

SEO: A unique approach to enhance the site rank by implementing Efficient Keywords Scheme

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Abstract

In search engine optimization individual website pages are optimized through precise keywords, while the websites are optimized using back link watch. The existing literature has no proper guideline for keywords selection and back link generation. In this research, we proposed a model for making back link watch generation and the selection of keywords through precise research analysis. The information on webpages consist of specific keywords while the website traffic is monitored through referrals. we concluded that during the development of Page Content, and architecture, if selected keywords are used in Title, Headings and Meta Tag then the page result is higher in search results. Moreover, for the back-link generation use a shorter volume of URL that monitor the complete traffic of a site can be placed on trusted location which increase the ranks of a site. Proposed model has been validated by comparing quantitative data of website rank taken before and after implementation of framework. Results revealed that overall increase gained in site rank by applying the proposed model was 40%.

Keywords: On-site Optimization, Off-site Optimization, Site Traffic, Link Generation, Keywords Competitor Analysis, Website Crawling, URL Analysis, SEO

1. INTRODUCTION

In this modern Information Technology era internet is the biggest place which provides all type of information all around the globe. Internet is a large society containing Trillions of consumers that use this communication tool. Now a day the technology has made the internet a significant business network to perform huge amount of trade and business all around the world. The electronic crowd which is known as digital users, uses Internet for business and marketing purposes. The website rank is very important to

provide a quick and better information to user against the search queries. To attain higher page ranks of individual websites and web pages through search results is known as search engine optimization. Search engine optimization techniques play a key rule to increase ranks of a sites. (J. Lemos et al 2017) explain the use of basic SEO principles through different methods. Internet has changed the working method and also enabled companies for internet-based marketing. There are millions of web pages on the Internet, but to reach the exact website or to find the pertinent information, we need to use search engines. The activity of getting higher page rank through search results is known as search engine optimization. Japan, UK, and China are the Largest internet users according comscore. 80 percent business and marketing activities now a day are done by using internet as per research study, and china is the bigger one. To search the wanted data on websites, the use of search engine optimization is needed. To get a relevant information from websites and web pages is a challenging task for search engines. Query based web crawler approach reduce the volume of URL which can help to search engine to find the topic related information for users. (M. kumar et. al 2018) proposed query-based k level max ancestor method to find relent information from webpages.

1.1. Background of SEO Process

In the current era everyone is the user of internet or digital world. On the internet everyone wants quick response from the search engines to get required information against the search queries. So, Search engine optimization is a process of optimizing the individual webpages and the whole website and give them top rank on search page of search engines. The search results of user requests usually display on first page of search engine. The first page normally shows 08 to 12 results of search queries and majority of users only uses first page for search. Very less number of users moves to next pages for their required results. To get higher rank in search results it is essential for any web page or website to have a top rank on first page of search engine. The optimized websites appear at better ranks in search engine and ordinarily get higher number of visitors. SEO is a process of increasing the individual and overall rank of a website and pages against the search queries that is given by the user and enhancing the probability of websites discovery in search results. Search engine optimization is the activity to increase the rank of site and it is very important for companies to promote their business (Yalçın, N., & Köse, U. 2010). Individual web pages getting top rank in search results using specific keywords. Search engines uses search algorithms, back links, web crawler and index sites to provide a result of users search queries. 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. 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 website. Off-site optimization consists of back links, link building, link popularity and site indexing which help to increase the ranking of website on popular search engines such as Google, Bing, Yahoo as its site traffic proliferated.

1.2. Life Cycle of SEO

The search engine optimization factors should be considered during the development of websites because it can help to get higher rank of sites in search results. The most efficient method to acquire interest of internet users is search engine optimization. Specific keywords and back link watch are used in

optimization process to increase the page ranking in search results of search engines. Individual webpages and website optimization involve in whole search engine process. The complete life cycle of search engine optimization is shown as in Figure 1.

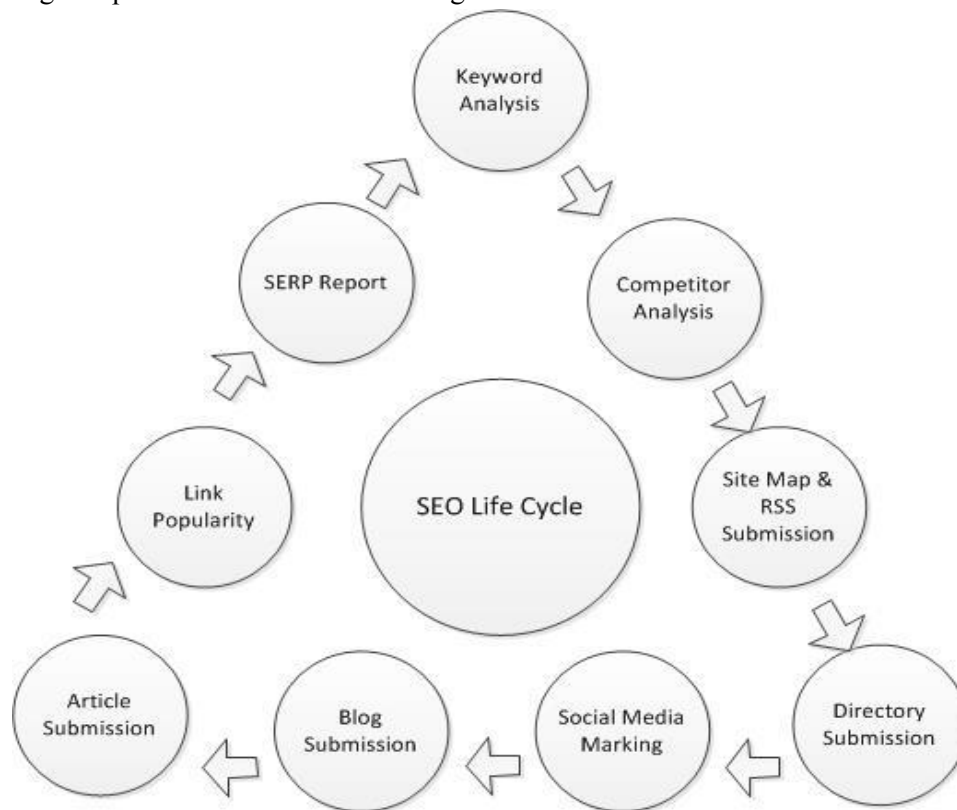


Fig.1. SEO Life Cycle.

