



BRNO UNIVERSITY OF TECHNOLOGY

VYSOKÉ UČENÍ TECHNICKÉ V BRNĚ

FACULTY OF ELECTRICAL ENGINEERING AND COMMUNICATION

FAKULTA ELEKTROTECHNIKY

A KOMUNIKAČNÍCH TECHNOLOGIÍ

DEPARTMENT OF FOREIGN LANGUAGES

ÚSTAV JAZYKŮ

THE IMPLEMENTATION OF SEARCH ENGINE OPTIMIZATION METHODS AND KEYWORD ANALYSIS IN ARTICLES WITH SCIENTIFIC AND TECHNICAL CONTENT

IMPLEMENTACE METOD SEARCH ENGINE OPTIMIZATION A ANALÝZA
KLÍČOVÝCH SLOV VE VĚDECKO-TECHNICKÝCH ČLÁNCÍCH

BACHELOR'S THESIS

BAKALÁŘSKÁ PRÁCE

AUTHOR

AUTOR PRÁCE

Ondrej Chudáčik

SUPERVISOR

VEDOUCÍ PRÁCE

Mgr. Jana Jašková, Ph.D.

BRNO 2018

Bakalářská práce

bakalářský studijní obor **Angličtina v elektrotechnice a informatice**
Ústav jazyků

Student: Ondrej Chudáčik

ID: 163951

Ročník: 3

Akademický rok: 2017/18

NÁZEV TÉMATU:

Implementace metod Search Engine Optimization a analýza klíčových slov ve vědecko-technických článcích

POKYNY PRO VYPRACOVÁNÍ:

Cílem práce je určit a analyzovat vhodné metody optimalizace textu na webových stránkách s vědecko-technickou tematikou za účelem lepších výsledků ve vyhledávačích.

DOPORUČENÁ LITERATURA:

Adams, R. L. (2013). SEO black book: Learn the secrets to Google search engine optimization. Lexington KY: CreateSpace Independent Publishing Platform.

Adams, R. L. (2013). SEO white book: The organic guide to Google search engine optimization. Lexington KY: CreateSpace Independent Publishing Platform.

Dover, D., & Dafforn, E. (2012). SEO: optimalizace pro vyhledávače profesionálně. Brno: Zoner Press.

Termín zadání: 9.2.2018

Termín odevzdání: 25.5.2018

Vedoucí práce: Mgr. Jana Jašková, Ph.D.

Konzultant:

doc. PhDr. Milena Krhutová, Ph.D.
předseda oborové rady

UPOZORNĚNÍ:

Autor bakalářské práce nesmí při vytváření bakalářské práce porušit autorská práva třetích osob, zejména nesmí zasahovat nedovoleným způsobem do cizích autorských práv osobnostních a musí si být plně vědom následků porušení ustanovení § 11 a následujících autorského zákona č. 121/2000 Sb., včetně možných trestněprávních důsledků vyplývajících z ustanovení části druhé, hlavy VI. díl 4 Trestního zákoníku č.40/2009 Sb.

ABSTRACT

The bachelor thesis focuses on the implementation of the Search engine optimization method into a website focused on science. It summarizes what Google is looking for in the website and what should be done to achieve the best rank in SERP. It addresses possibilities and skills required for success in the world of internet. In a search environment with constantly evolving algorithms, it is important for webmasters to stay current and relevant. Author describes numbers of goals in optimization of on-page and off-page elements. All goals should be achieved by the correct implementation. The work deals with all the basic functions of a website, their parameters and defines the possibility of earnings from advertisement. It emphasizes the responsibility and necessity to observe special rules of effective optimization strategy. The practical part is focused on creating of two articles and the process of keyword research for relevant topic of articles.

