SEARCH ENGINE OPTIMIZATION

1Amith T H, 2Akshay S Koundinya, 3Falguni H K, 4Saurav Dash, 5Priyanka M C

1Student, 2Student, 3student, 4student, 5Asst.Professor

1Malnad College Of Engineering,

2Malnad College Of Engineering,

3Malnad College Of Engineering,

4Malnad College Of Engineering,

5Malnad College Of Engineering

Chapter 1 : **Introduction**

Chapter 1.1 : **Introduction to area**

According to Wikipedia, "Search engine optimization (SEO) is a set of methods aimed atimproving the ranking of a Web site in search engine listings…" Search engine optimization, called SEO for short, is important to websites, which will improve the rankfor search engines and get more page views. Search engine optimization, is a process of improving the prominence of a website. Search Engine Optimization is the practice of building a web site search engine friendly, so that it can be found easily on the search engine with its relevant keywords. There are many free lancing SEO companies, which provide such facilities. The main role of these companies is to list the websites on searchengine.

Chapter 1.2 : Potential of the problem

Users use search engines for most of their queries but they only prefer the results availableon first page and 2-3% of users go on further pages, Now imagine if the page of an organisation is on 2-3rd or 4th page then the business which can be generated from that page has a very less change to return and user will prefer the page coming on the 1st page.Trillions of web pages are indexed per day in a search engine.

There are millions of search per day. Most of the visitor's visit the website by hitting the links available in search engines and believe that companies found on the top results are the best brand in their product service and category. These clues make it very clear that if an organisation wants to go on top in their sales then they should concentrate

in getting their page widely available in the search engines. There are so many business of online booking system of tickets are growing these days and getting a very good response in very short span of time; in this particular case its very necessary to be on top results of a search engine so that the customers can easily be fetched out.

Chapter 1.3 : **Problem Description**

Search Engine Optimization is the way of increasing the visibility of a page by natural means i.e., unpaid search results. In this process the website undergoes redevelopment to make our keywords effectively communicate with major search engines. This work is done by SEO (Search Engine Optimizers), They may target image search, academic search, local search, video search. Optimising a page involves editing contents & HTML codes in order to increase its relevance to specific keywords and proper indexing in search engines. The contents and codings are edited keeping in view of the indexing pattern of the search engines which are done by a crawler named Googlebot in Google. It is the most powerful way to reach to reach the customer as we meet them when they are in need. Most of the users find the target websites during their search.

Search Engine Optimization, a popular network marketing method in recent years, focuses on increasing the web visibility through raising the exposure of specific keywords to create more sales opportunities. With the help of these techniques, SEO committed to optimize the website to increase the search engine ranking and web visits number and eventually to increase the ability of selling and publicity through the study of how search engines scrape internet page and index and confirm the ranking of the specific keyword.
SEO, a guiding theory for search engine marketing, is not only about the ranking of search engine, but also about the every detail of web producing, construction, and maintenance, which worth the attention of every web producer, developer and agent to the significance of their job for the SEO.

Chapter 1.4 : **Platform or Tools used**

- **Google Analytics :** Google Analytics will help users analyze everything that is happening on the website including traffic sources, your audience demographics, audience behavior, top pages, and of course, the search engine traffic. Users can measure their top landing pages, search queries and more to see what pages are driving traffic and conversions.

- **Google Keyword Planner :** The Google Keyword Planner is the best way to find new keywords for the website. Users can use the Google Keyword Planner to find the most popular and most relevant keywords related to the industry, or website. Users can use the keyword research to guide the SEO decisions.

- **Ubersuggest :** Ubersuggest by Neil Patel gives users a lot of information and it is completely free. Users can find the top keywords for their website, see the search results, understand where they need to optimize and improve their website, and more. Within a few minutes, users can have the top 100 keywords that will drive more traffic to their website and it is a free search engine optimization keyword tool.

- **Google Search Console :** The Google Search Console will show users the performance of their website in Google Search and any index issues or mobile usability issues users may be having.

- **Google Page Speed Insights :** Google Page Speed Insights will show users how fast or slow their website loads on Desktop and Mobile devices. With Page Speed Insights, users can find exactly what is slowing their website down and how to fix it.

- **GTMetrix :** GTMetrix is a freemium tool that works similar to Google Page Speed Insights, but it gives users some different information on what to fix for their website so that they can improve the speed.

- **SEO Analyzer :** SEO Analyzer will look at users website like Google or other search engines would to help them find any errors or warnings. If their page is slow or if users have an unorganized website with errors, they can learn about them with the free SEO Analyzer tool.

- **Yoast SEO :** Yoast SEO is a freemium WordPress plugin that will help users SEO optimize every page on their website with ease. They can decide which pages and posts to include or noindex in search results, create an SEO sitemap, and more. When it comes to free search engine optimization tools for WordPress, Yoast SEO cannot be beat.