1.3. Significance of SEO

Internet is a wide range society of peoples that use Internet as a communication tool. Due to increase the popularity of internet there is a new crowd was appeared known as electronic society and this electronic society wants related data or wanted information on Internet and it is superior they need to use search engine to attain most wanted information. People buying cars, dresses and other things by using Internet and they want related data on top page of search results. Search engine optimization take higher rank of site in search results. The working process which has been changed due to Internet has changed many other areas and converts companies on internet marketing. Marketers want quick and efficient way for straight marketing and also condense cost and user reaching to product because they introduce optimized website which take higher rank in search results. Internet contains thousands of pages of websites and it is superior to use search engine optimization to reach most wanted results. SEO factors should be considered by the web developers, designer while developing any project of sites.

1.4. Link Reputation and Keywords Analysis

Search engine optimization is a process that make website visible in search results of search engine. A higher ranked site gets more visitors in search and Internet is a biggest marketing channel. More than 70000 million user's searches information on search engine every month. A top rank of site provides a great opportunity to reach customers. Specific keywords and back link building can be used for search engine optimization. There are two type of optimization individual webpages (on-Site) and the whole websites(off-site) optimization.

Keyword Analysis: keyword must be analyzed for websites when optimization process will perform. Some important rules for selection of keywords analysis are:

- The specific keywords list must be used for analysis of keywords.
- Use those keywords which takes webpages into first 5 links of search results.
- Keyword in links must be found on target.

Meta tag and content of page is very important to search individual webpages. There are many keyword analysis tools and site that can help to examine the density of keywords. Density of keywords should be in 4-7 to word in 50 words and these words used in making individual webpages.

Link Forming: After selection of keywords concise and famous links should be used for link building as a URL.

1.5. Site Indexing, Web Page Ranking on Alexa, Google, and Bingo

For getting top rank in search results various factors are involved such as site indexing is a primarily factor that should help quick retrieval of search results. Index of a site is consist of specific keyword and content. This information is retrieved form meta tags and contents of sites. Another important factor is a Google Page rank. Google (PR) is its own algorithm that can be used to rank a website on Google search engine. Similarly, Bingo uses different method from Google for page rank against the search queries. Bingo page rank algorithm also get information from the URL of website, if URL is more concise and used proper keyword than it can be help to get top rank in search results. As per Webmaster report more than 100 factor should be used for websites to get higher page rank in search results. Many factors are still confidential from public however important factors such as keyword density, Link popularity, site indexing, page content and existence of sites on popular social medial are available publicly. Alexa page rank another important factor that can be used for top position. Alexa.com working on two factors: (a) only analyzed first level domain of websites. (b) site traffic that has installed on Alexa toolbar should be analyzed.

1.6. Current Challenges of SEO and Tools

SEO is a broad discovering area. Getting and maintaining top position in search engines and reaching to the target market is challenging activity for SEO professionals. It is a long-lasting process. As we discussed in the previous section that for getting higher page rank site popularity and link building are important factors. Another time consuming and challenging task is a related back links generation. Due to this time-consuming task for bank links will increase the project cost and overall budget. The selection of keywords for individual website optimization is another challenging task because keywords increased individual page rank in search results. So, the selection of appropriate, relevant, low competitive with higher traffic keywords selection is also a critical decision.

There is another challenge are the SEO Tools which can provide very less support for the selection of keywords. The afore mentioned challenges were from an industrial and professional perspective. From research and newbie point of view we have some more challenges.

1. From a research perspective we need to know about the whole SEO life cycle (Fig.1)
2. Identifying the facts and figures (Secrets of SEO i.e, models and frameworks)
3. Issues and challenges
4. Best Practices
5. Tools and techniques used

Ultimate goal of the study is to develop a framework suite according to organizational requirements for the better SEO of websites. This will enhance the current practices and will help in positioning a product or application higher.

SEO Tool that is commercially available can be used for the selection of keywords during the creation of websites. Many of these tools are open source and online available. The main purpose of SEO tool is the analysis of keywords selection and back links generation during the development process. Some of these tools are as: Google Analytics, Google Fred, SEO Quake, Google Webmaster, Google Adwords, Google Trends, Firebug, Do Follow/No Follow, Xenu, david Naylor.

2. LITERATURE WORK

Websites search ranking needs to be a specific optimization technique and policies because a search engine uses various algorithms to search and index the information on websites. To increase the rank of e-commerce websites the internal code and content of sites are optimized through SEO (Cui, M., & Hu, S., 2011). During the development of web projects SEO tool and techniques are used by the developers. The optimization of web forms, website images, website directories, website content, websites URL and directory structure are SEO process which can be a friendly approach for getting better ranks of sites. (Wang *et al.*, 2011) the back propagation neural network algorithm is a good technique for faster information retrieval of websites through SEO from the feedback of employees. These approaches compulsory for creating search patterns about user profiles. Search engine optimization is also used for obtaining higher rank in search results from the business information. (Hui-ye *et al.*, 2010) report improvements in the motel website rank in search results using search engine optimization methods in development phase. Similarly, the developers, and software engineers must be used a proper set of keywords while they are developing website for big organizations such as bank, government agencies and commercial sites (Chung, P. T. et al., 2012). Search engine optimization techniques increase the rank of websites in search results therefore, many enterprises use SEO as a marketing strategy for their sites (Yunfeng, M. 2010).

