Working of Page Ranking)

Deepika Dandwani & Malay N Punjani

Abstract—The paper introduces SEO(Search Engine Optimization), working of it.As we know main point of SEO is to rank websites according to their PR Algorithm hence it briefly depicts various techniques of SEO like Keyword Research, Link Building, Social Media Strategy in order to improve the Page Ranking of websites. Commonly used algorithms used by search engines to rank their pages, Google, Yahoo and Bing being the most important ones as they drive majority of Web Traffic, focusing over page ranking scheme used by Google stepwise. Hence trying to explain various category of factors that are taken into consideration by the Page Ranking algorithms.

Keyword- Working of SEO, Factors Affecting Page Ranking, Google's PR Mechanism, GoogleWebMaster

INTRODUCTION

SEO-Search Engine Optimization is a mechanism through which traffic to your website increases it causes the site to rank higher in natural /organic results. Usage of search engines in today's world that proves the relevance of SEO . Impetus on white hat methodology further classified into factors that can help you improve the page ranking categorized into onsite and offsite factors influencing page ranking. Various page ranking algorithms used focusing on Google's page ranking algorithm and Google WebMaster technique. Following which we try and understand how does SEO mechanism take place on the backend.

WORKING OF SEO

Let us consider a simple structure of any typical website which shall help us understand working of SEO. You have 3 tier website that has home page at the top some tier 2 pages and some more tier 3 pages this is your site structure. When spider comes for crawling pages in your website it usually starts from homepage, it then follows links in the homepage to go to subsequent pages in tier 2 and tier 3

While crawling spider records certain parameters in each page, It draws a list of words and notes where they occur .

In next stage search engine builds index of page based on its own system of weightage for each parameter , it can be assumed that this analysis of page considers a host of other factors like link

patterns ,duplication of content, age of website, how fast page loads ,site reputation and so on.It can also be said that this analysis of webpage is dynamic and changes as logic of site changes. [6]

Once index building is over it encodes data to save server space and also for secrecy finally data is stored in a place that is accessed and retrieved by search engine to show up in search results in response to a search query by a user .the place of concern to you as a website owner is when search engine builds the list of words from your webpage , this is where you can influence the search engine by giving clear signals which words in the page are more important you can do that in 3 steps[6]

Content Placement- The keywords in your pages should be placed accordingly for example the title contains important keywords about your page hence should be towards the top and center

Traversing through the subpages of your website- Once the keywords are placed ,these keywords should contain a link to the tier 2 pages/other pages of your website so that the user also checks out the other pages and it increases the views of the other pages also which shall hence improve the Page Rank

Back Linking of Keywords- This part is usually the key aspect for increasing the page rank -Link Building. Keywords on your page should be back linked from other related websites so that it bring users to your website and improves the Page Rank once again

After now understanding that how SEO works and how your pages are ranked we further proceed towards why is SEO becoming important day by day ,and the need for processing of webpages and ranking them. The importance of SEO shall tell us what would happen if SEO is not done.

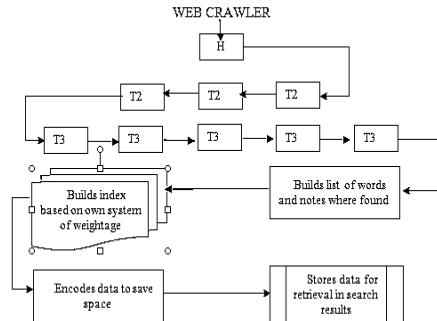


Fig 1.1 Mechanism of SEO

IMPORTANCE OF SEO

The facts presented tell us the massive use of Search Engines in today’s scenario , how important ranking is on an SERP. There are about 130,000,000 registered websites out there on the internet to sort through all of it .To find necessary content most of us rely on search engines and these search engines have become so good that over 91 % of people using the internet rely on them to find things there are lot of good search engines out there about 83% of people worldwide use Google. [10][8]

About 94% of people that use Google only click results on 1st page if they don’t find results on 1st page they don’t prefer to check subsequent pages instead adjust their search terms

63% only click on top 3 results that is the golden triangle. when people search for something relevant to them and they see your website in the search results they going to click and visit your page these are visitors who are looking for exactly what you have to offer so they likely to convert to customers subscribers etc. Hence your website should be seen in the first 3 results or atleast on the 1st page. That’s why SEO is done. [10][8]