- **Moz Link Explorer :** Moz Link Explorer will help users look at their backlink profile or a competitors backlink profile. Users get 10 free searches per month with a free Moz account, which is plenty if they just want to use the link explorer. Moz has plenty of other free SEO tools in addition to their premium SEO service.

- **Ahrefs Backlink Checker :** Ahrefs Backlink Checker is a free SEO backlinks tool that will show users the top 100 backlinks for any website.

- **SimilarWeb :** SimilarWeb is a tool to look at users own website or competitor websites to find traffic sources, top keywords, backlink profiles, and more. It is a freemium tool that can be used for their own website or to perform SEO competitive analysis for free for another website related to user.

Chapter 2 : **Implementation**

Chapter 2.1 : **Website SEO Process**

Search Engine Optimization is the practice of building a web site search engine friendly, so that it can be found easily on the search engine with its relevant keywords. Keyword is most important factor which influences search result ranking; therefore the first thing is to solve the keyword selection and application. Building of external link, backward link and index have a positive correlation with search result ranking. Therefore, the superior building of linking and indexing after the perfection of keywords will greatly contributes to the SEO of the websites. Flow monitoring and search engine analysis. The key of SEO is the instant monitoring of the whole website and the flow of each page. The basic flow ofwebsite SEO as shown in fig 1 :

Fig 1
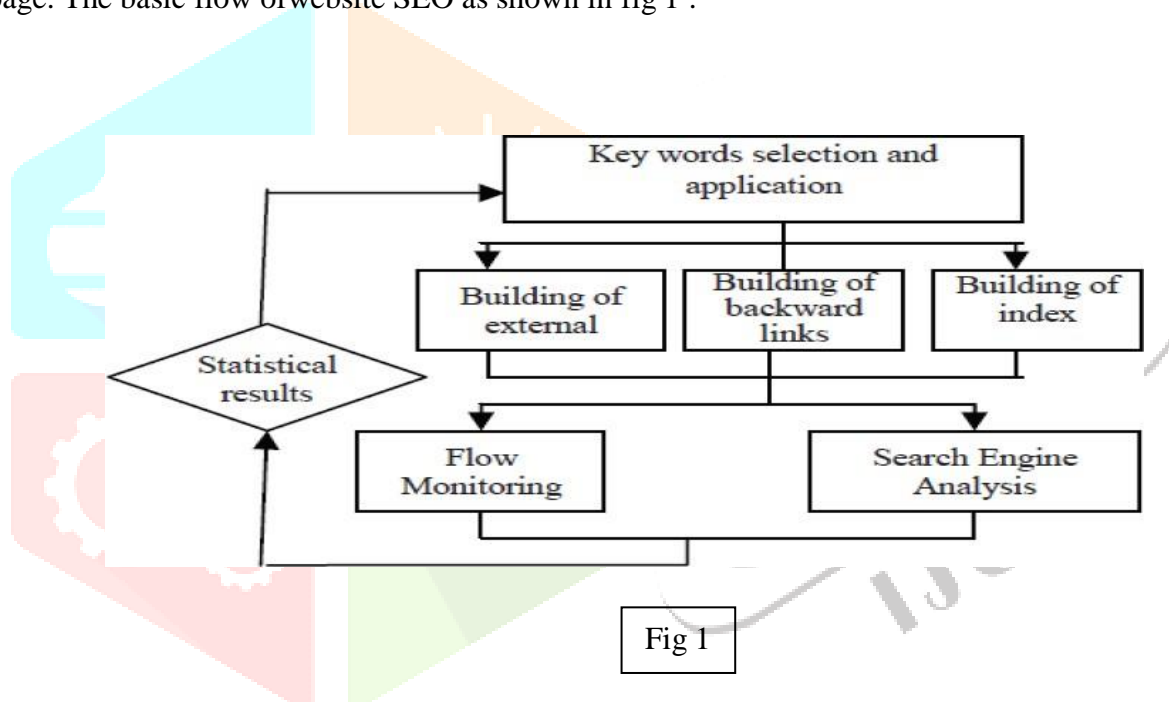
Chapter 2.2 : **Various SEO Techniques**

There are many free lancing SEO companies, which provide the facility of building a web site search engine friendly, so that it can be found easily on search engine with relevant keywords. The main role of these companies is to list the websites on search engine. Someof those small SEO providers or other people also use some automated tools and/or other