There are many educational, government institution and corporate wants worldwide recognition and popularity by getting higher page rank of sites in search results. (Ahmad and Ayu, 2011) describes the relationship between Webometric rank and web content accessibility for getting higher page ranking. SEO provide the relevant information from webpages to pertaining user queries and this can also filter the irrelevant information from webpages in search results (Kumar, S.M *et al*, 2009). Search engine optimization should be used to improve the individual page rank as well as website page ranks. For search engine optimization site analysis reverse engineering can be very helpful (Zhu, C., & Wu, G., 2011). Web caching in website architecture are also help for SEO of sites in semantic web (Rajaram, M., & Vadivu, S. L. S., 2010). Search engine optimization can be used in four main areas such as link building, content making, keywords selection and structure of sites (Wang F *et al*, 2011). On the internet in these modern

eras the search engine optimization techniques are compulsory to get required information from websites in search results. These SEO techniques take higher page rank of sites. The indexing page techniques working very efficient in this regard (Yuan S *et al*, 2010). There are many ways of spamming techniques that can be used to increase the site traffic and higher page rank. To counter the Spamming techniques of SEP (Somani and Suman, 2011) developed black hat technique. To get higher page rank search engine optimization techniques through reverse engineering approach improve the prominence of results. (Cen Zhu and G. Wu 2011) analyze key factors of SEO process using URL, PageRank and HTML. (Fawaz A.Z et al 2014) proposed analytical research about local culture and geographical area which effect the website ranking. The use of social culture keywords with its geographic information should be used to increase the website rank in search engine results. Online marketing generates a huge amount of revenue through paid search engine provider and search engine optimization. (Kai Li et al 2014) focus on competition between pain search engine and organic search engine firms. They investigate better algorithm which is effective to enhance the page rank through search engine optimization (R. Ferraz 2017) elaborate scalable vector graphic technique for the description of image to enhance the index of sites in search engine queries. In his study he focused on <desc> and <text> tag to prominence the image description that should be indexed by search engine. Search engines deals with the large amount of data in the form of websites and webpages. Big data provide a better solution to handle the hug amount of data. (Ragavan N 2017) proposed big data search engine indexing through Key Has indexing to increase the page rank in search results. The competition between site to ger first rank on search engine result is increasing day by day. (S. Krrabaj *et al* 2017) discussed about the comparative analysis on off-site and on-site optimization techniques to get higher page rank through search engine optimization. As well as the access of internet has been increasing to domestic users, majority of universities and colleges developing online web portal to provide necessary information to students. (W.Bin et al 2018) using page structure design, page title, text, location and description for search engine optimization. Internet is a fast and easy source of information for the whole community to get answers. It is very rare the exact answer to user queries could be found on first page of search engine results. (F. Adnan *et al* 2017) implement the search engine optimization techniques to make possible the answers of user against the search queries on first page on search engine results. Due to increase online information access on internet E-commerce is big plate form to marketing the products throughout the globe. (Wang fan 2014) proposed a evaluation system for search engine for e-commerce to meet the marketing requirements for users. Language translation is a challenging task for search engine to produce exact meaning of words against the user queries. (Le Wei 2017) adopt optimized scheme using weight and quality factors to enhance the ranking of sites in his research.

3. MOTIVATION AND RESEARCH GAP

For getting top rank in search results various factors are involved such as site indexing is a primarily factor that should help quick retrieval of search results. Index of a site is consist of specific keyword and content. This information is retrieve from Tags and site content. Every search engine has its own algorithms to indexing the site, but these algorithms is not completely indexed a site. Internet users only use such search engines which can provide quick results regarding to their quires. To overcome indexing problem for sites and to increase the rank of website and webpages is a motivation for this research. our proposed framework fulfils the research gap in existing literature of SEO. Two problems in existing literature that can be addressed by our proposed framework. Existing literature only use SEO Techniques

with respect to marketing purpose however, we proposed a logical method to improve the site ranks. There is no proper guideline for keywords selection and back link generation in existing literature. Our paper has 5 parts, starting from introduction, Literature Review, Proposed Model, Validation and conclusion as the last part.

4. PROPOSED RESEARCH MODEL

The proposed research model is consisting on Three section: **1. On-page Optimization**, **2. Off-page optimization**, and **3. Suite Auditing**. 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. 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 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. In our proposed research model complete guidelines for SEO are as below.

4.1. Individual page Optimization (On-Site)

Individual website optimization pertains to the practices which are used during the development of a website. There are three main activities on which on-site optimization is based as shown in Figure.2.

- Content
- HTML Tags
- Architecture

The complete detail for on-site-optimization we explain in our proposed model. The site developers keep in mind when they are going to develop a new site the **Content**, **HTML Tags** and **Architecture** should be developed as we explain in figure 2. All the three activates consisting of Keywords selection and its implementation. We further explain how to select proper keywords for the development of web pages. On-site optimization is based on Keywords analysis. An extensive keyword research is performed and after that the final list of selected keywords is sent to client. A client gives feedback. When the keywords are finalized and approved. After that keywords are implemented on-site everywhere in tags, Meta tags, content and website is made keywords populated internally. After the implementation of SEO, the websites are checked on daily basis for the comparison of search results. The main things that should be observed during this phase are site traffic, regular visitors, unique visitors, page rank and SERP. From the results of this phase the next methodologies should be adopt for the betterment of site ranking. Search engines (Bingo, Yahoo, Google) generally optimized to analyze the site traffic. Figure 2, show the onsite SEO Model of on-site optimization.

