

Search Engine Optimization for the Website of a South African Organization as an Internet Marketing Strategy

Reinhard O. Otto and Johnson O. Dehinbo

Abstract—The increasing Internet users and Web's billion searches per day suggest one should take advantage of online activities, and with the correct Internet marketing strategy/method, one could drive some of those users to one's own website and making them customers. One major problem with Internet marketing could be that online companies either have incorrect Internet marketing strategies or that their strategy is just old and out-dated. A problem with *athealth.co.za* website is that there's no Internet marketing strategy in place. They have a little bit of Search Engine Optimization (SEO), but it's old and out-dated. Google and other major Search Engines changes their algorithm from time to time and a website's strategy should change accordingly. Not only does the Search Engines change but the way the internet works and how content are being shared also changes in a short period of time. Towards determining a successful Internet marketing strategy for *athealth.co.za* website, this study established criteria for evaluating and executing their Search Engine Optimization strategy.

Index Terms—SEO, Search Engine Optimization, website, internet marketing strategy, evaluation, organization

I. INTRODUCTION AND BACKGROUND

INTERNET Marketing refers to the marketing and selling goods and services using the internet as the sales and distribution medium. More and more people are connecting to the internet via some sort of mobile devices namely: mobile phones, tablets and laptops. A lot of people spend their whole day on the internet. With Facebook for example, Facebook [4] statistics indicate that they have about 800 million active users of which 50% may be logged in on any given day and about 700 status updates per second. Twitter on the other hand has about 600 tweets per second, and the search giant Google has about 33 000 searches per second, i.e., more or less 3 billion searches per day[5]. These are just few examples of how people are using the internet.

The reasons why people engage online would be a discussion on its own, but the main reason would be that it's easy and super convenient with businesses' clients just clicks away. Amazon.com is one of the biggest online stores

in the United States of America with net sales of about \$34.20 billion, a 39.5% increase from \$24.51 billion in 2010 [6].

A. The context of the problem leading to the study

A look at the data from Facebook with its 800 million active users and Google's 3 billion searches per day [4], suggests one should take advantage of all that online activities. With the correct Internet Marketing strategy/method, one could drive some of those users to one's own website and making them customers. Internet marketing strategy may contain some of the followings: Search Engine Optimization; Social Networking Sites (facebook, twitter and Google); Linking Strategies; Paid Advertisements and Email Marketing. This study concentrates on Search Engine Optimization as an Internet marketing strategy.

B. The research problem and objectives

One major problem with Internet marketing could be that online companies either has incorrect Internet marketing strategies or that their strategy is just old and out-dated. The problem with *athealth.co.za* is that there's no Internet Marketing strategy in place. They have a little bit of Search Engine Optimization, but it's old and out-dated. Google and other major Search Engines change their algorithm from time to time, and a website's strategy should change accordingly. Not only do the Search Engines change but the way the internet works and how content are being shared also change in a short period of time. The main purpose of this study would therefore be to determine a successful Internet marketing strategy for Search Engine Optimization for *athealth.co.za* website and execute that strategy within Industry standards.

The objectives of the study are therefore given below:

- 1.) Investigate and establish criteria for analyzing and evaluating the current Search Engine Optimization (SEO) structure and keyword analysis regarding URLs, Meta tags, positioning of heading tags and other technical SEO points)
- 2.) Apply the criteria to evaluate and execute the Search Engine Optimization of the website of an organization.

C. Outline of the rest of the paper

The background, research problem and approach were given in section I including the introduction to Internet marketing and why it's so important to engage in Internet marketing. Section II presents background literature

Manuscript received December 31, 2011; revised February 2, 2012. This work's conference presentation's cost is supported by the NRF Grant # 78718. The first author, R.O. Otto (reinhard.otto@gmail.com) and the second author, J. O. Dehinbo are with the Department of Web and Multimedia Computing at the Tshwane University of Technology, Pretoria, South Africa (phone: +2782-259-4883; e-mail: jdehinbo@yahoo.com).

including explanations on how Search Engine Optimization can be used for Internet marketing as well as how it should be implemented according to industry standards. Section III discusses the research methodology while section IV establishes the proposed criteria to be used for the evaluations presented in section V. Section VI concludes the study.

II. LITERATURE REVIEW

Search Engine Optimization (SEO): SEO refers to the process of improving the visibility of a website or a web page in search engines via the "natural" or un-paid ("organic" or "algorithmic") search results [7]. In general, the earlier (or higher ranked on the search results page), and more frequently a site appears in the search results list, the more visitors it will receive from the search engine's users [7]. We start with SEO and how it can be used to formulate an Internet marketing strategy as well as the Technical aspects of SEO.

