Trends and Developments in Search Engine Optimization

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The purpose of this study was to give web developers a better understanding of how to implement search engine optimization practices. Search engine optimization practices have grown increasingly important and this study explains the do's and don'ts of search engine optimization practices.

Although search engine optimization has grown increasingly important, it has yet to grow in popularity. Currently, implementation of search optimization is needed in order for a website to be searched successfully. This study researched the practices of what rules to follow and which techniques to avoid in order to create a long lasting and successfully searched website.

Elite and specialized interviewing was used as the main tool for gathering industry knowledge for this study. The results showed the current trends and developments in search engine optimization

as being keyword development, sitemap implementation, good structural hierarchy, descriptive title tags, and descriptive alt tags for images.

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Table of Contents

Introduction	6
Literature Review	8
Research Methods and Procedures	13
Results	16
Conclusion	22
Bibliography	24

Chapter 1 – Introduction

Today web developers are looking for ways to make the websites they build more searchable. The goal is to make the website be one of the first to appear when being searched by search engines such as Google, Yahoo, and Bing. In most cases the first sites searched are the websites that are first to appear when the results are returned from the keyword search list. These sites tend to have the most traffic and ultimately make the most money. The process of getting the website to that top search position is much more complicated than one might think. The concept of search engine optimization (SEO) is the reason behind the complication. SEO is the process of improving the volume or quality of traffic to a website from search engines. The way websites come to be the most searched falls in the hands of the web developer. The web developer must keep in mind the SEO rules when creating any particular site. If the rules are neglected or purposely broken, to gain a competitive advantage, the site can be permanently shut down. The best way to become the most searched site is to follow the convention set forth by the highly skilled SEO web developer. Some of well known rules include the following.

Use keywords when describing the product or service of the particular website being developed. Usually, there will be multiple spots within the website to describe the product or service. The more descriptive the better, the web crawler picks up these keywords so the more descriptive keywords

there are the better the chance is that the web crawler grabs the site.

Use plenty of links to outside sources. Including links to other websites away from your site sounds counter intuitive, it is not. This is the best method of improving traffic to a particular site.

These few rules will help SEO but more consideration must be taken into account. This study will explore more of these rules and also answer the question: What are the trends and new developments in the search engine optimization field of web development?

Technology is one of the fastest growing and ever-changing markets and since the web is highly technical its trends and developments should be paid close attention to. Although there are many avenues in web, the developments in SEO are especially important. In order for web developers to stay current on the rules of SEO they must research and use the information gained to be able to predict where the future of the web industry and SEO is headed. Currently HTML-based websites are the only types that can be optimized for search engines but the future may allow for newer computer coding languages such as Flash and JavaScript to be searchable as well.

The purpose of this study is to research what techniques top-level web developers are implementing to make their websites more SEO friendly. Through research, this study will address and answer the questions that beginning and advanced web developers might have about SEO. The issue of SEO is exceedingly important when developing websites and this study will provide viable industry tips, industry research, and real-world cases to give readers a better understanding of how to apply SEO to their work.

Chapter 2 – Literature Review

The basic understanding of SEO starts with understanding how a search engine works. There are three basic types of web search engines; crawler-based search engines, human powered directories, and hybrid search engines or mixed results. SEO only applies to the crawler-based search engine, which is what the larger search engines, Google, and Yahoo are using. There are three major elements of crawler-based search engines, the spider, also known as "the crawler", the index, and search engine software.

The spiders are programmed to looks for document changes to a site over time. It works by "crawling" around a website scanning the content. It to stores the content in the index and then follows the links to other pages within the site to repeat the same process. It returns about every month or two to check for changes that it can then store in the index. This is what is meant by a website being "spidered" or "crawled." (searchenginewatch.com)

The second part of the search engine is the index. The index is where the content from the crawled site is stored. Much like a library that stores books, it collects and stores information to assist a fast and accurate retrieval later. For a website to be searchable it must be indexed first. The process of "crawling" may take months before the website is indexed. Once the website is indexed it is searchable using the search engine and the process of "crawling" continues and indexes any updates or

changes made to the site. This is a process that Google does on its own without outside influence and speeding up the process cannot be requested. (searchenginewatch.com)

The third part of the search engine is the search engine software. Search engine software sifts through millions of indexed sites to find matches to a search. It then ranks the searches in order based on relevance. The formula on how the search engine decides the sites relevancy is not completely known. (searchenginewatch.com)

Google and Yahoo are similar in regard to the previously described crawler search engines but have their own formula for how results are categorized. The focus of this study is on how the leading search engine Google is optimized. "The typical website gets 61 percent of its traffic from search engine results, and 41 percent of all traffic from Google alone." (pcworld.com). Yahoo is in the 20 to 25 percent range.

