

The Foremost Guidelines for Achieving Higher Ranking in Search Results through Search Engine Optimization

Khalil ur Rehman and Muhammad Naeem Ahmed Khan

*Shaheed Zulfikar Ali Bhutto Institute of Science and Technology, Islamabad, Pakistan
khalil_ur@hotmail.com, mnak2010@gmail.com*

Abstract

Search Engine Optimization (SEO) relates to the activity of optimizing individual web-pages or the entire website to make them friendlier to acquire higher ranking in the search results. All the major search engines such as Google, Yahoo, Ask, Bing, etc. rank web-pages based on certain factors that affect its ranking; therefore, SEO aims at generating the right types of signals on the web-pages. The core methodology used in SEO is to upgrade both content and associated coding of the website to improve its visibility and prominence in organic searches made by the search engines. The optimized websites obtain better ranks, and typically get a higher number of visitors. This research is based on reviewing different optimization techniques for individual web-pages or the entire website to make them search engine friendly. Besides, this study also critically analyzes and summarizes the core techniques proposed in the contemporary literature. This paper offers a comparative study of the previous research work regarding the techniques used in SEO and pinpoints certain gaps in the known search engine optimization techniques. Finally, we put forward some pertinent guidelines for optimizing the websites.

Keywords: *Search Engine Optimization, Search Ranking, Web Crawling, Internet Marketing, Website Promotion, Re-ranker*

1. Introduction

Search engine optimization is a process that uses a search principle for search engine to acquire higher ranking for web-pages or websites to enhance the probability of website access. Since the emergence of Google, Yahoo, Ask, Blekko, Volunia and Bing, the SEO principles and search engine innovations have been in the process of development. Search engine is a methodology which is based on different strategies using a computer program to gather information from the Internet, and organizing and processing the searched information for displaying the search results to the users in a systematic way. A search engine has four major areas: searcher, indexer, hunter, and user. Search engine is not only the necessary function in the website to provide a convenience for users, but it is also an effective tool of understanding web user's behavior. Efficient search engine allows users to find the target information quickly and accurately. At present, the major Internet search engines are Google, Yahoo, Ask, and Bing and so on.

Search engine optimization relates to the activity of optimizing the 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 pertains to the practices which are used during the development of a website. Followings are the important aspects that need meticulous attention during the development of a website to make it search engine friendly. Domain name and title of

the web-pages should contain the keyword for which the website is required to be optimized. In addition, it requires choosing descriptive text for the website contents followed by figuring out the keyword phrases through which website is meant to be optimized. These keywords are required to be placed within the headings, anchor tags and *Alternative* tags (Alt-tag) as well as in the main contents. For SEO, we recommend using the latest tools and software for website development, and regularly updating the website with fresh and unique contents so that the websites stay compliant with the ever-changing Internet trends. Ensuring that the web-pages contain the most recent keyword that are more pertinent to their contents bring about value addition in the SEO methodology. The keywords used for optimization should also reflect in all the linking structures on the web-pages. Similarly, videos, images, audios and other contents should be optimized on the same lines.

Off-site optimization relates to the practice through which the website and its contents are propagated over the Internet to increase its traffic which in turn helps enhance Google ranking of the website. In this study, we suggest that Back Linking, Social Network and Groups are the three major considerations for off-site optimization.

There are a number of different techniques that have been proposed for SEO, but there are several gaps that should be filled to make these techniques more effective. To this end, we have reviewed different SEO techniques that are in practice for optimizing individual web-pages or the entire website in order to make them search engine friendly with the ultimate objective of acquiring higher ranking in the search results.

