Abstract— In recent advancements in technology, Search Engine Optimization has evolved significantly. Since the websites began to grow rapidly in the last decade, Search Engine Optimization techniques have been evolved side-by-side. The purpose of this paper is to study about search engines and the background of Search Engine Optimization. SEO in this era has become a compulsion for everyone with an online presence in order to get noticed among millions of others in the digital world. This paper throws light on the history of SEO and the techniques and tools used for the search engine optimization for websites. In the digital world, technology changes moment to moment, and therefore an improvement in Search Engine Optimization is becoming a necessity.

Index Terms— Backlinks, crawling, indexing, keyword research, search engines, search engine optimization, SEO.

I. INTRODUCTION

Every day there are millions of searches performed on millions of topics over millions of devices. Most people prefer to choose the results displayed on the first page of the search query generated by the search engine. Therefore, it is necessary to apply SEO techniques on your website in order to fulfill your motive, which can be to generate more traffic getting more clients, etc. SEO is not a newly emerging technology but it is rapidly developing since the search engines were developed [1]. Search engine optimization techniques help to rank a webpage in search results using keywords, backlinks, meta-descriptions, rich content, etc.

II. PAST STUDIES AND RECENT MODIFICATIONS

Search Engine Optimization

Ever since the World Wide Web came into existence, it has constantly been flooded by thousands of websites every now and then. There are hundreds of search results for a string of keywords and it is important to rank the best appropriate result on the top of the search results. This is done by search engine optimization. The first search engine ever to be used was named ‘Archie’ which was used to search for FTP (File Transfer Protocol). The first text-based search engine was named ‘Veronica’[2]. In order to filter through a large number of webpages, various algorithms are used which have been constantly updated over time. The most prevalent search engines are shown in Fig1.

There are three primary functions of a search engine-
1. Crawling- It is a process of scouring internet for content and looking over the code for which URL found. A crawler/spider/bot scans the website and collects details like titles, keywords, images, link pages etc.
2. Indexing- It is the process of organizing and storing the content found in the crawling process [4].
3. Ranking- This is done by providing the pieces of content which will best answer the search query.

To adopt best SEO techniques, functions of search engine have to be kept in mind.

Types of SEO

The Search Engine Optimization techniques can be divided into three parts – On Page SEO, Technical SEO and Off Page SEO [5].

On Page SEO: In this technique, optimization is performed on the website, its pages and code.

Elements of On Page SEO-

1. Keyword choice: The selection of most appropriate keywords has to be done which should be relevant to the website and is apt with the user search query [7].
2. Content- As it is widely said that Content is king, it applies in Search Engine Optimization too. Content is the major factor in SEO as it engages users and is the actually the result of user search query. Therefore, the contents should be SEO rich, unique and should
comprise of an appropriate number of back links and keywords.

3. **Meta Data**: In simple terms, it is the data that describes other data.

**Technical SEO**: It is the process of optimizing the website as per search engine functions like crawling and indexing. It also focuses on the ‘look and feel’ of the website. The content and images in the website have to be properly aligned and planned. They should be relevant to the theme of the website and all pages should follow that.

**Off Page SEO**: It comprises of outside website relationship between inbound links. It focuses on link building and optimizing social media.

![Fig.2 Types of SEO](image)

**III. SEARCH ENGINE OPTIMIZATION TECHNIQUES**

1. **Meta Data**: It is the data that describes other data. Meta Data is included in the source code of the website in order to optimize it.

2. **Title tag**: It contains the title of the website. Fig 3 shows the location of the title in the search results. It is a very important ranking factor in SEO. The title tag should be optimized according to the following characteristics –
   a) **Length**: The length of the title tag should be between 55 to 60 characters and not more than that.
   b) **Front**: The front of the title tag should include relevant keywords.
   c) **End**: The end of the title tag should include the brand name.

3. **Meta Description**: It is basically the “About Page” of the website. It is included in the source code. The character length of the meta description is about 160 characters. Fig 3 shows how the meta-description is visible in the search results. It is important to optimize the Meta Description as it is the first text that the user reads before visiting the website and therefore, it has to engage the user. It should contain relevant keywords so that the website can create a better user experience and generate more traffic.

4. **URL Optimization**: URL stands for “Uniform Resource Locator” which is the address of a specific webpage or a file on the internet. Fig 3 shows how a URL looks like in the search results. Optimizing URL means using keywords in URL and its sub-directories to make it relevant to the user and match the theme of the website.

5. **Heading Tags**: This is another important aspect of Search Engine Optimization. There are mainly six heading tags starting from H1 to H6. Fig 4 shows the importance of these tags in SEO. Generally, the H1 tag should be used once or twice per page for better results and the H2 tag should be used twice or thrice. Over optimizing heading tags should be avoided.

![Fig.3 SEO Title and Meta Example](image)

There are several SEO optimization techniques. Some of them are as follows [6]-

6. **Content Optimization**: Content is the most important part of a website. It is the part that engages users and is generally what drives the traffic to a website [8]. The content should have the following features-
   a) Focus and related keywords
   b) Should match the website theme

![Fig.4 Heading Tags for SEO](image)
c) Organized Sub-directories  

d) Add value  

e) Presentation style – should be apt with links, images, videos, and download links.  

f) Use of a great variety of synonyms  

g) Keyword breakup  

h) Link via Anchor Text  

7. Social Media - Although social media does not directly impact the SEO it significantly generates traffic indirectly. Social media is used in a way to promote websites and reach a larger audience. It is a platform where users interact with each other about their preferences. Facebook and Twitter hold the most important social media presence. If the website is more image-focused, Pinterest can be a great social media platform.  

8. Sitemap – It helps the search engine to crawl webpages. It is important to optimize the site map of the website so that the search engine can find it and gather information [10]. It consists of two files –  

a. HTML – It is easy to read and understand and is used to link other websites.  

b. XML – It is the file read by the search engine robots. It is considered as “behind seen webpage”.  

9. Robots.txt file – It is a file that tells search engine crawlers about which page to exclude from the website during crawling. It should be created and researched carefully in order to avoid a decrease in ranking.  

IV. PROS AND CONS OF SEO  

These are some of the Pros of SEO [9]-  

1. Helps to increase the rank of a Web Page in search results  

2. It leads to better user experience  

3. It leads to better cost management  

4. It builds brand credibility  

5. SEO helps to increase traffic on the website and leads to higher sales for your business.  

These are some of the Cons of SEO  

1. The process of SEO is slow and requires patience.  

2. It is algorithm dependent.  

3. It has no guarantee of results.  

4. There is a risk of being penalized if SEO practices are not performed properly.  

5. Will always have competition.  

V. CONCLUSION  

Search Engines play an important role in the present era of web and appropriate Search Engine Optimization practices should be used for getting topmost results. This paper explored the novel methods of SEO and its importance to increase the ranking of a website and derive more traffic. SEO has its own advantages and drawbacks, which have to be properly researched to get the best results.  

VI. REFERENCES  