KEY WORDS

Digital marketing, keyword analysis, SEO, internet traffic, Fourth industrial revolution, solar energy

ABSTRAKT

Bakalářská práce je zaměřena na implementaci metody Search engine optimization na vybranou webovou stránku se zaměřením na vědu. V práci autor shrnuje konkrétní body, na které se je třeba při provádění zaměřit, aby se stránka zobrazila na první stránce výsledků vyhledávání v Google. V prostředí současných internetových vyhledávačů, v nichž algoritmy se neustále vyvíjejí, je pro poskytovatele webových stránek velmi důležité být pro uživatele snadno přístupný a zároveň zůstat aktuální. Autor se v práci jednotlivě věnuje On-page a Off-page prvkům, které v případě správné implementace zaručí úspěšnost. Práce rozebírá základní funkce, technické vlastnosti webových stránek a také popisuje možnost finančních příjmů z internetové reklamy. Důraz je kladen zejména na odpovědnost při dodržování pravidel optimalizace. Praktická část je zaměřena na vytvoření dvou článků a proces analýzy klíčových slov pro vybranou téma článků

KLÍČOVÁ SLOVA

Digitální marketing, analýza klíčových slov, SEO, internet traffic, čtvrtá průmyslová revoluce, solární energie

PROHLÁŠENÍ

Prohlašuji, že svou bakalářskou práci na téma Implementace metod search engine optimization a analýza klíčových slov ve vědecko-technických článcích jsem vypracoval samostatně pod vedením vedoucí bakalářské práce a s použitím odborné literatury a dalších informačních zdrojů, které jsou všechny citovány v práci a uvedeny v seznamu literatury na konci práce.

Jako autor uvedené bakalářské práce dále prohlašuji, že v souvislosti s vytvořením této bakalářské práce jsem neporušil autorská práva třetích osob, zejména jsem nezasáhl nedovoleným způsobem do cizích autorských práv osobnostních a/nebo majetkových a jsem si plně vědom následků porušení ustanovení § 11 a následujících zákona č. 121/2000 Sb., o právu autorském, o právech souvisejících s právem autorským a o změně některých zákonů (autorský zákon), ve znění pozdějších předpisů, včetně možných trestněprávních důsledků vyplývajících z ustanovení části druhé, hlavy VI. díl 4 Trestního zákoníku č. 40/2009 Sb.

V Brně dne 24.05.2018

Podpis autora

CHUDÁČIK, O. *The implementation of Search engine optimization methods and keyword analysis in articles with scientific and technical content*. Brno: Vysoké učení technické v Brně, Fakulta elektrotechniky a komunikačních technologií, 2018. 62 s.
Vedoucí bakalářské práce: Mgr. Jana Jašková, PhD.

Pod'akovanie

Chcel by som pod'akovať svojej vedúcej bakalárskej práce Mgr. Janě Jaškové, Ph.D. za odborné vedenie a rady pri spravovaní tejto práce.

V Brně dne

.....
Ondrej Chudáčik

Table of contents

1. Introduction.....	5
2. Theoretical part.....	6
2.1. World Wide Web.....	6
2.3. Web search engine.....	6
2.4. History of search engines	7
3. Digital marketing	8
3.1. Definition of digital marketing.....	8
3.2. Affiliate.....	8
3.2.1. <i>Pay per click</i>	9
3.2.2. <i>Pay per sale</i>	11
3.2.3. <i>Pay per lead</i>	11
3.3. Locations	11
3.4. Facebook instant articles	12
4. Search algorithm	13
4.1. Google Advanced Search	13
4.3. Home page optimization.....	14
4.4. Link building & Building authority.....	14
5. SEO - ranking factors.....	16
5.1. On-page factors	16
5.2. Content.....	16
5.3. Meta key words	17
5.4. Meta description	17
5.5. Page title	18
5.6. Webpage rank & domain authority	18
5.7. Keyword	19
5.8. Keyword research.....	19
5.9. Keywords ranking factors.....	21
6. Ten rules for writing SEO (Search engine optimization) friendly articles	23
6.1. Advanced rules for writing SEO friendly articles	24
7. Practical Part	26

7.1. Set up Instant Articles and connect to Facebook fan page	26
7.2. Ownership of website	27
7.3. Clearing cache	28
7.4. Setup style, logo and branding	28
7.5. Import articles.....	29
8. Video.....	30
8.1. Creating an educational video	30
8.2. Submitting video	31
9. Keyword idea generation	32
9.1. Keyword scoring	33
10. Articles.....	34
10.1. Goal of an articles.....	35
10.2. Topics of articles	35
11. Article - How technology revolutions changed the world	36
12. Article - Čína, solárna supervel'moc	43
13. Articles post-analysis	49
14. Conclusion	50
15. Apendix.....	51
16. References.....	52

