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Title

**OFF PAGE OPTIMIZATION FACTORS FOR
PAGE RANK AND LINK POPULARITY**

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ABSTRACT:

Off page optimization includes those techniques that can be done off the pages to increase traffic to your website. Off-page optimization are strategies for search engine optimization that are done off the pages of a website to maximize its performance in the search engines for target keywords related to the page content example of this are linking and placing keywords within links anchor texts (anchor texts are the labels of the links). Obtaining links are also considered off-page optimization, which include articles distribution, social networking, directory listings, blogging, link exchange, forum posting, etc. It is very important to note, though, that submitting your website to be linked to other websites randomly could hurt your website's ranking. You should only submit your website to directories or listings that are connected or are relevant to what you are offering to be able to properly achieve off-page optimization. These factors are off-site in that they are not controlled by on page factors .Examples of off-page optimization include things such as link popularity and page rank .Off page factors outside of normal control of the content of site. They are often referred to by search engine optimization experts as the “inbound links (IBL)” to a given web site from other websites. The more inbound links to a site, the higher its ranking will be on most search engines. Search engines are relying more and more on these elements when determining ranking because they are more resistant to spamming abuse.

Keywords- SEO, IBL, OBL, PR

1. INTRODUCTION:

Off page optimization (off page search engine optimization) is the techniques or strategies for search engine optimization, with the off page optimization strategies or techniques websites performance in search engine results pages (SERP) maximize its performance for target keywords related to the page content[1]. Off page optimization includes link building and placing keywords within the link anchor text. Obtaining the links from the website or web directories also is considered as off page optimization.

Off page optimization consists:

- Title Selection
- Description Preparation
- Keyword Selection for Submissions
- Directory Submissions
- Search Engine Submissions
- Link Building
- Blog Posting
- Comment Posting
- Forum Posting
- Community Building
- Social Bookmaking
- Press Release Submission
- Public relations
- Link campaigns, such as asking complementary businesses to provide links
- Three way link building
- Two way link building
- One way link building
- Multiway linking

Off-page optimization deals with link building strategies. This off page optimization results in the improvement of the website in link popularity and reputation. Off page optimization also ensures that the businesses get only qualified links. For example submitting your site to the top search engines for link sharing will automatically increase the rank of your site. Though there are many distinct features for both these types of SEO services, they are equally important for a website. Without implementing SEO techniques, your site will soon be non-existent on the Internet. Link popularity means, how many quality and relevant inbound links your website having. in Major search engines (Google, Yahoo and Msn) using link popularity algorithm tools

or techniques for determining your websites quality and relevance inbound links from other websites or open directories. If you don't have quality relevant inbound links from other websites or providing links pages are not indexed by the search engines. Your website may not rank well for competitive keywords in search engine result pages (SERP). Search engines normally find your web site if you submitted your site to those search engines, apart from that the another way of finding search engines your website is from other web sites. Having such external links gives the search engines the another way of finding your website and from those websites search engines spiders or crawlers will come to your web site for cached purposes and another advantage is visitors come from directly to your site through such external linking websites. Google and other major search engines gives the more priority to your website in the process of allocating page rank and displaying search results in te search engine result pages (SERP)[1].

2. OFF-PAGEOPTIMIZATION FACTORS TO BE CONSIDERED:

2.1 Backlinks

Backlinks are incoming links to a website or web page. In the search engine optimization (SEO) world, the number of backlinks is one indication of the popularity or importance of that website or page. Outside of SEO, the backlinks of a webpage may be of significant personal, cultural or semantic interest, they indicate who is paying attention to that page.

2.2 Link Exchange

Link Exchange process in which, three sites are involved in a series of three one way links between them. This is usually done when two websites (A) and (B), and one link to website (A), to another link partners site(C), while in return, the link partner links his website(C) to the site (B). It means that site (A) is linking to site (C) and in return, site (C) is linking to site (B).

2.3 Page Rank

It is a link analysis algorithm used by the Google Internet search engine that assigns a numerical weighting to each element of a hyperlinked set of documents, such as the World Wide Web, with the purpose of "measuring" its relative importance within the set[2].

