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Ranking factors to increase your position on the search engine result page

Theoretical and practical examples

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Abstract

Search engine optimization (SEO) is the way to improve the visibility of a website on the search engine result page (SERP). If the website is not on the first three result, then it will be missing most of the traffic that could be generated. This report will go into detail on how to work with SEO and how to get a website to rank high. Both On-page, how to work with code and content, and Off-page, how to get more links, methods will be discussed, with a higher focus on On-page.

This paper strives to find what methods and techniques to use with the results gathered from scientific databases, interviews and three websites with different levels of SEO implementation. How to structure the code, where and how to use keywords, domain name, links and much more will be discussed in this paper.

Keywords: Google, SEO, SERP, On-page, Off-page

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Definitions

SERP - *Search Engine Result Page* is the page displayed by a search engine in response to a query made by a user.

SEO - *Search Engine Optimization* is the process of affecting the visibility of a website in a search engine's SERP.

Googlebot - Is the search bot software used by Google, which collects documents from the web to build a searchable index for the Google Search engine.

Webcrawler - Also called a spider, is an search bot that systematically browses the World Wide Web, typically for the purpose of web indexing like Googlebot.

Black hat - Techniques in SEO. If websites use these techniques Google may punish them by lowering their rank and therefore their visibility in the SERP or even remove them entirely from the SERP.

White hat - Techniques in SEO that Google accepts in their guidelines.

Keyword - Are the target words and phrases in your web content that make it possible for people to find your website with search engines.

Long Tail Keyword - A keyword that is more specific but have a lower search rate. Can be a sentence or combination of words.

CTR - *Click-through rates* is the ratio of users who click on a specific ad to the number of total users who views the ad.

Backlinks - Is a link from some other website that points back to your website. A backlink may come from multiple resources like a website, web page, or web directory.

Ranking - Is the total sum of all ranking factors which will determine where you will show in the SERP.

Query - Is a word or set of words that a user enters into a web search engine to satisfy the user's information needs. Web search queries are distinctive in that they are often plain text or hypertext with optional search-directives (such as "and"/"or" with "-" to exclude).

On-page - SEO that can be done directly on the page. Such as keyword optimization, technical implementation and titles.

Off-page - Involves how to build links from other websites that points towards your website which in turn generates more traffic to your website.

Keyword cannibalization - When trying to optimize multiple pages on your website towards one keyword, the keyword strength will be weakened for each page the keyword is featured on. This might result in Google showing one of your less desired pages when resolving a query, instead of your best page that you actually want visitors to.

Domain - An address on the Internet that indicates the location of a computer or network.

Hashbang (#!) - Is a way to build URLs dynamically. A URL built like:
www.example.se/#!/page uses a hashbang.

SPA - *single page application*. Is a website where all of its content is presented on one single page, compared through different urls leading to different content on new webpages.

1 Introduction

If you are in a discussion with a friend where you both think you are right, how would you solve it? If you need to find new clothes for the party that you are having later that weekend, how do you find the shop with the best prices?

The answer most people will give you is to use a search engine called Google. In Sweden, “Googla”, in english “Google it”, has even become a word of it’s own which means searching the internet using the search engine Google. [33] There is no exact number on how many search queries Google handles each day, but there are some estimations done that is based on previous numbers Google have announced. According to them there is somewhere over two trillions queries made the year of 2016, which translates to 55 billions each day . [1] This is a major challenge for corporations and organisations today because all of them want to be on the top of Google's SERP with their given keywords or keyphrases to attract the most users, who are potential customers.

“The best place to hide a dead body is the second page of Google search”

Author: Unknown

This quote that is often used when discussing SEO is not entirely true, but it has a point. If you are not on the first page in Google's SERP, you are as good as invisible for the big audience. There are studies that shows that the first three results in the SERP gets more than 50% of the traffic generated. [2]

Corporations pay big money and have entire teams that works with SEO in order to stay on top of the SERP. This is because Google do constans changes in their search algorithms and if you're not up to date, are you at risk of falling in the SERP.

Search engine optimization is a collection of methods and techniques one can use to get a website to rank as high as possible from the results after querying a search engine. [3] These techniques is often divided into On- and Off-page methods. On-page methods is the thing we as a developer can affect like structuring the HTML-code, titles, images and their tags and so on. Off-page methods are things outside of our website such as backlinks. You have to know about these techniques and how to implement them in the best way for your specific website to be able to achieve a high ranking in the SERP.

We have chosen to do our report on this subject because we want to learn the methods and techniques needed to improve a website's ranking in the SERP, see if it is possible to achieve a high ranking and also learn what factors affects Google's ranking. We are targeting the people, organisations and businesses that have a technical interest in web development and wants to learn how to use SEO in real life. For future web developers, like ourselves, it is crucial to know about these techniques and methods and to be able to give our future employers a better chance to rank high in the SERP.

The value of knowing what techniques and methods search engines use is that one can affect how high one's website ends up in the SERP, which in turn will affect the number of visitors the website gets in the end. Additionally, you have to keep up with the evolution of SEO in order to avoid being outmaneuvered by your competitors. Since it is a field in

constant change most of the reports and information out there are outdated soon after it comes out.

Nothing really suggest that we will stop using search engines in the future. Based on the history it rather seems like we are going to increase the usage and more users will be dependent on their existence. [1]

The aim of this study is to find different techniques and methods that actually works at the current time when we are talking about SEO. We will find these technique with an extensive literature study combined with information collected from interviewing people working at various companies and fields, that are working with SEO in their daily job. We will also have an experimental part where we will apply our knowledge on three different websites that were created purely for this study.

2 Background

The internet we use today has developed through cooperation between instances and idéas from different innovators that together had a vision about a global network.

The history of SEO begins at the start of the 90's [4] when search engines first started to index websites from the internet so that users easily could find the information they wanted on the growing web. Since there were only a few websites, the search engines started by organizing the pages alphabetically and created a register quite like the one found in the phone books.

The speed of which the internet grew quickly made this system less and less usable. A new system was implemented where users could query the search engines and get matching keywords or tags. This new system was vulnerable since the content creators easily could add false keywords that had little or nothing to do with the content of the web page. This way a page could be ranked higher than it actually should have been. It would take until the turn of the century before a new actor on the market would solve this problem in an effective way. This actor was Google. Google's page ranking system and their new ranking algorithms managed to sort out most of the bad pages.[5] This led to a huge success in a short time for them. Google revolutionized how we work with SEO and nowadays they are so big that they more or less control how we use SEO.

One thing is sure, SEO will not die out but will instead be changing with the web. We are bound to see more user statistics and more complex algorithms in SEO in the future. [6]

3 Research questions

RQ1 - Which factors does Google account for when they rank a website in the SERP produced by their search engine?

RQ2 - How should you implement these ranking factors to get a better position in Google's SERP?

RQ3 - What is the difference between an optimized versus unoptimized website in the SERP?

RQ4 - What is the difference between a mobile-friendly versus unoptimized website in the SERP?

This study is based on the four research questions above. The reason why we choose these questions is because we want to have a theoretical part where we learn what to do, in order to receive a higher rank in the SERP and practical part on how to do it. This will give us a good overall understanding of how SEO works.

RQ1 was chosen because we have to learn how Google's algorithms works when they rank a website so that we can use this knowledge for RQ2.

RQ2 was chosen because we wanted to have a practical part in the study where we use our acquired knowledge on our own websites. With this approach we get a practical part in the report which widen our knowledge of SEO and test what works. Depending on where you get your information it will vary and sometimes contradict what you have previously learned.

RQ3 and **RQ4** was chosen so that we can measure the results and compare them to each other. With these results we can make some conclusions about how much SEO actually affects the search results ranking.

The hypothesis is that the unoptimized website will have the lowest ranking since there is nothing to be implemented that would increase its ranking. The mobile friendly should get a better ranking than the unoptimized, since Google has said that a mobile friendly website will give some extra ranking. The optimized should rank the best since we are following the guidelines provided by Google as well as the information gained from the interviews.

4 Method

4.1 Literature Study Design

The literature study was designed to give information in order to get an answer for RQ1 so that we could build an optimized website for RQ2. We also wanted to get a wide view of how SEO is used by people that work with it and that is why we wanted to add interviews.

We will mainly use material for our research from scientific databases like IEEE, ACM and Libris where the material has gone through a review before it is accepted. Since they have been reviewed already we have an assurance that the source material is correct.

In these materials we can also find other references which may give us some additional information and inspiration for our work.

We will also use material from other sources because there is a lot of people out in the non-academical world working with SEO that has other techniques and more updated information to acquire. Here we have to be careful with what information we are going to use since it has probably not been reviewed by another part. That means that the information can be written in a way that is angled to favour the author's own agenda instead of being objective.

Because of this we will only use sources which has a reliable position in the SEO market such as Rand Fishkin, founder and former CEO of the company Moz and is known as a guru in the SEO community.

We have also restricted our material to not be older than 2015 since Google releases 500-600 updates a year. [7] If we get a reference from

<https://support.google.com/websearch/?hl=en#topic=3378866>, we are going to use it, though it has no date. This is Google's own documentation and therefore we can trust it to be up to date.

If we find information that is pure history, we can ignore what date the information was released as long as we do not find any contradictory facts.

To find relevant and useful papers the authors used the snowballing approach. This approach is well described in "Guidelines for Snowballing in Systematic Literature Studies and a Replication in Software Engineering", by Claes Wohlin [8].

