Improving Webpage Visibility in Search Engines by Enhancing Keyword Density Using Improved On-Page Optimization Technique

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Abstract: Website Optimization is about making important modifications to almost concerned sections of the website. Though it is viewed individually, some of the changes might seem like gradual incremental improvements. SEO is a process which requires considerable time, techniques should be applied as in sequence presented in the paper and should jingle with updated ranking algorithms. All the factors are controlled by the Website developer or by code present on the webpage. Highlighting in this paper the on-page optimization include actual code merged with various languages, keyword placement and keyword density.

Keywords: *webpage optimization, on-page factors, organic search, webpage, page rank, web analytics*

1. INTRODUCTION

SEO factor will be able to guarantee search engines rankings. As having a unique title is not of much help and also the page has the degraded content. The links flooded are of no use if they come from low ranked sources. If mastered positive factors then it may increase sufficient chances for success on the other hand the presence of the bad factors can degrade it.

On Page Factors

On-The-Page search engine ranking factors are mostly those which are completely in all through control of the publisher. The type of content published should be relevant. The few questions that must be asked can be: Is the provision of HTML or XML clues that can help the various search engines as well as the surfers? How does the site architecture should affect search engines visibility?

SEO Violations & webpage Ranking Penalties

Avoid mistakes in performing optimization because it would help improve the search query results.

Site Architecture & Numerous Search Engine Factors

The relevant site structure will help one's SEO efforts moves on while the other that is the irrelevant one can worsen them fully. The few factors are enlisted as follows:

Site Crawl Factors

As we know that Search engines flips from one page to another quickly almost acting as hyperactive speed-reader. They make cached copies, the one get stored in what is called an index that is nearly like a massive book.

Most websites do not have the crawling issues often as some have major issues. As ait is known, JavaScript, J-Query or Flash might have hidden links. Each have a crawl cost that is a required measure of time and pages that the numerous search engines will crawl day after day, based upon the engine trust value. Now a days the use of robots.txt and of internal link (inbound) is frequent.

2. LITERATURE REVIEW

Sahu and Kapoor (2014): there are the three areas namely the Web classification, Optimization method and in the last is the Danger Theory (Which could directly reject those web pages which behaves abnormally) has been discussed. The study might be helpful for developers to have a deep research in to classification and new different paths to optimize it further. It motivates in the area of optimized web page classification with the help of danger theory [1].

Kushwahan and Chopde (2014): Due to tremendous growth in internet over recent years, the huge volume of data serving over the web and also the search engine users facing problem in searching query or the relevant information by writing collection of keywords. An innovative algorithm has been applied to recommend related keywords to a query submitted by the user across the world and processing by web clustering and genetic algorithm [2].

Bedi and Singh (2014): The availability of information on the internet is growing. But it will be more useful if the user finds the correct information in less amount of time. In order to stay off the lime light of the competition means in order to increase the sites visibility, SEO plays a vital role. SEO is far more cost-effective process which promotes internet marketing. It also helps to bring the targeted customers to the website. The optimization can be done by two ways; on page and links to the particular web page i.e. off-page to improve the organic search ranking [3].

Killoran (2013): In the heavy competition having a wish to achieve top rankings, some practitioners depend to black hat techniques conceived to fool algorithms used by the search engines. Among the many such techniques are keyword stuffing, in which excessive keywords are inserted within the coding or cloaked behind the content of a webpage; and link farming, in which sites filled with a swarm of outbound links that are published for the only purpose of making the destinations of the used links to appear top rated by search engines [4].

Jain (2013): The optimization process mostly initiates with on-page techniques. In this paper the author basically focus on content and tags. Off-Page SEO measures relevant back links linking to the website and to present the web page in

front of web spiders to crawl successfully. The author in paper describes the techniques as well as the value of Off Page SEO [5].

3. PROPOSED WORK

To improve the rank by implementing SEO techniques it is important to start with improvement in the on-page SEO factors of the website. It was thought earlier that the website publisher should put the keywords relevant in their websites. But in this research we conclude that keyword placement is also very important. Thus, it will enhance the rank of the website in search results that contains the optimised Keyword as well the links it attracts the most. The two most valuable questions to start are follows:

    a. What are the Contributing factors for top rankings?