Page Rank is a link analysis algorithm used by the Google Internet search engine that assigns a numerical weighting to each element of a hyperlinked set of documents, such as the World Wide Web, with the purpose of "measuring" its relative importance within the set. The algorithm may be applied to a collection of entities with reciprocal quotations and references. Factors of page rank

- Its relevance to the words and concepts in the query
- Its overall link popularity
- Whether or not it is being penalized for excessive search engine optimization (SEO).

2.3.1 Inbound links: - An inbound-link (IBL) is any hypertext link from an external website to a page on your website.

2.3.2 Outbound links: - Outbound links are links that start from the site and lead to another site.

2.3.3 Page Rank Algorithm

The Google algorithm interprets a link from one page to another as a vote. The Google algorithm and the configuration of web pages means that page rank can be fed back so that pages that have more votes are then deemed to be more important. The numerical weight that it assigns to any given element E is also called the Page Rank of E and denoted by PR (E). The Page Rank of a particular page is roughly based upon the quantity of inbound links as well as outbound links.

Page Rank is a probability distribution used to represent the likelihood that a person randomly clicking on links will arrive at any particular page. Page Rank can be calculated for collections of documents of any size. The Page Rank computations require several passes, called "iterations", through the collection to adjust approximate Page Rank values to more closely reflect the theoretical true value. A probability is expressed as a numeric value between 0 and 1. A 0.5 probability is commonly expressed as a "50% chance" of something happening. Hence, a Page Rank of 0.5 means there is a 50% chance that a person clicking on a random link will be directed to the document with the 0.5 Page Rank

$$PR(A) = (1-d) + d (PR(T1)/C(T1) + \dots + PR (Tn)/C (Tn))$$

Where

- $PR(A)$ is the Page Rank of page A,
- $PR(T_i)$ is the Page Rank of pages T_i which link to page A,
- $C(T_i)$ is the number of outbound links on page T_i and
- d is a damping factor which can be set between 0 and 1.

Example

Assume a small universe of four web pages: **A**, **B**, **C** and **D**. The initial approximation of Page Rank would be evenly divided between these four documents. Hence, each document would begin with an estimated Page Rank of 0.25. In the original form of Page Rank initial values were simply 1. This meant that the sum of all pages was the total number of pages on the web. If pages **B**, **C**, and **D** each only link to **A**, they would each confer 0.25 Page Rank to **A**. All Page Rank $PR()$ in this simplistic system would thus gather to **A** because all links would be pointing to **A**.

$$PR(A) = PR(B) + PR(C) + PR(D)$$

This is 0.75.

The Page Rank conferred by an outbound link $L()$ is equal to the document's own Page Rank score divided by the normalized number of outbound links (links to specific URLs only count once per document).

$$PR(A) = \frac{PR(B)}{L(B)} + \frac{PR(C)}{L(C)} + \frac{PR(D)}{L(D)}$$

In the general case, the Page Rank value for any page u can be expressed as:

$$PR(u) = \sum_{v \in B_u} \frac{PR(v)}{L(v)}$$

i.e. the Page Rank value for a page u is dependent on the Page Rank values for each page v out of the set B_u (this set contains all pages linking to page u), divided by the number $L(v)$ of links from page v .

2.4 Link popularity

Link Popularity is considered a significant factor not only in ranking websites but also for achieving increased traffic through search engines. For SEO purposes, links should be created with various sites keeping both quality content and ranking in view. Link popularity is one feature that secures good positioning in search engines[6].

Link popularity refers to the total number of links that a search engine has found in a webpage. The more websites link to the web page, the higher the link popularity of the page. High link popularity contributes to a high search engine ranking. Link popularity is very important with regards to search engine placement or ranking. They use the number of outgoing and incoming links to a website to determine the importance (relevance) of the website for a particular keyword or keyword phrase. However, incoming links are more important than outgoing links. Obtaining quality links from good websites is not easy. A good website will only link to page if there is some benefit to that site or that site's visitor's. When a spider-driven engine combs-out the web, it finds sites by traveling through links. The more sites that link to page, the more important the engines believe page content to be relevance. Link popularity refers to the number and quality of links that point to a website. Increasing the website's link popularity is critical. A Web page that has links from many pages that have a high Google Page Rank receives a higher rank itself[6]. The absence of links means that there is no support for that page and it will not get a high page ranking. Links from web pages that are appropriate to the website and are of good quality should increase the page rank.