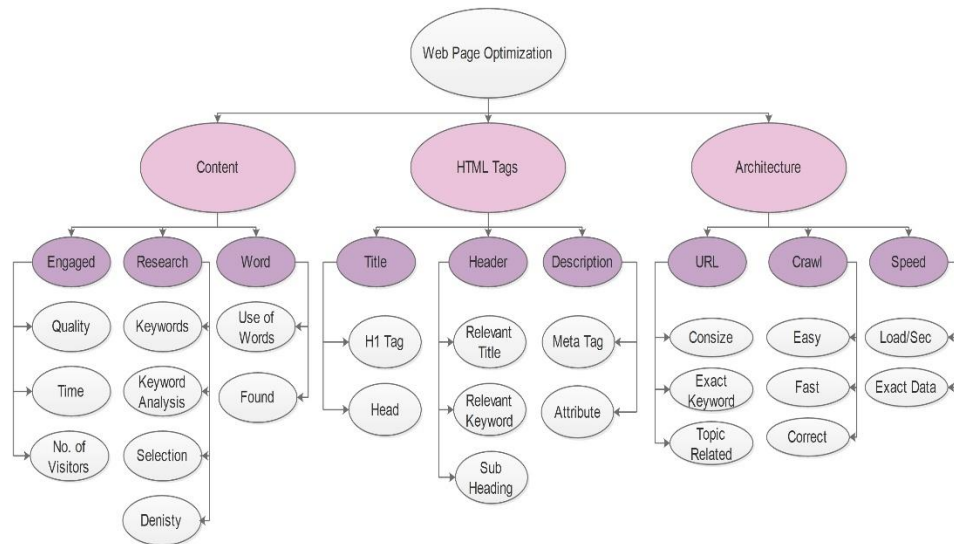


Fig. 2. On-site optimization

The following guidelines are suggested for Individual page Optimization:

- *DNS* and the websites *individual page title* must be use that keywords which is essential for optimization.
- The websites description should be used selected keywords to make is short.
- After the *keywords analysis* there are three main things (*Keywords used in Headings, Alternative, and Anchor elements*) should be figure out for the optimization of websites. This activity can help to increase the page rank and optimization of search queries. There are many factors that can be analyzed before the selection of keywords. These are local URL, Local traffic Vs Global, and competitor analysis. The big search engine Google also used Adward tool of Google for keywords research analysis.
- Use of latest and updated tool in the development process of website could help in searching after optimization. The architecture of website plays a vital role for WebCrawler.
- 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.
- Multimedia (Audio, Video, images, Flash, etc.) contents of website should be used after optimization process.
- The main elements (Title, Header) of website should be used optimized keywords.
- Web page contents should be optimized with keywords without violating the webmaster rules

4.1.1. Keywords Research Analysis

In search engine optimization the selection of proper keywords after optimization is a big task. The Optimized web pages consist of keywords and the most appropriate keywords help user to find relevant information as a result of search and then the given page get higher rank. Our proposed model in figure 3 shows the process of keywords selection and analysis through SEO. There are four main task that should be done before SEO. These are Mont hly search, Google Trends, Competitors, and KEI. Monthly search

is used to find local and globally used keywords for optimization. Google trends help to point out the current trends of search on Google and other search engines. SERP keywords generally help to find competitors keywords in URL creation and in Title, Header, Meta tags. The keywords effectiveness index KEI is used to find the effective keywords for on page optimization. Numerous tools and methodologies can be used for the selection of keywords but the main task in this process is to find that keywords which are low competitors and higher search results. The keywords effectiveness index is find through the equation 1. And keyword process is shown in Figure. 3.

$$\frac{1000 * 2 * M}{SR} \dots\dots \text{Equation No. 1}$$

Where M is monthly local searches and SR is search engine result page

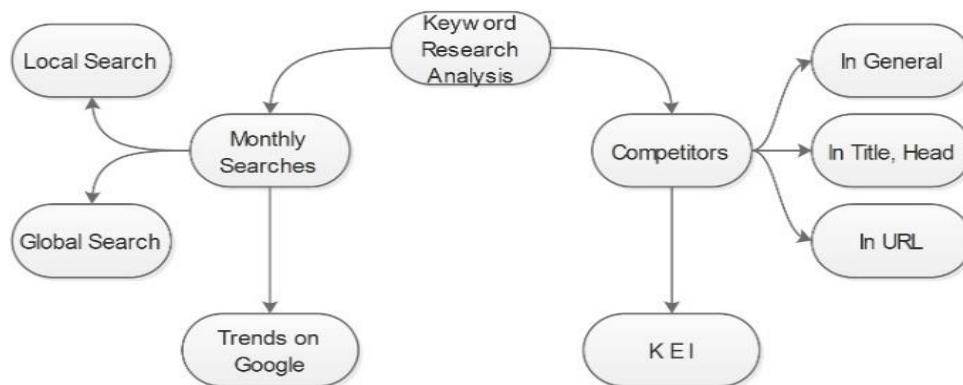


Fig. 3. Keyword Research Analysis

4.1.2. Density of Keywords

Density of keywords means time that a keyword taken for appearance after search query with respect to their competitors. Use of appropriate keywords make it help for search engine to increase the higher rank in search results. The Ideal density of keywords are between 4-7, 5-8, and 6-10 %. To calculate the density of keywords, use the following equation.

$$\left(\frac{RK}{TK}\right) \times 100 \dots\dots \text{Equation No. 2}$$

Where RK is repeated keyword and TK is total keyword on page. To find the density of keywords within the specific range you can calculate through the equation 3. KP is keyword on specific page

$$\left(RK \times \frac{KP}{TK}\right) \times 100 \dots\dots \text{Equation No. 3}$$

4.1.3. Analysis for competitors

The Competitors are those keyword that can be used other websites to target the same information through search engines. The analysis of competitors is identify the targeted keywords for other websites. Through competitor's analysis you can identify the backlinks for their websites and also find targeted keywords for backlinks. While knowing about this you will be able to compete and do it better. You can find Competitors analysis for keywords using following method.