For Google the specific formulas are unknown but there are developers in the industry who study and interpret how Google works. There are many consultants who specialize in providing SEO services. Long time technology and business journalist Christopher Null writes, "To make a website search engine optimized there are certain rules to follow. The rules are not an exact science but the top developers have figured out many tricks and tips that have been proven to work. These developers have been on the cutting edge of developing websites that are search engine optimized." (multichannelmerchant.com).

Because there is no exact formula Null interviews three experts in the field of SEO to get answers to what history and empirical evidence has shown. Rand Fishkin of SEOmoz, Danny Sullivan of

Search Engine Land, and Michael H. Fleishner, author of SEO Made Simple – all seem to agree on the following rules. (mulichannelmerchant.com)

The first rule to becoming SEO compliant is to optimize keywords. Keywords are words placed inside of a web page that "crawlers" index. Keywords should be placed within the content of the page based on how often they are searched. "One way to gauge search term popularity is to use an online keyword tool designed to measure what general terms are searched for the most. Both the Google Keyword Tool and the SEO Book Keyword Suggestion Tool can help get a quick, accurate sense of the search volume for words and terms, and will recommend related terms that might not have been thought of." (pcworld.com). The experts explain that it is important not just to include popular keywords but popular keywords relevant to what the web page has to offer.

Secondly, experts say that loading the title tags and the URLs with keywords is central in efforts to produce a search engine optimized website. "It is the single most important element on a web page," says Danny Sullivan. "The tags should view like a series of published books, they should not be titled the same but titled differently." Sullivan suggests loading title tags with keywords and making each one unique to the website because search engines consider keywords in URLs as much as they do keywords on the page itself (mulichannelmerchant.com).

Thirdly, knowing how others link to a website is important to increasing the rankings. Many times users of other websites will look for content for their own site. On a website it is important to make content accessible for users, often users will copy and paste content without editing so it is important to provide the actual HTML code rather than using images to link to other sites (mulichannelmerchant.com).

Lastly, be careful of spelling. "Typos can be a huge problem for eBay sellers who cannot figure out why no one is bidding on their "Tiffany bracelets" says Michael Fleischner. "On the other hand, including the incorrect form of words that are frequently misspelled can work for you. For example, about five percent of searchers misspell absinthe as "absinth," so it may be wise to include the misspelled version of the word as a secondary keyword." (pcworld.com)

All of this information is useful but if developers wanted to pack the title tags full of keywords could they? By doing this, when a user types a keyword into a search engine, the site with the packed title tags would show up as long as that keyword was placed in the title tags. This could hypothetically happen even though the site has nothing to do with what the user initially wanted to search for. The problem with this is that it breaks the rules, which can potentially shutdown a site, and ban the company from the search engine.

Conditional redirecting should be avoided as well. Conditional redirecting is when a user goes to view a page and is then redirected to another site before the page has loaded. Often a website will change its domain name and use this method to redirect users that are used to viewing their old page to new page. This is legal by Google standards, the problem is when sites create phony pages that are initially searched for one item and then redirected to a site that has nothing to do with what was searched. The advantage to this is it gets unintended traffic to site which can help its ranking. This tactic, according to Google web spam department head Matt Cutts, risks a Google penalty or ban. "It is considered a form of cloaking in which the human is shown one thing and the search engines are shown another. There are many different methods of cloaking to feed text and links to search engines, but hide them from humans. The best way to stay safe is to avoid tactics that present content to crawlers that customers cannot see." (mulichannelmerchant.com)

Another tactic to avoid is hidden text and links. The process of hiding text and links has is essentially the same idea as overfilling title tags. Developers are able to include a large amount of keywords without taking up any viewable space that the viewer can see. White on white text and off page positioning with CSS are some ways that developers accomplish this but it is not a recommended way of optimizing for search engines.