Now that we know how important it is for our sites to rank better, we also need to know how the page ranking for website happens. The theory behind page ranking shall help us know better how our site is ranked and work towards betterment of the site also

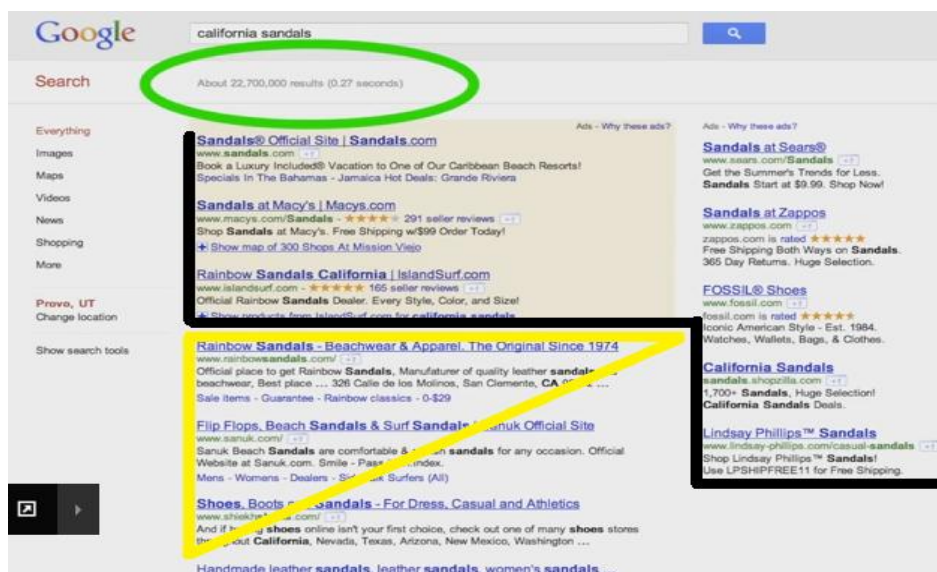


Fig 2.1 SERP(Search Engine Result Page)

Highlighted in green(total relevant results found)

Highlighted in yellow in the golden triangle

Highlighted in black is the area google provides to place ads that are relevant

After discussing the 2 basic topics that how does SEO work, why is it done, we now read about the crux of SEO that is Page Ranking trying to know how does our website get a rank from the Search Engine hence which will determine where is it shown in SERP. There is a standard theory which is applied to rank every website which we shall study further.

PAGE RANKING OF A WEBSITE

Page ranking commonly known as PR is basically a ranking system (1-10) determining how much the search engine(specifically Google) trusts any given website quick way to reference what google thinks of your website.[9]

10 means google home page it knows it trust it it gives it a lot of credit

0 means newsgoogle doesn't trust it no weight wont give it traffic either.

There are two types of Page Ranking.

Tool bar page rank (commonly known heard and seen on your browser(firefox) guess estimate)

Actual Page Rank (never known- as we never know the real algorithm search engines use to rank websites)[9]

Hence we always have a rough idea of the page ranking algorithms used by Search Engines.

Your website gets a page rank . Web site consist of multiple pages. Hence your page rank can never be created for individual pages , It can only be distributed among the webpages (distribution depends on the website owner how much page rank he wants to distribute to respective web page). This is known as The Bucket Theory used for distribution via links amongst web pages. If you don't want to distribute you page rank to some unimportant web pages you add a no follow tag to them.

After understanding what types of page rank actually exist and how they are assigned to various pages of our website we need to know what factors influence the PR , so that we keep them in mind while designing our website in order to rank it higher.[9]

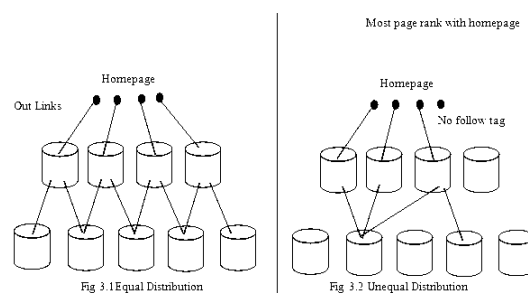


Fig 3.1- Big Bucket Theory for equal distribution of Page Rank to all pages of web site

