A Qualitative Analysis of the Factors Influencing Findability of the Websites of Slovak Libraries

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Introduction: At present we are witnessing growing number of websites. So it is very important not only to have a website, but also to be findable within the first pages of search results. According to iProspect study the importance of appearing high in the search results has steadily increased over time. The data indicates only few users go beyond the third page of results.

Research question: How do Slovak library websites conform to the recommendations of the information architects, SEO and usability specialists and recommendations of the W3C to create findable websites?

Methodology: We have decided to do the heuristic evaluation of the library websites that were enrolled to the contest TOP WebLib 2005 - 2008. We elaborated the Findability Management Scorecard that benchmarks website against best practices in findability search engine factors and used variety of SEO optimisation tools. We also used web analytics to get more information about the visitors and their interaction with the site.

Results: Findings indicate that only little attention is paid to the findability factors. SEO may be greatly improved by web analytics. According to us the most important ranking factor is the authority and trust of a domain, the quality and number of external links pointing to an individual page and keyword-based relevance of an individual page. There are several recommendations for improving findability of a website. We have developed Guidelines for better findability that should be taken into account when creating findable websites.

Keywords: findability, web analytics, usability, accessibility, SEO, search engine optimization, information architecture, Slovak Libraries

1. Introduction

Today when we are witnessing growing number of websites, it is not enough to have a website, but to be visible for search engines. Search engine visibility is very important, because search engines and directories are the main way how Internet users discover web sites. In literature we find many resources that confirm this fact and the percentages range from 42 percent to 86 percent Internet users (Thurow 2003, p. 10). According to Jakob Nielsen (2004) over 80% of Web traffic is generated by information searches initiated by users.

To stress the importance of the visibility, we must take into account, that according to iProspect Blended Search Results Study (2008) 68% of search engine users click a search result within the first page of results, and a full 92% of search engine users click a result within the first three pages of search results. It means that it is very important to appear high in search results. According to the previous research there is a growing tendency to click on the first page in 2008 (68%) as compared to than in 2006 (62%), 2004 (60%) and 2002 (48%). On the other hand fewer users are willing to click results past the third page in 2008 (8%) as compared to 2006 (10%), 2004 (13%) and 2002 (19%). So having a good listing on the first SERP (search engine result page) for all relevant keywords is very important if you want to be found by people who are looking for the products or services you offer.

The purpose of the study is to analyse qualitative factors that influence findability of the websites of Slovak libraries and to propose some recommendations for the designers. According to our research the usability, accessibility and search engine optimisation greatly influence findability.

2. Findability of Web Sites

One of the most important qualitative factors of websites is their findability. Peter Morville in his book Ambient Findability (2005, s. 4) defines findability a) as the quality of being locatable or navigable, b) the degree to which a particular object is easy to discover or locate, c) the degree to which a system or environment supports navigation and retrieval. Because of the enormous growth of the Internet, findability will be recognized as a challenge in the development of web sites, intranets but also knowledge management systems and online communities.

According to our opinion findability is influenced by many factors. To the most important belong (Makulová, 2005):
Enormous growth of websites and digital documents is a very serious problem. The first Google index in 1998 had 26 million pages and by July 2008 official Google blog reported to had indexed 1 trillion unique URLs on the web at once.

But unfortunately the information literacy of the users is still very low and the vast quantity of digital information is not as structured as we were used to find in professional information services. This unstructured content requires new methods and new techniques of accessing information anticipating the behaviour of different types of users.

With the enormous growth of the Internet there has been an increased demand for understanding of its audience. There are many studies providing detailed information about the Web and its demographics. But till now there has been no large-scale, quantitative or qualitative study of user behaviour of searching the Web. How do they search the Web? What do they search for on the Web? We have to take into account that the Web is an information universe of users who have different types of user needs and user behaviour. This is a very important concern because according to the latest Internet World Stats there were 1,463,632,361 Internet users in 2008 that represents 21.9% of the population.

Findability of the websites may be improved by good information architecture and by search engine optimisation. The findability is critical factor. If the users cannot find what they need through combination of searching, browsing and asking, they fail. Jakob Nielsen in his recent book with Hoa Loranger Prioritizing Web Usability (2006) states that almost three quarters of the usability issues that people encounter have to do with basic user goals: finding, reading and understanding information.