List of figures

<i>Figure 1 - World's first search engine Archie [28]</i>	7
<i>Figure 2 - Affiliate advertisement on entertainment website [43]</i>	9
<i>Figure 8 - Meta Description displayed in organic result of search engine Google [13]</i>	17
<i>Figure 9 - Organic results in search engine result page [13]</i>	19
<i>Figure 10 - Long tail keyword analysis [29]</i>	20
<i>Figure 3 - Facebook Instant article webpage [24]</i>	26
<i>Figure 4 - Facebook instant article [24]</i>	27
<i>Figure 5 – Meta tag [24]</i>	27
<i>Figure 6 - Logo of Educan Project [22]</i>	29
<i>Figure 7- Wordpress Instant Articles plugin description [41]</i>	29
<i>Figure 11 - Graph described popularity of “solar energy” and “Digitalization” [14]</i>	36
<i>Figure 12- The first steam locomotive [9]</i>	37
<i>Figure 13- First steam powered print machine [17]</i>	38
<i>Figure 14- Henry Ford riding in a Ford Model N around 1906 [12]</i>	39
<i>Figure 15 - Woman slavery in the Islamic State [32]</i>	41
<i>Figure 16 - Fully automated Tesla Factory [30]</i>	42
<i>Figure 17: Najmodernejšia čínska atómová elektrárň [20]</i>	44
<i>Figure 18: Najviúčšia čínska solárna elektrárň v Zhejiagu [44]</i>	45
<i>Figure 19: Povrchová ťažba ropy [26]</i>	46
<i>Figure 20 Veterné elektrárne postavené v rámci elektrifikácie vidieka v Indii[36]</i>	47

List of tables

<i>Table 1: Abbreviations for Google advanced search</i>	14
<i>Table 2: Keyword research for Slovak article</i>	33
<i>Table 3: Keyword research for English article</i>	34

1. Introduction

The internet is generally defined as a global network connecting millions of computers. Twenty years ago, nobody knew what internet could really be able to do. The number of computers connected to internet has grown exponentially. The world as we know it is addicted to the internet connection. As the internet grew, it became harder and harder to find specific information. People are gathering hundreds of millions of terabytes of specific information on the internet. This information we gather is usually stored in data centers across the world. We use these data centers and servers as an online depository for human heritage.

This bachelor thesis will introduce a process of implementation of SEO (search engine optimization) into websites and articles. Once the optimization is done, young authors and new topics can be found on the internet with ease. The aim of the thesis is to provide a summarization of the rules and demonstrate a keyword research in practice. Both keyword research and rules will be applied in the articles. Bachelor thesis is focused on on-site optimization which involves a keyword research and other rules that need to be followed. Practical part can be considered a manual for young authors, who want to publish their articles and reach the correct audience but have a lack of knowledge about SEO. Author of this thesis therefore expects that thanks to this bachelor thesis, they can easily distinguish which information or rule is more relevant for better rankings in the Google's search engine results page. The author of this bachelor thesis is considered as the author of both of the articles, keyword research, video and the manual for Facebook Instant articles. Since the practical part of this bachelor thesis can be used as a manual in the future, author used appropriate language for example imperatives in the chapter 7. and chapter 8.

2. Theoretical part

In the theoretical part the thesis presents the concept of internet marketing introduced by reputable authors, several rules and definitions are also proposed. The author also provides a brief introduction on the history of the Internet and digital marketing.

2.1. World Wide Web

The biggest part of the Internet is the *Web*. *The World Wide* or *Web* is a way of accessing information over the medium of the internet. According to Internet Live Stats, 3,432,809,100 internet users were connected to Internet, worldwide. Nowadays, more than 40,000 Google queries are searched and more than 2 million emails are sent every second [21]. According to Cisco's Visual Networking Index, Internet is now in the so called "zettabyte era." A zettabyte equals 1 sextillion bytes, or 1,000 exabytes. By the end of 2016, global Internet traffic will reach 1.1 zettabytes per year. One zettabyte is the equivalent of 36,000 years of high-definition video. With about 1 billion websites, we have access to millions of pages of useful information [31].

The problem is, how we can find them in relatively small time? Tools, such as search engines, are used for searching specific information on the Internet. A search engine is a web service that uses the so called "web robots" to query pages and create an index of those webpages. It is processing results via complex algorithms, usually able to find accurate and valuable information we are looking for [19].