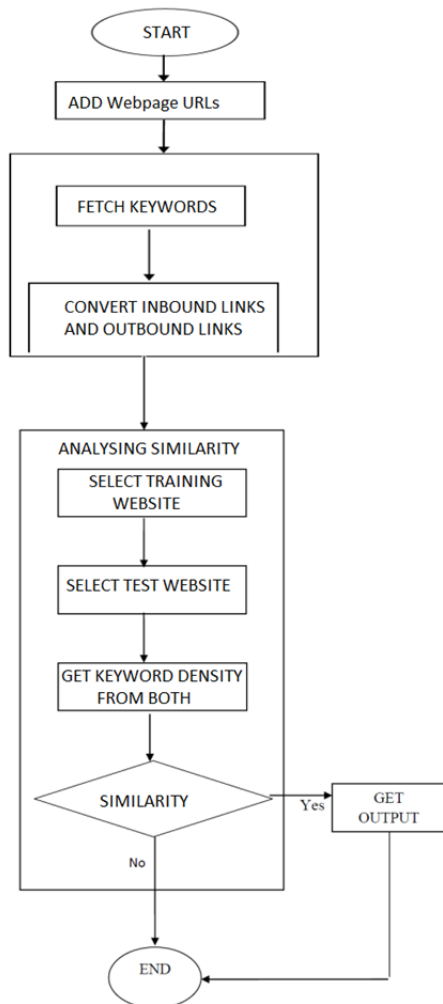   b. How easy usability and visibility of content can be done?

Figure 1: Algorithmic approach to the small & continuous modifications

The system architect establishes the basic structure of the system that needs to be modified, defining the essential design features and elements that provide the framework. The system architect encores the architect view of the users' vision.
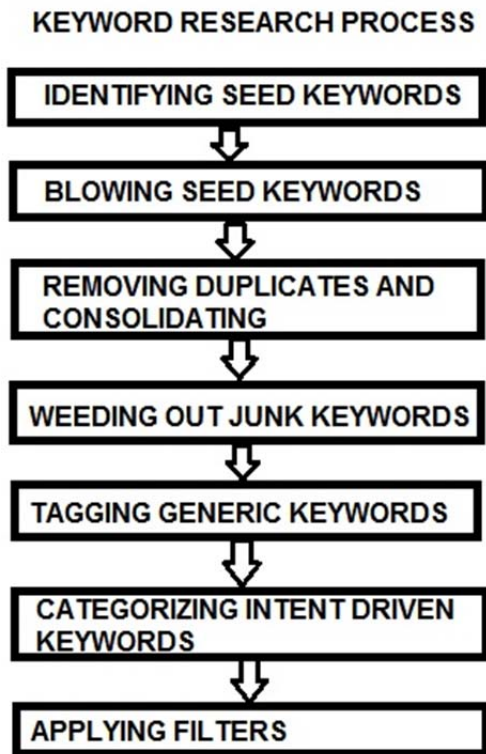

Figure 2: keyword research process implemented by the algorithm

Some of the following decisions should be made in order to optimize the search engine for the websites.

$$Keyword\ Density = \left(\frac{Number\ of\ keywords}{Total\ words\ in\ Article}\right) X\ 100$$

$$PageRank\ of\ site = \sum \frac{PageRank\ of\ inbound\ link}{Number\ of\ links\ on\ that\ page}$$

OR

$$PR(u) = (1-d) + d \times \sum \frac{PR(v)}{N(v)}$$

Figure 3: Keyword density and the factors responsible for page rank calculation.

The general considerations to keep in mind before implementing the proposed techniques are listed below:-

1. The web audiences as well as the website's competitors and also analysing the relevant keywords.
2. Insertion of the more relevant keywords into the web text that will appear on the search results.
3. Involve the particular content to seek major improvement in the top rankings.

4. OBJECTIVES

The main concept introduces a framework for the approach to SEO; it defines search related terminology, and explains how the three factors of participants' shapes search engine rankings. The paper examines in the detail that how each factor that contributes to influence search engine re-rankings together with the help of keyword density and keyword placement.