A. Using SEO as a marketing strategy

Search Engine Optimization or SEO can be described as a method of getting your website to rank higher in search engines—such as Google, Yahoo or Bing. A search engine optimization campaign pairs on-site optimization with off-site tactics, which means you make changes to your site itself while building a portfolio of natural looking back links to increase your organic rankings. When Internet users search for your products or services, your website needs to be among the first ones they find. SEO helps the search engines to recognize your relevance to specific keywords that people search for online. The process of optimizing search engine includes researching keywords, creating content, building links and making sure your website is visible in the search engines [8].

SEO plays an important role for your website because having a great SEO strategy is like having an index of your website on google. This means that if someone is searching for a specific keyword and that keyword falls within your list of optimized keywords, the chances are that the visitor sees your website on the first few places on the main results may be very good. One should always try to optimize one's website to rank on the first few places on the first page of any Search Engine results.

B. Factors for evaluating SEO of websites

Page rank

There are many factors regarding the page ranking algorithm but few people know exactly what the formula is and how it is calculated. In short the page rank for a specific page describes the page relevance or importance for that page.

According to Rogers [7] the page rank of each page depends on the page rank of the pages pointing to it. But we won't know what page rank those pages have until the pages pointing to them have their page rank calculated. So, from that statement we can assume that the calculations for determining a page rank can be very troublesome. Luckily there are a few online tools which can be used to determine the page rank, namely Google Toolbar or

http://www.prchecker.info/check_page_rank.php, but there are many to choose from on the web.

According to Craven [1], there are a few guidelines to increase your website's page rank: Inbound Links; Outbound links; Dangling Links; Domains and File Names; and Broken links

Inbound links or in other words links coming from the outside into your site can affect your page rank. The linking page's page rank is important, but so is the number of links going from that page. For instance, if you have the only link from a page that has a lowly page rank of 2, [1] suggests that you will receive an injection of $0.15 + 0.85(2/1) = 1.85$ into your site, whereas a link from a page rank of 8 page that has another 99 links from it will increase your site's page rank by $0.15 + 0.85(8/99) = 0.2186$. Clearly, the page rank 2 link is much better - or isn't it?

Once the page rank is injected into your site, the calculations are done again and each page's page rank is changed. Depending on the internal link structure, some page's page rank is increased, some are unchanged but no pages lose any page rank [1].

Outbound Links refers to a link going out from your website's pages. Outbound links link a website page rank on to the page it's linking to. So, to ensure that the links are reciprocated, the links that are reciprocal can gain or lose page rank for your pages. One needs to take care when considering exchanging links [1].

Dangling links refers to pages that link to a page but from there doesn't link to another page. According to the co-founders of Google, Brin and Page in [5], dangling links are simply links that point to any page with no outgoing links. They affect the model because it is not clear where their weight should be distributed, and there are a large number of them. Often these dangling links are simply pages that we have not downloaded yet. Because dangling links do not affect the ranking of any other page directly, we simply remove them from the system until all the page ranks are calculated. After all the page ranks are calculated they can be added back in without affecting things significantly.

Domain Names and Files should be standardized across your website because to a spider which are crawling your website, the following would be seen as different pages although they are actually just one page e.g.: www.athealth.co.za, athealth.co.za/, www.athealth.co.za/index.html and athealth.co.za/index.html. So technically, according to the crawlers, a page rank should be divided between those different pages where it should actually just be allocated to one page.

According to the above mentioned statements regarding link building and how your inbound links, outbound links and dangling links should work, you should first create effective objectives for your website namely where you want to rank for your targeted keywords and the working towards those objectives.

III. RESEARCH METHODOLOGY AND DESIGN

The research design involves elements of descriptive theoretical, qualitative, and interpretive research. Furthermore there is another research design that one can

use for a research, qualitative research is found to be more suitable for this study.

Qualitative research ask the question ‘why’ and not ‘how’ about the research topic through the analysis of unstructured information. It doesn’t just rely on statistics or numbers [3]. In information systems, interpretive research is “aimed at producing an understanding of the context of the information system and the process whereby the information system influences and is influenced by its context” [10].