Select Competitors
Validate SC
If SC > All Competitors
Then
Select targeted Competitors Keyword

For more information about competitor analysis visit this site.
http://www.webhostingtalk.com/wiki/SEO_competitive_analysis

4.2. 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 and better positioning in SERP. After the analysis of competitors and search engine result page in the phase of website auditing the next strategies for off-site optimization is developed. The on-site optimization process is consist of three parts **Trust**, **Location** and **Links** as shown in Figure 4. The website developers should be used this phase of model as explain in figure 4, while they are creating URLs for webpages and websites.

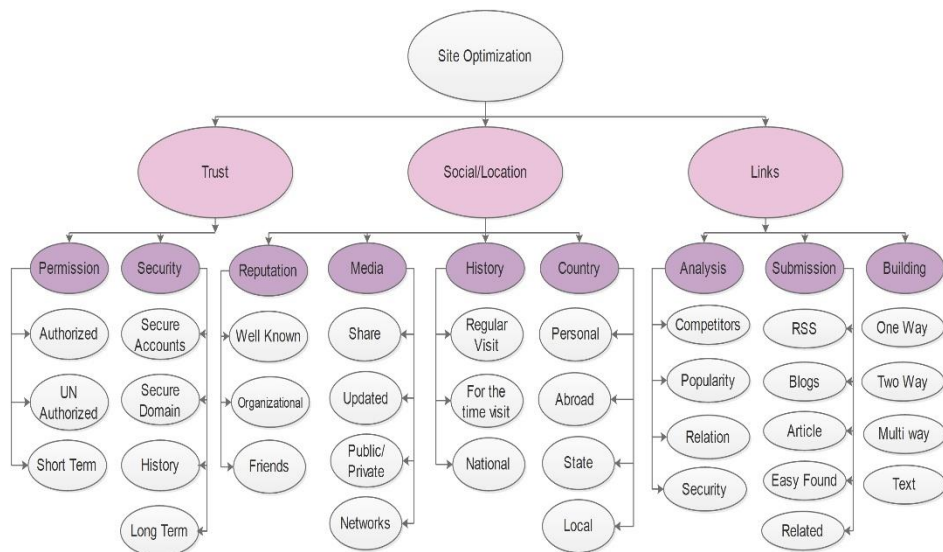


Fig. 4. Off-site optimization

The following considerations are suggested for website (off-site) optimization:

1. Link Building: There are some guide lines for back linking there are:

- Put URL of website into popular sites and on social websites.
- Post link on well reputed Blogs and Discussion Forums.
- Use domains such as “.org”, “.com”, “.edu”, and “.gov”.
- RSS Feed and Directory Submission.
- Add extension to social media and bookmarking

2. *Social Network*: Place links of snapshot, Google Plus, Bing, Yahoo, and twitter 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 share the link of website to all users.
5. Use trusted websites to share your links and also insert links of the reputed sites in your web pages. More than 80% of internet users use Google search engine to entertain their search queries. So, the Guidelines by the Google webmasters are very important in this phase and it should be used to create a back links.

4.2.1. Back links Generation

In Linking building phase which is also called backlinks generation. After link building is completed, results are analyzed. The main part of website (off-page) optimization is back links. These are the incoming URL to a site from another webpage. This is also called the referral links. Back links helps to increase the traffic to your site and also tells the search engines about the popularity of your site and keywords. Try to get back links from high PR sites. dot .edu and .gov sites has also a good impact. Always try to get back links from the sites that are more related to your site (search in your own niche). Figure. 5, illustrates link building strategy.

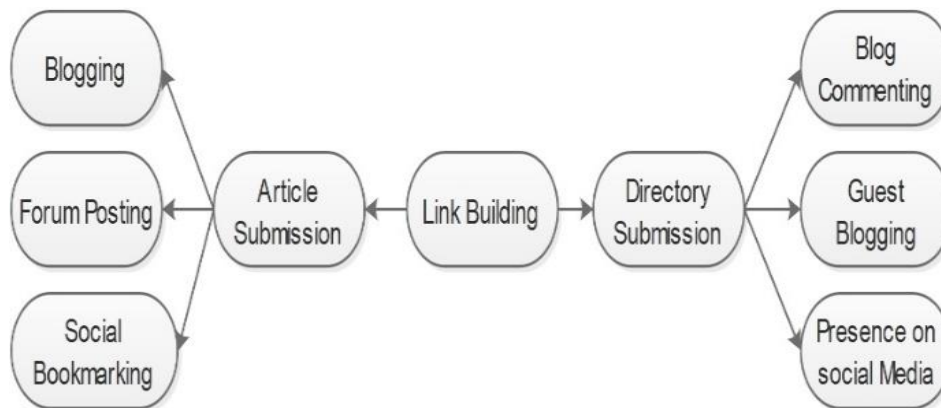


Fig. 5. Link Building

4.2.2. Forum posting:

is participating in a discussion or commenting on threads on the forums. This is another best approach to carry out traffic to your site. It is very important while commenting on forms to highlight new things into comments for attaining attention from the admin and user for the approval of your comments. Second you must add a signature referring to your site.

4.2.3. Blogging:

Blogging is another good approach to increase the visitors of your site. You must write your own blogs with authentic information and selected qualities of site to get attention form reader.

4.2.4. Visitor Bloggers:

Another positive approach is that write own article for others blog and then request him for posting on some other famous bloggers site. This is also a good technique for gaining the popularity and traffic.

4.2.5. Blog commenting:

To get popularity and higher site traffic blog comments also a good strategy. To get this goal you must be a very smart because there are often loads of pending comments with admins. they will review your comment and if it is not valuable your comment may not be approved and published. So, to keep yourself in you must either add something new or ask questions, give reasons why you are commenting if you liked something or dislike something justify why. do not promote yourself directly. provide your links tactically. No matter for traffic generation the blog is do-follow or no but for popularity on search engine it has a very much meaning for higher rank in search results.

4.2.6. Submission of Articles on popular sites:

there are several article submission sites your can submit your articles and generate back links.