2. Literature Review

Search engines have a unique policy for indexing information in an efficient manner, and it is essential to optimize web-pages in a specific way to enhance their search ranking. Cui and Hu [1] highlight the specific requirements for optimizing the search queries, and present a novel website building and design concepts based on the empirical research pertaining to internal coding method and website contents. In addition, the authors elaborate search engine optimization tools and strategies specific to the e-commerce sites for the sake of effective website promotion. When a user searches a website through an optimized search engine, then the entire website can attain higher ranking position. This improves the website traffic and enhances the website sales capability. This necessitates employing specific tools, strategies and search engine friendly methods for SEO. Furthermore, the five techniques used for the *Tools of SEO* category are: keyword tools, link tools, usability tools and high-quality incoming links. For the *Strategies of SEO*, three methods are elaborated which are: website structure, space strategy and writing website titles strategy. The methods used in the *Friendly Methods of SEO* category are structure optimization of frames, optimization of images, URLs, directory structures, navigation of website, optimization of flash and web form optimization.

Wang, *et al.*, [2] used back-propagation neural networks technique to optimize the search engine for speedy retrieval of information from the web. The authors claim that using neural networks technique reduces the load of information that exceeds the limits of loaded information accessible through a particular user's requirements. The idea is to create profiles of user's behaviors while searching information on the Internet, and then optimize the websites based upon the characteristics collected through the profiling to acquire the desired results of achieving higher page ranks.

Search engine optimization increases ranking of search results in the Internet marketing. Hui-ye, *et al.*, [3] elaborated in their research that the rank of the motel sites

and its bandwidth increased for Internet marketing after the implementation SEO techniques. The authors used several techniques of SEO to increase the bandwidth and ranking of search results including *text title, label text, picture note, HTML modification, map of site, open website catalog registered in DOMS, web ping, Internet discussion boards and signature lines for keywords.*

Web services technologies have been replicated briskly to facilitate the running businesses through web-based applications. Chung and Hui [4] state that SEO tools can help organizations like banks, governments and other institutions to improve their web services in order to increase their business in the current world competition. The authors emphasize specifically using *image searches, proximity organic searches and top-k keyword* for optimizing the web server: The SEO tools and techniques used for web server development include: *search indexed getting web pages, optimizing the web server, choosing the correct set of keywords, on-site web analytics, attract links and off-site web analytics.* In addition, the supplementary web intelligence techniques are *query ranking factors and page raking factors.* The quality of services can be ensured by focusing Trust, Performance, Reliability, Enterprise Application Integration, Security and Reputation.

Search engine optimization is also used for getting higher rank in search results from the business information. Yunfeng [5] used SEO algorithms and techniques for the development of websites. The research canvas covers search engine, web design methods and Internet marketing. A search engine has become an essential component of our everyday life. Enterprises use the search engine for marketing role as the aim of search engine is to enhance the ability of web pages retrieval. The websites' basic elements are created by using a retrieval principle of SEO. Therefore, the rank of websites is higher in search engine in natural search results. The research emphasizes using the specific SEO algorithms and techniques such as *page rank algorithm and Hilltop algorithm.* The author stresses upon using certain tactics for web development such as *contents of website tactics, domain and hostname tactics, and links and keyword tactics.* The pertinent approach of tactics is based upon the development of websites by aiming SEO and getting higher rank in natural search results.

Corporate sector and institutions want to become more recognized worldwide through seeing higher ranks for their websites. To this end, Ahmad and Ayu [6] focused on relation of Webometric rank and web content accessibility in the search ranking system for acquiring higher ranking. The authors compare WCAG and Webometrics techniques to find best between them based on their ability to get higher ranking. A positive relation occurs between WCAG and Webometrics after analyzing the search results. The relation of WCAG and search engine rank is also investigated in this research. The reliability of several search engines is based on this ranking system; therefore, the authors prefer Webometrics ranking system to the search engine ranking system. The following WCAG processes are of significance: *web accessibility, web content accessibility guidelines, web content tools, and webometrics ranking system.* Specifically, three types of methodologies *WCAG and its relation to webometrics ranking, research design, and search engine ranking and its relation to WCAG* are proposed in the study.