2.3. Web search engine

Adams (2013) stressed that the global network consists of millions of web pages located on servers across the globe. The importance of a powerful presence on the web has become a necessity in today's competitive business environment rather than an option. Considering the potential and importance of the Internet and internet searching today, being found online is more important than ever before. With the increasing number of webpages, it's no surprise that the level of difficulty in attaining high organic search rankings has drastically increased over time. "The Google Company has now made the world "Google" synonymous with search" [1].

2.4. History of search engines

Algorithms as we know them now, have come from early prototypes. Archie, FTP site holding, was the first search engine on the Internet. Search engines have evolved rapidly in recent years. At first, a search engine could only deal with Boolean operators. It means that the search engine was able to realize whether something is true or false, 1 or 0. Additionally, it was possible to use an operator, such as AND, OR and NOT to search documents that contain multiple terms, or to exclude some terms. [31].

IT company Yahoo started as a mere list of favorite websites. They had their search services until 2002, when Yahoo started to work on the complex search engine. The most popular search engine of all time was made by Google. Google appeared on the search engine scene in 1996. It was unique because it ranked pages according to interconnection between two different websites. Google also began judging sites by their authority. It means that Google determined how many other websites were linking to the site, and how reliable those outside linking sites were [31].



The image shows a screenshot of the Archie Query Form interface. At the top, it says "Welcome to archie.icm.edu.pl". Below that is the title "Archie Query Form" with a magnifying glass icon. There is a search input field containing "html" and a "Search" button. Below the search field are several radio button options for "Database", "Search Type", "Case", and "Output Format For Web Index Search".

Database: Worldwide Anonymous FTP Polish Web Index
Search Type: Sub String Exact Regular Expression
Case: Insensitive Sensitive
Do you want to look up strings only (no sites returned):
 NO YES
Output Format For Web Index Search: Keywords Only Excerpts Only Links Only

Figure 1 - World's first search engine Archie [28]

3. Digital marketing

3.1. Definition of digital marketing

Definition provided by Adams (2014) states that the main objective of digital marketing is to promote the products using various digital channels to reach consumers. Digital marketing spreads its range beyond internet marketing to include channels that do not require the use of the internet. For example, SMS, MMS marketing, email marketing, various types of banners, social media, search engine marketing etc. It mostly depends on specific customer behavior.

Adams (2014) also says that “brands can now be direct sellers, content producers, bloggers, tweeters and even friends without having to rely on media to deliver those messages. Consumers can seek out those brands, connect with them through social networks, tweet about them, and instantaneously let all their friends know what they think about them or what they plan to buy.”

3.2. Affiliate

Affiliate program is described in Business Dictionary (n.d.) as a type of internet advertisement. Thousands of people are making their personal websites without any knowledge of advertisement. The main earnings are from PPC advertisements [4]. Affiliate is a big advantage for sites with a lot of unique visitors. It includes sites such as news websites, entertainment websites, video channels etc. Affiliate is a cooperation that involves two or more parties that work together. Advertisement of product is displayed as a banner in the publisher website (see figure 2). This picture was obtained from the internet website and it illustrates the position of advertisement. Client either has a possibility to buy product directly in a publisher website or will be redirected. The sponsoring website provides rewards to participating websites for directing traffic to their site [25].

