Search Engine Optimization Research for Website Promotion

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Abstract—In order to make the search engine transfer information efficiently and accurately and do this optimization to improve the web search ranking, beginning with understanding the principle of search engine, this paper exports the specific explanation of search engine optimization. And then it introduces the new website building concepts and design concepts for the purpose of the construction of search engine optimization. Through an empirical research from the fields of the internal coding method, the website content realizable form and website overall architecture, the paper expounds search engine optimization tools, strategies and methods, and analysis the new thought that the enterprise and e-commerce sites with the search engine do the effective website promotion. And when the user through the search engine to search, the website can get a good rankings position in the search results, so as to improve the site traffic and finally enhance the website sales ability or advocacy capacity.

Keywords: Search Engine Optimization; Engine Optimization; Website Promotion; Search Ranking

I. FOREWORD

Search Engine Optimization (SEO, for short) refers to a process that following the search principle of the search engine, reasonably planning to the web structure, website text language and sites interaction foreign strategy in order to improve the search performance of sites in the search engine, then increase the possibility of discovery and access to the website. SEO is not a suddenly appeared technology, but it synchronously developed with search engines. From the appearance of yahoo to Google and the emergence of SEO theory, to Baidu arising and search engine innovations, search engine technology is in the process of development and perfection.

In our country, SEO development situation is not good. Although domestic SEO market is also gradually developing more normalization and professional, it still has the condition of small scale and multiple operability, etc. The unit who engaged in SEO industry is still individual studio and small companies primarily. What is more, inland lack of academic exchanges and professionals lack of technology to explore and to pursue, and other factors. So SEO technology in China is still at low level. Relatively in foreign countries, SEO is already quite normal and mature industry. A large number of professional companies and professional technical personnel for the general customer website in the search engine optimization provide the omni-directional service. Meanwhile, SEO technique also obtained various kinds of identification from the general website managers and even search engine inside. But with the arrival of the foreign enterprise, our technology will gain upgrades. Plus, because

the improvement of arithmetic, the original called optimization method has won't work. The accession of normal company abroad forces the comparative superficial part waiver or steer justifiable way. To a certain extent, industry got purification.

II. THE CONCEPT AND PRINCIPLE OF SEARCH ENGINE

A. Concept of Search Engine

Search engine is a system which is based on certain strategies, using specific computer program to gather information from the Internet, then it organizes and processes information searched in order to provide search service and display relevant information to users. A search engine consists of four parts: hunter, indexer, searcher and user. Search engine is not only the necessary functions in the website to provide convenience for users, but also it is an effective tool of web user behavior. Efficient search engine allows users to find the target information quickly and accurately. At present, the major Internet search engines are Google, Baidu, Bing, You Dao, Sogou, and so on.

The excellent search engine should have four characteristics: rapid, accurate, easy to use and strong.

Query speed of search engine is an important indicator. To ensure that the query information is the latest and most comprehensive, the internal of excellent search tool should have a database with time variable. On the other hand, high accuracy is also the purpose of using search engine. It should contain a fairly accurate search process in the internal of good search engine. The information that search process searched has high precision and meet requirement of user. In addition, easy to use is one of the reference standards in choosing search engine. The important factors to be considered in choosing search engine have the following two aspects. The one factor is whether the search engine can search the entire Internet, not just the World Wide Web. The other one is whether the search engine can change the length of the description or change the number of displaying the results page. The ideal search engine should have both a simple query capability and advanced search functions after search results come out. Advanced queries can narrow searching range and limit date, location and data type and so on.

B. Assortment of Search Engine

According to the difference of information collection methods and service providing way, search engine can be divided into the following several kinds of types:

1) Full text Search Engine: Full text search engine is really a search engine. Foreign delegate is Google, the domestic well-known one is baidu search. They extract any

website information from the Internet, establish database, and retrieve the records what match with the user's query condition, return result according to certain permutation order. According to the different search results source, full-text search engine 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.

2) Directory Search Engine: Although directory index has a search feature, strictly it cannot be called the true search engine. Be the web links list classifying by the catalog. Users can completely according to classified catalogue find required information, and undertake inquiring without keywords.

3) META Search Engine: META Search Engine gets started to search in multiple search engines simultaneously after accepting users' queries, and returns to the users. About permutation in search results, some directly search results in accordance with source; some others rearrange combination according to the set rules.

4) Vertical Search Engine: Vertical search focuses on specific search field and search demand, and in its specific search field has a better user experience. Compared with Universal search taking thousands of retrieval servers frequently, vertical search need lower hardware cost, particular user needs and more varied inquiry modes.

C. Basic Principle of Search Engine

Search engine deals with the tens of thousands of information search; the process is bound to follow a rule that pre-determined search engine operating principle. Any search engine after finishing one request will work in accordance with the following three steps:

1) Crawl page: Each individual search engine has its own web capture progress. It along the hyperlink of the web, continuously, captures the pages. The captured page is called of webpage snapshot. Due to the application of the Internet hyperlink is common, theoretically, starting from a range of web pages, you can collect the vast majority of web pages.