unethical techniques. The different SEO techniques are used for this purpose. Large web search engines use significant hardware and energy resources to process hundreds of millions of queries each day, and a lot of research has focused on how to improve query processing efficiency. One general class of optimizations called early termination techniques is used in all major engines, and essentially involves computing top results without an exhaustive traversal and scoring of all potentially relevant index entries. SEO techniques also obtained various kind of identification from general website managers andeven search engine inside. But the arrival of foreign enterprise, our technology will gain upgrades. Large web search engines have to answer hundreds of millions of queries per day over tens of billions of documents. To process this workload, such engines use hundreds of thousands of machines distributed over multiple data centres. In fact, query processing is responsible for a significant part of the cost of operating a large search engine, and a lot of industrial and academic research has focused on decreasing this cost. Major families of techniques that have been studied include caching of full or partial results or index structures at various levels of the system, index compression techniques that decrease both index size and access costs, and early termination (or pruning) techniques that, using various shortcuts, try to identify the best or most promising results without an exhaustive evaluation of all candidates. Comprehensive search engine to meet alot of horizontal information search, the accuracy of search results, and the results of correlation and the user's search goal has some differences on the information needs of the relative concentration of the lack of classification more detailed industrial customers oriented. With increasing the amount of information contained in search engine, in the mass of information queries to the information about the time it takes is gradually increased.

Chapter 2.3 : **Types of SEO**

Types of SEO are as follows :

Off-page Optimization

On-page optimization

Fig 2
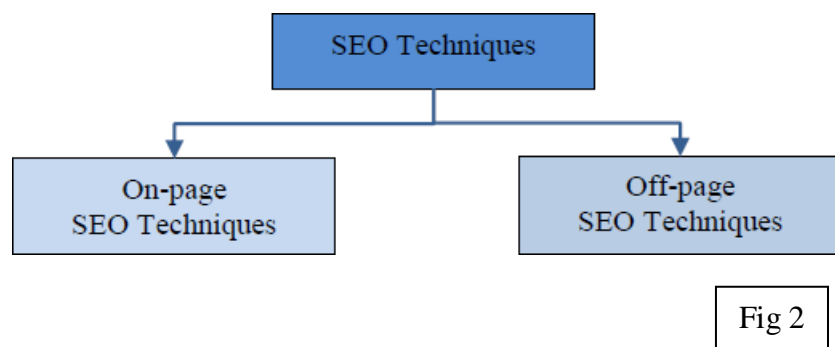
Chapter 2.3.1 : **Off-page Optimization**

Off-Page Optimizations includes those methods that can be done off to increase traffic to your website.

Off-page optimization includes the following techniques :

- ✓ Directory Submission
- ✓ Social Bookmarking
- ✓ Forum Posting
- ✓ Press Release Submission (PRS)
- ✓ Classified Submission
- ✓ Blog Commenting
- ✓ Article Submission

Chapter 2.3.1.1 : **Directory Submission**

In this website link is submitted on reputed web directories and internet directories termedas Directory Submission. In the directory submission process, the submission of url, title, description and other information of website is submitted. A lot of directories available some free and some paid, a little more concise about the company, product, services, website is provided in directory submission.

Chapter 2.3.1.2 : **Social Bookmarking**

It is the best method to manage, organize, store bookmarks for online resources. The SEO players search for the related social bookmarking sites where they can bookmark their ownsite to recover a link from the site.

When we discover a web page that we find interesting, in its place of having to remember the address of the webpage, we can basically save the address as a 'bookmark' in our browser.

It is much similar to saving favorites links on our browser, except we are saving to a website that we can access from any computer in the world. But the component of social bookmarking is the 'social' element. Each one can appear at each one else bookmarks.

That's mean, we are looking for the content, that people already bookmarked.

Chapter 2.3.1.3 : **Forum Posting**

It is a technique of link building in which website links are associated with good forum posts. In this strategy, endeavors are made to make back connections from gathering, examination in related specialty discussion sites. Web forums are used to produce traffic for the websites and web pages. Therefore, by communicating in web forums, the SEO specialists include the website links as signature in their reply. Forum posting is an essential efficient SEO Link Building technique to receiving quality traffic and quality back links to our website and web pages.
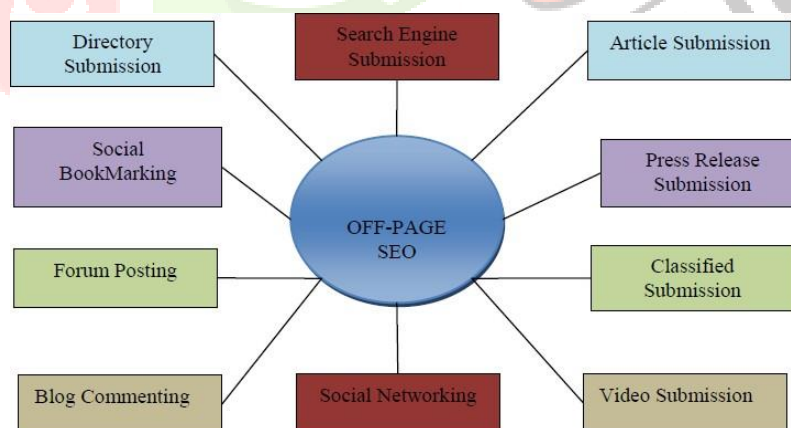

Fig 3

Chapter 2.3.1.4 : **Press Release Submission (PRS)**

In this, the latest news is submitted in related websites. It is one procedure of submitting news of events taking place within our corporation. A lot advantages to PRS are back links from news websites, good position in Google news, and eventual media coverage. When we are writing our press release submission, we will make sure that the public will want to read it. We should try to make a press release like the newspaper article. PRS websites are in common extremely ranked and indexed by Google extremely speedily. When we submit a press release it can be ranked within a week. A good written PRS can drive more traffic to our website and raise our probability of receiving links from other trusted websites. A high-quality matter for our press release submission could be the o riginate of a new product. A well written press release will spotlight on the benefits of the product. A very good press release can increase our traffic and give us ability within our business, while also improving our business.