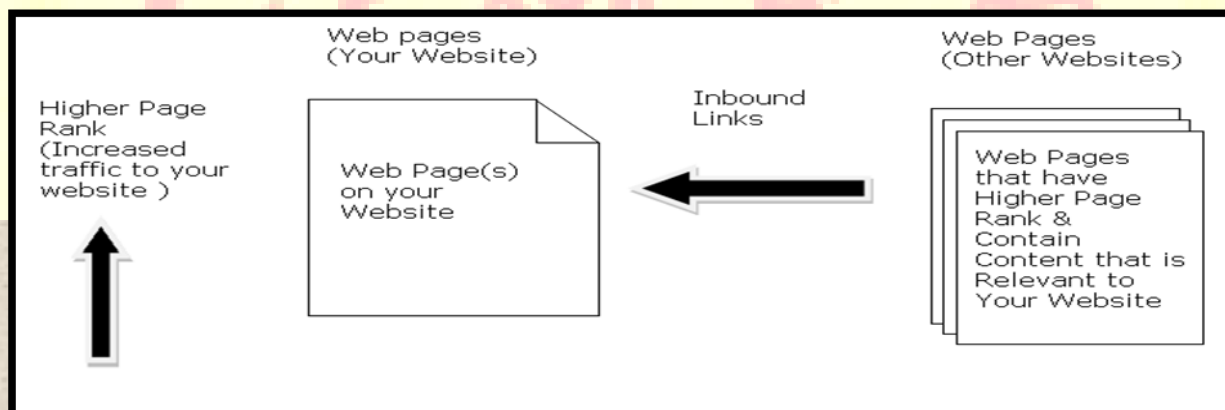


Fig 1: The processing of Inbound links.

2.4.1 *Quality of individual links*

This is the Quality of the website the link is coming from. The quality of a link is based on several factors, including:

- The importance of the website.
- The 'optimization' of the content on that website (i.e. the quality of content).
- The number of outbound links on the linking page.

2.4.2 *Quantity of links*

When the quantity of inbound links to a website are usually talking about link popularity

The quantity of a link is based on several factors, including

- The number of links from one website.
- The number of links from the same IP address

2.4.3 *Reciprocal Linking*

It is simply exchanging links with other webmasters in order to boost link popularity. It involves sending e-mails to webmasters of sites with relevant and complementary content. A reciprocal link occurs when a web site links to a site and in turn the linked-to site links back to the linking site i.e. the link is reciprocated by both parties. They aid in driving traffic to a web site and in some cases also add to site's link popularity.

2.4.4 *One Way Incoming Linking*

It is the best type of links to have for the site. They increase PR and link popularity. They indicate to the search engines that the site is an authority on the keyword or keyword phrase used to link. However, incoming links are the most difficult to acquire. These types of links are powerful in building link popularity

2.4.5 *Natural Links*

Links pointing to a web site created because someone found the web site useful and decided to link to it i.e. linked to it naturally. These types of link are very powerful in the link popularity stakes as they identify a web site that is worth linking to and therefore has a better chance of being a quality resource of information.

2.4.6 Hubs and Authorities

Hubs are that pages with high quality outgoing links and Authorities are that pages with high quality of incoming links.

3. SUMMARY:

The summary includes the off-page optimization techniques which includes the backlinks, link popularity, link exchange and page rank. The most important factor of off-page optimization process is link popularity.

4. CONCLUSION:

In this paper I discussed the mainly the factors of Off page Optimization which affects on the Page Rank and Link Popularity. I defines How a the Rank of a website is maintained by the Google search engine and how the Page Rank algorithm works. I also defined that which things and factors affect on Link Popularity.

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