Search engine is an approach for the retrieval of web pages related to user requests on the Internet. Vijayalakshmi, *et al.*, [7] focus on a filtering system for search engine to decrease the number of irrelevant pages in search result. The proposed idea is to implement a two-tier link extractor for optimizing a new search engine filtering system. The web searching results of this filtering system addresses certain issues related to the

searches on the worldwide web. Implementation of two-tier link extractor is based on search engine filtering to reduce the irrelevant documents in the search results. The specific techniques used for search engine filtering system include: *link URL filter, a process of assigning weight, re-ranker principles, link extractor, vector formulator and content filter*. This process retrieves the specific documents that are related to user queries.

SEO approaches are superintended in four areas: *keywords optimization, content optimization, link optimization and structure optimization*. Zhang, *et al.*, [8] focus on the impact of search engine optimization techniques and their outcomes and analyze the efficiency of SEO to find out which approaches or methods are more efficient. The online information searching is very important activity in the present-day Internet world. SEO is a process that improves the quality and traffic volume of sites in the search results. Efficient SEO methods are used for making websites prevalent in the results generated by the search engine. The actual objective of SEO techniques is to make a more preferable website in search result and make more visitors for higher rank. The effective techniques that are used for obtaining the higher rank are: *indexed pages, independent or static IP address and crawled links*. In this research, the authors use six SEO techniques which are: *link popularity, page size, web directory, customization of 404 error pages, website title length and keywords density*.

Search engine spamming is a factor to enhance the rank of unworthy web pages and websites. Somani and Suman [9] proposed black hat technique to counter the spamming in SEO. Black hat technique helps find the target pages and trace down the entire graphs that are caused for spreading spam. SEO is a process to make a website user friendly; therefore, the websites can be searched simply by the search engine based on the related keyword. Two kinds of spamming techniques — hiding technique and boosting technique — are highlighted by the authors. There are many other techniques such as spam blog technique and evolving technique are used to increase the spamming in search engines. The authors used the following methods to decrease the spamming for search engine: *spam detection, refining the request, combining spam detection and labeling the spammed site with page rank*. Black hat technique decreases the spamming in search engine and increase the ranking of relevant websites.

Zhang, *et al.*, [10] proposed a technique of full-text search rank optimization for e-commerce. The authors use CNBAB (an Asian e-commerce trust platform) model to validate their proposed technique. There are many algorithms and protocols used for optimization e-commerce websites. CNBAB is a trustworthy and credible model to implement these methods in the field of e-commerce and trading. The full-text search engine is based on two strategies CORESEEK and MMSEG. The CNBAB trust model is based on the trust measurement and trust recommendations.

SEO is a process that improves the rank of websites and web pages. Zhu and Wu [11] proposed a research analysis on SEO by using reverse engineering factors and built a system that automatically crawled 200 thousands web pages. After that they analyzed the page rank, URL and HTML based Google search results. Website owners want that their websites have higher ranks than the other websites in the search results. SEO industry has its own optimization goals. Every search engine has its own crawler that refreshes the pages. The SEO factors analyzed by the authors include: page rank on analysis, URL analysis and HTML analysis. Reverse engineering approach is also used by the authors for SEO analysis. They expound five factors of SEO: URL length, keyword that appears in URL domain, keyword density in HI, keyword density in title and URL layers.

The World Wide Web is a global information place. Rajaram [12] focus on the web caching in semantic web technique for developing multiple search engines by using clustering of web semantic for optimization and analyze the advantages and disadvantages of these techniques. Web cache technique is used to reduce latency and network traffic. The authors recommend using the following algorithms: LUV algorithms, least weighted usage algorithm and lowest relative value algorithm. The web caching in semantic web solve the problem of optimization at the architecture level. The advantages that can be achieved by using these techniques include: reduce load on the web server, reduces latency time, reduces the network traffic and data structures. The author used web crawling, design ontology search and clustering of the web results for development of multiple search engines.

3. Critical Evaluation

The critical evaluation of the contemporary literature studied during this research is presented in Table 1.