4.1.1 Inclusion Criteria

Language: English or Swedish

Timeframe: 2015-2017

Title: Is the title relevant to the study?

- Yes, review abstract, questions, keywords and conclusion. Does it answer any of our questions, or contain relevant information?
- No, exclude the paper
- Information from <https://support.google.com/websearch/> is Google's own documentation, and we will use it though it has no dates.
- If information is pure history.
- One exception will be made for searching globally on google[42], where we cannot find any newer information about it.

4.1.2 Exclusion Criteria

We began the literature study with a starting set of 14 papers.

These papers and sources were defined as relevant and useful using the inclusion and exclusion criteria.

We excluded material if:

- It is older than 2015
- Does not have any additional sources that can confirm the information
- It is only about Off-page methods
- It is from a dubious source and there is no way of checking its credibility
- Duplicates

4.1.3 Purpose

The purpose of the literature review is to find previous research so that we can get information to start with and make sure that our work will have scientific relevance. Though research in SEO has been made before, the world of SEO is in constant change. This makes research outdated quite fast and new research can lead to new results. The review helps to make our research relevant when we know what has been studied before and what have been missed. It will also give us an alternative way to conduct our experiment compared to

others. We can also see what other reports suggests, in their “*future work*”, what they believe is interesting to work on.

4.2 Empirical Study Design

4.2.1 Interviews

To empirically explore the research questions we arranged six interviews with persons that works with SEO. To get a wider perspective we choose to find people from different fields and therefore have different knowledge and usage of SEO.

This part was designed to collect information that will help us answers our RQ’s and to give us a vider view of how different companies work with SEO.

We used a semi-structured interview [9] where we have a set of questions (appendix A) that asks how the interviewee is working with SEO, such as On-page methods, htaccess, techniques and so on. We have asked a lot more questions than we are going to go through in the interview result. We did this to get a more general view on SEO and cherry picked the questions that would answer our RQ’s. During the interview we recorded the interviewee, if he or she allowed it, so that we may compile the answers afterwards. What we got out from the interview was used on our own optimized website in order to improve the website and rank it higher and for the report. In case we got the same answer from different respondents and/or if they match with the information gained from other sources, we drew the conclusion that it is a valid and working technique to use. In case there were answers that contradicts each other or the information we found in the literature study, we would have to do some research and draw our own conclusions.

The interview will be complementary to our experiment. The plan is to use what we learn on our own website to improve them as much as possible.

4.2.2 Experiment

Beyond the interviews we also wanted to conduct a small experiment where we set up three different websites on which we will have different setups.

The first website, which we call the base site, will be an ordinary object oriented PHP website on the .nu domain with no additional SEO work conducted on it. The reason we will have this website is because we want to have something to compare against and therefore be able to show if there is any use to SEO-optimize your website.

The second website we set up is mobile-friendly, which is built with a Javascript framework called Mithril.js version 1.1.1 [10]. We choose this framework because it is small and fast and is also mobile friendly accordingly to Google’s tools. The reason for doing this website is that we want show the difference, if any, between the mobile friendly, SEO optimized and the base site.

The third and last website we are going to set up is the SEO-optimized, mobile friendly website which we are continually going to update until the end of the project. On this website we will use all our acquired knowledge to make it rank as high as possible on our keywords. The ranking in SERP will be our mainly feedback on how well the websites are doing.

The keywords we have chosen to measure for the websites are:

- Daniel Lindgren
- Daniel Lindgren CV
- Daniel Lindgren Online CV
- CV
- Online CV

We choose these because we wanted a mix of keywords with low competition and keywords with a higher competition, so we can compare and see if we can compete with the older, higher ranked websites.

4.2.3 Limitations

We have set some limitations in this literature review and report. First of all will we only work with Google's search engine, since it is the largest and most used.[11]

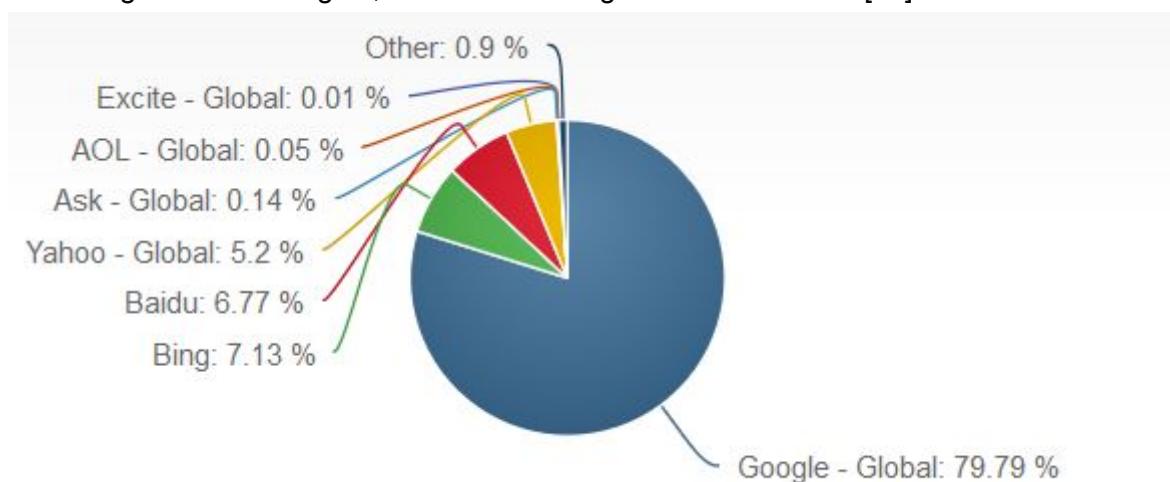


Figure 1. How much different search engines are being used, desktop only.

The next limitation is that we only have a certain timeframe to work with the websites. We started to work 22/2-2017 and 19/5-2017 is the last date on which we can update the optimized .se website.

4.2.4 Risk

The risks we thought of is that the experimental part does not give enough data to evaluate and therefore will be impossible to draw any decisive conclusions from it. That is why we also have the interview part from which we will get data that we can analyse and use in the report. Another problem can be inexperience with technical parts, such as the rules and limitations of Mithril. Neither are we sure if we are going to be able to compete with much older websites with the limited timeframe we have for this project.

5 Result

In order to be successful in SEO you have to know more than just Google's ranking factors. You also have to understand how people use Google to find information and with that understanding decide on what keyword you want to optimize for your website. [12]
As a webdeveloper you need to understand how to make a website's content more engaging so people will click to get to it and have good content that they will stay on it. [20]
SEO is really the same thing as marketing in the more traditional way, only that you work online instead. [14]

There is a quote from Samuel Scott, who is a former journalist and newspaper editor turned marketing and communications executive, who currently is Marcom Director at Logz.io, that goes:

"How would you market yourself if the Internet didn't exist? Answer that, and it'll help your online marketing too."

— Samuel Scott (@samueljscott) August 25, 2015

In this report we focused our attention on the ranking factors Google uses for their SERP result.

There is no checklist that you can use on all websites that makes them come on the first position in the SERP, but there are some guidelines that you can follow. In the paper "Search engine optimization: A game of page ranking (Kakkar, A.; Majumdar, R.; Kumar) 2015" the author discussed and summarized the workflow of SEO in a figure which we included in appendix c:

5.1 Literature review result

5.1.1 Ranking factor - On-page



Figure 2. Summarization of what methods SEO consists of

5.1.1.1 Domain

Your domain is important since it is a ranking factor but also because it creates trust and credibility for the website's users. Such domains as .com, .se and .nu is preferable if you are

doing SEO with Swedish market in mind. [15]

Domain localization may prove to be a game changer. For example, .co.uk caters to the United Kingdom and is more specific to users in that region and those with business links to the UK.

Your domain name is crucial, because it indicates what your website is all about. Opt for a simpler, unique and relevant domain-name instead of a sensational name. You can use an online dictionary to check words related to your service or product. You can also use a combination of two or three words to create a unique name. The focus should be on your potential customers and to come up with something catchy and easy to spell and relate to. [13]

5.1.1.2 URL

Consider organizing your content so that URLs are constructed in a logical manner and make it easy for humans to interpret (when possible, readable words rather than long ID numbers).

For example, if you are searching for information about aviation, a URL like <http://en.wikipedia.org/wiki/Aviation> will help you decide whether to click that link or not.

A URL like

http://www.example.com/index.php?id_sezione=360&sid=3a5ebc944f41daa6f849f730f1, is much less appealing to users, since it is much harder to interpret. [16]

When constructing an URL you should consider using hyphens (-) in the URL instead of underscores (_). It makes the URL look better and is also the way Google recommends you to do it.

URLs should be definitive but concise. By seeing only the URL both users and search engines should have a good idea of what to expect the content on the website to be.

Using lowercase letters is preferable, uppercase letters can cause issues with duplicate pages which Google punishes you for. For example, moz.com/Blog and moz.com/blog might be seen as two distinct URLs, which might create issues with duplicate content. [ibid]

Keywords should also be in the URL if possible, since it's a ranking factor and will help you in the SERP.

The SEO-guru Moz has created a cheat sheet that summarizes what to think about when creating a URL with a SEO perspective.

5.1.1.3 Keywords

Keywords are suppose to be words or phrases that is included somehow on your website.