4.2.7. Putting link into Web Directory:

In this phase the internal and external links of website should be post on website directory with selected keywords, there are number of free and paid directory submission sites.

4.2.8. Social Bookmarking:

In this process the URL of a website is posting or tagging to social bookmarking sites. These sites are very helpful for search engine to increase the visitors of a site and increase the search rank. There are many publicly online available social bookmarking sites such as snapchat, Twitter, delicious, reddit, Pinterest and StumbleUpon. This is good approach for link building.

4.2.9. Social media Presence:

Make sure that the site link place on Facebook, twitter, and other media. It can be helpful to increase the number of visitors for a site.

4.3. Auditing of website

Before starting an SEO of a website, the very first step is site audit. In inspection phase the complete website is analysed, and the result of this analysis is used as recommendation for changes. This phase mostly focuses on website analysis and recommendation as shown in Figure 6. Table.1. presents a check list for site audit.

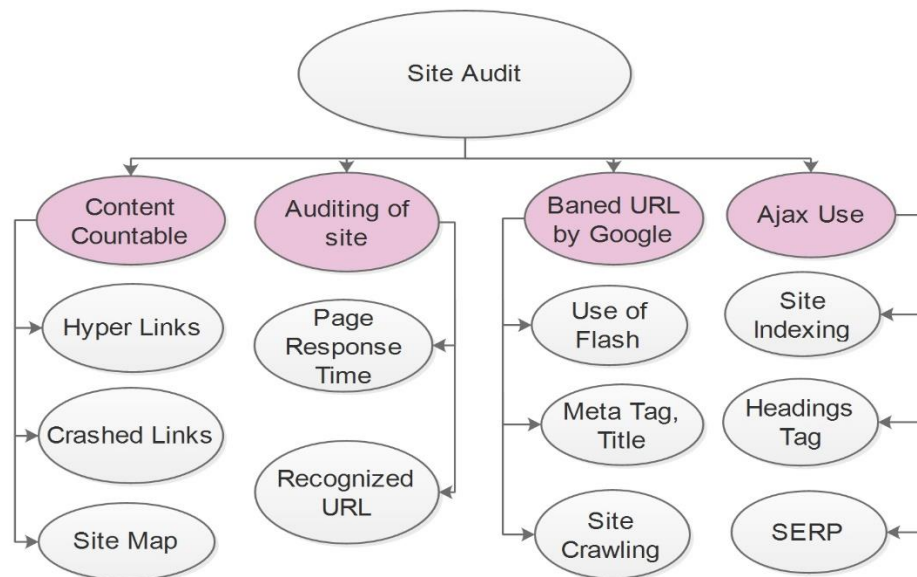


Fig. 6. Site Audit

<ol style="list-style-type: none">1. Auditing of website2. All countable content3. Hyperlinks of other pages4. Page response time5. Crashed links6. Recognised URL check7. Site Map8. URL not allowed by Google9. Ajax and use of Flash and frames10. Website Indexing11. Meta Tag and title, Head Tags12. SERP13. Site Crawling

Table 1: Check list for Website Auditing

4.3.1. All countable content

Content is considered as a king in SEO. On the other hand audience is also important. If you don't have interesting, original, relevant and readable content visitors will not be interested in your site. However duplicate content may cause banning your site. Many online tools are available which tells about the readability/count ability of your web content.

4.3.2. Hyperlinks of other pages

Hyperlinks of a website that connect other pages of site with one another. The URL for these internal webpages can be developed tactically because it provides information to search engine about the individual webpages. It is very important to think logically and tactically about the creation of these URL.

4.3.3. Page response time

The average time that page take to load from domain and display to user is a page response time or average speed of page. This factor is very important while the search engine rank the sites in search results. So the content and data on web page also effect due to page load time. The proper use of JQuery, JavaScript and CSS will reduce the page load time.

4.3.4. Crashed Links

Crashed links are the hyperlinks of a site that is not exist externally or internally. These links down the site traffic and decrees the site ranking. There are many tools available online to check the crashed links of a sites.

4.3.5. Recognised URL Check

Recognized URL mean more than one URL of a site for similar page. These pages has similar data and content. So recognized URL are best use if they have URL recognition tag.

4.3.6. Ajax and use of Flash and frames

If any website has a use of Frames, Ajax and flash then it could not be search engine friendly and could not be crawled and indexed easily. And as a result of search engine the given sites rank and visibility has reduces.

4.3.7. URL not allowed by Google– Correction Verification

It is very important to check validation of sites link on Google, Yahoo, Bing and other search engines. If any search engine is blocked URL of a website, then the site has labelled with black list and as a result the rank of site is very low and may be not search by the search engines. Numerous tools online available to check for banned sites.

4.3.8. Sitemap

Sitemaps are an easy way for webmasters to inform search engines about pages on their sites that are available for crawling. In its simplest form, a Sitemap is an XML file that lists URLs for a site along with additional metadata about each URL (when it was last updated, how often it usually changes, and how important it is, relative to other URLs in the site) so that search engines can more intelligently crawl the site.

4.3.9. Website Indexing

Website indexing importance is very low on Google because its primarily indexing is internal site indexing. These webpages are measured supplemental results if no page matching from main page on runtime search and returned in SERP. The Indexing percentage provide information about indexed page from supplemental result of websites. Its better if the indexing ratio of supplemental page are lower. This kind of indexing is a secondary and has lower page rank. And web crawler is assigned a lower rank to these supplemental index pages in result of crawling. And as a search result the overall page rank is very low.