Table 1. Critical Evaluation of the SEO Techniques

Ref	Focused Area	Technique Used	Scope/Merits/Limitations
[1]	Search Engine Optimization (SEO)	Website optimization through coding and enhancing website contents.	SEO is used to optimize websites for frequent retrieval by the search engine by increasing the website ranking. This approach helps in grabbing attention of the net surfers. Website optimization merely is not enough; rather it entails the development of new search engines as competition is expected to become tougher in the future.
[2]	SEO	Use of back-propagation neural network for personalized search optimization.	Neural network algorithm is more effective when optimizing a personalized search engine to get higher precision rate of information retrieval. Neural network algorithm can only be used for personalized search engine optimization.
[3]	Internet Marketing	Promoting Internet marketing by employing search engine optimization techniques.	Search engine optimization enhances the rank and bandwidth for Internet marketing. General SEO techniques are used for Internet marketing.
[4]	Web Server Designing	Use of Web intelligence and SEO techniques.	Future development methods Internet of things (IOT) and machine to machine (M2M) are good approaches. However, the proposed techniques can only be used for small organizations
[5]	Tactics for Web Development	Exploitation of SEO techniques.	SEO algorithms and tactics approach help get higher rank of websites in natural search.
[6]	Web Content Accessibility	WCAG & Webometrics.	WCAG is used as a tool for SEO and for ranking system which bears limited scope for future website development.
[7]	SEO	Introduced two-tier link extractor, re-ranker and vector formulator.	The proposed technique reduces the chances of inclusion of irrelevant documents in the search results.
[8]	SEO	Comparison of SEO techniques through hypothesis.	The paper provides an empirical analysis of SEO techniques and its outcomes.
[9]	SEO Spamming	Introduced black hat technique.	Black hat technique can help decrease the possibility of spamming in search engine. The proposed technique can be used for removal of unwanted websites in the search results.
[10]	Rank Optimization for e-commerce	Full text search rank optimizer.	The proposed model is based on full-text search for potential use in optimizing the e-commerce websites.
[11]	SEO	Analysis of SEO using reverse engineering.	The authors analyzed the factors of search engine optimization and provide its effects on websites ranking. However, reverse engineering is a complex and lengthy procedure for analysis.
[12]	Multiple Search Engine Optimization	Web caching and clustering.	Use of semantic web techniques improves the optimization factors for multiple search engine development.

4. Proposed Guidelines for Search Engine Optimization

SEO relates to the activity of optimizing individual web pages or the entire website to make them more search engine friendly, thus, getting higher position/ranking in search results. All the major search engines such as Google, Yahoo, Ask and Bing rank web-pages with the right combination of ranking factors or signals; therefore, SEO aims at generating the right type of signals on the web-pages. The core methodology used in SEO is to upgrade both contents and associated coding of the website to improve its visibility and prominence in organic/natural searches made by the search engines. The optimized websites appear at better ranks in search engines and ordinarily get the higher number of visitors. For practical purposes, the thumb rule to optimize the website is to make it entire contents as “*search engine only index text.*” *WordPress* (<http://wordpress.com>) is a website generator/creator and optimizer tool which has the following functionalities:

- Create a website
- Create pages and directories
- Update (pages and directories), edit and delete
- Create website links same as the title page or an article
- Install new themes (layout, fonts, textual representation etc.)

SEO technique entails two major processes: on-site optimization and off-site optimization.

a. ***On-site Optimization:*** On-site optimization pertains to the practices which are used during the development of a website. Listed below are the important aspects that need meticulous attention during the development of a website in order to make it search engine friendly. The following guidelines are suggested for on-site optimization:

- *Domain Name* and *Title* of the website/web-pages should contain the keyword for which the website is required to be optimized.
- Choose *descriptive text* for the website contents.
- Figure out *keyword phrases* through which website is meant to be optimized and put these keywords in headings, anchor tag and Alternative (Alt) tags as well as in the main contents/text.
- Create a perfect architecture of the website that can be easily crawled. Use latest tools and software for website development (*e.g.*, WordPress).
- Regularly update website with fresh and unique contents so that the websites contents should comply with the ever-changing Internet trends.
- Ensure that the web-pages contain the latest *keywords/buzzwords* that are more pertinent to their website contents.
- The keywords used for optimization should also reflect in all the *linking structures* placed on the web-pages.
- Similarly, video, images, audio and other contents should be optimized on the same lines.
- Select keywords after analyzing its density by using SEO Tools (such as Quake, Xenu). Use keywords that can be crawled easily by the Google spider.