1. Priority Keyword & Relevant Placement
2. Use Meta Descriptions
3. HTML tags & XML Sitemaps
4. Organized Inbound Linking Semantic
5. Architecture Review
6. Emphasised Web Programming
7. Relevant usage Of Domains as well as Redirects

5. RESULTS

To evaluate the performance of our approach, a series of modifications were conducted following the proposed approach. We carried out this by implementing proposed technique on the content of the website and evaluated the performance by Rapid Miner Mining tool and to keep track of the changes on the web for search rankings the Google Analytic tool was used. The usage of Rapid Miner Tool is to crawl the webpages for the relevant keywords and the inbound links used. Web mining considers the usage of raw data mining techniques and to research and extract the information from Web as well as the documents and web services.

In this Research work we have to analyse the three categories of mined information that should be fetched by web mining tool:

1. Web activity from web server log reports
2. Web graph of links between the web pages and surfers
3. Data found on pages and data in depth of documents.

When extracting the content over web or the information using web mining tool, there are mainly four typical stages.

1. Collecting – fetching the content from the various urls.
2. Parsing – extracting valuable data from formatted data such as DHTML,XHTML, HTML, DOCX, PDF etc)
3. Analysing – tokenize i.e breaking in pieces, rate of occurrence, classification, clustering, filtering, sorting, etc.
4. Produce – formatting the results into something having scope of use or some relevant semantics mainly structured report or the index reports.

The results confirm the following:

1. Keyword count is directly proportional to the keyword density
2. The new visitors or the traffic possibly increase with the advent increase in the keyword density
3. The gain in traffic and the increase in page rank of the website is direct in relationship with the keyword density and keyword placement.
4. The values generated in this research are far better than the previous researches and are likely to be more satisfying in the future researches to come.
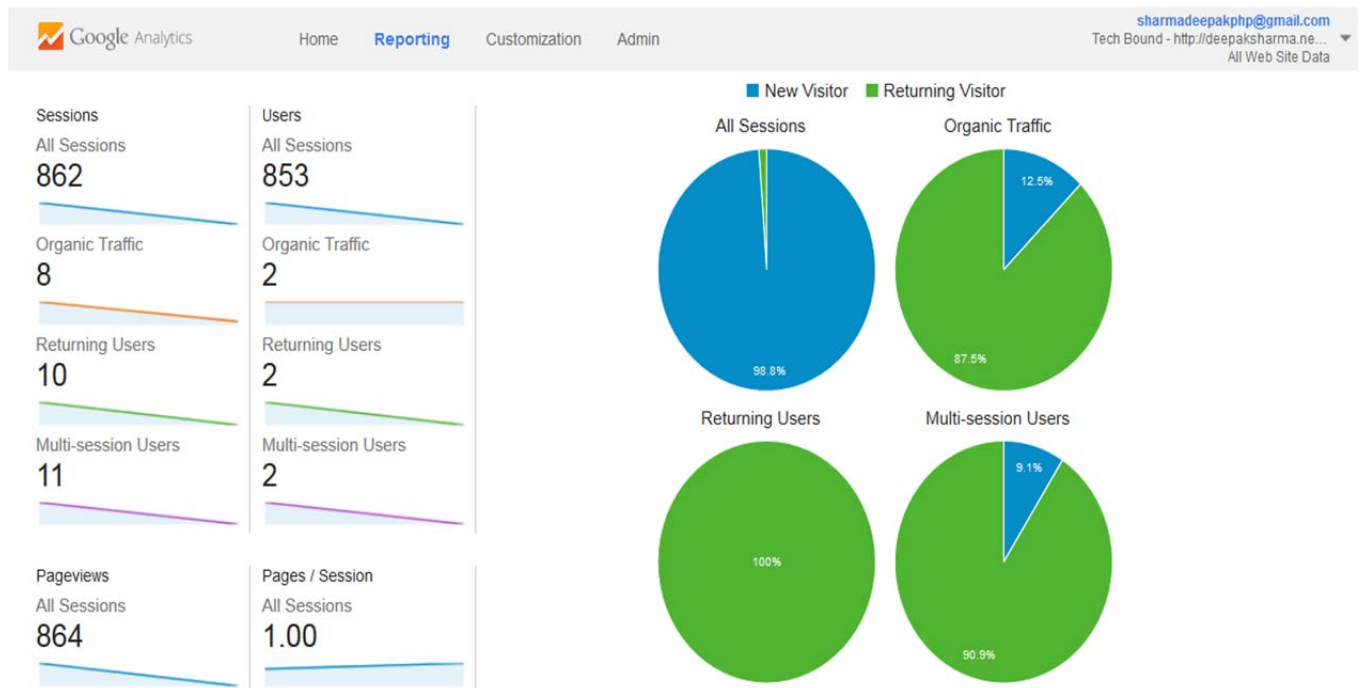