Other methods to avoid are sister site link farms and rings. In this method developers set up numerous sites that have practically the same content and link them to each other. "The problem with this is that these sites are all hosted on the same C Block (web hosting register company) and registered to the same company or person. Fifty thousand links from 50 external domains have far less value when they can all be traced back to the same owner." (mulichannelmerchant.com)

List linking is not always bad especially when used as a sitemap. Cocher says, "An HTML sitemap is a tried and true usability feature and a secondary navigation path for search engine crawlers." The problem arises when sitemaps are created to link chains of sitemaps to other sitemaps. Pages with only links and no content are destined to rank poorly with Google. (mulichannelmerchant.com)

The best way to accomplish SEO is to follow the rules. Becoming search engine optimized is a long process that will usually take months to reveal results. The time spent trying to find ways to trick the search engines could be better spent trying to make the site rank higher.

Chapter 3 – Research Methods and Procedures

The idea behind SEO is that each search engine has its own formula, which it uses to pick websites that appear first when particular keywords are searched. For the purpose of this research the search engine used to define the trends and developments in SEO in this study is Google, the most popular of all search engines. The purpose of this study is to find what the top-level web developers are implementing to make their websites more SEO friendly. Since SEO is not a defined science the best research methods to use is elite and specialized interviewing, historical, and content analysis.

Elite and Specialized Interviewing

Elite and specialized interviewing is the process of interviewing or asking an expert in a particular field questions to better understand a topic. The exception in the interviewing process is that the expert cannot know he/she is being questioned or interviewed formally. In Lewis A. Dexter's book *Elite and Specialized Interviewing*, the premise behind this type of interview is the professional being interviewed views him/herself as important and their time valuable and therefore should have special treatment to maximize the useful knowledge being extracted. Dexter also notes the importance of not making it seem like an interview for the reason that information is likely to be withheld (Levenson). Dr. Harvey Levenson notes, "The interview may take the form a conversation. Hence, the inter-

viewer's questions may be answered without a formal sequencing of questions. In such interviews the interviewers do not read questions from a prepared list. In fact, it is best to have no prepared notes or, at the most, a few aided recall notes" (Levenson). By doing this it takes the spotlight off of the interviewee making them more likely to disclose information they might not otherwise. (Levenson)

In this study the elite and specialized interviews took place with Brian Treese, a senior web developer for the Couto Solutions Company and Erin Davis, a freelance web designer. Brian and Erin have several years experience with developing sites to be search engine optimized. Erin and Brian were asked questions about their techniques for becoming search engine optimized as well as where they see the future of SEO heading. Brian and Erin were asked questions such as: What have you found to be the most effective way to make a website you build searchable? And, what new techniques have you found that help in making a website searchable.

Historical Research

In historical research the goal in essence is to predict the future by looking at the past. The researcher should attempt to establish facts by studying past events and form a conclusion as the result. For example, in the computer industry dating back to the 1950's, the duration of time between each significant technological advancement of processing times, has shortened from decades to years to even months or weeks. Therefore, it would be reasonable to assume that the pace of development for processing times would continue to improve. Examples of SEO articles, which show facts that have been proven to work, will be examined. These articles will include, Googles Guide to SEO as well as Google's Web Masters Tools from which a conclusion was drawn about the future. (Levenson)

Content Analysis

Content Analysis is the process of quantifying qualitative information gathered from Elite and Specialized Interviewing and Historical research. For the purpose of this study Content Analysis was used to quantify the information gained from the interviews and historical research. In the interview, questions were asked about historical research that was previously done to find what the most popular tactic for tackling SEO. The information recorded in the interviews has been cross-referenced with the information obtained from the historical research. The responses are measured by giving a (+) for every comment that correlates with the historical research and a (-) for any answer that contradicts what the historical research suggests. For anything that was brought up that could not be cross-referenced was given a (/) to represent a neutral response. The results are quantified of both the findings of the historical research and specialized interviewing to conclude what the trends and developments in SEO are.

Chapter 4 – Results

To help answer questions web developers have about SEO, this study investigated the best strategies for implementing successful search engine optimization (SEO). This study examined the current rules of SEO and contrasted it with which trends SEO web developers are currently using.

Couto Solutions is a custom web based software solutions and design company that focuses on enterprise organizations. They deliver world class enterprise resource planning systems that manage product inventory, warehouse and shipping logistics, product sales forecasting, on and offline sales tracking, and analytics on the effectiveness of marketing. Couto Solutions finds that SEO plays the biggest part in delivering their product to potential customers as well as assuring success for their clients.