2) Processing page: Search engines after it caught WebPages, still need to do a lot of pretreatment projects to provide retrieval service. Among them, the most important part is extracting keywords and establishing an indexed file. Others also include removing duplicated WebPages, participles, judging the types, analyzing hyperlink and counting pages important degree/abundance, etc.

3) Providing Search Services: Users input the keywords, then search engine finds matching pages from index database; Except for page titles and URL, it still provides an abstract from the web pages and other information to make users estimate expediently.

III. SEARCH ENGINE OPTIMIZATION

A. Tools of Search Engine Optimization

SEO tool is the tools that optimize the search engine function. Testing the search engine optimization status with the search engine is the most direct, the most effective way. Because the 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. Application of search engine optimization tools is designed to test that a web site may obtain search rankings effect to search engine optimization degree machine. SEO tools include mainly keyword tool, link tool, usability tool and other tools.

1) Keyword Tool: Keyword tool includes keyword research tools, keyword density analysis tools and competitor analysis tools, etc. The study of keyword research tool can prepare for Websites classification and regulate keywords deployment columns. The existing tools include Keyword Research Tool, Keyword External Tool, Keyword Selector Tool, etc. The keyword density in Keyword Density Analyzer tool is refers to the number on pages and the ratio in text of a key word or phrases appearing. Including Keyword Density , Google ADwords Keyword Tool, Keyword Density Analyzer, Analyze Keywords Density, etc. Competitor analysis tools mainly apply in analyzing that rivals choose which keyword and how they are using these keywords on their website. The existing tools include Competition Tool - SEO Digger, Competition Analysis Tool - Seoscorecard , Top Competitor Tool – Webuildpages, etc.

2) Link Tool: Link tool in practical applications mainly contains Link Popularity, Grade C IP Address Inspection and Spider Simulator. Link Popularity in some articles is translated into "Link Popularity", "Link Widely Degree", etc. One important role of adding link popularity is increasing rankings advantage in the search engine. Grade C IP Address Inspection Check link partners on IP address, and should not be punished by the link of the 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 can test pages' display effect in different resolution, different operating systems, different browsers .Usability tool includes HTML and CSS validation, Fire Fox extension and page speed test too. SEO tools in fact are varied. In addition to the above said, it also include checking tools such as Link Popularity Check, Search Engine Spider Simulator, Similar Page Checker, etc. And others such as Page Rank Prediction what can view a specific URL Page Rank, Search Engine Saturation what can detect the search engine index number of web site.

4) Keywords Strategy: Keywords strategy is the core of search engine optimization. When choosing keywords, you should note the following points: First of all, select the often used when people searching. In addition, the keywords must be related with the focus on the promotion of products, services and information by the same website. Secondly, keywords can not be too many, at the same time to comply

with the requirements of the search tools. Avoid popular keywords. The third, we should use the keyword analysis tools. Finally, must be avoided the broad general terms as the mainly keywords, to select a definite word as much as possible. Do not use a keyword in the same line more than 2 times continuously. As much as possible to make web pages indexed into the search engine, grasp the style of the website's theme, to make sure the theme keywords evenly distributed by leve in the website. At the same time, Keywords in the same page should be not appear in the form, text, fonts, formatting and links are not exactly the same, can close a page natural position.

5) High-quality IncomingLlink: Submit the website to search engine directories, find websites 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 keywords related to on the website. Engine optimization is the focus of the link strategy, SEO link strategies are mainly consist of import links, outbound links, internal links three parts. Import links refers to a website ranking crucial factors is the high quality get as much as external links. There are four ways to get your links, Helpful for rich web site content, also be helpful for ascending to good impression of the web site's search engine. Internal links through linking to the articles in the same theme in website make visitors convenient, mutual beneficial to search engines.

B. Strategies of Search Engine Optimization

The strategies of SEO can be summarized as "friendly cooperative" optimization. On the one hand, continuously using the optimized method provides something of value to improve quality and improve the site rankings. On the other hand, search engine guides the searchers, who may be interested in our products, service to this web site. Search Engine Optimization strategy throughout web site planning, construction and maintenance of the entire process, In this process we can take keywords 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. We should choose the good public praise service providers to ensure the stable running, data backup and related emergency response. In addition, we must avoid sharing the host machine with the 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 the website, can be searched by search engine more easily. The flattening mainly depends on the physical structure and the logical structure planning of the web site. Directory physical structure series should be controlled in 3. If you can't achieve it, you need to adjust through the logical structure of the website. The reasonable logic structure of one flattening website points out the hyperlink through the deployment of pointing on the directory low-grade pages; so that makes search engine robots index more web information on the website.