4.3.10. Meta Tags and Title, Head Tags

Elements of HTML are very important for SEO. Heading and Meta elements of HTML mainly targeted in search engine optimization. It is recommended by Webmaster the H1 element should be used for Headings. The Meta element provide information about each tags therefore, Meta tags should be used for each element and are included in header element. The keyword Meta provide description of about data to site crawler. The main purpose of Meta element is to provide information about web page to WebCrawler for indexing and crawling. In some cases, the Meta element is restricted by robots. Some use of keyword for heading tags are as below:

1. <H2>: Most Popular

2. <H2>: Most Valuable
3. <H2>: Recent Sales
4. <H2>: Sale
5. <H2>: Apple
6. <H2>: Apple Product

4.3.11. Search Engine Result Page

In search bar of google, yahoo, Bing or any other search engine when we type a search query there are millions of pages appears as a result this is known as Search Engine Results Page (SERP). Organic and paid SERP are used in search engines. The listing that is automatically done by the search engine algorithms are known as organic while in paid listing the paid advertisements are used for SERP.

4.3.12. Site Crawling

Site crawling is a process in which the search engine bots can crawl the website. Also it is analyzed whether the content is enough to cope with keyword densities or not. If the pages of site are not crawling by the site crawler then it would not be in database of search engine and the results of search engine (Google, Bing) could not display the site

5. RESULTS VALIDATION

A Case Study: We validate our framework through 7 search engine optimization products in a small size organization providing SEO services to their remote clients. Name of the organization and projects are kept confidential. The team consist of four members, two senior marketing experts on social media and two junior SEO, team lead of having 10 years total experience on SEO. Four people are developer and two were designers in this project and all are coordinating with one another. The working environment was very good and simultaneously they were work on all products.

There is no proper guide line available for the selection of keywords (on-site) and back Link generation (off-site) before our proposed model for optimization and the developers used it blindly. Our framework provides a proper strategies and techniques for the implementation of SEO through a systematic and streamline way.

We started from zero and take analysis of more than 1000 top rank websites through our SEO model of auditing. We found many shortcomings and positive results during this auditing and SEO process. Some common outcomes and issues from our work are as below.

These are the big problems that can decrease the site rank. There is no proper method used for the selection of keywords. Multiple keywords were used in page content and in title tag without keywords analysis. The most important density of keywords is not on the defined range. Website indexing ration is very low and no sitemap available for searching. The website traffic was very low and not considerable. The use of Heading Tags is considerably none. And H1 tag used without optimization. The page rank was 1 or 0. There is no authorized URLs. Search engine result page are very low and not site result listed in top 50 pages. There is no use of robot tag but robot.txt files available on server. In the title tag keywords used without analysis and as a result number of competitors increased. So, we recommended the use of business idea, domain specific keywords, and sub categories for SEO.

Next, we implement our individual web-page optimization techniques after the site auditing. We spent a lot of time and detail research on keyword research analysis then we implement our keyword on our sites and propagated the site with targeted and relevant keywords. After the completion of on-site optimization, we started the development process of website(off-site) optimization. In our proposed Model we focus on back link generation, link building and presence to sites on popular social media. we conclude that, if selected keywords are used in Title, Headings and Meta Tag then the page result is higher in search results for webpage optimization. Moreover, for website optimization the back-link generation use a shorter volume of URL that monitor the complete traffic of a site and then the rank of website is higher in search results

Back links Results

Back links watch the incoming traffic of site in the form of links. It can help search engine to check the SERP and increase the website popularity by increasing the links of other user's pages. This is a remarkable factor that increases the rank of site in search results of search engines. Back link checks the number of link that the site has created by visiting the users. The Table 2 and Figure 7 shows remarkable improvement in Links rank after the implementation of our proposed model.

Search Engine	Google	Bing	Alexa	Yahoo Directory	DMOZ
Website Links Rank After implementation	15678	10987	15243	3467	1234
Website Links Rank Before implementation	11111	8456	13456	3345	1038

Table 2: Site Rank on different Search Engines

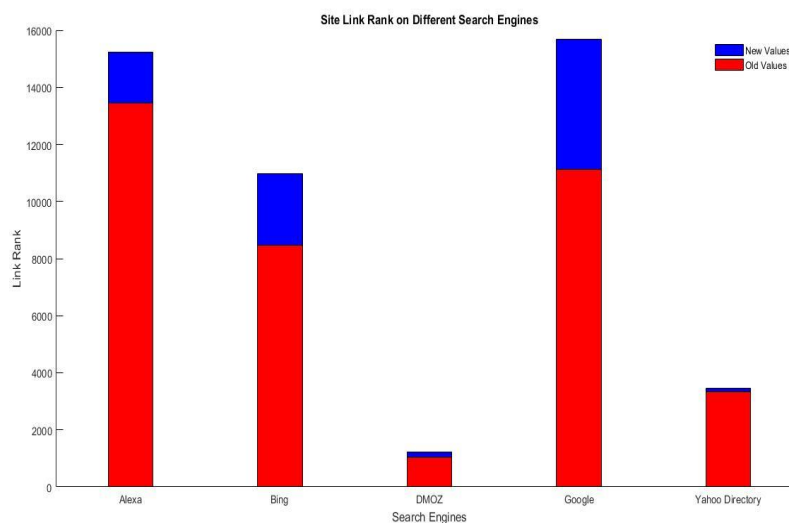


Fig.7. Site Rank results Comparison

Site Crawling Results

Site crawling is a process in which the search engine bots can crawl the website. the site crawling results on Google Search engine as shown in Table 3 after the implementation of proposed model

SEGMENT	STATS
Total Readable Content	1873 Characters, 213 Words
HTML Title	N/P
Keywords	Zero
Description	Zero
Internal Links	107
Back Link	2
Average Speed	2.9 Sec
Data Volume	867.22 KB
Size with HTML	56.38 KB
Size without HTML	16.88 KB
CSS File	2 files, 31,560 Bytes
JavaScript Files	4
Total JS File Size	196,867 Bytes
Images on Home page	109
Total Image Size	601,870 Bytes

Table 3: Site crawling

The results of our model show the higher number of visitors and huge jump in overall graph. Here below we present some the analytical reports in 4 tables comparison of results before and after implementation of framework that is collected from one of our project after **three months**. Overall increase in site rank is 40% after the implementation of our proposed model. Table 4 and Figure 8 shows the experimental results of site traffic overview.