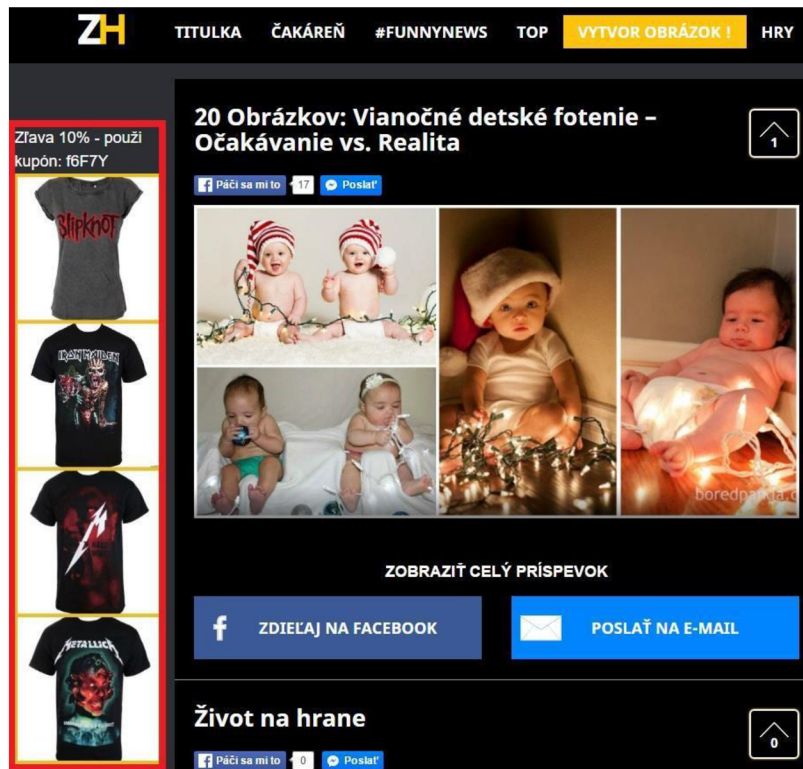


Figure 2 - Affiliate advertisement on entertainment website [43]

Affiliate provides a certain level of benefit to each other. *Affiliate* programs are prevalent in internet advertising. This is typically done by including display advertisements on the websites of the participants. Performance of the advertisement is monitored, and participants are rewarded based on these results [4].

3.2.1. Pay per click

According to SEO specialist Domes (2011), PPC advertising revolutionized the online advertising industry, and today advertising generates almost 97 percent of Google's revenue. Pay-per-click advertising, or PPC, is a form of paid search engine advertising that marketers use to get their message out to the masses on a large scale very quickly.

Domes (2011) further explains that PPC ads show up on the right side of SERPs (search engine result pages) and are now also being implemented on Facebook, YouTube videos, and more recently on sites like Twitter. PPC advertising mainly uses phrases to get relevant results. A search term can have one word or be made up of many

words. Sometimes a multi-word search term is referred to as a key phrase or keyword phrase. Advertisers target those keywords for which they want their advertisement to appear. When the users are trying to find winter jackets, PPC advertisement will display when a keyword query matches in advertiser's keyword list. This type of trafficking is called sponsored links or sponsored ads. They can appear on the top of the result page, usually in a box, and also on the right-hand side of the results page. [2]

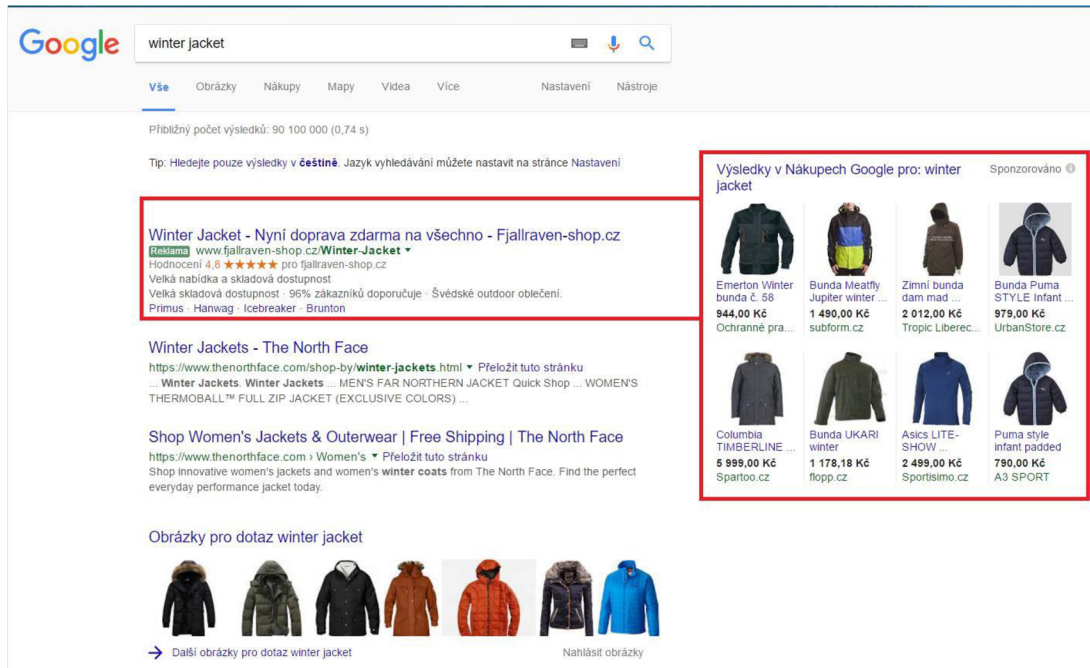


Figure 3 - The position of sponsored links in a search engine result page [13]

