A Study on SEO with Webpage Design

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Abstract-*The time, information available on tip of finger webpage plays important role. A web page design is the most successful when it appeals to the lowest common denominator- that is, people who do not understand how to use computers must be able to navigate the web page's layout. With this webpage Search engine optimization (SEO) involves designing, writing, and coding a webpage in a way that helps to improve the volume and quality of traffic to your webpage from people using search engines.*
Good web page design is entirely determined by the way the end user interacts with the design. End users must not only find the site attractive enough to stay, but they must also be able to use and navigate the site quickly and easily, or they won't return.

Keywords - -*Crawler Technology, Keyword Selection, SEO-tools, Strategies, Web page,*

Document database

WebIndex database
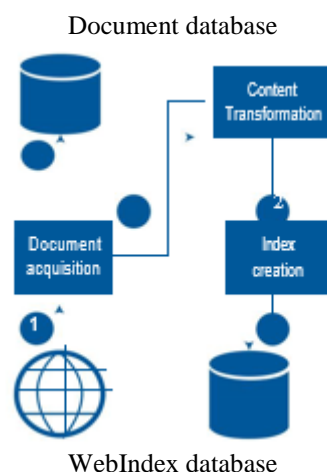
Figure 1. Indexing involvesfetching HTML documents, storing them in their original form, transforming the documents by processes such as stop-word removal and stemming, and generating indexes and storing them in a database.

I. Introduction

SEO and Search Engines:

Search engines are clearly foundational to SEO, but many organizations lack knowledge about how they work. Web-sites host a range of HTML documents, each with a unique Uniform Resource Locator (URL). A search engine enables Web searching by creating an index, a process transparent to the user, and responding to queries, a process that requires the user's active participation.

1. The WebCrawler stores these pages in their original form in its search engine's document database.
2. The pages go through trans-formations, such as HTML tag and stop-word removal and stemming. The transformation, conducted by the search engine, extracts significant textual con-tent and information about links for indexing.
3. The search engine creates indexes- by generating direct and surrogate page representations, such as single words or phrases and their positional information on the page. It also notes information about incoming and outgoing links and generates a snippet.
4. The search engine stores indexes in its index database.

II. Types Of SEO

According to difference of information collection methods and the way of service providing, the search engine can be divided into several kinds of types: Full text search engine, Directory search engine, Meta search engine, Vertical search engine.

Full text Search engine: Full text search engine is really a search engine. They exact any website information from Internet, establish database, and retrieve the records what match with the user query condition, result according to certain permutation order. According to the different search results source, full-text search can be divided into two categories: one category has its own web grab, indexing and indexer, has independent spider program or crawler or robot program. It can self-built WEB database, search results page directly from its own database calls. Another kind is to hire other search engine database, and according to the home grown format ranks search results.

Directory Search Engine: It is a directory index has a search feature, but it cannot be a true search engine. Web link list classified by the catalog and user can find the required information according to classified catalogue and without keyword inquiring undertake.

META Search Engine: It started to search in multiple search engines simultaneously after accepting user's query and returns to the users. In this some directly search results in accordance with source and some other rearrange combination according to set rules.

Vertical Search Engine: This search focuses on specific search field and search demand. In Its specific search field has a better user experience [7, 3]. The vertical search engine need lower hardware cost.

III. Work Principle Of Search Engine

Full text search engine is really a search engine. As per the full-text search engine work principle, the main task of the search engine includes: the page collection, page analysis, page sorting. The page collection refers to the activity on internet data collection by search engine, and then collected data are being stored in its own database of search engine, which is the most basic job of the search engine. The search engine uses a URL of the webpage to find the webpage, and then uses the spider program to grab the webpage.

Page analysis means that the search engine processes the collected webpage with a series of analysis and processing, mainly including the label filtration, extraction of webpage text information, text parsing, and establishment of the index between keyword and webpage in order to prepare for the user's query. Sorting refers to a process that a ranking program calls the index database data to calculate the correlation after users enters keywords, and then the search result page is generated in certain format. In this manner the working is doing.