Ask yourself: [3]

- Is the keyword relevant to your website's content?
- Will users find what they are looking for on the website when they search using these keywords?
- Will they be happy with what they find?
- Will this traffic result in financial rewards or other organizational goals?

If the answer to all of these questions is yes, then you have found keywords or phrases that suits your website. E.g if you own a restaurant in Karlskrona you want to be visible in the

SERP when someone queries "Restaurant Karlskrona". If the website is not shown, it does not matter if it has great content since no one will see it. To have better visibility you should have your given keywords in the content a certain amount of times. Moz says:[idib]

- In domain name (if possible)
- In title of the page
- In the headlines
- In the content
- In the meta-description

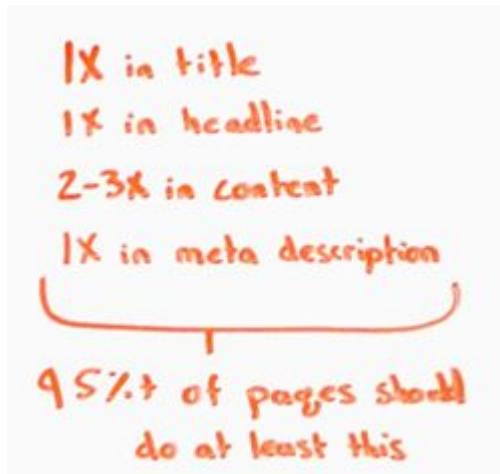


Figure 3. Moz explains number of times keywords should appear on a page in total (from Moz 2016)

5.1.1.4 Title-tag

A title tag is an HTML element that specifies the title of the website. Title tags are displayed on the SERP as the clickable headline for a given result, and are therefore important for usability, SEO and social sharing. The title tag of a website is meant to be an accurate and concise description of a page's content as well as appealing to your potential visitors.



Figure 4. Example of title shown in SERP when searching for BTH

The max length that will show in the SERP is 600 pixels, or around 60-70 characters. [17]

Your title tag will be displayed on the SERP and is a search visitor's first experience with your website. Even if your website ranks well, a good title can be the decisive factor for whether or not someone clicks on the link.[18][19]

Since the title-tag is a ranking factor it is important to include your keyword or keyphrase that you want to be ranked on. It is also a good idea to use the title to make your name or company name to allow branding. Also make sure that you have a unique title on every subpage since it helps search engines to understand that your content is unique and valuable, and also drive higher CTR. For example, if you have many different product pages

with a database of product names and categories, you could use that data to easily generate unique titles for each page like this:[20]

[Brand Name] [Major Product Category] [Minor Product Category] [Name of Product]

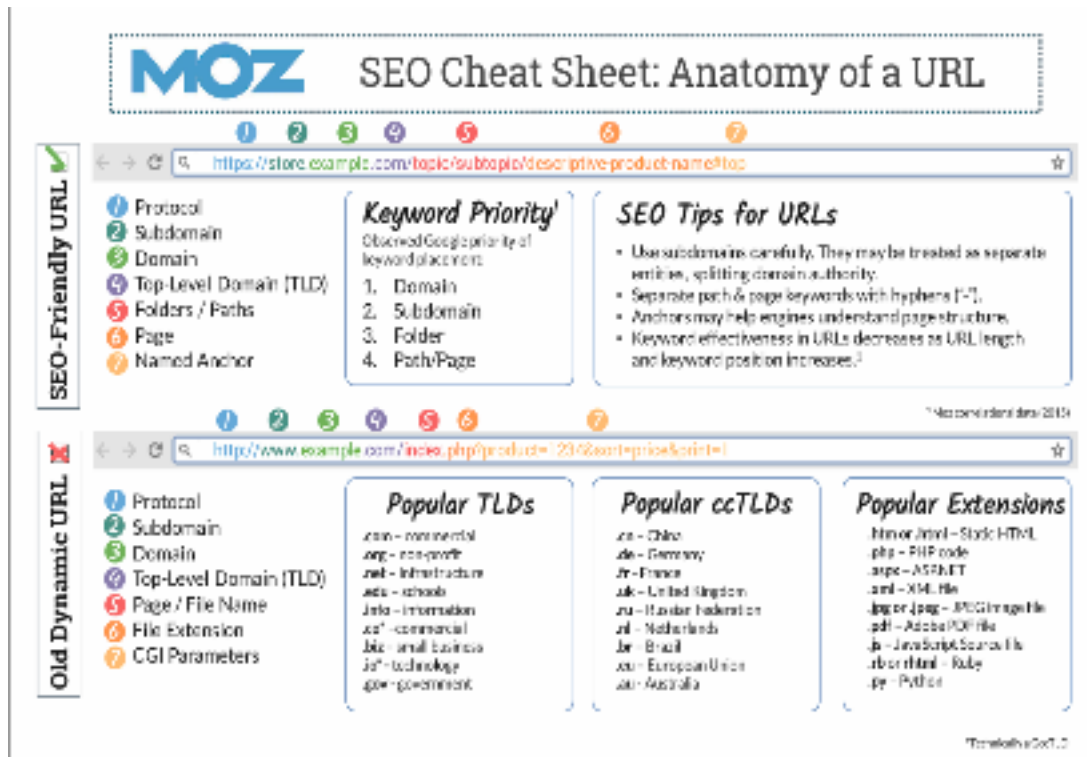


Figure 5. URL Cheat Sheet (from Rand Fishkin (Moz), 2016)

5.1.1.5 Headlines

Headlines comes in six different tags: H1-H6 with H1 being the most important. By using a headline, the Googlebot can read what the content is about. It is important to use your keywords in the headline or you will lose the value headlines provides.[19]

5.1.1.6 Content

“Content is king” is a term that is well-known in the world of SEO. Content is the key factor when making a website to which a user will come back to in the future. If the website does not give any value to the user, then there is no meaning to the website and Google will rank it lower. This is because Google want to serve their user with quality content which either have some value to the user or give answer to a question.

If the users find the website useful and unique, they may come back again or even link to the content on their own websites, blog or social media.

In Google’s own guideline they have listed things you as a content creator should consider when creating good SEO friendly content: [21]

- Useful and informative
- More valuable and useful than other websites
- Credible

- High quality
- Engaging

It is very important that the content that is created is unique, you should not fall for the temptation to copy any text. Not only can it be illegal but Google also combats such things by trying to filter out copies and even punish websites that have copied material.

Unique can also mean that your content is the first about a new topic or story on the whole internet, which can be good in a view of SEO since you can be searchable for completely new keywords.

The semantic of the created content is also important to consider. A text should have good headlines which are both intriguing and descriptive of the topic at hand. The font should be easy to read and it is a good practice to use shorter length sentences than longer. Create lists whenever you can since humans like to get information summarized. [13] The amount of text is also important since Google considers more text to be better than less. [15]

Some other factors regarding the content which is important in Google's eyes is if you can get any backlinks pointing to your content and/or if you point to any trusted external link. It is important to keep updating the content on the website, because it signals to Google that you have a relevant and an active website.

5.1.1.7 Images

Images are important for user experience. The crawler can not understand images so that is when alt and title tags comes into play. By writing good alt and title tags that contains the targeted keywords you can get some better SEO.[43] By giving your images a descriptive name you will further boost the understanding of the crawler. A good image name contains the keywords as well as a description of what the image is. It is important to keep to the truth while writing alt and title tags, images may be reviewed manually by Google. The last tag is figcaption. As opposed to alt and title tags, the figcaption is made for humans to read.[44]

The crawler uses this as well when ranking your page. In this case it is important to focus on users and crawler at the same time.

5.1.1.8 Anchor text

An anchor text is the clickable text that leads you to a web page. [13][20] It is important to tell the users what the link is about and where they will end up by clicking on it. Websites with the keyword written in the anchor text usually ranks higher than those who do not.

5.1.1.9 Canonical

Canonical is a tag that Google has produced to help with duplicated content on websites. With proper use of this tag you can tell Google which one that is the original and thereby avoid getting punished. [46]

Duplicate content issues occur when the same content is accessible from multiple URLs. For example, <http://www.example.com/page.html> would be considered by search engines to be an entirely different page from <http://www.example.com/page.html?parameter=1>, even though both URLs return the same content. [22]

Canonical tags is also useful to solve www and non-www duplicate content where two URL's, identical except that one begins with "www" and the other does not point to the same page.

Other examples:

- <http://www.example.com/>
- <http://www.example.com/index.html>
- <http://example.com/>
- <http://example.com/index.html>

Each of these URL's spreads out the value of inbound links to the homepage. This means that if the homepage has multiple links to these various URL's, the major search engines give them credit separately, not in a combined manner. [23]

When you implement canonical tags on a website, you put it in the header of the website you do not want Google to prioritize and link it to the page you want to give the credit.