According to them findability was the biggest issue, accounting for 26 percent of user failure. Findability of the websites depends on the information architecture, category names, links, navigation, etc. The second problem was search, then page design (readability, layout, graphics, scrolling), information (content, product info, corporate info, prices), task support (workflow, privacy, forms, comparison) and fancy design. The findability of the websites may be greatly improved by search engine optimisation.

3. Search Engine Optimization

There are many approaches and definitions to SEO. Search engine optimization is the process of designing, writing, coding, programming and scripting your entire web site so that there is a good chance that your web pages will appear at the top of search engine queries for your selected keywords (Thurrow 2003, p. 18). According to our opinion SEO does not mean only choosing the right keywords and writing useful content, but also giving the right semantic structure to the page and setting up the information architecture of the site so the pages have the right relationship to each other and the most important pages are indicated within the navigation.

The objective of SEO is to increase Web traffic counts, and ultimately conversions, by ranking very high in the results of searches for the keywords in the search query. The mission of SEO is to deliver more relevant and competent content than the competition’s.

In terms of ranking sometimes you are well ranked for general terms and not well ranked for specific terms and vice versa. There are many new theories and approaches to this problem, as e.g. siloing (Clay 2005), long tail (Mailat 2008), etc. SEO has many techniques, but to the most important ethical techniques belong linguistic SEO, architectural SEO and reputation SEO (Nielsen and Loranger, 2006).

4. The analysis of the factors influencing findability of Slovak library websites

Since 2005 there has been a contest TOP WebLib, the aim of which is to regard the quality of library websites and to choose the best three library websites in 2 categories: public libraries and academic libraries. Websites are evaluated by an independent jury according to many criteria as **functionality** (accessibility, HTML quality, navigation and links, legality), **design** (graphic design, usability, aesthetics and beauty, layout, integration), **content** (purpose, human interactivity, information architecture, verbal expression) **originality** (innovation,
creativity, technology, distinctiveness, vision) and professionalism and effectiveness (customer service, values, focus, advances components, overall site effectiveness).

In our study Návrh metodológie na tvorbu používateľsky prijímateľných, prístupných a nájditeľných webových sídiel (transl. Proposed methodology for creating usable, accesible and findable websites) (Makulová 2007 b) we regard the most important criteria for the website findability, usability, accessibility and credibility. This year we have decided to judge the library websites independently of the jury according to one of the criteria – findability. For these purposes we have developed Findability Management Scorecard that enables to benchmark your website against best practice in findability search engine ranking factors.

There are many approaches to classification of the individual ranking factors. In our study The Analysis and Proposal of Recommendations for Better Findability of Library Websites in Internet (Makulová 2007 a) we proposed the classification to positive and negative on-page and off-page ranking factors. There were more than 100 factors with different level of significance.

Positive on ranking page factors
Keywords in URL, domain name, title tag, description meta tag, keyword metatag, keyword density in body text (5 - 20% - (all keywords/ total words), keyword proximity, keyword prominence, keywords in alt text, keyword in links to site pages, navigation, internal links, external links, domain name class, freshness of pages and frequency of updates, etc.

Negative on page ranking factors
To the most important belong text presented in graphics form only - noactual body text on the page, over optimization penalty (especially by Google), link to a bad neighborhood, redirect by using refresh metatags, stealing images/text blocks from another domain, use of Frames, dynamic Pages, invisible text, gateway, doorway page, HTML code violations.

Positive off page ranking factors
Number and quality of the incoming links, page rank of the referring page, anchor text of inbound link to our site, age of link, position of link on referrer page, keyword density on referring page, link from "Expert" site, referrer page - same theme, site is listed in DMOZ Directory (in what category), site listed in Yahoo Directory, site listed in LookSmart Directory, user behavior (increasing number of visitors, time spent on domain), domain registration time.

Negative off page ranking factors
Zero links to your site, link-buying, cloaking, links from bad neighborhoods, penalties - resulting from domain hijacking, server reliability, etc.

Top ranking factors
SEOMoz as a hub for search engine marketing worldwide interviews experts in SEO to vote on the importance of over 100 unique factors that are part of the search engines' ranking algorithms. They started in August 2005. In the following tables you see the Top ranking factors in 2005, 2007 and 2009.