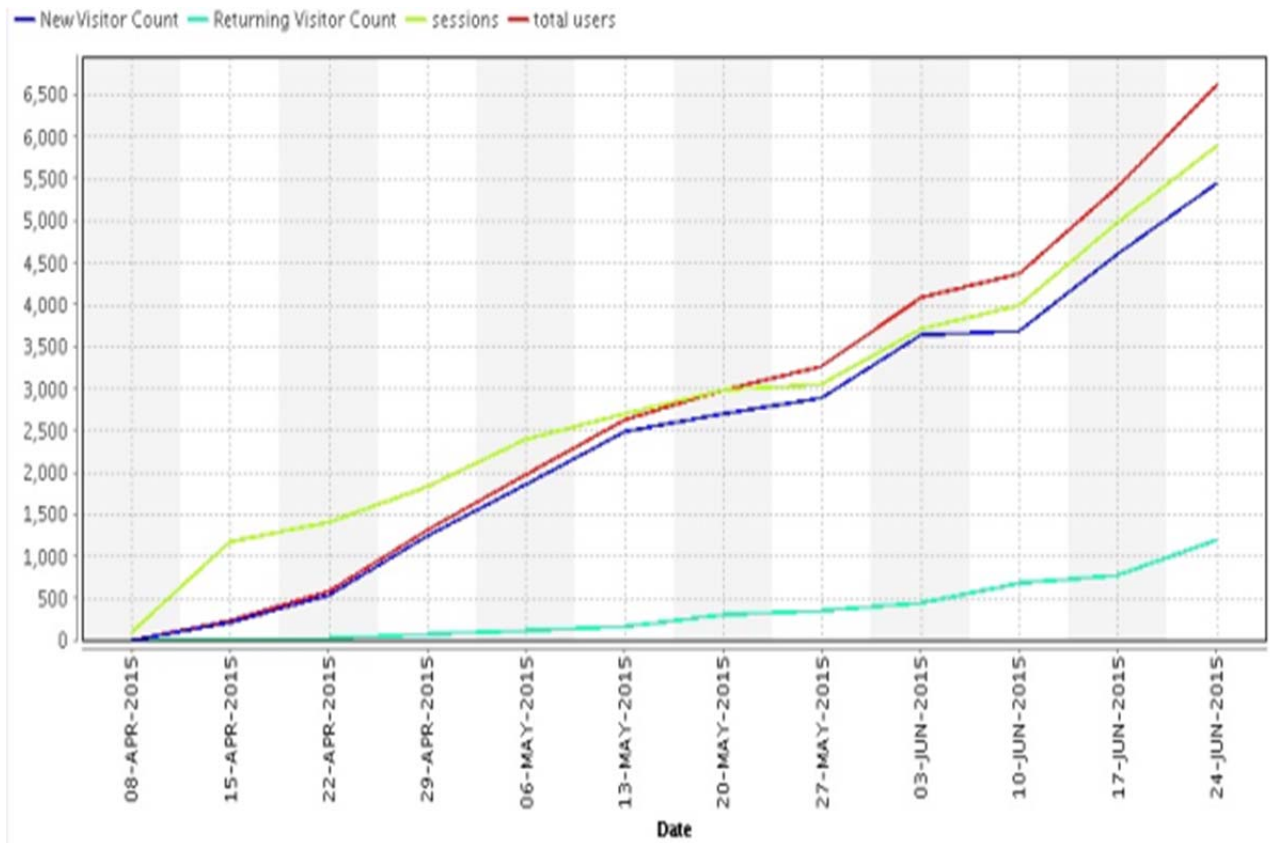**Figure 4: Overall analysis results from Google Analytics**