Fig 3.2- Big Bucket Theory for unequal distribution of Page Rank to pages of web site (Giving importance to certain pages)

FACTOR INFLUENCING PAGE RANKING

You need to adhere by key points while designing the website. If you don't adhere by these protocols your site wont get an effective PR which instead would result in no views to your website causing it to be distinguished among the million of other websites

There are about 200+ factors that influence the page rank of your website and it is not possible for any of the websites to suffice these hundreds of factor, They are broadly categorized into

- a) Onsite/Onpage/Internal Factors[6]
- b) Offsite/Offpage/External Factors[6]
- c) On Site Factors – They directly influence you page rank .Are in complete control of website owner.
- d) Include many things that website owner should keep in mind crucial ones being

Domain/URL :

Any user which connects to a webpage has a small information i.e. Domain Name / URL.If it's simple and justified gives Web Crawler to catch it easily, this can be exposed to a huge set of user.URL passed over different Site's or Blogs gives huge traffic connected via them.For Example , user is trying to search "xyz" on Google websites having "xyz" in there URL or Domain will be listed like "www.stackoverflow.com/xyz" , "www.csharpecorner.com/xyz" , "www.xyz.com" all of them will be listed but only according to their Page Rank.

Title :

After Domain , Title is the very first thing which makes searching of a page easier.Keep the title short in length (less than 70 char).Powerful keywords are those having lot of search volume & attract user click.[3]

Meta Description :

Description is mandatory according to Google.Limit your description length to 160 chars.

Widely spread your targeted keyword all over the description.It can use any symbols in it as long as it makes sense for your web page.[3]

Header Tags :

Header tags from the range of H1 to H6 can be utilized.This will help to justify the content of the page in the best formatted way, H1 should be the Main Heading of the Page.

Use a minimum number of H1 tags should not be more then 2, this will cause the Spider to be mislead.Use related Keywords in sub headings.[3]

Keywords :

Since content makes the complete information but, Keywords make it simpler for a user to view or search the related topics in the easiest format.Keywords can be split into two words,

1. Key i.e. Important
2. Words i.e. Content,

this combination make a Word in a Description of the content or a concept.Keywords may be like a Single word used to describe or refer to another concept.A spider crawling through the content make it simple i.e. will keep a track of this Keywords and search the content and use them while indexing.[2][3]

Rich Media Files- Images /Videos :

This Images or Videos should have a small description to make the Image or the Video to be understood in the context thought by the Sender.This again makes the life of a user to Search the Image at ease and fast.An Image or a Video should have a mandatory Keyword Passed next to it, this make the Crawler to catch hold of the Keyword as well as Index the Image at the same time.Also if an image is a copied one should give credit to the owner by placing a link to the image or respective page.Alt Tags that are for these rich media files should be optimized with some of the keywords, Anchor text both internal and external.[2]

Title	17%
Description	11%
URL	12%
Heading	15%
Image	9%
Image Name	9%
Transparency	8%
Strong	7%
Links	8%

Table 4.1 Percentage impacted by Onsite Factors

Offsite Factors:

They are external factors. Anytime there is a reference to your website, links from other websites, there is a tally of it. You would like this tally count to increase as it is kept in account and helps improve you page rank. This Process of Factors Affecting the Page Ranking can be split into Organic or Artificial.[6]

Organic:

This is the original and optimized way to may it big, but the process is to slow but might bring in real users to read the content, or we can say like a "Return Back User" will be in huge number.

Artificial:

As the word itself describe the process of the method , but makes the process the quickest to find the output. This is where the users are directed from one Page to another.

Links to your site:

Blogs , Social Networking site's plays a huge space to share Links of the Website this will eventually generate a huge traffic flow since Blogs and Social Networking are normally visited.As if we visit a website like "Facebook" there is set of Paid links passed to each users according to the Age, Preferences and Location.But this task can be done by a normal user to which can help to set an audience for him and share a Post including the Link and "Image" / "Video" is a must to catch eye of a normal user.[2][3]

Press Releases:

This is the best way to reach out to millions in a day, this can be done with AD's in a Newspaper or TV channel.Today media is so supportive to bring in there force to support if working over a Unique stuff and makes sure a Website is visited to its best.[1]

Example:BookMyShow being the best website to provide the Service in India crashed while booking tickets for IPL2014, which can show the huge number of Hits over the Website, this was all because of New experience to book tickets from Home.