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IV. Components Of SEO

a. Components for SEO-based Website: The SEO based website editing system components includes Backward Spider Module, SEO Analysis Module, Information Collecting and Text Extraction module, Website theme editing Module, Article writing Module etc. The functions of each module are listed as following:

1) **Backward Spider Module:** For giving keywords, the backward spider module tracks its ranks in popular search engines and scratches its relative keywords. Then the keywords and its relative keywords are sent to SEO analysis module.

2) **SEO Analysis Module:** The module includes keyword analysis and article content analysis. Keyword analysis is an analysis to keyword competitive ability. The historical optimizing data of the web site where the editor serves can be taken as data mining set. The keyword competitive ability forecast can be calculated according to decision tree. Web editor can decide whether to adopt the keyword as a creative theme based on forecast results. Article content analysis helps editor do SEO analysis from article title, article body, and picture information point of view. The SEO analysis results are fed back to the editor in time for carrying out further implementation of network optimization.

3) **Information Collecting and Text Extraction Module:** This module passes the more competitive keywords to the backward spider module. Then the keywords are sent to some popular search engine, and the HTML code corresponding to the first result page's hyperlink of the search engine is scratched back. The text in HTML code is extracted to act as support reference for website editor.

4) **Website theme editing module:** By using this module, website editor can modify website's column and topic information according to keywords analysis and article content analysis results from SEO analysis module.

5) **Article Writing Module:** This module integrates web text editor to facilitate the creation of articles and thematic information [10].

b. Components for Search Engine Architecture

Search engine is an information retrieval tool that uses a query of keywords to locate relevant websites on the Internet. The different components of the search engine architecture and how the components collaborate together to deliver search results. The components include in SEO are as follows:

1) **Crawler module:** The search engines collect their search index (corpus of web content) in the first place mainly by using a spider. That is a program also called a boat or a crawler. It repeatedly crawls or surf the web link by link and record new and updated pages. Spiders or robots that constantly search the Internet to collect and categorize information about web pages. The results are stored in a central repository.

2) **Page repository:** It is a Storage place for complete web pages collected by spiders or robots. Web pages are later sent to the indexing module for processing.

3) **Indexing module:** A processing unit that extracts vital information from web pages and stores the information in various indexes.

4) **Indexes:** Storage of the vital information of each web page.
- Content index: Index based on keyword, title, and anchor text.
- Structured index: Index based on hyperlink structure.
- Special purpose indexes: Index based images and PDF documents.

5) **Query module:** Processing unit that converts user's natural language query to search query. The query module uses various indexes to return a set of most relevant web pages.

6) **Ranking module** – Process the set of relevant web pages returned from Query module, and sort them in an order based on the sum of content score and overall popularity score of the web page [13].

V. Tools Of SEO

The SEO tools and techniques used for web server development include: search indexed getting web pages, optimizing the web server, choosing the correct set of keywords, on-site web analytics, attract links and off-site web analytics. In addition, the supplementary web intelligence techniques are query ranking factors and page raking factors. The quality of services can be ensured by focusing Trust, Performance, Reliability, Enterprise Application Integration, Security and Reputation [6].

SEO tool is the tool that optimizes the search engine function. Testing the Search engine optimization status with the search engine is the most direct, the most effective way. Because the most retrieval results can bring people a large number of valuable information. The analysis from the search engine retrieval results is one of the effective methods of researching site Search engine optimization status.

This necessitates employing specific tools, strategies and search engine friendly methods for SEO. Furthermore, the five techniques used for the Tools of SEOcategory are: keyword tools, link tools, usability tools and high-quality incoming links. For the Strategies of SEO, three methods are elaborated which are: website structure, space strategy and writing website titles strategy. The methods used in the Friendly Methods of SEO category are structure optimization of frames, optimization of images, URLs, directory structures, navigation of website, optimization of flash and web form optimization.

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1) **Keyword Tool:** Keyword tool includes keyword research tool, keyword density analysis tools and competitor analysis tools, etc. The study of keyword research tool can prepare for Website classification and regulate keyword deployment columns. The exiting tools include Keyword Research Tool, Keyword External Tool, and Keyword Selector Tool etc.