Traffic Overview	Traffic Values Before implementation of Model	Traffic Values after implementation of Model
Referrals	18.64%	2,727
Direct Traffic	54.73%	4,436
Search Engines	26.63%	16,979

Table 4. Traffic Overview Experimental Results

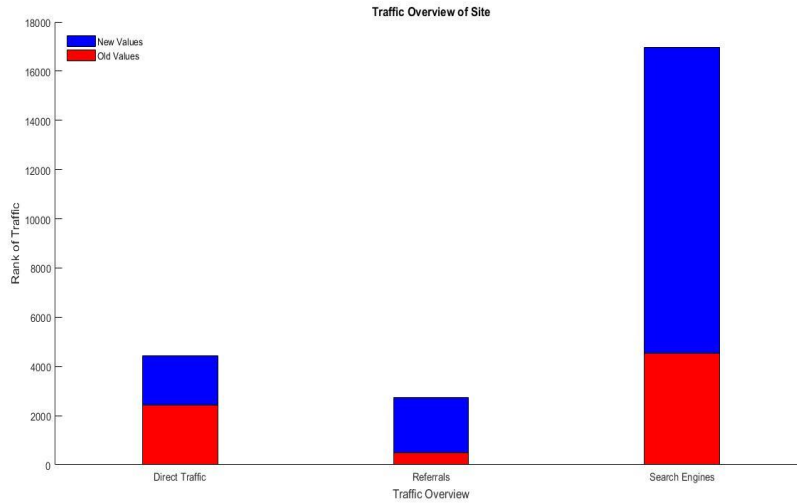


Fig.8. Traffic Overview Results

Table 5 and Figure 9 shows the experimental results of site visitors overview.

Visitors Overview	Visitors Values Before implementation of Model	Visitors Values after implementation of Model
Visitors	338	22,993
Absolute Unique Visitors	209	18,228
Returning Visitors	43.79%	5,573
Page views	724	11,541
Average Page views	2.14	20:24:00
Avg time on site	0:04:15	0:02:50
New Visits	56.21%	17,520

Table 5. Visitors Overview Experimental Results

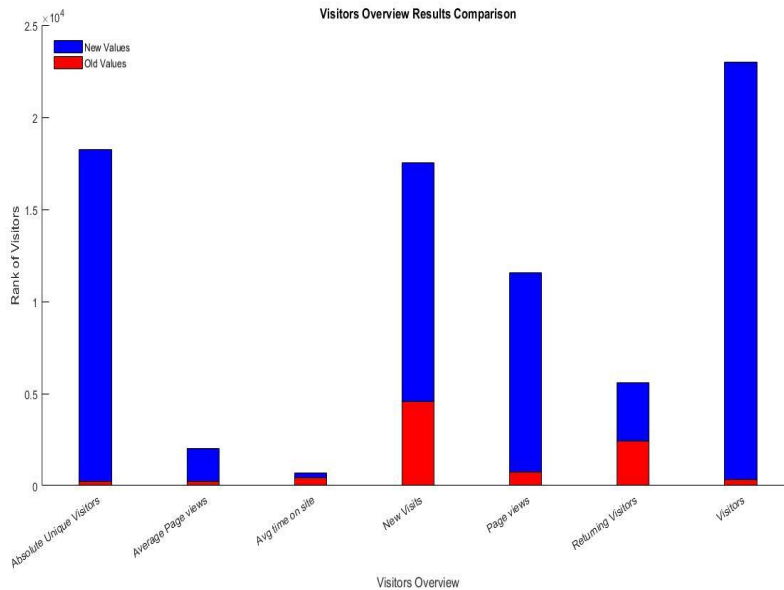


Fig.9. Visitors Overview Results

In the meantime, we keep watching the results as well. We acknowledged that the individual page optimization provides good and quick results in improving page rank. After the implementation of our proposed model for on-page SEO the page rank of our site surprisingly increased. When we implement our model page rank is jumped to 3 to 4 while before **one month** without our model the page rank was 0 or 1. This shows clear results of our proposed framework.

Similarly, in the development phase of our website optimization, we found that the results come a bit later. The reason is websites consists of URL and URL take a longer time for searching to the relevant information from sites, blogging, and web directory. This process will take a time to get approval for links building of related search results. This is the challenging task in off-page optimization to produce quick and relevant search results. Moreover, through our proposed framework for off-page optimization we still achieve higher page rank and good search results. Before the implementation of our model for off-page the search engine result page was very low, and the website not listed in first 15 links of a search engine. But after **three months** of implementation of our model the SERP was increased and listed in top 10 pages. The result of one of our websites became on first page, another one on 3rd on first page, other sites having a tough competition but still now appearing on 3rd and 6th pages of Google. Similarly, the traffic on the site was also very less it was in few hundreds and thousands, especially returning users and special users were also decreasing.

Another experience that we gained from our research to attain top webpage rank the individual webpage optimization is good and for getting highest rank in search engine result page the off-site optimization is good for any search query. The role of bloggings, social media sites and web forms are also very important for traffic generation.

6. CONCLUSION & FUTURE WORK

In this research work we explain the search engine optimization techniques, process and our proposed SEO module and compare the results with older methodologies. Now a day more than 80 percent people do their business through websites. To get more visitors for their sites you must need a higher rank in search results and popularity over internet. SEO help to get higher page rank as well as higher website

rank in search results. We also discuss current challenges of SEO and suggest some guidelines to overcome these challenges. To increase the business and popularity for their website companies need SEO. Our new techniques help to increase the rank of sites and pages with specific keywords selection and back link generation.

As a future research direction there is a great need to develop a specific tool which provide best keywords selection and show their competitor keywords. There is also a need to develop a tool to reduce the size of back link for creating URL of website. This use of specific tool can help to reduce the overall time for SEO.

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