Chapter 2.3.1.5 : **Classified Submission**

In this submission online classified ads submitted in classified related websites. This is also the best method of getting back links. Classified is a small impressive ad placed where classified-ads, websites take the interest of the desired visitor. Though, online classifieds varies from the ordinary advertising or common business models ads. Additionally, it helps us in SEO by promoting the traffic (passage) to our presented website. Classified submission increases the traffic level to our website.

Chapter 2.3.1.6 : **Blog Commenting**

In this technique, back links are created by commenting on different blogs and websites. The blog commenting is really effective on the same niche blog and websites. Comments on blogs can produce precious links. Comment on DOFOLLOW blogs that are associated to our niche and the link that points back to our website or blog could be measured a popularity vote and could increase our website's perceived relevancy to our subject matter. The more relevant Google believes our website is to our topic, the better for our site.

Where possible, comment on blogs and websites with an even more established presence than ours. Many blogs allow a space at the end of each post for a blog reader to leave a

comment. The blog commenting field normally asks for the name of the commenter, theiremail address, and their website.

Chapter 2.3.1.7 : **Article Submission**

Submission of articles in Reputed Directories is one of the best techniques for making back links. It is one of the most admired and one of the oldest link building technique known in the SEO Industry. On a daily basis many of articles are being submitted to thesearticle directories by webmasters and SEO Experts to enhance the back links of the websites. Now that search engines give big credit to back links, many link building techniques have come into the business. Article submission allows the users to propose their articles to the article directories and hold live links in the author box. At this time article directories get free content for their website and webmasters get their free of chargeback links. When discover one way back link became extremely difficult, article submissions came as a big phenomenon to the webmasters. It is very essential that we get good quality back links to our website. All the webmasters worked on this concept and article submission was used as one of the major link building techniques.

Chapter 2.3.1.7.1 : **Link Reputation**

Web pages and websites with more number of back links improve ranking in SE result. But it is important that the quality of external links is also very important. External links must have a good reputation, relevant or similar content. Also have key phrases similar tosearch term.

Chapter 2.3.1.7.2 : **Click Popularity**

Number of clicks to the site is known as click popularity. It is also significant factor to lift website top ranking result. If a visitor clicks websites, SE provides certain value to that site. But SE keeps track of who is clicking by tracking their IP address. So owner can't click to his site hundreds of times to improve the click popularity as clicks from a single IPaddress will be consider as only once.

Chapter 2.3.1.7.3 : **Inbound Link**

In this external high quality links pointing towards a website are called inbound links. Link popularity is known by total number of inbound links. In Google, page rank of the website determines according to quantity and quality inbound links. To promote site in top ranking list, the quantity and quality of external links are still recognized as the major ranking factor. The web page must contain more number of relevant inbound links to rank high in SE result. Inbound links in textual form and not in graphic form like banners, advertisements and images are not preferred by search engines.

Chapter 2.3.1.7.4 : **Black hat SEO**

To develop a website is a marketing strategy which is more effective and least costly to reach many people. Promoting a website in the SE result list is one of the keys of creating a profit producing web site. Sometime to get higher ranking in search engine result listing, SEO techniques are used in an unethical manner called spamming. Such black hat SEO techniques break SE rules and regulations and place the undeserving site on the top list.
Such technique not only misleads the SE algorithms, but also lowers the quality of search results and increase traffic.

Chapter 2.3.2 : **On-page Optimization**

It includes those techniques that can be done on the pages of a website. This process helps the search engine crawlers read the website content. A readable website demonstrates quality and will bring about higher positioned pages. The website design elements includes such as: Keywords in meta tag, title tag, formatting, position, external link, density etc., which are controlled by site itself.

On-page optimization includes the following techniques :
- ✓ Location of Keyword
- ✓ Title Tag
- ✓ Keyword Density
- ✓ Keyword in URL
- ✓ Keyword in Meta Tag

- ✓ Keyword in Alt Text
- ✓ Keyword in Anchor Text
- ✓ Title Length
- ✓ URL (Uniform Resource Locator)
- ✓ Outgoing Link

Chapter 2.3.2.1 : **Location of Keyword**

SE crawler checks whether keyword appear in <title> tag; <header> tag; <Alt> tag;

<meta> tag; <body> tag, in anchor text, in URL etc.