- Place keyword in title tag of the page.
- Content of the page should contain such keywords that can be easily found on pages during the optimization.
- Use brief and concise URL for the websites.

b. **Off-site Optimization:** Off-site optimization relates to the practices through which the website and its contents are propagated/proliferated over the Internet to increase its traffic which in turn helps enhancing Google ranking of the website. The following considerations are suggested for off-site optimization:

1. **Back linking:** Place your website links on other well reputed websites. This helps enhance page rank. Some other course of action includes:

- Choose a reputed *web hosting company*.
- Website should have its own *static IP address*.
- Ensure *Article Distribution* to other websites.
- Include *Forum and Blog Commenting*.
- Submit your *Blog and RSS Feed*.
- List your site in directories.
- Get “.gov” and “.edu” links.
- Include *social bookmarking*.
- Check shares of your website content on different media periodically.
- Use clear text for links that should be found on site.

2. **Social Network:** Place links of the social networking websites such as Twitter, Facebook and Google+ on your website. Proliferate your website’s content onto these social networking sites by creating your web-links/web-pages on these sites. This helps other people to add to your accounts and ultimately visit your website.

3. **Groups:** Join groups such as Yahoo, MSN, Google and post comments on these groups. Your comments should always have a reference/link of your website or the specific webpage that you wish readers to read. Sending email to masses is also covered in this strategy.

4. Join online community and discussion boards, and place comments containing links of your website.

4. Use trusted websites to share your links and also insert links of the reputed sites in your web pages.

5. Check county location where your website is uploaded.

5. Tips to Improve Google Ranking of Website

- The *Panda* update was designed by Google to improve the user experience by catching and demoting low-quality sites that did not provide useful original content or otherwise add much value. At the same time, it provides better rankings for high-quality sites — *i.e.*, sites with original content and information such as research, in-depth reports, thoughtful analysis and so on.

- Social media plays a role in influencing the search engine results by giving preference based on the authority of the author and the number of times a piece of content is shared on social networking sites. Therefore, this aspect must be practiced in order to get higher ranks in the search results.
- Websites which are already online can progress upward swiftly than uploading a new website because Google and other search engines carry out indexation of old websites more frequently, which ultimately helps in easy and fast crawling. It is recommended to link your website with some old famous website.
- In general, webmasters can improve the rank of their sites by increasing the number of high-quality sites that link to their pages (a search engine optimization characteristic known as *back links* or back linking).
- *Alexa* provides traffic data, global rankings and other information on thousands of websites. It is suggested to check periodically the ranking of your website through such websites that provide web analytics.
- *Google Penguin* algorithm is used to counter spamming and other illegal ranking factors.
- *Link building* methods are usually used for creation of sites.

6. Conclusion

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. Besides, this study also critically analyzes and summarizes the core techniques proposed in the contemporary research work. The paper also offers a comparative study of the previous research work regarding the techniques used in SEO and pinpoints certain gaps in the known search engine optimization techniques. Finally, we have also suggested our own observed methods for search engine optimization. As a future dimension to this research, we intend to develop an effective and accurate system for search engine optimization for obtaining a higher rank for the websites in the search results.

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Authors



Khalil Ur Rehman received BS(CS Honrs.) degree from Allama Iqbal Open University and is currently pursuing for MS degree in Software Engineering at SZABIST Islamabad, Pakistan. His research interests include Software Engineering and Search Engine Optimization.



Muhammad Naeem Ahmed Khan obtained D.Phil. degree in Computer System Engineering from the University of Sussex, UK. His research interests are in the fields of software engineering, cloud computing, cyber administration, digital forensic analysis and machine learning techniques.