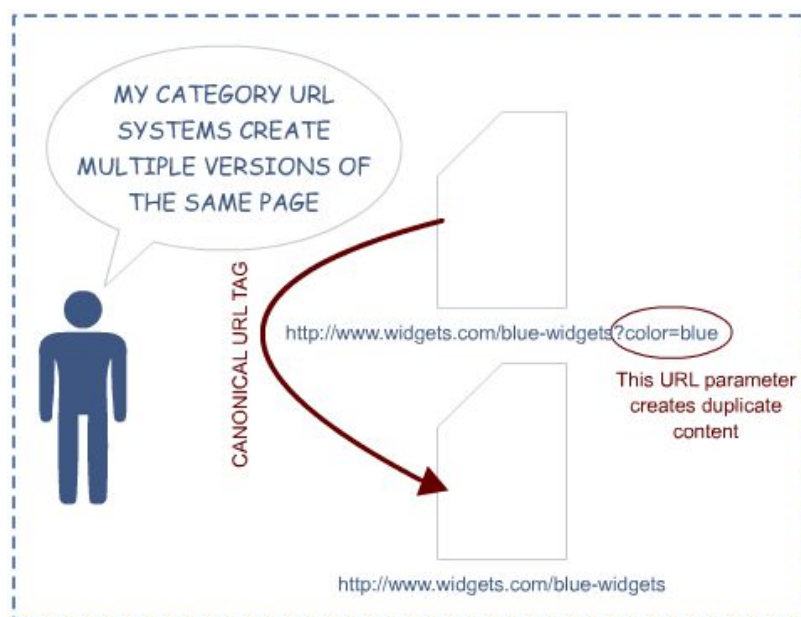


Figure 6. Canonical URL Issues for Categories (from Rand Fishkin, 2016)

5.1.1.10 Nofollow

A normal link will give the target website an improvement in ranking. If the link contains a nofollow rel (relation) tag, the link will not count for the targeted websites ranking. This can be used to avoid search engines of thinking that a website has payed or otherwise compensated for the link.[24] Nofollow can also be used for user generated content. Since you will not have any control over what kind of links your users will post, it might be better to set nofollow on all links from user generated content. You can also add nofollow any time you do not want a link to count.

5.1.1.11 Sitemap in HTML

The sitemap helps visitors to quickly find what they are looking for and is also a search engine locally that helps to easily find all the subpages on the website. A sitemap is a subpage of a website that often dynamically displays links logically to all pages on the website.[20]

Remember that search engines reward websites that are easy to use and that, in many cases, you can improve your website's ranking by improving your user experience.

5.1.1.12 HTTPS

In 2014 google announced that having an encrypted website would affect the website's ranking in a positive way. This has not been as huge of a factor as anticipated, but it is still a recommendation from Google to use it and gives the website a small boost in terms of ranking. [15] [25]

Using HTTPS will send your traffic via TLS (Transport Layer Protocol) which gives three layers of protection: [26][43]

- encrypts the data sent so eavesdroppers cannot listen in to your traffic.
- if someone is trying to modify or corrupt your data during transfer it will be detected.
- gives you and your users an authentication. This will prove that your user is communicating with your website and protects from man-in-the-middle attacks.

5.1.1.13 Mobile friendly

In April 2015 Google announced that a new variable would be accounted as a ranking factor. The new ranking factor was if websites have some form of mobile friendliness. This change was made because Google wanted users to have an easier time to get relevant, high quality search results optimized for other devices than computers. [27]

In the next step of Google's evolution they announced in november 2016 that they now will do "mobile first indexing". This means that Google will index its result from the point of view of a mobile device instead of a computer, since the most searches are made from mobile devices. [28] To be able to be on top of the SERP these days you need to think about the fact that Google sees your website with the point of view of a mobile website.

Some of the factors you should consider when you are talking about a mobile friendly website are:

- **Page speed** (See below)
- **Do not use Flash** - since the plugin may not be available on your user's phone. If you want to create special effects, use HTML5 instead. Flash is also known to be a security risk.
- **Design for the fat finger** - Touch screen navigation can lead to accidental clicks if your buttons are too big, small or in the path of a finger that is trying to get the page to scroll.
- **Responsive design** - which allows the user to zoom in and out and also make the content automatically adapt to the size of a user's screen. [29]

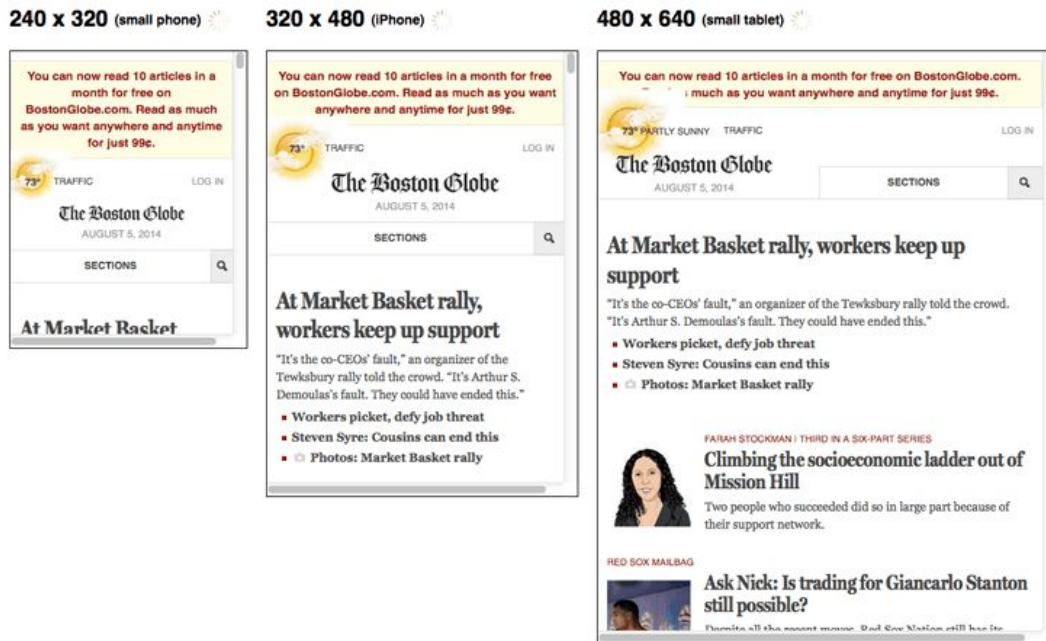


Figure 7. Moz showing how responsive design works (from Rand Fishkin, 2017)

5.1.1.14 Page speed

Having a faster load time for your website will help to increase the user experience and ranking. [13] There are some tips to increase the page speed. By compressing the files it will take shorter time to download them. Compressing images should be done with photoshop or similar so that you can control how they look after the compression is done. Optimizing the code and removing unnecessary characters, comments, white spaces and minifying the text will decrease the loading time. Avoid redirects as much as possible. Each redirect will increase the HTTP request-response cycle. Caching is a good way to use the visitor's own computers to help with your loading time. if you seldom update the website, a year's expiration time is suggested. If updates are done often, then decrease the expiration time. The optimal server response time is under 200 ms. One way to get to this response time is to find bottlenecks in the used server. Any database queries, slow routing or inadequate hardware will increase the response time. Find out if there are any problems and fix them.

5.1.2 Ranking factor - Off-page

5.1.2.1 Backlinks

A backlink, also called an "inbound link" or "incoming link," is created when one website links to another. Backlinks are especially valuable in SEO because they represent a "vote of confidence" from one website for another. Website A that links to website B is telling that this is a trusted source and it has valuable information. If many websites link to the same website, search engines can imply that the content is worth linking to. Earning these backlinks can have a positive effect on a website's ranking position or search visibility. [30] However, you should not use link farms or use underhanded techniques. It may result in a

penalty. There should not be too many links from a single domain, because this is an indication of spamming and can have negative consequences. [13]

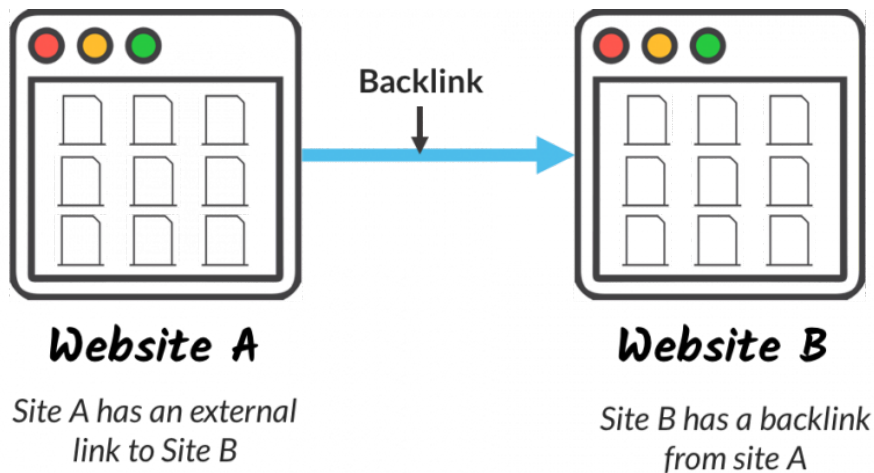


Figure 8. explain how a backlink works (Moz 2017)

5.1.2.2 Link building

Link building is a methodology that results in getting external websites to point to your website. They may be links from a blog, affiliates or any relevant source. Inbound links help search engines to understand the popularity of a website and are therefore an important factor. [13]

Google evaluates links differently depending on if they are organic or non-organic. An organic link is a link that some real user have created to your website because they find some value on it and wants to share it. Google prefers these links because they do not want it to become a business to sell links and therefore get better ranking. Non-organic links are links that you either pay for or create in a non natural way.

There are also bad or good backlinks. A backlink from a trustworthy source is more valuable then a link from a source that Google thinks is not trustworthy.