2) **Link Tool:** Link Tool in practical applications mainly contains Link popularity, Grade C IP Address Inspection and spider simulator. One important role of adding link popularity is increasing ranking advantage in search engine. Grade C IP Address Inspection checks the link pattern on IP address, and should not be punished by link of same kind IP address. Through spider simulator can learn the difference between the look of your web page and the search engine spider's index.

3) **Usability Tool:** The Browser resolution test is a very practical tool. It tests pages' display effect in different resolution, different operating systems, and different browsers. Usability tool includes HTML and CSS validation, Fire Fox extension and page speed test also. SEO tool in fact are varied. In addition with above

tools, it also include checking tools such as Link Popularity check, Search Engine Spider Simulator, similar page checker etc. and other such as Page rank prediction, what can view a specific URL Page Rank, Search engine Saturation what can detect the search engine detect number of web site.

4) **Keyword Strategy:** Keyword Strategy is the core of search engine optimization. When choosing keywords, some points must be noted, firstly select the often used when the people searching. In addition to this, the keyword must be related with the focus on the promotion of the products, services and information by the same website. Secondly keyword cannot be too many, at the same time to comply with the requirement of the search tool. Avoid popular keywords. Third, use keyword analysis tool and finally must be avoided the broad general term as the mainly keywords, to select the definite word as much as possible. Do not use keyword in the same line more than two times continuously.

As much as possible to make web pages indexed into search engine, grasp the style of website them keywords evenly distributed by lave in the website. At the same time, keywords in the same page should not be appear in the form, text, font, formatting and the links are not exactly the same, can choose natural position.

5) **High-quality Incoming Link:** Submit the website to search engine directories, find the website to exchange links, the website is linked or reproduced actively, published professional articles in important website.

Export links are added some resources of the search industry the keyword related to on the website. Engine optimization is the focus of the link strategy, SEO link strategies are mainly consists of three parts: import links, outbound links, and internal links. Import links refers to website ranking crucial factor is the high quality get as much as external links. Internal links through linking the articles in the same theme in website make visitors convenient, mutual beneficial to search engine [3, 6].

VI. SEO Strategies / Issues

By continuously using the optimization method, it provides something of value to improve quality and site rankings. On the other hand search engine guides the researcher, are may be interested in product, service to the website. Search engine optimization strategy throughout website planning, construction and maintenance of the entire process can use keyword strategy, link strategy, space strategy, website structure planning strategy, document writing strategy and so on.

1) Space Strategy: It is a pointer that makes choices about the server or the shared host machine. By choosing good public praise service provider option, It ensure the stable running, data backup and related emergency response. In addition, must avoid sharing the host machine with illegal websites, and make sure that the website doesn't with those who issue the website consisting of incongruent basic social ethics information coexistence.

2) Website Structure: Website structure refers to the hierarchical relationship among the website pages. The website that has flat structure is more suitable for the search engine robots, which can also make website, can be searched by search engine more easily. The flatting mainly depends upon the physical and logical structure planning of the website.

3) Title Writing Strategy: the title writing is the big part in the search engine optimization skills. The page title is very important in the search engine's text analysis. Friendly title writing is too good at the search engine ranking. The description should be concise, forceful, the word number ensures that the search engine results can fully display it, have one to three core keywords. The home page title, web column title, final content page title's form should be in particular form [3, 6].

Indexing information –Each crawled page goes through an indexing process to generate the corresponding indexing information, which helps speed up the user's search process. In the indexing process, the web content is first parsed, and valuable information is extracted, and finally the relevant indexing information is generated and stored.

Optimize a website the web content- The valuable content information in the indexing process could be contained in title, description and URL as well as hyperlinks. Therefore, to optimize a website the web content should be edited in the optimal way. So it is essential to make an analysis of web content and find out which factors play the important role in web search [5].

Rank of websites in search engines-In order to make a website or a web page to be more visible, the webmaster or website owner has been making efforts to improve the rank of their websites in search engines.

This process is search engine optimization (SEO). In fact, every website has its own SEO more or less, especially for e-commerce site.

Site structure-Search Engine Optimization is the process of adapting the principle of the search engine such as site structure, webpage language and interaction diplomatic strategies for the rational planning to improve the site search performance in the search engine, and increasing the possibility of customer discovery and access to the website [4]. SEO is a scientific development concept and methodology, which develops along with the development of search engine, and promotes the development of search engines at the same time.