Chapter 2.3.2.2 : **Title Tag**

Title is the biggest ranking factor. Most search engine use the website's title tag as main factor of sites listing in search result pages.

Chapter 2.3.2.3 : **Keyword Density**

Density of Keyword means frequency of keyword present on the web page compare to the total number of words on the page. Frequency of keyword in the title tag and frequency of keyword in body tag should be a strong optimization factor. Density of keyword should be within 2% -8% for improving website ranking.

Chapter 2.3.2.4 : **Keyword in URL**

In this site will be discovered all the more effortlessly via web index crawlers if keyword incorporated into a URL. Web crawler pays priorities to different domain name suffixes like edu or gov. Likewise shorter length URL is favored in SEO.

Chapter 2.3.2.5 : **Keyword in Meta Tag**

In Meta tag contains a description of a page or website that is informative and reflects the content of web pages. The website will be indexed if related keywords are found in meta description tag.

Chapter 2.3.2.6 : **Keyword in Alt Text**

In At tag or text specifies alternative text for images. Description of text associated with alt tag that that serves same reason and pass on same fundamental data the picture. Alt tags are short and enlightening which reflect the body text that depicts the image.

Chapter 2.3.2.7 : **Keyword in Anchor Text**

Search keyword in anchor text represents what is linking. Pages using link text based on search keywords often rank higher.

Chapter 2.3.2.8 : **Title Length**

The most important on-page factor is an appropriate use of keyword in title tag. Website title should be such that it reflects the subject of website. Using title name, user understands brief information within website at first glance. Title length within limit returns good results.

Chapter 2.3.2.9 : **URL (Uniform Resource Locator)**

URL speaks to the location of webpage on the web. The URL incorporated search keywords in the URL so crawler will discover it effectively. Short length URL's are ideal via SE.

Chapter 2.3.2.10 : **Outgoing Link**

Site page contains connections to other related sites. Related active, outgoing links give helpful data to the client. More number of one of a kind outbound links enhances positioning of the site.

Chapter 2.4 : **SEO Benefits and Carrier**

SEO become widely adopted online site cause of its effectiveness. While the benefits of SEO are vast and cause of demand and popularity, carrier opportunity in SEO become increase in day by day.

- ✓ **SEO Benefits :** In digital market SEO become very effective and popular so there are many benefits to a good SEO. Such as :
- Increased traffic
- ROI and Cost effectiveness
- Increased site usability
- Brand Awareness

- ✓ **SEO Career :** Career in SEO is become popular in recent era and different opportunities are available for choose SEO as a career such as :
- Great Demand
- Good Money
- Advertising and Marketing
- Large Brand publicity
- Organic and Direct demandable Ads

Chapter 2.5 : **Search Engine Optimization Techniques**

Search Engine Optimization Techniques are used for the following some of the applications :

- ✓ Spamming application
- ✓ Block-Max Indexes application
- ✓ Website application
- ✓ News Industry application
- ✓ SEO Techniques by Researchers
- ✓ Six Sigma Management application

Chapter 2.5.1 : **Spamming Application**

Search engine spamming is a practice of misleading the search engine and increasing the page rank of undeserving websites [1]. This is a new way to counter those techniques using link based spam detection combined with the page rank algorithm. This technique helps us to discover target page and trace down the entire graph responsible for spreadingspam.

The spam technique is mainly classified into two basic categories, namely; boosting technique and the hiding technique. The boosting technique is the technique, which is usedto make the page look more relevant to the search engine. The boosting techniques are further classified as keyword stuffing and link building. Keyword stuffing is also known as on page technique. During the on page, the target keyword is stuffed into the web pages

i.e. the HTML page, PHP page or any other available source page on the web server. These keywords are stuffed into HTML tag i.e. META tag, H1 tag, HEADER tag etc. Each tag is rated explicitly by the search engine and the summation of all the ratings provides the total keyword density for the particular page. Even the sub directory, URLs and contents are rated and included in calculating the keyword density for the website. The various factors affecting search engine results are: trusted link, link population, traffic, converging graphs. Hiding techniques are the techniques that are used to hide the boosting techniques. These techniques are responsible for generating traffic from the user and misguiding the crawlers.

Chapter 2.5.2 : **Block-Max Indexes application**

Large web search engines use significant hardware and energy resources to process hundreds of millions of queries each day, and a lot of research has focused on how to improve query processing efficiency. One general class of optimizations called early termination techniques is used in all major engines, and essentially involves computing top results without an exhaustive traversal and scoring of all potentially relevant index entries. There are several early termination algorithms for disjunctive top-k query processing, based on a new augmented index structure called Block-Max Index that enables aggressive skipping in the index. Major families of techniques that have been studied include caching of full or partial results or index structures at various levels of the system, index compression techniques that decrease both index size and access costs, and early

termination (or pruning) techniques that, using various shortcuts, try to identify the best or most promising results without an exhaustive evaluation of all candidates.