This is hard to achieve and as soon as you are thinking about getting backlinks to your website, regarding of method, you are in the gray zone in Google's eyes. [31]

Some link building techniques can be:

- Get your customers to link to you
- Build a company blog; make it a valuable, informative, and entertaining resource
- Create content that inspires viral sharing and organic/natural linking
- Be newsworthy [12]

5.1.2.3 Satellite website

The purpose of a satellite website is to give links back to your main website. [15] It is a slow process that takes time but can be very effective if done correctly. A satellite website is made to get backlinks to your main website that targets a specific keyword that is used by your main website. Your satellite should be able to stand on its own. Make the content interesting and engaging, not just an information website about your product.

5.1.2.4 Blog

By having relative blogs you can make sure that the customer have access to the latest news, and that they are correct. By using it as a satellite website you can link back to your own website and gain link power.[15]

You can also post blogs on someone else's blog. This is called guest blogging. What you need to do is to find someone who is willing to take one of your posts and add them to their website. In your post you add links back to your own website. You should avoid boilerplates, a standard text that gets reused with the information about the author, company and link to the website. Google does not like this way of guest blogging.

5.1.2.5 Recycle

If you have an old website that have been changed during the years, chances are that you have a lot of links that can be recycled.[15] By using Google Search Console, Ahrefs or Majestic you can get a list of links that have been lost. If you find any links that returns 404 you can use redirect to your new page and regain the link power they give.

5.1.3 Non-ranking factor

We also found some things that are not factors directly, but can help you improve your SEO which we also thought deserved to be mentioned.

5.1.3.1 Meta-description

Meta description is not a ranking factor in Google's search engine, but is still important for user experience and can give you advantages against competitors in the SERP if used correctly.

This tag provides a short, around 150 characters is preferred length, description of the website and its content. It is important to have unique meta-descriptions on each subpage. [45]

Meta description is a possibility for companies to advertise and sell themselves with the purpose to increase the CTR.



Figure 9. showing meta-description of BTH

5.1.3.2 Favicon

Favicon are important because they create credibility for the website and helps with effective branding. It helps users recognize your website and improves trustworthiness significantly. They also appear in the list of bookmarked URLs in your browser. While browsing the history section of Google Chrome they make it easier to find the particular link you are looking for. They enhance the usability of the website. [13]

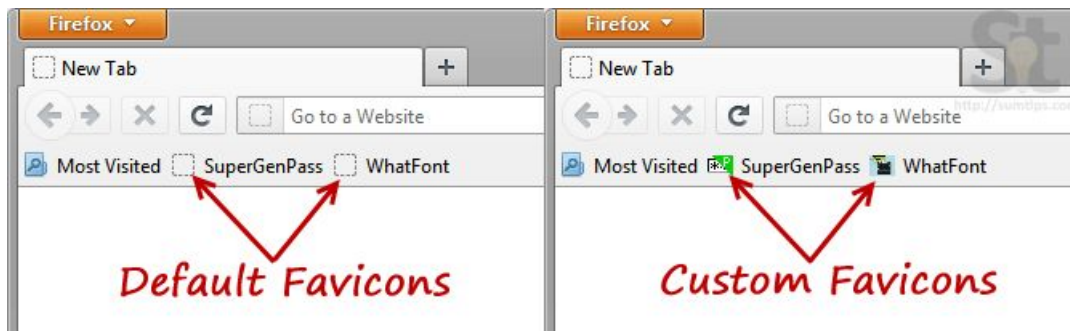


Figure 10. showing difference between customized and default favicon

5.1.3.3 Sitemap XML

An XML Sitemap is a document designed in accordance with the protocol for XML Sitemaps. It is located on your server and is used by search engines to determine which URL's your website consists of and their mutual priority to crawl and index the website.[20]

A sitemap is especially important if your website contains pages you want indexed but can only be accessed through, for example, a form or flash which search engines may have difficulty following or if you have thousands of pages.

5.1.3.4 Infographic

Can be used for link building purpose because people tend to spend only a small amount of time on a website and therefore want the information handed to them quickly. People also tend to share links with infographics more frequently than links without them. [13][32]

5.1.3.5 Social media

Google has stated that social media signals are not ranking factors in Google's search engine, with that said, it can still help you to improve your rank. It can be used to spread your content by shares and can also direct a large amount of traffic to your website, which in turn will help your ranking. It is also great to use for branding purpose and to interact with the potential customer and users in a more comprehensive way. [34][35]

5.1.3.6 Redirects

We need a way to redirect traffic if anything goes wrong while trying to find a page. This will often happen due to restructuring a website and moving its content from one page to another. [15] It will happen if you change your domain. If a page cannot be found the status code 404, not found, is returned from the server. Getting 404 (or any other message beginning with 4) is very bad. Users get lost and have to back up one page if they are navigating from your website and in worst case they will just leave. It is bad for the crawler to find a message beginning with 4 since its job is to follow links. To avoid this problem you need to send a 301, redirect, message instead. This tells the crawler where to go and it will redirect the users to the page you want them on. By using 301 all your link power will be transferred from the old website to the new. There are other types of redirect, but 301 is the recommended one to use from a SEO perspective.

5.1.4 Interview result

We have interviewed people from six different organizations. All respondents work with SEO in one way or another in the private or public sector. In appendix B you can see a list of the people we interviewed. We have had the interviews face to face, over the phone and one replied with the answers over email.

We received answers from:

- Pineberry who work with SEO marketing.
- BTH which is a college and is working somewhat with SEO to push their courses.
- A teacher at BTH who has his own website and has experience in SEO.
- OG Group which works with affiliate marketing.
- Mustasch which is a advertising agency.
- Ballou which works with operating services.

5.1.4.1 Do you follow any special search engine optimization strategy from start to end in your projects?

After we had interviewed all the respondents and analysed their answers we realised that none of them had a strategy they follow from start to finish. Instead they said that they have some parts they use most of the times and the rest depends on the type of project and goals they have.

Michael Wahlgren, founder of Pineberry, said for example, "We have a recipe that consists of different ingredients that we use in different projects".

Mikael Roos, Lecturer at BTH, said that he follows his own strategy which he has developed after reading and watching how other people are working with SEO, but it can be different depending on the project.

Johan Bournonville, formerly webmaster at BTH, the role we interview him for, Mathias Olsson, CEO at OG group, and Calle Magnusson, project leader at Mustasch, all had similar answers. They said that they do not follow any checklist or strategy from start to finish. Instead they developed a plan depending on the customer's goals and needs. Mathias also talked about the danger of getting stuck in old habits. It can lead to laziness and stop you from thinking critically about what you actually are doing.

When we talked to Victoria Lindén, marketing at Ballou, she told us that they follow some of the basic principles that are well known when it comes to SEO and that they hire external parts to help them with Google Adwords. This is because they do not have the same competence in-house in that area. But like the rest did she said that you cannot have a checklist that you follow each time, instead every project is unique.

5.1.4.2 Do you have any on-page methods that you use in every project?

Everyone answered that it is important to have the right structure on the page, except Johan who said that they use different strategies depending on what page they are working on. With structure we mean how the different tags are added to the page.

Michael pointed out body text and H1. They also used Screaming Frog [36] to make sure that the quality of the pages were good. He also mentioned that they always do some sort of analysis of the pages.

Mikael goes a bit more into depth. The content of the page title and H1 is important and that a paragraph follows the H1 that goes into what the page is about. He also says that a H2 should never follow a H1, there has to be a paragraph between them. He wants to use the different elements that describes what images, links, figures and figcaptions are about. It is nice to have Google parse a picture and get a description at the same time. To avoid 404 he makes sure to have a lot of links on one page. There is no use for him to link to other websites unless they have a purpose or are spot on for the content he is working on.

Nofollow is rarely used, but he thinks he probably should use them more.

Mathias quickly goes through the basics: titles, headings, adjust images with alt and title. It is important that the text is long, about 1000 characters and at the same time the content has to be of good quality. Nowadays the technical bit is more important than it used to be.

Victoria mentions Yoast [37], a wordpress plugin. She mentions that there are a lot of tools but they use Yoast for its wordpress functionality.

Calle thinks it is important with good articles with clear headings, preambles and body text. Using meta description, title tag, keywords and good named images is something he thinks they gain from in the long run.

5.1.4.3 How do you do to get keywords higher ranked?

When we asked Michael about how he works to get keywords higher ranked, he answered that they have a whole recipe that they use to get higher ranking. Sometimes it is all about getting good, trusted backlinks that points to your website and sometime you have to work with the content. To achieve the best result, combine them both.

When their firm gets a potential customer, they always start by looking at the customer's prerequisites and work to improve their weaknesses, which can be in the technical part or in terms of content. To find these weaknesses they use some tools like Ahref [38], Majestic [39] and Screaming frog. They also have some tools they developed by themselves to measure different statistics and SERP positioning for their customers.

Calle talked about the importance of being able to identify relevant keywords that provide the desired hits on the SERP. These keywords are then used in the texts, headlines, tagging of images as well as in other types of content marketing to drive traffic to the website. Calle also uses the same tools as Michael, except those developed by Pineberry.

When we talk to Mathias he says that it is a combination of many different parts that has to be done in order to rank well. You have to choose the right keyword, either short or long-tail. A question to ask is: can different variants of keywords suit us? You must also consider how many people are searching for each keyword and the conversion rate. The next evolution in the field is the voice search, which is going to alter the way people work with keywords.