Top 10 Ranking Factors in 2005 (Fishkin 2007):
1. Title Tag
2. Anchor Text of Links
3. Keyword Use in Document Text
4. Accessibility of Document
5. Links to Document from Site-Internal Pages
6. Primary Subject Matter of Site
7. External Links to Linking Pages
8. Link Popularity of Site in Topical Community
9. Global Link Popularity of Site
10. Keyword Spamming

Top 10 Ranking Factors in 2007 (Fishkin 2007):
1. Keyword Use in Title Tag
2. Global Link Popularity of Site
3. Anchor Text of Inbound Link
4. Link Popularity within the Site's Internal Link Structure
5. Age of Site
6. Topical Relevance of Inbound Links to Site
7. Link Popularity of Site in Topical Community
8. Keyword Use in Body Text
9. Global Link Popularity of Linking Site
10. Topical Relationship of Linking Page

Top 10 Ranking Factors in 2009 (Ranking Factors 2009):
1. Keyword Focused Anchor Text from External Links
2. External Link Popularity (quantity/quality of external links)
3. Diversity of Link Sources (links from many unique root domains)
4. Keyword Use Anywhere in the Title Tag
5. Trustworthiness of the Domain Based on Link Distance from Trusted Domains (e.g. TrustRank, Domain mozTrust, etc.)
6. Existence of Substantive, Unique Content on the Page
7. Global Link Popularity of the Domain Based on an Iterative Link Algorithm (e.g. PageRank on the domain graph, Domain mozRank, etc.)
8. Link Diversity of the Domain (based on number/variety of unique root domains linking to pages on this domain)
9. Links from Hubs/Authorities in a Given Topic-Specific Neighborhood (as per the “Hilltop” algorithm)
10. Site Architecture of the Domain (whether intelligent, useful hierarchies are employed)

The criteria taken into account may be divided into several categories. We put the ranking factors that were according to the experts of very high importance, high importance or moderate importance.

**On-Page (Keyword-Specific) Ranking Factors**
1. Keyword Use Anywhere in the Title Tag - 66% very high importance
2. Keyword Use as the First Word(s) of the Title Tag - 63% high importance
3. Keyword Use in the Root Domain Name (e.g. keyword.com) - 60% high importance
4. Keyword Use Anywhere in the H1 Headline Tag - 49% moderate importance
5. Keyword Use in Internal Link Anchor Text on the Page - 47% moderate importance
6. Keyword Use in External Link Anchor Text on the Page - 46% moderate importance
7. Keyword Use as the First Word(s) in the H1 Tag - 45% moderate importance
8. Keyword Use in the First 50-100 Words in HTML on the Page - 45% moderate importance

As we see, on-page keyword usage still plays an important role for improving findability of websites. Among keyword use factors to the most important belong keyword use in title tag and also keyword use in the root domain name. According to the experts keyword use in the title tag is of exceptional importance and it has been the most important on-page SEO factor for the past few years. Title tag also belongs to top ten guidelines for homepage usability (Nielsen 2002).

**On-Page (Non-Keyword) Ranking Factors**
1. Existence of Substantive, Unique Content on the Page - 65% very high importance
2. Recency (freshness) of Page Creation - 50% moderate importance

Unique content is still one of the most important criteria for SEO and findability. The golden rule of SEO Content is King. Well written content is important because it attracts the reader, increases search engine rankings and traffic and also gets links from other sites.

**Page-Specific Link Popularity Ranking Factors**
1. Keyword-Focused Anchor Text from External Links - 73% very high importance
2. External Link Popularity (quantity/quality of external links) - 71% very high importance
3. Diversity of Link Sources (links from many unique root domains) - 67% very high importance
4. Page-Specific TrustRank (whether the individual page has earned links from trusted sources) - 65% very high importance
5. Iterative Algorithm-Based, Global Link Popularity (PageRank) - 63% high importance
6. Topic-Specificity/Focus of External Link Sources (whether external links to this page come from topically relevant pages/sites) - 58% high importance
7. Keyword-Focused Anchor Text from Internal Links - 55% high importance
8. Location in Information Architecture of the Site (where the page sits in relation to the site’s structural hierarchy) - 51% moderate importance
9. Internal Link Popularity (counting only links from other pages on the root domain) - 51% moderate importance

As we see, page specific link popularity factors play very important role in SEO optimisation. To the most important belong keyword-focused anchor text from external links and external link popularity (quantity/quality of external links). Off page factors were the most significant change in search relevancy as the result of many techniques of on-page spam. It is important to focus on good links, understand the difference between various kinds of links as well as their relationship to search result sets. According to some experts not only Content is King but also Link is King.