Guest Blog Posts:

If a user having his website which can have a great information providing capabilities it can be referred while Writing a Blog or a Post this can be a generic way to float the information about the website.Since a Website always stands with its own IDEA which makes many websites unique and its distinct flow of information, a set of Viewers need to be focused upon and then move ahead to get user to be stuck to it.Since Blogs and Post have been shared on a large number which make the flow of Information of Links with them ease and Reusable i.e. "Reposted / Shared".[1]

FBMentions/Shares/Tweets/Pins/Reddits/Diggs :

This is the Most fasted and the quickest manner to go ahead and attract a huge set of users and this have gone out and created a huge effect in traffic flow , as well as excitement of Exploring.In simpler words FB/Tweets/Pins/Diggs are taking over the power of media i.e. Newspaper / TV Channels , as every second user in Modern cities connect to them and gain information from it.[1]

STEPS FOR GOOGLE PAGE RANKING

There have been a huge set of thoughts which flow to maintain the best practices to be in the good books of Google i.e. having Page Ranking at the best in Google. As we have covered almost all Best Practices used in Google to maintain the better outcome. But a few more to List Down which is mainly defined to refer directly to any Search Engine.[4]

Manage Robots.txt to handle any Crawler :

- This is a normal Text file but makes a huge impact in the functioning of the Crawler.
- Any crawler going through the Website will have to first Read the location which a crawler is not allowed to visit in any condition.[5]

Eg User-agent:*

Disallow: /images/

Disallow: /search

All search engine bots should not access or crawl the files / content under the folder images , search.

This restricts the crawler but will make the indexing a bit focused towards the page which the site is mainly focusing.

"Keep a firm grasp on managing exactly what information you do and don't want being crawled"

Be aware of rel="nofollow":[5]

- This is a feature to make a setup to maintain a good reputation with Google.
- Rel is used when an untrusted site you have referred on urBLog or Website.
- Example:<a href="<http://www.a3itech.com>" ref="nofollow">Comment
- If Google stores the information about the link we have shared and later it turns out to be faulty which can affect our website reputation, so to prevent this "REL" is used.

Notify Google of Mobile Sites:

As we know the world is moving towards a technology with supports the world connect on the go, which can be possible by Mobile Phone.

So if the website which is made and only focused towards cell phones which can have a better index in the way this Listing are shown in the Search.

So this needs to be registered with Google which makes it more easier to be visible or indexed, but if it doesn't show up there can be some problem with the Website namely:

Google Search Engine Might not be able to find the site.

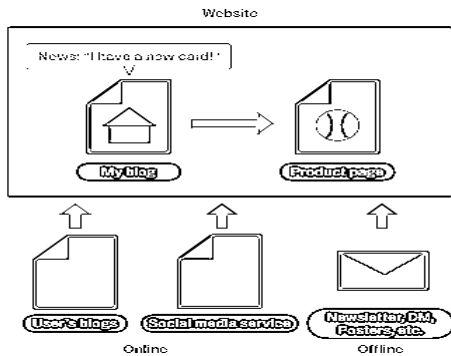
Promote You Website In Right Way:

As the below image helps us to view a constant update in the site helps to maintain a good amount of return back users.

Linking of the page with the product list will help user to navigate and catch eyes over new product.

It should be a constant effort to have this process to make a new about the site at different blogs and social media.

Also the effort to make the newsletter and spread the word will be helpful.[4]



GOOGLE WEB MASTER TOOL

So as we know Google the Best Search Engine World Wide have a service which make a normal user to make his website be at the top of the Search Engine , and its FREE which makes it more user friendly and fast too. So in simpler words Google has its own Webmaster tool which make it simple for a normal website to get the best of its rating at the soonest. Google have named this service as "Search Console".