Mathias uses SemRush [40] and Ahref to help with finding keywords and they use Screaming Frog to check if the website is correct. Here he also talked about the problem with being locked to a specific tool and that you have to think about how the company behind the tool gets the information they present to you. Do they have their own agenda?

Mikael talks about the basics, put the keyword in the domain name, repeat the keywords a moderate number of times in the content and that titles on images are important. Mikael thinks that the keywords in the title or headlines are not that important to him, even though

he knows that it helps. He uses his article about database modelling [41] as inspiration for future articles on his website, since it ranks high on the keyword “databasmodellering” (database modelling in english).

Johan tells us that he uses the most common tips from Google guidelines and tries to think about having his keywords in the title and in the body text. He also used Google adwords to help with finding relevant keywords and see what people are searching for. They also hired a company called Jajja Communications to help with SEO and keywords analysis.

Victoria does also work with Google adwords to find less competitive keywords and they use Yoast to help them improve the website.

5.1.4.4 Do you have any technique to get valuable backlinks from other pages?

The answers differed quite a lot here. Something that came up a lot is that it is hard to get valuable backlinks and it takes a lot of work.

Michael thinks it is important to ask people that you are close with to link to your page. It is important to get links from a lot of different places. How they do it depends on what kind of website they work on. It differs if it is commercial or something else.

Mikael has no special strategy but knows it is very important. If he is on a forum and someone has a question that he has a perfect article, he will link to it. Mostly he lets it grow by itself. If he had a company he would be working more with getting links from social media. Johan says that he had to be careful with BTHs page since it is a website for an authority. He encourages to get natural links.

Calle does not work with link building that much, they focus mostly on content marketing, creating content that makes the customer stand out and become the most relevant in their branch, product and so on.

Victoria explains that it is really hard and takes a lot of time. When they work with a customer, the customer can give them a backlink. The problem is to make sure that the customer updates the links.

5.1.5 Empirical study result

We used three methods to get the result from the empirical study. We started by using <http://www.whatsmyserp.com/serpcheck.php>. whatsmyserp.com is an easy tool to use. You add the domain and the keywords which you want to check for that domain, set what location you want the results from, press the “check all keywords” button and it will start to look for your rankings on each keyword. It stops once it hits 300 search results. If you have a lower ranking than 300, you will not get to know what rank your website has.

Two different searches was made through whatsmyserp.com, one global on google.com and one local on google.se. The reason we used global and local searches was to get different rankings, since the top domain (.com, .se and .nu) will affect the SERP.

When we had the results from whatsmyserp.com we went on to do a manual search. This included going into incognito mode on Firefox, in order to get a clear search since Google saves their user's previous searches to give them better search results. After going incognito we searched for each desired keyword on Google and clicked through the first ten result pages, looking for any of the domains.

The unoptimized website has nothing extra added to it. It was written in PHP and behaves as a normal website.

The mobile friendly has been written in Mithril.js in order to make it responsive to different sizes depending on the user's screen.

The optimized has been written in Mithril.js in order to make it responsive to different sizes depending on the user's screen. The optimized has also had the following implemented:

- The top domain is .se for targeting Sweden.
- The URL has been improved. The unoptimized has www.example.nu/test.php while the optimized has www.example.nu/#test.
- More of each keywords has been added.
- Headlines has been improved.
- Content has been rewritten to get more keywords.
- Images has been fine tuned.
- It is mobile friendly.
- Page speed should be faster with Mithril since one of its strength is speed.

Since Google do not allow users to search globally, but forces them into their location, [42] we could not do a manual search on google.com. We got redirected to google.se. The information was gathered on the 19th of may. The results can be found in the following tables.

Online SERP check, global location:

Keyword / domain	SEO optimized daniellindgren.se	Mobile friendly daniellindgren.com	Base case daniellindgren.nu
Daniel Lindgren	300+	48	82
Daniel Lindgren cv	300+	1	2
Daniel Lindgren online cv	300+	1	300+
cv	300+	300+	300+
online cv	300+	300+	300+

Table 1. Showing the position on Google's result using whatsmyserp.com on global settings.

Online SERP check, Swedish location:

Keyword / domain	SEO optimized daniellindgren.se	Mobile Friendly daniellindgren.com	Base case daniellindgren.nu
Daniel Lindgren	55	300+	300+
Daniel Lindgren CV	1	300+	3

Daniel Lindgren online CV	1	300+	300+
CV	300+	300+	300+
online CV	300+	300+	300+

Table 2. Showing the position on Google's result using whatsmyserp.com on Swedish settings.

Manual SERP check:

Keyword / domain	SEO optimized daniellindgren.se	Mobile Friendly daniellindgren.com	Base case daniellindgren.nu
Daniel Lindgren	75	100+	100+
Daniel Lindgren CV	1	100+	3
Daniel Lindgren online CV	1	100+	100+
CV	100+	100+	100+
online CV	100+	100+	100+

Table 3. Showing the position on Google's result using manual check.

We managed to get into the 300+ for the easy and medium difficult keywords but not for the harder.

One thing that might have stopped us from ranking higher is that we have been having technical problems with how Mithril handles URL building. We started out by building our links using hashbang, which is the recommended way to do it according to Mithril. The problem occurred when Google was trying to access links with hashbangs. Google do not like these kinds of links and could not find anything beyond the default page, index.html and the content of the CV. We have been trying to solve this for a long time, but finally decided to go with a single page application (SPA). With SPA you insert all your content into one page and do not link to any other page to get any of the content. This is not optimal from an SEO point of view because Google prefer to have the content split into different pages so it easily knows what content each page is supposed to contain. Even though the same fix has been applied to both of the websites, Google is still having problems with the mobile friendly website and its links. For some reason Google still thinks that the mobile friendly website has a few subpages, though this is not the case.

We have uploaded the websites to GitHub for any who is interested to see the code behind it:

- Base case: <https://github.com/McSlush/daniellindgrennu>
- Mobile friendly: <https://github.com/McSlush/daniellindgrencom>
- SEO optimized: <https://github.com/McSlush/daniellindgrense>

6 Analysis

After analyzing the literature, interviews and experiments we found some recurring methods that correlates with each other. Based on these findings, we draw the conclusions that those methods will help to improve your ranking in the SERP.



Figure 11. All results supports these statements.

The first ranking factor we found in our study to be important is the use of keywords, both short-tail and long-tails, in the right places on your website. By this we mean that the keywords you want to be ranked for should ideally be in the domain name, title and in headlines. We found that headlines and title were more important than the domain name and this is probably due to the fact that so many domain names already are taken. To work around this you can try to combine two or more words into one unique domain name. This method have some advantages since you can create a unique name that can have multiple meanings and still reflect your brand.

It is important to have your keywords in the content of the page and that the keywords have something to do with the content or Google will punish you for trying to lure traffic to your website with false premise.

The keywords should be repeated a “healthy amount” in the content. We could not really find any evidence what percentage or number of times the keywords should be repeated, but it depends on the content itself and how long it is. A recommendation we found was that 1-2% of the total amount of words should be the keyword. But it can also hurt you in the ranking if you make the content SEO friendly instead of focusing on user friendly content, since in the end it is the user who will read it and if they do not like the content, you will not rank well in the SERP.

We also found out that longer content seems to perform better than shorter content. This was very clear when we had the interview with the respondent that worked with affiliate marketing mostly oriented towards the casino and gambling market, which has highly competitive keywords.



Välkommen till Daniel Lindgren online CV!

Mitt namn är Daniel Lindgren och studerar webbprogrammering. Jag är uppvuxen i en by i Dalarna som är placerad mellan

Figure 12. An example of how to use keywords

The next factor that we found to be important is that your website is technically built correctly. When we did the experiment with our three websites, we had some problem to get Google to index our Mithril websites correctly. This is because Googlebot cannot handle the way Mithril built links with hashbangs (#!). This seems to be due to the fact that Google has deprecated hashbangs[47]. There is a way to fix this and use normal links with slash (/), called pathname, by changing some server-side code[48]. Though following the guide, there seemed to be some part that is missing. The browser had problems getting the pathname URL. Lacking knowledge is something we developers have to take into account when we choose technology. There are tools which you can use to see how Googlebot will interpret your website which you should use or you might be ranked lower because Googlebot cannot see all your pages and content.

It is also important to think about the pagespeed of the website and the internal structure of it. If the Googlebot cannot access a certain part of your website, then it will not be indexed and potentially lower your chance to rank higher.



Figure 13. An example of a link built with hashbang

Backlinks is also a ranking factor Google accounts for. But it is not the amount of backlinks that are the most crucial here, instead it is more important to get backlinks from sources that Google consider valid and trusted. If you get backlinks from “bad neighbours” it may instead harm your ranking.

There are many strategies on how to get a number of good backlinks. You can ask your customer to backlink to your website after a successful project, you can look after websites that are ahead of you in the SERP and ask them to link back to you, if you have some content they might find to be of value or you can even buy backlinks from different sources. The problem with buying backlinks is that it is against Google's guidelines and you may be punished for it if they find out.

Social media can be a useful resource to get backlinks from. Social media itself is no ranking factor, but with the help of social media you can reach out to a bigger audience in a much easier way than before.