Brian Treese, Couto Solution's director of design and user experience, explains that a big part in making their clients website successful depends on SEO. According to Treese, at Couto Solutions goal number one is to have the clients website be searchable. Treese explains that in order for the client to be successful and for Couto Solutions software to work, traffic to the client's site is a must. Treese goes on to explain that SEO is the backbone of any good website and starting with good website architecture is the most important when building a website. Treese suggests the top five most important elements for building a website to search engine optimized are: Keyword develop-

ment, sitemap, good structural hierarchy, descriptive title tags, and descriptive meta tags.

Treese focuses the majority of his SEO strategy on keyword development. Treese suggests that it is important to look at top searched sites in the neighboring fields to get ideas for keywords. For further development Treese recommends using Google Analytics, a free service offered by Google which generates statistical information about the visitors to a website, as it will help give a better idea of where the content of a website should be heading. Google also offers Google Trends to find popular keyword searches, and Google Search-based Keyword Tool to give helpful hints on keywords for a particular website.

Constructing a sitemap for a website is a type of legal link building that works within the site to help with navigation and can also aid in SEO. Sitemaps are another integral part in Treese's strategy for developing a search engine optimized website. Treese explains that a sitemap allows for search engines to easily locate and index all relevant pages of a website while at the same time allowing for keyword reinforcement of pages through the use of descriptive linking text. A well-designed sitemap can help produce quality indexing by the web crawlers and help any site achieve good search results.

Good structural hierarchy is having meaningful content placed in the correct HTML tags, in the correct order. Treese explains that having HTML tags missing, out of order, and/or with irrelevant content placed inside them is a big SEO mistake. Treese points out that placing content that belongs in an h3 tag into a h1 tag would be like reading a map with the words easier to see, being city names instead of county or state names. When a site is indexed it reads the most important and relevant content as being the content placed in the h1 tags, therefore the keywords placed in the h1 should be the keywords that one might expect to be searched by Internet users. Treese also points out that overfill-

ing an h1 tag is bad practice as well. Treese suggests filling the h1 with no more than five words to avoid using bad SEO practices.

Title and meta tags should also be filled with relevant content according to Treese. Meta tags are filled with relevant information and keywords about the web page. Title tags are the brief description at the top of a web page that describes the content. Treese explains that both meta tags and title tags should be concise. The difference between the two is the title tag should be limited to about 15 words as it only has a small window to explain the title. Treese points out that over wording the title tag or meta tag with irrelevant content will result in SEO failure. Treese explains that a good motto to live by when constructing a search engine optimized website is "if it feels like bad is being done it probably is."

Erin Davis is a freelance Senior Web Developer with over 15 years of experience in web production. Davis agrees with Treese's ideas but also adds that providing descriptive alt tags can also boost search results. Davis explains that by adding descriptive alt tags it gives the web crawlers another avenue to index content. Many of the popular searches today include images and video results, and by having descriptive alt tags it allows them to be searchable. Davis points out that web crawlers do not index images and videos without alt tags.

According to Davis to keep a website "above the fold" or top searched, it needs to have continually updated content. Davis explains that web crawlers continually look for new and updated content, and sites that fail to update their content fail to stay "above the fold." Along with updating content Davis suggests adding a blog or forum to a website. Blogs, because they are continually stuffed with content and relatively easy to create tend to be the popular of the two. Davis admits that forums tend

to be better when it comes to SEO because overall there is more content and the added bonus of link sharing. Davis explains that with a forum you are able to post content as well as an external link back to a website. The hope is that somebody else will like the post enough to continue on to the link. Davis points out that this type of link building is abused by spammers but if done right it can be SEO gold.

Googles Guidelines to SEO match many of Treese's and Davis's points. Google adds to the point Treese makes about sitemaps that they should not contain more than a hundred links if possible. Google notes if sitemap contains more than a hundred links it is recommended it be split up into two pages.

When talking about keyword creation Google suggests creating an "information-rich site" that clearly and accurately describe the content of the product or purpose of the site. Google suggest carefully choosing words that fill the page by thinking about the words users would type to find the site or page.

Google adds to the topic of alt tags that web crawlers do not recognize text contained in an image and points out that alt tags should be used for this purpose. Google notes that the text in conntained in the alt tags should be brief, descriptive and accurate. Google provides an example on the following page.