So Search Console which sounds like a Technical term but it's just its opposite, even an generalist can manage to get its work done. It can help you in the following ways:

Business owners who delegates:

Its so simple to work with that a business owner might not need to hire a webmaster as Google will have its own simplest way to enhance your capabilities. If you know how to understand reports then it will be a "BOON" , as it allows the person to take future decisions and make required changes accordingly.

SEO specialist or marketer:

Still a huge sum of amount is been paid for managing the SEO of a particular website , which used to increase the maintenance charge of a Website. But now the Search Console does it for you which save a huge amount for SEO. The information shared by the Search Console not only manages the SEO but helps to influence the "Traffic" of the Website.

Site Administrator:

So it can be described as a best way for a small time firm to manage it own Website and not to rely on the hands of a Site administrator .which fixes a set of problems faces by many like,

- a. Server Error
- b. Security Issue
- c. Malware
- d. Smooth Flow

Web Developers:

If you are a Web Developer which will help you enhance your capability to make the most of it from the Search Console. So as a web developer they need to create a markup or code and Search Console helps to resolve those issues such as errors in structured data.

CONCLUSION

In Conclusion, SEO is changing day in day out as new aspects come into the picture. As requirements change and people expect far better search results the need for optimizing Search Engines comes into scenario. Common user behaviour determines that search engines yet need to be optimized as they are the prime source of finding information on the internet plus reliability of million users makes it important for SE to improve. For a supreme quality SEO you need to concentrate on 2 base pillars that is the on site factors and off site factors on site factors are directly in control of the publisher , unlike the off site factors which are controlled by user behavior, social engagements, visitors, and other publishers. The topics researched help us how the back end working of Search Engine and the output seen by as us SERPs. It tell us the way web crawlers work ,process of indexing where keywords of web pages are indexed, encoding and saving of information which returns as SERP when user enters a query. Further to understand how pages are ranked we need to understand the factors that would influence it and what is the difference between onsite and off site, how social media , back linking impacts page ranks in a major way and why does content of your page still remain the king for determining the page rank. Further elaborating on steps followed by maximum used Search Engine for page ranking of web site. How does it keep a chain of which pages are not to be crawled by the web crawler using specific no follow tags , and technique to improve your page rank by specifying it as a mobile site so that it appears higher on SERP. Also studying on Webmaster tool used by Google for page ranking

REFERENCES

- [1] Search Engine Optimization Research for Website Promotion **Publisher-IEEE** Information Technology, Computer Engineering and Management Sciences (ICM), 24-25 Sept. 2011 International Conference:-M. Cui ,S. Hu
- [2] Study on Website Search Engine OptimizationPublisher- IEEE-11-13 Aug. 2012,Q. Shigang , L. Jinhua , C. Jianli, Z. Hui
- [3] An Empirical Study on Search Engine Optimization technique and its outcomes Publisher -IEEEArtificial Intelligence, Management Science and Electronic Commerce (AIMSEC), 2011 2nd International Conference8-10 Aug. 2011,Yi Li , Yiwen Zhang
- [4] Research and Improvement of PageRank Sort Algorithm Based on Retrieval Results Publisher -IEEE Intelligent Computation Technology and Automation (ICICTA), 2014 7th International Conference on25-26 Oct. 2014, L.Z.Xiang
- [5] Analysis of Search Engine Optimization (SEO) Techniques International Journal of Advanced Research in Computer Science and Software Engineering -Volume 4, Issue 3, March 2014 :- Gurpreet Singh Bedi, Ms.Ashima Singh
- [6] Using Search Engine Optimization Technique Increasing Website Traffic and Online Visibility International Journal of Advanced Research in Computer Science and Software Engineering Research Paper -Volume 5, Issue 1, January 2015:- GeetanjaliTyagi* Megha Sharma Kumar Kaushik
- [7] Zhang,Lihong, Zhang,Jianwei, Ju,Yanbein , Research on Search Engine Optimization based on Six Sigma Management
- [8] Michael David , Search Engine Optimization in 2013
- [9] Search Engine Optimization for Improving Page Rank And Image Search Accuracy International Journal of Engineering Research and Applications (IJERA) -Vol. 3, Issue 4, Jul-Aug 2013:- Tanveer Singh, Dr.RamanMaini
- [10] Beginners guide SEO By Rand Fishkinand Moz Staff