Site-Wide Link-Based Ranking Factors
1. Trustworthiness of the Domain Based on Link Distance from Trusted Domains (e.g. TrustRank, Domain mozTrust, etc.) - 66% very high importance
2. Global Link Popularity of the Domain Based on an Iterative Link Algorithm (e.g. PageRank on the domain graph, Domain mozRank, etc.) - 64% high importance
3. Link Diversity of the Domain (based on number/variety of unique root domains linking to pages on this domain) - 64% high importance
4. Links from Hubs/Authorities in a Given Topic-Specific Neighborhood (as per the “Hilltop” algorithm) - 64% high importance
5. Temporal Growth/Shrinkage of Links to the Domain (the quantity/quality of links earned over time and the temporal distribution) - 52% moderate importance
6. Links from Domains with Restricted Access TLD Extensions (e.g. .edu, .gov, .mil, .ac.uk, etc.) - 47% moderate importance

It is clear that Domain Trust/Authority is becoming since the Florida update (November of 2003) the dominant factor in the success of rankings at Google. A link strategy that positions your site as an authority, or a hub, in a web community is a powerful way to get attention of search engines.

Site-Wide (non-link based) Ranking Factors
1. Site Architecture of the Domain (whether intelligent, useful hierarchies are employed) - 52% moderate importance

For the first time were into ranking criteria put also social media based ranking factors. They took into account the data from Delicious, StumbleUpon, Twitter, LinkedIn, Facebook and MySpace. According to the most experts data from social media have very minimal importance. According to my opinion they will play in the near future more important role.

The new ranking criteria was also usage data ranking factors. Of very low importance was according to the experts:
- Historical Click-Through Rate from Search Results to the Exact Page/URL
- Historical Click-Through Rate from Search Results to Pages on this Domain
- Search Queries for the Domain Name or Associated Brand.

Above were the positive factors influencing page ranking. But we must always take into account also negative factors. According to the experts following are the negative factors:
1. Cloaking with Malicious/Manipulative Intent - 68% very high importance
2. Link Acquisition from Known Link Brokers/Sellers - 56% high importance
3. Links from the Page to Web Spam Sites/Pages - 51% moderate importance
4. Cloaking by User Agent - 51% moderate importance

5. Guidelines for better findability

We have developed following guidelines for different attributes:

1. Guideline: Keyword focused anchor text from external links – try to get external links with keyword focused anchor text.
It is recommended that you need to control the links as much as possible. You may provide suggested links to your site including entire HTML tag, so people can grab the information and drop it into their sites. Example: `<a href="http://www.snk.sk/?historické-fondy">Historické fondy Slovenskej národné knižnice</a>`. It is recommended to use text links, in case you use buttons you must add ALT text. In case you contact people and ask them for links, provide them with actual link that you would like to use. Use link checking tool to find out who is linking to you.

2. Guideline: Use Concise and Descriptive Titles and Headings
Main headings should appear larger and bolder than body text. Subheadings should be smaller than main headings. Headings should be left-justified (Nielsen – Loranger 2006, p. 277).

3. Guideline: Keyword Use in Body Text - use the targeted search term in the visible, HTML text of the page
For this guideline we used Keyword Density Calculator that reveals which keywords are the most used words on chosen website. Compare those keywords with keywords you optimize that website. Recommendation is to have occurrence of your keywords between 4% and 8%.
Recommendations:
- Put keywords to TITLE tag
- Put keywords to Meta Tags like KEYWORDS and DESCRIPTION
- Use keywords in semantic tags like all headings H1, H2, H3, H4, H5 and H6, STRONG, EM
- Try to put your keywords between first "n" words. Searching engines sometimes examines only the beginning of the page.
- Do not overload your page with keywords. Some searching engines penalize high density, because they think you want to cheat.