An augmented inverted index structure called a Block-Max Index and used it to speed up the WAND and Maxscore approaches. The basic idea of the structure is very simple: Since inverted lists are often compressed in blocks of say 64 or 128 postings, we store for each block the maximum term score within the block, called block Maxscore. Thus each inverted list maintains a piece-wise constant upper bound approximation of the term scores.

Chapter 2.5.3 : **Website application**

The search engine deals with tens of thousands of information search; the process is bound to follow the rule that pre-determined search engine operating principle.

Any search engine after finishing one work will request in accordance with three following steps :

- ✓ **Crawl Page:** Each individual search engine has its own web capture progress. It along the hyper link of the web, continuously capture the pages. The capture page is called web page snapshot. Due to the application of hyperlink Internet is common, theoretically, starting from a range of web pages, you can collect the vast majority of page pages.

- ✓ **Processing Page:** After catching web pages, still need to do lots of pre-treatment projects to provide retrieval service, among them, most important part is extracting keywords and establishing index file. Others also are including removing duplicate web pages, participles, judging the types, analyzing hyper links and counting pages important degree/abundance etc.

- ✓ **Providing Search Services:** User inputs the keywords then Search engine finds the matching pages from indexed database; except for page title and URL, it still provide an abstract from web pages and other information to make users estimate expediently. The SEO tool is tool that optimizes search engine function. An application of search engine optimization tool is designed to test that web site may

obtained search ranking effect to search engine optimization degree machine. SEO tools mainly include keyword too, link tool, usability tool and other tools.

Chapter 2.5.4 : **News Industry application**

Existing news sites usually have the following two questions: (1) information update is slow. Slow information update is a common problem with the existing website. (2) News editor is poor. Existing news networks, including Sina-Chinese news web site, Yahoo China, Sohu and other influential online news media, there is the problem of poor news editor. In the case of limited human and material resources, it is hard to resolve. Then the news source for automated production will be reasonable and efficient, vertical search engine is suitable to the development of the news industry. The vertical search engines must meet the performance requirements of multi-threaded crawling. On this basis, it can be extending to distributed systems. The news site for news and information requirements is timely, accurate information. Lucene is an open source tool package. Its basic function is from the file system, database, Web, manual input and other sources of data integration, indexing documents, stored in the index database. When the user submits the query in the index quickly, it find the information in returned to the user. Lucene as a full-text search engine, it has the number of advantages.

Chapter 2.5.5 : **SEO Techniques by Reserchers**

Below were the six SEO techniques that the researchers implemented and analyzed :

- ✓ **Overall Links :** The total number of web pages linking to another website. This has been a huge determining factor on how search engines determine a site's position in the search results.
- ✓ **Website Title Length :** Most search engines use the title tag on the search results page. Search engines also use the title tag to determine the theme or what the webpage is about. Therefore, optimizing the title tag is important.
- ✓ **Website Title Length :** Most search engines use the title tag on the search results page. Search engines also use the title tag to determine the theme or what the webpage is about. Therefore, optimizing the title tag is important.

- ✓ **Layer Number :** This is "related to the logical structure of a website designedaccording to the relationship between content relevance and link position"

- ✓ **Page Size :** The researchers defined it as "the sum of the file sizes for all the elements that make up a page". According to them, "most search engines will

  not fully index pages that are greater than a certain size"; therefore, the smaller the web page size, the faster it will load.

- ✓ **Customization of 404 Error Pages :** An Error 404 "Page not found" is displayed whenever a visitor requests a web page that no longer exists. The final results of their study indicated that Page Size, Customization of 404 Error Pages and Overall Links are significant factors in the effectiveness of SEO. But as stated before, it's important to note that this study was focused on Baidu, China's most popular search engine. Although the research was performed on a different search engine, Overall Links seemed to coincide with Google's ranking algorithm as an importantfactor.

Chapter 2.5.6 : **Six Sigma Management application**

The authors of this paper conducted research and empirical analysis to determine what factors had the most positive effect on SEO and proposed a method for its implementation. The goal of the study was to help SEO engineers identify the most influential factors for SEO and how to manage the execution of these strategies by using Six Sigma Management model. Originally developed by Motorola in the1980s as a business management strategy, Six Sigma "seeks to improve the quality of process outputs by identifying and removing the causes of defects (errors)"; it was interesting to see that the researchers included this process model in their research as a way to execute their SEO methods more effectively. The top five SEO influence factors from their study can be seenin Fig 4 :

| number	Influence factors
1	The application of keywords in website TITLE
2	The application of keywords in web page content
3	The number of external links
4	The number of backward links
5	The number of paper indexeded （take Baidu as an example）

Fig 4

Based on their Six Sigma approach and their research, the researchers propose a "basic flow of the website search engine optimization (SEO)" process using the following strategic steps :

✓ **Keyword selection and application :** Their tests suggests that keyword selection is the "most important factor which influences the search results ranking".