Optimizing individual web-pages- Search Engine Optimization (SEO) relates to the activity of optimizing individual web-pages or the entire website to make them friendlier to acquire higher raking in the search results. Some major search engines such as Google, Yahoo, Ask, Bing, etc., the rank web-pages based on certain factors that affect its ranking; therefore, SEO aims at generating the right types of signals on the web-pages.
Page deployment, high quality back links, rational website constitution, and rich content, etc. details the technical process of website search engine optimization in terms of the search engine work principle, factors affecting search ranking, and website search engine optimization method.
Search Engine Optimization (SEO) refers a technique that optimizes the website constitution , webpage code, and webpage content by learning how a search engine grabs internet webpage and make an index, as well as how to determine ranking in search result for a specific keyword, and thus makes the website friendlier with full-text search engine. Therefore, the SEO can help the spider program of a full-text search engine find the relevant webpage and raise the natural ranking of the website in the search result [8].

Keyword optimization- SEO techniques include website optimization, keyword optimization, link optimization, etc. in which keyword optimization accounted for about 35% of all the factors. Crawler technology is adopted to reverse search engine's relative search results in order to expand keywords [2]. In Keyword Optimization, the Keywords are the words which users input into search engine when they want to look up some information. Only a website contains right keywords, it can meet the goal of user specific web search. Therefore the selection of the keywords should consider the requirement of internet customers. Good keywords should be popular and have not been widely abused. [9, 10]
Search Engine Optimization refers to a process that following search principle of the search engine, reasonably planning to web structure, web site text language and sites interaction foreign strategy in order to improve search performance of sites in the search engine, it increase the possibility of discover and access to the website. SEO is not a suddenly developed technology, but it synchronously developed with search engines. The methodology used in SEO is to upgrade both content and associated coding of the website to improve its visibility and prominence in organic searches made by the search engines. The optimized websites obtain better ranks, and typically get a higher number of visitors [6]. This research is based on reviewing different optimization techniques for individual web-pages or the entire website to make them search engine friendly.

Rules and standards of search engines-Search engine optimization, refers to such behaviors to improve the structure and content of website according to the rules and standards of search engines, and make it more suitable for search engines; as a result, it will be collected and the rank for search engine will be higher. Search engine optimization is characterized by effectiveness, timeliness and convenience. Compared with other patterns of website marketing, search engine optimization has the advantage of good cost performance, which is likely to get better performance with lower cost; in addition, it can also bring other values to website operation. Those potential customers who are really interested in some products can directly reach business's websites through search engines, which can increase web pages views.

Increase website visibility- SEO, the major method of network marketing, has become more popular in recent years. The main purpose of SEO is to increase the exposure of specific keywords in order to increase website visibility, thereby increasing sales opportunities. The main work of SEO is to analyze how various search engines obtain the Internet page, how to index and how to determine a particular keyword search results for ranking techniques .At same time, we optimize the related web pages to improve ranking. And it also improves site traffic, and enhances the site's technical ability which impact on selling or promoting [7].
Details of web producing, construction, and maintenance SEO, is again 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. So many website managers are trying to make effortsfor Search Engine Optimization. But only doscientifically exploring the key factors of SEO, Could avoidunnecessary invest and help managers to achieve prospectiveeffects [12].

VII.   Conclusion

There are many significance of applying SEO to websites, are the formation of search habits, Most of the user focus on the first page and the self-value of SEO. The users have become accustomed to use search engines to search for valuable information on Internet, because there will be no such type of website, which meet needs for all the information in addition to search engine. When we are giving the key words are for searching and then hundreds or thousands of results will appear. Users prefer to pay more attention to the first several data of the first page. When users click a few pages and could not find the desired results, they generally give up the existing search results, and re-enter additional keywords. Therefore, the more on top of the search results, the more possibility to be clicked [11].

Search engines have a unique policy for indexing information in an efficient manner, and it is essential to optimize web-pages in a specific way to enhance their search ranking. The optimized websites obtain better ranks, and typically get a higher number of visitors. So the Website Ranking through the search engine is most important. Therefore, SEO is a process that improves the rank of websites and web pages.

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