The handling of images is also important in SEO. Google cannot interpret images alone, so it is really important to have some explanatory text to the image so that Google understands the context of the image. Giving your images a descriptive name will further boost the understanding of the crawler. A good image name contains the keywords as well as a description of the image. It is important to keep to the truth while writing alt and title tags, since images may be reviewed manually.

Images are good for the user experience because they can make the content easier to read and understand if there is something that can visualize what the content is about.



Figure 14. An image with header, alt, figcaption and backlink to GitHub. Title is set but does not show.

We also found some methods that were not confirmed in all three studies, but in two of them and is therefore also ranking factors worth to bring up. The reason we could not confirm these in all three studies is that it is hard to measure some aspects in our experimental study for different reasons.

Interview	Experiment	Literature
✓	✗	✓

Figure 15. Interview and literature supports these statements.

Nofollow tags is something that we did not use on our website. It is a ranking factor because it provides a way for webmasters to tell search engines "Do not follow links on this page" or "Do not follow this specific link.". It is important to use the "nofollow" when the link is something you do not or can not endorse or when the link is primarily commercial in nature. We did not use the canonical tag either, but it should be used when you want to mark which content is original and which is duplicated. If you do not use this tag and have duplicated or similar content on your website, Google may punish your website with a lower rank. Redirection is the process of forwarding one URL to a different URL and this is really important when you do a new version of a website. Then you want to make sure you redirect the users that tries to access the old page to the new one. If you do not do it you might end up losing traffic.

Google announced in 2014 that websites that uses HTTPS will be boosted in the ranking. HTTPS was developed to allow authorization and secured transactions. Exchanging confidential information needs to be secured in order to prevent unauthorized access, and HTTPS makes this happen. In many ways, HTTPS is identical to HTTP because it follows the same basic protocols. The HTTP or HTTPS client, such as a Web browser, establishes a connection to a server on a standard port. However, HTTPS offers an extra layer of security

because it uses SSL to move data. Google promotes this as a ranking factor because users can be guaranteed that the site will encrypt their information for that extra level of security.

We can also come to the conclusion after the analysis that these methods alone will not guarantee that you reach top rankings, since SEO has more to it than just technical aspects. In order to be successful in SEO you need to understand how the users search behaviours are today, but it is also important to understand how they will search in the future. The mobile device revolution has changed the way the people search for information and it leads to changes in Google's algorithms.

To understand and use a good strategy for link building and networking is also important in SEO. There are many strategies out there and the hard part is to find the one who fits best for your goal and ambitions. Many keywords and websites have a hard time to get organic backlinks that point to them because of their type of business.

We also saw that different types of websites need different types of SEO, and that there is no standardised way to always reach the top of the SERP. When we talked to our respondents they were unanimous when we asked if they follow one strategy on all projects. They said that you can't do that and expect to achieve a good result. You need to work differently on each project to find the weakness of the website and work with them.

6.1 RQ1 - Which factors does Google account for when they rank your website in the SERP produced by their search engine?

We divided the factors we found into two categories, On-page and Off-page methods. The On-page category consists of the factors that you as a developer can affect since it is about how you structure and work with your website. While Off-page is more about getting backlinks and traffic to your websites. We list the factors we found below and gave them ranking from low to high depending on their importance.

On-page

Method	Impact
Title-tag	High
URL	Medium
Headlines	High
Anchor text	Low
Canonical	Medium
Content	High
Images	High
HTTPS	Low
Mobile friendly	Medium
Page speed	Medium
Nofollow	Low
Domain	Medium
Sitemap in HTML	Low
Keywords	High

Off-page

Method	Impact
Backlinks	High
Link building	High
Satellite page	Low
Blog	Low
Recycle	High

Table 4. Showing ranking factors and their impact on SEO

6.2 RQ2 - How should you implement these ranking factors to get a better position in Google's SERP?

There are several things you as a developer should take into consideration when optimizing a website. First of all you should consider how you work with the content. The text on the page have to be of value to the user and not just written to be optimized for a search engine. You should also know that Google ranks longer content higher in general and therefore plan your text accordingly.

The keywords you want to be visible on in the SERP has to have some relevance to the text and should also be repeated approximately 1-2% of the total number of words you have in the text for maximal ranking boost.

The structure of the entire text is also important. You need to use a correct structure with a title that explains the overall topic and which have the keywords within it. Use headlines for subparts of the text and use paragraphing to make it easier to read. To make it more user friendly it might be a good idea to use images to make the text easier to understand and not just a wall of text. Then you have to remember that Googlebot only understand what images represents if you give them a title and a description.

Depending on what keyword your site targets it is also important to think about what top-domain to use and URL. The optimal choice is to have your keyword directly in the URL, but since so many keywords already are occupied that can be difficult. Instead you can combine two or more words to make a new keywords that still make sense to the user, your brand and that it is catchy. Try to target where your keymarket is located and choose the

top-domain depending on it. For maximum exposure in the Swedish market you should use the .se domain.

If you go deeper into what you can do technically on your website to optimize it, the most important thing is to make sure that all your pages are reachable. If Googlebot can not reach a certain part of your website, then they can not index it and therefore not give the page any ranking. So the internal structure of the page is important. Do not use pages where you need to fill a form to come to the next page since Googlebot can not do that.

You should build the website with a fast and lightweight language to boost your page speed and also use the HTTPS protocol. For extra boost in the ranking, make your website mobile-friendly with responsive design. That will be good in two ways. First Google give you a higher ranking for it, and secondly the user that accesses your website from a mobile device will be grateful. The majority of the searches today are made with mobile devices and you should therefore take them in concern when you build your website.

The next aspect to consider is how you will lead traffic to your website and how to make people link back to your website and share it among others. There are several strategies for working with how to get backlinks and they differ depending on what area your website targets. But it is important to try to avoid to get backlinks from sources that Google do not believe to be of good quality, since that might lower your ranking.

Even though social media is not a ranking factor you can use it to your advantage because you can reach out to a bigger audience whom can share your content which leads to more traffic. Infographics are something that you can use to make your content more understandable and more likely to be shared.

To improve the ranking one should use as many techniques as possible. One single technique will not give that much more rank, but combined they can be powerful. On-page methods are good for making the website more optimized both for Google's bot and the users. Without the Off-page methods you will lose out on a lot of traffic and therefore be missing out on better ranking.

6.3 RQ3 - What is the difference between an optimized versus unoptimized website in the SERP?

The unoptimized website has nothing extra added to it. It was written in PHP and behaves as a normal website. The optimized has been written in Mithril.js in order to make it responsive to different sizes depending on the user's screen. The optimized has also had the following implemented:

- The top domain is .se for targeting Sweden.
- The URL has been improved. The unoptimized has `www.example.nu/test.php` while the optimized has `www.example.nu/#test`.
- More of each keywords has been added.
- Headlines has been improved.
- Content has been rewritten to get more keywords.
- Images has been fine tuned.
- It is mobile friendly.
- Page speed should be faster with Mithril since one of its strength is speed.

By comparing local search for .se and global search for .nu, using whatsmyserp.com, we can make a fair assessment of how the two websites compares to each other. Keep in mind that we have targeted different area by using different top domains. Using the same top domain and changing the domain name would have kept us in the same area and given us a better results to compare.

The key phrases “Daniel Lindgren CV” and “Daniel Lindgren online CV” for the optimized website places in the first position. For the unoptimized website we are placed second on “Daniel Lindgren CV” and for “Daniel Lindgren online CV” we did not get ranked.

Key phrase “Daniel Lindgren” on the optimized website places us 55th. On the unoptimized it did not rank.

For “CV” and “online CV” we are not placed at all.

The optimized website performed better as expected. It is not possible to make a correct comparison due to the fact that we are using local and global search result.

By comparing them both on local search, only the optimized get ranked at all and the fact that this happens shows the importance of using the right top domain for the right website, know your users.

6.4 RQ4 - What is the difference between a mobile-friendly versus unoptimized website in the SERP?

The unoptimized website has nothing extra added to it. It was written in PHP and behaves as a normal website. The mobile friendly has been written in Mithril.js in order to make it responsive to different sizes depending on the user’s screen.

Comparing the mobile friendly to the unoptimized website we can use global search on both. “Daniel Lindgren CV” gets second place on the unoptimized website and first on the mobile friendly.

“Daniel Lindgren Online CV” gets first place for the mobile friendly and gets no rank at all for the unoptimized.

“Daniel Lindgren” on the unoptimized website gets 82th place and on mobile friendly 48th place.

Neither placed on “CV” or “online CV”.

As the result shows, the mobile friendly outperformed the unoptimized. This was expected and the difference can be explained by the fact that Google gives mobile friendly a higher rank. It may also be due to different top domains. One theory is that the top domain can affect how important Google think that the website is compared from where the search is made.

7 Conclusion

SEO is a field that is constant change and the methods that works today, might not work tomorrow due to changes Google make in their algorithm.

In this report we have learned that in order to achieve the number one position on a Google’s

SERP, one have to apply many different techniques in SEO, there are no shortcuts. But it is possible for any person, organisation or business to achieve this, without paying Google to be in the advertisement section of the SERP. And that is because Google wants to give the user the best a answer to a question or the best content for the query.

During this report we learned about 19 different ranking factors and also six other methods that are not directly ranking factors, but they can be used to help you rank higher.

These methods can be divided into two categories, On-page and Off-page.