✓ **Building external links :** According to their tests, they confirmed that "the number of external links, backward links and websites indexed have a positivecorrelation with the search results ranking"

✓ **Flow monitoring and search engine analysis :** The key to having a successful SEO implementation is to constantly monitor "the whole website and the flow of each page". Due to the frequent changes of search engine algorithms, it's importantto constantly measure and analyze website data (Google Analytics) to verify any changes in the site rankings in order to "make instant adjustments to ensure rankings"

SEO, a guiding theory for search engine marketing, is not only about the ranking of search engine, but also about the every detail of web producing, construction, and maintenance, which worth the attention of every web producer, developer and agent to the significance of their job for the SEO. Six Sigma is a typical process management to conduct empirical study of SEO. Nowadays, Six Sigma Management is considered as the most efficient way to improve quality, reduce cost and raise effectiveness. Sigma ($\sum$), originated from Greek, is a statistic unit used to measure the standard deviation among the total.

Six Sigma Management includes DMAIC and DFSS, and DMAIC includes five phases as in Fig 5.

Fig 5
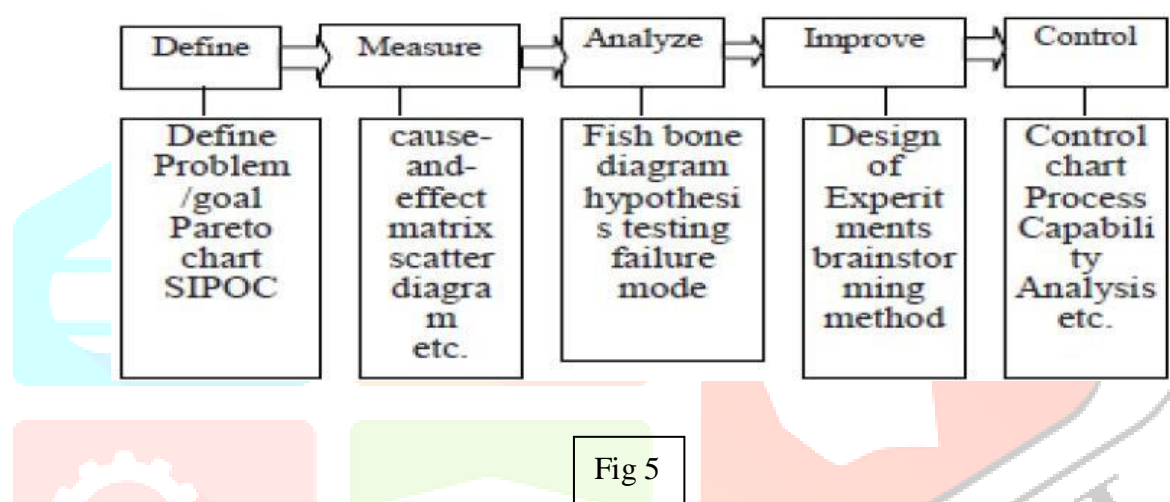
Chapter 2.6 :

How to Improve Your Google Ranking: Myths and Reality

This study focused on the Google's ranking algorithm; the researchers sought to systematically "validate assumptions others have made about this popular ranking

algorithm" and identify what page factors or other criteria, had the most influence in its ranking algorithm. They designed and developed a ranking system to determine the most important factors Google uses to rank pages. Using a reverse engineering approach, the paper showed how their ranking system "can be used to reveal the relative importance of ranking factors in Google's ranking function". Thus, the paper provides guidelines for

SEO engineers on what factors are the most critical for optimizing web pages in order to achieve higher rankings. Although it has been known that Google uses more than "200 factors" in their search engine ranking algorithm, this study determined a subset of those factors.

The researchers' top 5 SEO factors are listed below :

- ✓ **PageRank** : It defines how authoritive is the site (as determined by Google's algorithm).
- ✓ **Domain** : It defines the keyword appearing in the domain name.
- ✓ **Title Tag** : It defines the keyword appearing in the title tag.
- ✓ **Description Tag** : It defines the keyword appearing in the description tag.
- ✓ **URL** : It defines the keyword appearing in the URL.

Chapter 2.7 :

The Application of SEO for Internet Marketing

This study conducted an experiment in that they used selected SEO techniques and applied them on a website over the course of a year and then analyzed the effects of the SEO. The authors implemented their techniques on an existing website, applied selected SEO tactics and then measured the effectiveness of the SEO.

Table 2.3 below shows the research variables and their definitions that were used as metrics to measure and analyze the effectiveness of the SEO. In my research, *Number of Visits* and *Ranking* variables were also tracked and analyzed; *Pageviews* is another metric that was measured in this study.