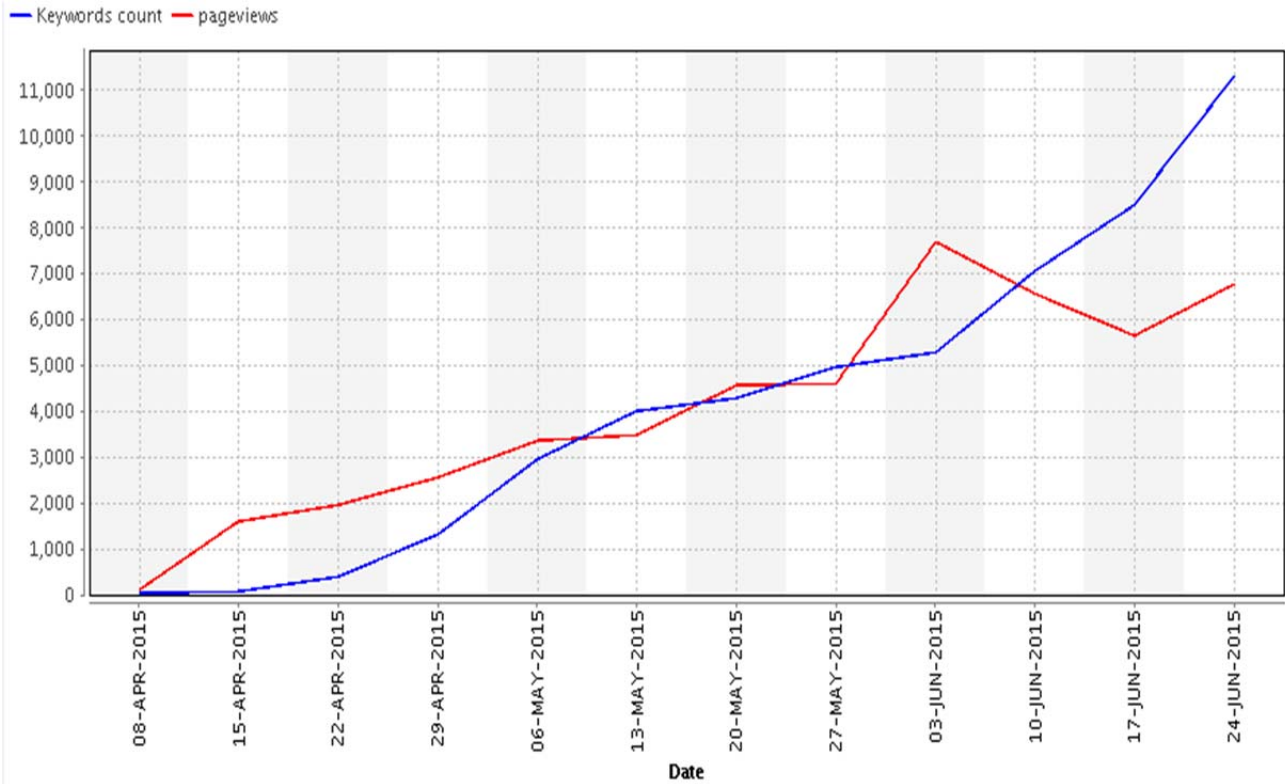**Figure 5: New Visitor Count Vs. Returning Visitor Count Vs. Sessions Vs. Total Users**