On-page methods are things you do directly to the website. That includes making good quality content that users find valuable, creating titles that intrigues, have a correct structure of the website itself and to find and use the right keywords.

On-page

- Keywords - Words or phrases that is included somehow on your website that you want to rank on in Google.
- Title-tag - Make them intriguing and include keyword
- URL - Make it readable for humans and Google's bot and include keyword
- Headlines - Use them correctly and include keyword
- Anchor text - Is important to tell the users what the link is about and where they will end up by clicking on it
- Canonical - Prevent Google from punishing your website for duplicated content
- Content - Should be easy to read and understand, help a user to solve a question or learn something and have the targeted keyword should be repeated a "healthy" number of times.
- Images - Important for user-friendliness but Google's crawler can not interpret it if you do not use alt or title-tag.
- HTTPS - Google gives a boost if the website have implemented HTTPS-protocol.
- Mobile friendly - Google have mobile first perspective and therefore will they rank pages that are mobile-friendly higher.
- Page speed - Google gives a boost if the website have a low loading time. The optimal response time is under 200 ms.
- Nofollow - If a link contains a nofollow rel (relation) tag, the link will not count for the targeted websites ranking
- Sitemap in HTML - Helps visitors to quickly find what they are looking for and are also a search engine locally that helps to easily find all the subpages on the website.
- Domain - Understand where your users or customers are and choose a domain accordingly. It is easier to rank better in Sweden with an .se then a .com.

The other category is about how you can get traffic to your website and how to get backlinks from trusted sources. Traffic in Google's eyes means that your website offer some value and will therefore rank it higher so more people can find it. But if they see many people go in on your website but leave immediately, will they interpret that as you are misleading people and instead lower your rank.

Off-page

- Backlinks - Are links that points to your website. If the source is accounted as trusted from Google, this will boost your ranking.

- Link building - Is a methodology that results in getting external websites to point to your website.
- Satellite website - Is an alternative website used to give links back to your main website.
- Blog - Is like the Satellite website, is used as an alternative to get traffic to your main website.
- Recycle - If you have an old website that have been changed during the years, chances are that you have a lot of links that can be recycled.

But it is not enough to just know about this ranking factor, you also have to understand how to use them to your advantage. How you SEO optimize your website depends on your goals, what field you are in and ambition. There is no shortcut to get to the top in high competitive keywords and there is no standardized way that always will work on all websites. This was very clear when we interviewed people, that it varies a lot in different companies how they approach SEO. Some had the strategy that they just let it grow organically and did not care about link building and how to get more traffic, while others worked really hard with link building.

To improve the ranking one should use as many techniques as possible. One single technique will not give that much more rank, but combined they can be powerful. On-page methods are good for making the website more optimized both for Google's bot and the users. Without the Off-page methods you will lose out on a lot of traffic and therefore be missing out on better ranking.

An experiment was conducted with three different websites. The first was an unoptimized website which only had the basic functionality of a website with no SEO implemented. The second had been implemented with mobile friendliness in order to see if it makes any difference. The third had as much SEO implemented as possible to see if it would rank better than the others.

The optimized website performed better than the unoptimized as expected. It is not possible to make a correct comparison due to the fact that we are using local and global search result. By comparing them both on local search, only the optimized get ranked at all and the fact that this happens shows the importance of using the right top domain for the right website, know your users.

The mobile friendly outperformed the unoptimized. This was expected and the difference can be explained by the fact that Google gives mobile friendly a higher rank. It may also be due to different top domains. One theory is that the top domain can affect how important Google think that the website is compared from where the search is made.

We discovered a problem with Mithrils.js in terms of SEO friendliness. Google did not understand the way Mithril build links, and could therefore not index all pages on the website correctly. We could also draw some conclusion that if you want to optimize a website for the swedish market, it is better to use the .se domain instead of .nu or .com.

8 Future work

We have only touched on mobile friendliness and since there is more mobile searches than searches from computers are being made today, this would be a great field to dive into. Due to the fact that mobile searches are increasing, so is voice search thanks to apps like Siri and Cortana. Voice searches are often quite different than searching with a keyboard. More complete sentences are used compared to a few words. This difference in how searches are made could be investigated.

Appendix

Appendix A interview questions

English (translated) version:

1. What is your job title?
2. What education do you have?
3. Is there any strategy that you follow from start to finish, like Moz iterative method?
4. How do you do to get keywords higher ranked?
 - a. Do you use Google Adwords Keyword tool to find keywords?
5. What tools do you use in your SEO work?
6. Do you have any technique to get valuable backlinks from other pages?
7. Do you have any on-page methods that you use to every project?
8. How do you measure changes in seo statistics?
9. Any tips on good websites, books, techniques or movies?
10. What are the most important variables to have in .htaccess?
11. Have you noticed if privately defined 404-pages makes any difference in SEO?
12. What to avoid? Black hat techniques that one may not think of.
13. Do you know anyone who works with SEO that you can recommend to us for an interview?

Swedish (original) version:

1. Vad är din arbetstitel?
2. Vad är din utbildning?
3. Följer du någon strategi från start till slut? (Moz iterativa metod eller liknande?)
4. Hur gör du för att få keywords högre rankade?
 - a. Använder du Google Adwords Keyword tool för att hitta nyckelord?
5. Vilka verktyg använder du inom SEO arbetet?
6. Har du någon teknik för att fixa värdefulla inlänkar från andra sidor?
7. Har du några on-page metoder du använder till samtliga projekt?
8. Hur mäter du förändringar i SEO statistik?
9. Tips på bra sidor, böcker, tekniker och filmer?
10. Vad anser du är de viktigaste variablerna att ha i .htaccess?
11. Har du märkt av om egendefinierade 404-sidor ger några skillnader i SEO?
12. Vad brukar du undvika? Blackhat tekniker man kanske inte tänker på.
13. Känner du någon som jobbar med SEO att rekommendera som vi kan intervjua?

Appendix B respondents

<u>Name</u>	<u>Title</u>	<u>Workplace</u>	<u>Education</u>	<u>Time of interview</u>
Mikael Roos	Lecturer	BTH	Master's degree Software Engineering at BTH	2017-03-17
Michael Wahlgren	Founder / Former CEO	Pineberry AB	Graduate economist Handelshögskolan Stockholm	2017-04-26
Johan Bournonville	Webmaster BTH / CEO 3DVision	BTH	It engineer: media and communication	2017-04-21
Mathias Olsson	CEO	OG Group	Bachelor's degree: MDA BTH	2017-04-06
Calle Magnusson	Web strategist / project leader	Mustasch	Graduate economist, Hyper Island and Berghs	2017-05-04
Victoria Lindén	Market manager	Ballou	Information economy BTH	2017-05-16

Appendix C workflow SEO

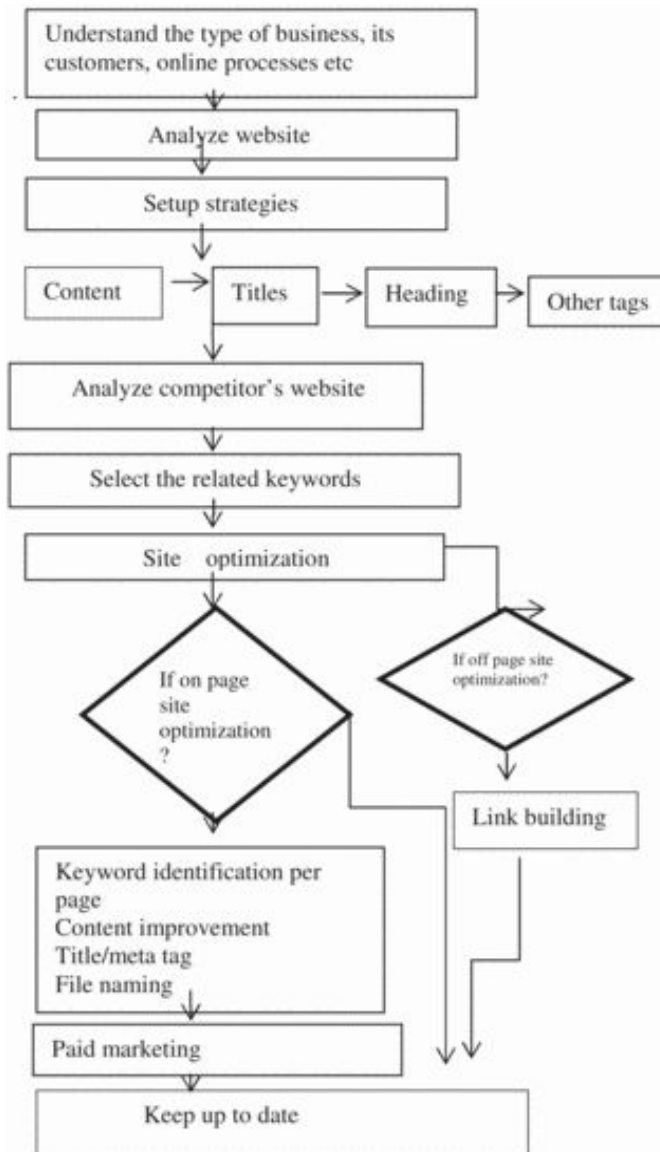


Figure 16. showing a typical workflow of SEO work (from Kakkar, A.; Majumdar, R.; Kumar, A. - Search engine optimization: A game of page ranking 2015)

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