3) Title Writing Strategy: Title writing is a large part in the search engine optimization skills. Friendly title writing is very good at the search engine ranking. Page's title is very important in the search engine's text analysis. The description should be concise and forceful, 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 forms should be as: "website names - web site content brief description or slogan", "column name - site name", "column name - site name".

C. Friendly Methods of Search Engine Optimization

The real search engine optimization via takes the reasonable mean to search engine index, make your website the user and search the engine friendlier. So that it is easier search engine included and prioritize. To the search engine friendly SEO methods include multiple aspects:

1) Directory Structure and URL: Directory structure optimization includes directory levels, naming of folders and files. For a small website speaking, it usually only has a layer of subdirectories. This single directory structure, namely flat structure is the most ideal. And for some large scale website, it often requires two to three layers of subdirectories. Search engines may grab files of two to three layers of subdirectories, but had better not exceed three layers. Or search engine is difficult to search it. In addition, graphics, scripts, CGI - BIN and CSS respectively establish special directory, generally not on root directory. For dynamic URL, many websites have URL by a database driven generated, is often shown as "?", "=", "%", and "&", "$" characters in URL. Dynamic URL is very detrimental search engine to grab the page, which seriously impact the website ranking. Usually transform dynamically URL into static URL form through the technical solutions.

2) Website navigation: Website navigation is the collective name for guiding users' access to web columns, menu, on-line help, and layout structure forms. Its main purpose is to guide the user to visit conveniently your content. It is important indexes of evaluating website's professional and availability degrees. Meanwhile to the search engine it also produces many hint effects. Generally speaking, it should be noted that, the first, master column must be reflected on marked position on homepage, and had better take text links instead of pictures. The second point is, to use "breadcrumbs" make user understand the position without losing "direction ", and be able back to the superior page and beginning expediently. Third, the homepage must highlight important content, should also reflect the important content in the sub prime directory with the link form in the home page or other sub pages time and again. Fourth, should pay attention to using the Site Map. The Site Map is one method for assisting navigation, and good Site Map design often reflects complex directory relations throughout topological structure. It embodies by static, catalogue of simple, intuitive and flat characteristic.

3) Frame Structure Optimization: On the one hand, it behaves as one piece maintaining constant on a page, and the other parts may display through scroll bars. Another performance of framing web is that the deep-seated domain name does not usually be reflected in the URL. Framing web' superiority embodies in the overall consistency and facilitating updates. Especially for those large-scale webs, using the frame structure makes the maintenance of the website become easier.

4) Image Optimization: Generally speaking the search engine only reads text without viewing images, and image files directly downshift page loading. Therefore, should avoid using big pictures, especially making a web page the pure image. The cores of web image optimization have two points: Increase the appearance that the search engine can visit, and try to compress image files size on condition of keeping the quality of the images. The purpose of the image files' optimization is that minimizing the file size to speed up the page download speed in case of not to affecting the images' visual effects. In addition, cutting a great picture into petty pictures and splitting joint in different forms can also speed up the download time relatively.

5) FLASH Optimization: Because of beautiful visual effect and broad creative space of FLASH, FLASH technology is very extensive in web design and the application of Internet advertising, and many home pages are even designed with FLASH completely. But the FLASH web page has a very fatal problem, namely, the majority of the search engines have inability to identify FLASH information. FLASH optimization can be considered of two aspects: First we can do an auxiliary HTML version. Then not only can it keep dynamic beautiful effect, also it makes a search engine through the HTML version of the web find websites. Second we are able to embed HTML files in Flash, and still take amends by changing the web structure.

6) Form Optimization: If one web includes much full-length texts, besides we can take it into pages, we can consider placing the text in different forms. Visitors can watch that downloaded content, and wait for rest loading at the same time, rather than waiting for a long time. Because the browser is gong to load embedded small forms after finishing the big form, embedded forms will reduce the whole loading speed eventually.

7) Page Cut: With page cut we can remove the disorderly code, dwindle bloated pages file size and accelerate web pages loading speed, so that the spider rapid search important content. Page cut involves two points: Firstly, we should unify the text font, font size, and color, background color and so on throughout the CSS styles setting, thus decreasing the amount repetitive labels and increasing the beautiful degrees of the navigation text.

Secondly, there are two ways to make the web using JavaScript techniques improve: moving the script to bottom of the page or take a. Js extension files into the JAVA script. The latter will cache down the. Js files contained of JavaScript in website the visitor's browser. It makes the visit speed faster next time, and makes the website revamp and maintenance more convenient.

IV. SUMMARY

With the development of the Internet and the enrichment of network resources, the role of search engines will be also increasing. Search engine optimization, as a kind of website optimization technique which can promote web site's ranking in the search engine, also will get more and more attention. Moreover, from the perspective of the development of search engine optimization, though there are SEO cheating, but the initiative of industry words basically master in the hands of SEO who uses widely recognized optimization technique.

Meanwhile, search engine is constantly adjusting its ranking strategies; the optimization of website is not once things. Search engine optimization will accompany the search engine's development, competition will fierce more and more.

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