Interpretive research sometimes uses qualitative research methods such as case study to gather and analyze information. Case study research’s main purpose is to bring to an understanding a complex issue or object and can extend experience or add strength to what is already known through previous research. Case studies may be very complex as it may contain huge amount of unstructured textual data [9].

According to the statements above, this study is a case study in the form of basic theoretical research which is to be critically analyzed and then compared with the website being analyzed – athealth.co.za. This is done to obtain an understanding of the current Internet marketing strategies being used.

IV. DEVELOPMENT OF THE CRITERIA FOR THE EVALUATION

For a website to be optimized for the targeted keywords one wants to feature in search results, one needs to have certain technical points checked, of which the most important ones are:

1. Meta Descriptions and Meta Keywords
2. Keyword Analysis
3. Title Tags
4. Page Content
5. Headlines (H1 tags)
6. URL Structure and Domain
7. Image Tags
8. Page Load Time
9. XML Site Map
10. Meta Data using schema.org

Meta Descriptions and Meta Keywords

Adding HTML Meta descriptions and Meta Keywords doesn't affect your page ranking. Previously it did have some influence on your page rank but lately it doesn't negatively affect your page rank. Google has recently announced that Meta Descriptions and Meta Keywords have no negative rating on your page rank. Having said that, if you want to highlight some text or highlight certain keywords, it may be advised that you insert the Meta description and Meta Keywords. When using Meta Description or Meta Keyword Tags, you should make sure that it's unique and relevant per page. Duplicate content may get you penalized thus resulting in a weak page rank [8].

Keyword Analysis

Keyword Analysis is a very important step in SEO. Your keywords for your web page or website should be chosen carefully, you should start by selecting a few keywords for your business/website, then you analyze them with some sorts of online tools, of which the best one to use is Google's Insights. You just enter you search phrases/keywords and then you can see how many searches there are for those

keywords. The goal is to optimize your pages with relevant keywords so that when someone searches for your keywords, they can find your website on the first page of the search engine results.

Title Tags

The Title Tag should be unique per page, and should be no longer than 70 characters. Using Title Tags may seem simple and can very easily be left out. You should make sure that your pages throughout your website have very descriptive and informative titles, because the title should tell your visitor exactly what the page is about. Also, not only does it help from users' point of view but it also helps the Search Engine crawlers to know what the pages are about [8].

Page Content

Page Content is one of the most important parts for SEO on a long term basis. Crawlers would scan your pages for content and they should exactly know what your page is about. Content should be fresh and relevant to your title. When writing content for your pages, you should write them for humans and not only for search engine crawlers. So start by writing your content for humans and then go back and make sure the content are optimized with the relevant keywords you want visitors to get your content when doing a search on a Search Engine. When optimizing your content for Search Engine crawlers, please make sure that you don't make use of keyword stuffing. Crawlers would pick it up and your content could be seen as spamming content.

Keywords should be used strategically. The best practice would be to use the keyword for the page in the top, middle and then at the end of the page. In that way, the search engine would think that the page content is relative to your keywords. On the other hand, if you only use your keywords at the top or just at the bottom, crawlers might think that your whole page is not relevant to your keywords. Try to formulate your sentence as follows: let's say your keyword for the page is “migraine headache aspirin” the best way could be:

Our New Migraine Headache Aspirin!

Do you get migraine headaches and your aspirin doesn't work? Try our migraine headache aspirin. It's aspirin just for migraine headaches [8].

As can be seen, the keywords gets repeated throughout the content but be careful not to over repeat them, as that would then result in keyword stuffing which would negatively affect your ranking. As you can see, the title is in bold format. Search Engine crawlers are very smart and they can actually read the boldness of the text as well as the background color of the page and the color of the text. Having said that, you should make sure that if you want to emphasize your text you should make it bold and make sure you don't insert text on the page, only for the crawlers making it the same color as the background color. Your page ranking could get penalized for that [8].

Headline (H1) Tags

The HTML H1 Tags or Headline Tags play an important role in content management because it makes it just easier for crawlers to identify what your content is about. As mentioned previously, the crawlers are smart enough to read certain tags within your page. Use the Headline Tags to break up content and each headline tag should contain keywords about the content to follow [8].

URL Structure and Domain

Your site's URL structure and domain could be a huge SEO benefit if chosen well from the beginning. You can't always choose the best keyword-related domain name but in most cases you should try to get as close as possible to your targeted keyword. Example: If you are in the real estate business, you should try to make your domain name look like *realestae.co.za*, *realestate.com* or even *property.co.za* etc. Many of the giant sites that use a lot of dynamic pages try to rewrite most of those pages to make it more read friendly. Making use of the Real Estate domain example:

http://www.realestate.co.za/property_details.aspx?property_ref=480886 could be rewritten to: <http://www.realestate.co.za/property-for-sale-in-pretoria-gardens/480886.aspx> which is much meaningful.