4. Guideline: Try to get the high Global Link Popularity of the site - The overall link weight/authority as measured by links from any and all sites across the web (both link quality and quantity)
Global Link Popularity refers to a site’s overall link authority. Its calculation is based on all links pointing towards your site from anywhere on the web. They take into account both quality and sheer amount of links. The only recommendation is to create content of high quality and so the people will point to you. Do not participate in any link schemas, etc.

5. Guideline: The Age of Site is especially within the past years more important. It does not mean the age of the domain but the launch of indexable content seen by search engines. If a domain switches ownership it may change.
The recommendation for this guideline is to create content that has stability over time and does not change the domain. Two things that are considered in the age of a domain name are: The age of the website and the length of time a domain has been registered. The age of the website is built up of how long the content has been actually on the web, how long the site has been in promotion, and even the last time content was updated. In the latest Google update (Jagger Update) the importance was given to age; age of incoming links, age of web content, and the date the domain was registered (The Age of a Domain Name).

6. Guideline: Anchor text for inbound links is one of the most important factors in search engine optimization. It's about getting quality links from important sites and ideally, very descriptive links with the terms you want to rank for in the anchor text. It is possible to get report from Google of the top anchor text phrases used when people link to your site. (Sullivan, 2007)
Recommendations:
Use multiple word phrases, try to deeplink to important site areas and use contextually relevant words around their link.

7. Guideline: Topical Relevance of Inbound Links to Site means that sites linking to you should be related to your topic (and targeted keywords). The more relevant they are, the more weight those links are given. This guideline is similar to the previous anchor text of inbound links.
Recommendations:
Get listed in the directories with high page rank that are topically relevant to your site.

8. Guideline: Try to get the links from the sites in a topical community that are considered more relevant and authoritative on the community's subject matter.
Topical communities are measured by the search engines as groups of websites who interlink with one another and have a similar topic or theme. The links from these site have great weight. A site that is included in a topical
community by way of links from many other members may be considered more relevant and authoritative on the community’s subject matter.

6. Web Analytics

Web Analytics Association defines Web Analytics as “the measurement, collection, analysis and reporting of Internet data for the purposes of understanding and optimizing Web usage.” By using web analytics you learn more about where your visitors come from and how they interact with your site. In Slovakia the web analytic tool NAJ.SK may be used for the purposes of libraries. There are many statistics available, but to the most important belong: the number of visitors (active, returning), the number of visits, the number of see pages, the number of IP addresses, how the visitors come to the website (search engines, servers, domains, search phrases), operating systems, browsers, technical equipment of the visitors, information about the visitors (computers, computers according to TLD, computers according to the regions, mode of connection), information about the behaviour of the visitors, the path on the web, the time spent during the visit, number of pages during the visit, starting point, simple and complex conversion. All these statistics are also available in pdf format for 2 years history. The pdf report is generated every month. For libraries special section was created, where you can compare the number of visitors for different libraries. There are 32 libraries in the system at present. There are plenty of other statistics that are very useful for improving findability of the websites.

7. Conclusions

Based on the detailed analysis of the websites of Slovak libraries we would suggest following:

- To register websites in the system NAJ.sk where there are detailed statistics about the behaviour of the visitors.
- Create website for the users and not for search engines. Do not use spam techniques to get better ranking, but only linguistic, reputational and architectural SEO.
- The website should have a clear hierarchy and text links. The links on a given page should not exceed 100. Google recommends fewer than 100.
- To register websites in the directories of Internet, especially at Open Directory Project, Yahoo and Looksmart.
- To improve use of Title Tag, it should be unique for each page of the website
- To improve use of metadata, they should be unique for each page of the website
- To improve the structure of the internal links as well as the external links the website with better Google Page Rank
- To improve the writing style – optimum density of keywords. While writing content try to use the words users would type to find your pages.
- To create structured text with the use of headings (h1) and subheadings (h2, ...)
- For the graphic layout of the web page do not use tables but external CSS.
- Not to use frames!!!
- Findability can be improved by using site map, with links to the important parts of your site. Google uses site map to know the structure of your site and to increase the coverage of webpages.
- You should use information design, it means to use text instead of images because Google crawler doesn’t recognize text contained in images.
- The website should pass the strict validation by the validators of the W3C.
- The website should conform to W3C accessibility guidelines (Web Content Accessibility Guidelines 2.0 W3C Working Draft 27 April 2006, version 1.0 was released in 1997)

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