Not so good:

```
<img src="puppy.jpg" alt=""/>
```

Better:

```
<img src="puppy.jpg" alt="puppy"/>
```

Best:

```
<img src="puppy.jpg" alt="Dalmatian puppy playing fetch">
```

To be avoided

```
<img src="puppy.jpg" alt="puppy dog baby
dog pup pups puppies doggies pups litter puppies dog retriever
 labrador wolfhound setter pointer puppy jack russell terrier
puppies dog food cheap dogfood puppy food"/>
```

Examples of alt tags

For this reason Google adds that images used for links, although legal, is not recommended because of keyword stuffing.

Google Guidelines also suggests practices to avoid such as hiding text. Google notes that, using white text on a white background, placing text behind an image, using CSS to hide text and setting the font size to 0, are all forms of bad SEO practices that lead to a demise of a searchable website. Google also notes that websites should avoid cloaking and loading pages with irrelevant keywords.

The information gathered from the interview with Brian Treese and Erin Davis was cross referenced with Google's Guidelines and applied to a table to objectively show the results of the information obtained. The information gathered is either for, against, or opposing the hypothesis. The important ideas pulled from the interviews and Google's Guidelines pertaining to SEO were keyword development, sitemap, good structural hierarchy, descriptive title tags, descriptive meta tags, alt tags to describe pictures, blogs or forums, and advice against use of hidden text and keyword stuffing. Fourteen out of twenty four agreed with the hypothesis and ten showed a neutral response.

Trends	Brian Treese		Erin Davis		Google Guidelines	
Keyword Development	Uses keyword development	+	Agrees with keyword development	+	Confirms keyword development	+
Sitemap	Uses sitemap	+	Agrees with the use of sitemaps	+	Confirms sitemaps as good SEO practice	+
Good Structural Hierarchy	Uses Structural Hierachy	+	Wasn't sure of the benefits	/	Hierarchy wasn't mentioned	/
Good Descriptive Title Tags	Good use of descriptive tags	+	Agreed with the use of descriptive tags	+	Confirms that use of good descriptive tags helps with SEO	+
Good Descriptive Meta Tags	Uses descriptive meta tags	+	Meta tags were never mentioned	/	Meta tags were never mentioned	/
Use of Alt Tags to Describe Pictures	Did not mention whether good or bad	/	Uses alt tags to describe pictures	+	Confirms the practice of descriptive alt tags as helpful for SEO	+
Use of Blogs and/or Forums	Did not mention whether good or bad	/	Uses blogs and forums for better SEO results	+	Did not mention whether good or bad	/
Advises not to use hidden text and keyword stuffing	Did not mention whether good or bad	/	Did not mention whether good or bad	/	Advises against the use of hidden text and keyword stuffing	+

Chapter 5 – Conclusion

This this study was done to find the trends and developments related to search engine optimization as well as the best practices for implementing SEO. The research performed showed that there were several key components to becoming SEO compliant. First, the study showed techniques to improve a web site's search ability. Secondly, the study showed the rules that developers should avoid breaking in order to maintain good SEO practices.

When implementing techniques to become better SEO compliant, this study showed that good keyword development, good descriptive meta tags, good descriptive title tags, use of alt tags to describe pictures, use of blogs and/or forums, good structural hierarchy, and a well developed sitemap were common techniques that help produce results. Brian Treese and Erin Davis both stressed the importance of keyword development which was backed by the findings in Google's own guidelines on how to better a website for search engine optimization. Other parallels of agreement between the three included the use of a well developed sitemap as well as using good descriptive title tags.

While implementing these techniques is crucial in building a searchable site, this study found that it is equally important to play by Google's rules of SEO. Google notes that it may be tempting to overs stuff title or alt tags with keywords as well as using hidden or displaced text but is not a recommended practice. Companies who have failed to play by their rules and cheated to gain a competitive

advantage have been known to have been banished for life. Playing by Google's rules is the only sure way not to penalized for implementing the techniques listed in this study.

Although the techniques listed in this study and following Google's Guideline rules are a sure way to improve SEO on a website today, these rules and techniques will evolve as technology continues to change. For example, Adobe Flash and Microsoft Silverlight are becoming a more popular addition to websites and search engines will naturally become more sophisticated in searching them. As noted before, it is important to continually update content on a website but it is equally important to stay informed on the latest trends and developments in SEO. The only guaranteed way of maintaining SEO success is to stay informed in the continuously changing environment that it presents.

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