According to Google expert, Cutts [2], your URL's should normally be between 3 – 5 words, because as soon as it's more than that, it just looks weird and untidy. Google's algorithm these days are very user orientated because the crawlers would try to see it as a user would see your site. So, your website URL's should be short and easy to read from a user's perspective and the naming of page should be relevant to the content it displays. Also try not to use underscores '_' as this could be negative for your SEO. Instead, use '-' for spaces. Let's say your URL is *green_apples.html*, a user should search for the exact word which is 'green_apples'. If it was written 'green-apples.html' the user would only have to search for green OR apples to find this page [2].

Image Tags

Some website uses a lot of images on their website, some might be for a gallery of some sort of event, other images may be for the design of the website. Optimizing images can also be great for SEO but are so easily overlooked. Images have an ALT tag which should be used to add text that is descriptive to the image; it should also be user readable because it will show to the user when the image can't be viewed for some reason.

Page Load Time

One of the new ranking factors that google introduced a couple of years back, around 2009, is the time it takes for pages to load. You can monitor this via tools that are available on the web, of the most popular one to use is Google's own *pageload*, which can be found in the Webmaster tools. According to Cutts [2] it will count as much as 1% of the ranking factor, and that's 1% that you could easily have. Cutts [2] also mentions that one should always try to make one's website as fast as possible because users don't want to wait long for information to display on the screen. So, one should try to minimize the time it takes for pages to load. There are a few techniques that you can use to minimize the time a page takes to load:

- 1) Remove white spaces from all the pages.
- 2) Make sure all external files are copied locally to the website, so that you don't need to load them from an external site.
- 3) Make use of css files and not inline css eg:
<div style='color:red; margin-top:15px;'>
could be replaced with <div class='custom-div'>
- 4) Make sure your design images are small enough.

XML Site Map

XML Sitemap is a file that is usually being linked to, from the home page or the default landing page in the footer section. This file usually contains all the links in the website

and contains data like the last date the page was updated, the URL link for the page etc. The XML Sitemap file is very important for search engines as it indicates how many links available to crawl and a 'map' to where the pages are.

Meta Data using schema.org

HTML Tags are used to tell the browser how to display information or render a web page e.g., <H2>Profile</H2> tells the browser to display the word Profile in a H2 heading. The word 'Profile' in fact can mean a few things to a search engine crawler. So, the three major browsers Google, Bing and Yahoo have developed a Meta data system called *schema.org* that would tell the crawler exactly what type of information it's working with. There are many types of information that can be specified including articles, news articles, persons, places and products, to mention a few.

V. EVALUATIONS USING ESTABLISHED CRITERIA

In this section, we analyze the overall internet marketing strategies for *athealth.co.za* and compare it to industry standards. We would have a look at their current SEO, social integration and Google Adwords.

With all the reviews done on SEO we can now analyze the *athealth.co.za* website. The *athealth.co.za* website focuses on static informative content. They have the normal brick and mortar business model and the website is there only to increase their client base and to use it as an advertisement tool for the services they offer. They do not engage in online sales or online service processing at this stage. They are a medical practice with all sorts of doctors, dentists, nutritionists and optometrists. Consider some data from google's Analytics. The image in figure 1 shows google's analytics' visitors' sources for *athealth.co.za*. As one can see, given the high search traffic, they should rely on SEO to get even more clients through the search engines.

From the image in figure 2, also supplied by google's analytics, you can clearly see the amount of visitors from each search engine. It is clear from the information above that one should focus on optimizing one's website for google crawlers.

According to the checklist we have presented previously, we would have a look at an SEO analysis for *athealth.co.za*:

1. Meta Descriptions and Meta Keywords

Current Meta Descriptions: *Medical centre with qualified doctors in Centurion, Doctors in Centurion, Medical centre Centurion* (98 characters)

The current Meta description is within the correct range according to industry standards. Also, the description matches the page content. We may change the order of the words to highlight "Doctors in Centurion", because the words you use first are more important than the words you use the second, third and fourth time, etc. And their focus is more on the doctors they have.