Research Variables	Operational Definitions
Number of visits	Total number of visits. Single visit to a website and then exit within a period of time. For example, it is counted as one time visit for reading all the information within an hour.
Pages	After deleting the unnecessary files, like pictures, the total number of files provided by the server.
Hits	The total number of files provided by the server.
Bandwidth	Total volumes of transmission
Ranking	After the users put keywords into the search engine, the website ranking order in the search engines shown on the result pages.

Fig 6

Below is a list of SEO strategies that were implemented on the existing website :

- ✓ Keyword was put in the HTML Title tag

- ✓ Added the keyword to the ALT property of the image tags

- ✓ Added keyword to the H1 header tags

- ✓ Registered the website to the DMOZ open website catalog (DMOZ.org)

- ✓ Directly submitted the website to the main search engines: Yahoo, Google and Bing

- ✓ Executed WEB PING to the main search engines. Pinging notifies the search engines that the website has been updated; this increases the chance that the search engines will find and index the pages much faster.

- ✓ Created profiles in popular discussion boards (forums) and put keywords into the signature lines

- ✓ Created a sub-domain with the keyword in it

- ✓ Created an XML sitemap for the search engines. Sitemaps lists all the pages in the website. Sitemaps tell search engines information about your site, how it's structured and how often to index (or crawl) certain pages.

According to their research results, the experimental website moved higher in Google's search rankings results for the particular keyword; the bandwidth also increased after applying SEO. The ranking went from the No. 14 position to No. 2 position for their target keyword, and the bandwidth increased as a result of an increase of users who visited to the site. This study in effect shows the importance of SEO as a way to increase website rankings and traffic. The only back-linking strategy discussed in the study was the creation of profiles in forums and back-linking from the signature.

Chapter 3 : **About the base paper**

This report is based on the base paper by *IOSR Journal of Computer Engineering (IOSR- JCE), e-ISSN: 2278-0661,p-ISSN: 2278-8727, PP 20-24* by the title **"SEO Techniques for various Applications - A Comparative Analyses and Evaluation"** written by three authors namely Sandhya Dahake, Dr. V. M. Thakare and Dr. Pradeep Butey.

In this paper, the comparative analysis and evaluation of different SEO techniques for various applications are included. These techniques have many advantages in web page designing. The importance of this paper is to suggest how we design a web site by using these techniques to get internet ranking on first page. According to the purpose of web page, we can use these techniques. Each technique has some importance, advantages as well as limitations.

This paper also proposed the novel methods or search engine optimisation for driving more and more users to a website. There is the importance of both on and off-page optimization method to improve website ranking. Both optimization methods have their own advantages and importance. The author reviewed different available techniques for optimizing individual webpages or the entire website to make them SE friendly. As a future dimension to this research, author intend to develop an effective and accurate system for SEO for obtaining a higher rank for the websites in the search results.

Chapter 4 : **Conclusion**

Search Engine Optimization is a good keystone for any good web related strategy. In this study, we show that SEO have different types of techniques. Using those, users/managers can easily found any result by entering proper keywords and also improve sites visibilities,traffics, time and rank. SEO techniques can be applied and explored on other search, likes image, video, news etc. SEO technique is used to modify website and increase ranking in organic (v/s paid). This study conclude that SEO gives more advance search result and using log tool and cluster algorithm get high ranking by comparing different sites and URL.

References

[1] Antriksha Somani, Ugrasen Suman , "Counter Measures against Evolving SearchEngine Spamming Techniques", IEEE Conference, 2011 , 214-217.

[2] Constantinos Dimopoulos, Sergey Nepomnyachiy, Torsten Suel, "Optimizing Top-kDocument Retrieval Strategies for Block-Max Indexes", IEEE Conference, ACM, 2013, 113-122.

[3] Meng Cui and Songyun Hu, "Search Engine Optimization Research for website Promotion," in IEEE Int. Conf .of Information Technology, Computer Engineering andManagement Sciences), 2011, 100-103.

[4] M. Li, X.J. Gu, Z.X. Yang, "Research of Vertical Search Engine in News Industry," inProc. IEEE ISMOT, 2012, 2012, 253–256.

[5] Lihong Zhang, Jianwei Zhang, Yanbin Ju, in " The Research on Search Engine Optimization Based on Six Sigma Management", in IEEE conference 2011, 101-103.

[6] R. Seema and G. Upasana, "A Review Paper on Web Page Ranking Algorithms",IJECS, vol. 3, Issue 8 (2014), pp. 7946-7949.

[7] J. Ayush and D. Meenu, "The Role of Backlinks in Search Engine Ranking", IJARCSSE, vol.3, Issue 4, (2013), online.

[8] Wikipedia, "Search engine optimization" https://en.wikipedia.org/wiki/Search_engine_optimization

[9] P. Rani and E. S. Singh, "An Offline SEO (Search Engine Optimization) Based Algorithm to Calculate Web Page Rank According to Different Parameters", IJCT,vol. 9, no.1, (2013).