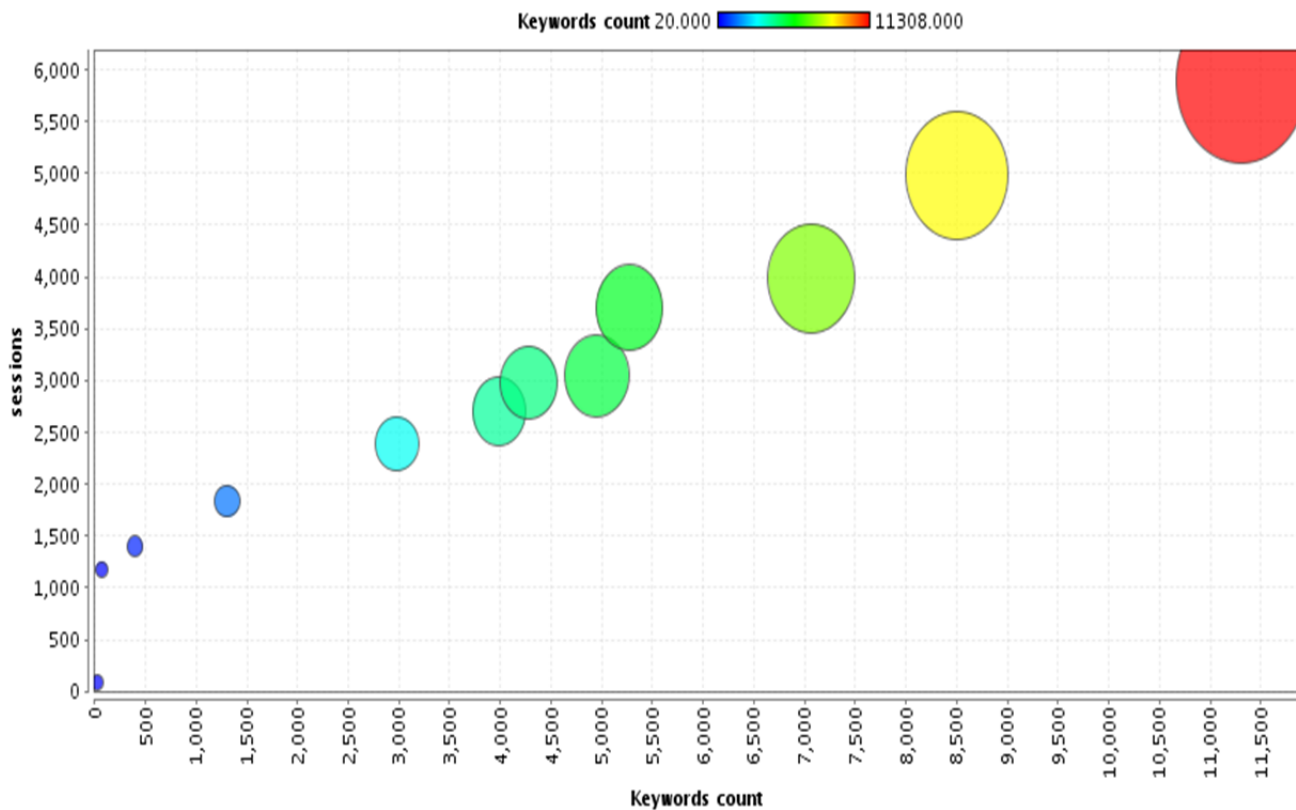**Figure 6: Keyword Density Count Vs. Page views**

Figure 7: Keyword Count Vs. Sessions

6. FUTURE SCOPE

Evidently, some content creators orient their sites not just too directly for attracting and maintaining the attention of their prospective human audiences but to accommodating and even taking advantage of search engines and their ranking rules, to the extent that orienting a site to search engines has become a professional specialty: SEO.

7. CONCLUSION

The optimized websites appear at better ranks in search engine and ordinarily get a higher number of visitors. The research is based on reviewing of different available and relevant techniques for optimizing individual web-pages or the entire website to make them more search engine friendly. Except this study also critically analyses and summarizes the core techniques proposed in the research.

1. The search engines are able to crawl the content is more organized way and the information retrieved is far more beneficial as it was before.
2. Major setback like plaguing website visibility is reduced as it was altered before by the black hat technique. The website now can generate the optimized keywords for the good visibility and usability.
3. Always optimize your content for your users. If Users appreciate it, Search Engines will surely do the same.
4. Try to serve unique value in the content which users are not able to find from anywhere.

The paper also worth a comparative study of the previous research work regarding the techniques used in SEO and pinpoints certain gaps in the known optimization techniques. In the end, we have also suggested our own observed methods for optimization. As a future dimension to this research, we intend to develop an effective and accurate system for SEO for obtaining a higher rank for the websites in the search results. The lack of visibility of accurate content from the web can be further reduced thus making the user experience good in terms of the organic searches.

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