Current Keywords: *@health, health, @health clinic Centurion, clinic, medical centre Centurion, Centurion doctors, medical centre centurion, mediese sentrum centurion, mediese sentrum, centurion dokter, centurion doctor, Psychologist, Sielkundige, Psychotherapy, Nutrition, Health shop, Derma Femme, beauty clinic, Diabetes Care,*

DBC, Ampath , Pathologists, Physiotherapy, Eye Institute, oog Instituut, biokinetics, South Africa (27 keywords).

The amount of keywords used is too much. According to Cutts (2009) from google, the amount of keywords should be between 4 – 8 keywords or keywords phrases. A keyword phrase should be no more than 3 words. Keywords should be separated by a comma. The main keywords to be used should be: “Centurion Doctors, Centurion Medical Centre, medical treatment facility, Medical Doctors Centurion”.

2. Title Tags

Current Title: @Health medical centre Centurion, medical Centre in Centurion (62 characters). The Current Title tag falls within the correct amount of characters, which is below 70 characters, including spaces. The titles are also relevant to the page keywords.

3. Page Content

The contents of the index page are relevant to the Title and other Meta data.

4. Headlines

Having a look at the screenshot in figure 3, you will see that the title for the page: “Welcome to the @health Medical Centre” should be within <h1> tags. The other headings on the page should also be within <h2> tags.

5. URL Structure and Domain

The domain name for this website is athealth.co.za, which is perfect for the services they offer. They only have static pages. The static pages have relevant page names for the contents they display.

The only change recommended for them to make would be to standardize the home page URL. At this stage, they have athealth.co.za/ and athealth.co.za/index.html which will have a negative impact on their page rank [8].

6. Image Tags

Few photo galleries are on athealth.co.za and they haven't got have any *alt tags*. This makes them really not suitable for users and also not suitable for most search engine crawlers.

7. Page Load Time

The time it takes for the pages to open is really good. That has to do with the fact that pages are static and do not need to pull large amounts of data from database.

8. XML Site Map

There are no XML site maps available on this website, and one should need to implement this in their footer. As seen in the image in figure 4 below, the footer of the web page should be reworked to cater for the XML sitemap. And the XLM sitemap needs to be submitted to google so that the URLs inside can be indexed.

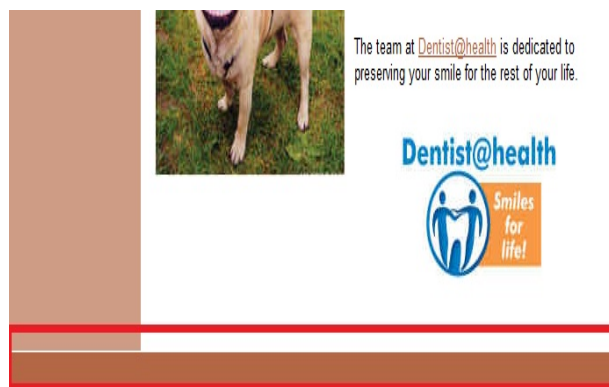


Figure 4. Display showing the footer of the web page should be reworked to cater for the xml sitemap.

9. Meta Data using schema.org

This website's information is not applicable for the schema referencing.

10. Keywords

According to their webmaster tools and google's analytics, they have the following keywords for their website: botox, dentist logo, frown lines, dentist, botox crows feet, logo dentist, botox images, diabetessa.co.za, monique bailey, tandarts jordan, sick kid, injection botox, physiotherapy, botox upper lip. These are relatively unique and relevant.

VI. CONCLUSIONS

It is important for organizations to make use of increasing Internet users and web's billion searches per day with the correct Internet Marketing strategy/method to drive some of those users to one's own website and making them customers. The problem with athealth.co.za is that there's no Internet Marketing strategy in place. They have a little bit of Search Engine Optimization, but it's old and out-dated. Google and other major Search Engines changes their algorithm from time to time, and a website's strategy should change accordingly. Not only does the Search Engines change but the way the internet works and how content are being shared also changes in a short period of time. This study aimed to determine a successful Internet Marketing Strategy for athealth.co.za website by evaluating and executing their Search Engine Optimization strategy. It could be concluded that athealth.co.za is in desperate need for advanced Search Engine Optimization on all their website pages. This would involve utilizing basic techniques needed to get good rankings from google and other Search Engines.

ACKNOWLEDGMENT

R.O. Otto would like to thank the management, staff members, doctors, health practitioners and most importantly the Information Technology staff members of the @Health Medical Center, Centurion, South Africa, for their time and cooperation during the investigations for this study.

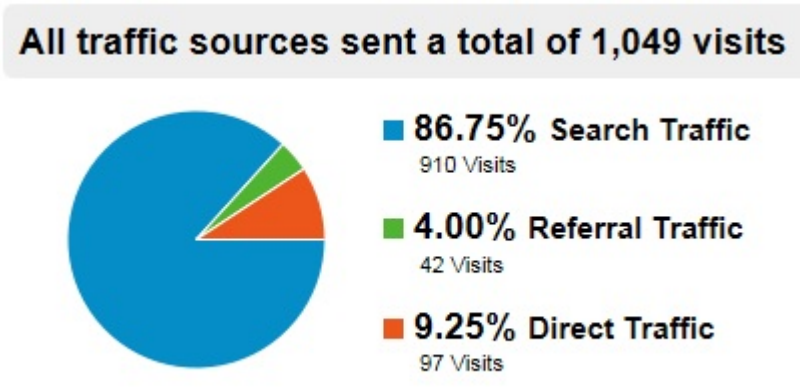


Figure 1. Google's analytics' data on visitors' sources for athealth.co.za website

Source/Medium	Visits	↓	Pages/Visit	Avg. Time on Site
1. google / organic	867		1.98	00:01:30
2. (direct) / (none)	97		2.10	00:01:26
3. bing / organic	17		1.88	00:01:43
4. search / organic	13		1.38	00:00:11
5. yahoo / organic	12		1.50	00:00:28

Figure 2. Google's analytics data on the amount of visitors from different search engines

```
<td width="547" bgcolor="#ffffff">
  <table cellpadding="15" cellspacing="0" border="0" height="348%" width="97%">
    <tr valign="top">
      <td height="1072" bgcolor="#ffffff"><div align="right"><font size="5" color="#B36745"><b>Welkom by die @health Mediese Sentrum </b></font><br>
        <hr width="100%" size="1" color="#990000">
        <font size="5" color="#B36745"><b>Welcome to the @health Medical
          Centre</b></font> <br>
      </div>
      <div align="left">
        <table width="97%" border="0" cellspacing="0" cellpadding="0">
          <tr>
            <td colspan="3" height="10"></td>
          </tr>
        </table>
      </div>
    </tr>
  </table>
</td>
```

Figure 3. HTML source codes showing header tags

References

[1] R. Craven, "Programming the Internet", Sebastopol, Calif.: O'Reilly & Associates Inc., 2002, pp.222-223.

[2] M. Cutts, "Google incorporating site speed in search rankings", 9 April, 2010. [Online] Available from: <http://www.matcutts.com/blog/site-speed/>. [Accessed: 2011-10-12].

[3] G. Ereat, "What is Qualitative research", [online] Available from: <http://www.qsrinternational.com/what-is-qualitative-research.aspx>. [Accessed: 2011-10-12].

[4] Facebook, "Facebook Statistics". [Online] Available from: <http://www.facebook.com/press/info.php?statistics>. [Accessed: 2011-11-15].

[5] Google Adwords, "Introduction to Google and Google AdWords", 17 November. [Online] Available from: <http://adwords.google.com/support/aw/bin/answer.py?hl=en&answer=157011>. [Accessed: 2011-10-12].

[6] M. McGee M, "By The Numbers: Twitter Vs. Facebook Vs. Google Buzz", 23 February 2010. [Online] Available from: <http://searchengineland.com/by-the-numbers-twitter-vs-facebook-vs-google-buzz-36709>. [Accessed: 2011-10-11].

[7] I. Rogers, "The Google Pagerank Algorithm and How It Works", 2002. [Online] Available from: <http://www.iprcom.com/papers/pagerank/>. [Accessed: 2011-10-29].

[8] SEO, "Search Engine Optimization", [Online] Available from: http://en.wikipedia.org/wiki/Search_engine_optimization [Accessed: 2011-11-05].

[9] K. Soy, "The case study as a research method", 1997. [Online] Available from: <http://www.gslis.utexas.edu/~ssoy/usesusers/1391d1b.htm>. [Accessed: 2011-11-05].

[10] G. Walsham, "Doing Interpretive Research", 2010. [Online] Available from: <http://www.uio.no/studier/emner/matnat/ifi/INF3290/h10/undervisning/materiale/artikler/WalshamDoing%20InterpretiveResearchEJIS2006.pdf> [Downloaded: 2011-12-23]