The search engines limit the number of characters in each line. There also are restrictions on what can be written in an advertisement. According to portal Saylordotorg (n.d.), it is necessary to respect the following nine rules:

- “Heading – maximum twenty-five characters
- Line 1 – maximum thirty-five characters
- Line 2 – Maximum thirty- five characters
- Display URL – maximum thirty-five characters
- No repeated exclamation marks
- No word may be written in capitals only
- No nonsense words may be used

- No claims like “best”, “number one” or superlatives may be used, unless they can be verified by a reliable third-party source
- Product numbers may be used” [27]

3.2.2. Pay per sale

Pay per sale program is a type of affiliate marketing program where the advertiser pays the affiliate based on conversion to sales. If a customer follows an affiliate link to the advertiser’s site and makes a purchase in accordance with the affiliate agreement, the affiliate is paid. These types of programs usually have the lowest conversion rate. [37]

3.2.3. Pay per lead

According to Webopedia (n.d.) “advertiser pays the affiliate based on conversion of leads, such as a file or software download, completion of a sign-up form for a newsletter, trial offer sign-up or other desired action.” If a customer follows an affiliate link to the advertiser’s site and completes the required action in accordance with the affiliate agreement, the affiliate is paid.

3.3. Locations

Publishers are able to target Facebook’s campaigns, so they know that the traffic they are getting is relevant to their product. This is known as geo-targeting. They can choose the language of the search engine and the location. For example, it is possible to choose where an advertisement will be shown. It might only be displayed in English speaking countries or just in specific locations. It is also possible to choose a single city as location. Targeting advertisement means that publishers are not paying for traffic they do not want [25].

3.4. Facebook instant articles

Facebook has been a very popular and important part of our lives for the past five years. Almost a quarter of the world's population is on Facebook. Every time people use it, Facebook earns a lot of money, about billion dollars monthly. Facebook earns this money using web advertisement which is displayed on Facebook profiles or on news feeds. Not so very long-ago Facebook started a service which enables Facebook users to earn money by using Facebook or better yet by posting things on Facebook. Every user is able do it by posting any website article or link on their Facebook page. The feature is called Instant Articles. Instant articles are mobile and Facebook friendly version of your website or link. Facebook puts an advertisement inside those articles. Instant articles are only for the mobile platform, smartphones especially. Instant articles link enables users to browse the link very fast by opening it inside the Facebook app rather than in a separate browser app, thus saving users time and effort. In the following parts of this bachelor thesis, author gives an answer to what needs to be done in order to earn money from Facebook. The solution can be divided into three sections: Facebook page, website and a minimum of 20 articles posted on your website. Following the step by step instructions which are described in the chapter 7, user can set up Instant articles for Facebook page. [24] [37].

4. Search algorithm

According to Adams (2014), search algorithm can be described as “a formula devised by brilliant minds that weights and takes multiple factors into account when reaching a determination for search result page ranking. A good search engine tries to answer the underlying question. The Google search algorithm combines many factors. The factors in the algorithm consist of the aged domain, website link popularity, On-Site SEO elements, and OFF-site SEO elements.

As Adams (2014) mentions, only by analyzing the on-site and off-site factors can Google determine which pages will answer the question behind the query. Nobody outside of Google knows the exact current algorithm and the total weight of each of the factors that are considered or precisely how they impact search results, but there are good guidelines available.”

Google also offers a wide range of options like image searches, map searches or advanced search which will be described in the following chapter.

4.1. Google Advanced Search

Search engines can do a lot more than it would seem at a first glance. Every search engine optimization specialist should know at least the basics of Google advanced search. The best way to utilize advanced searches is to use what Google calls operators. Operator is a symbol that can be included in the search bar to make the search more relevant [8].

Table 1: Abbreviations for Google advanced search [31]

Shortcut	Action	Example
" "	Search for exact phrase	"example"
OR	Matches terms	exaple OR example
-	Exclude term "example" from search	"name" - example
*	Missing word in quote	"this is example of * "
&&	Words appear on same webpage	example && word
&	Words appear in the same sentence	example & word
+	Search for webpages with specific word	example + name
mime:	Search for specific file type	mime:pdf
lang:en	Narrow search by language	Lang:en
domain:	Narrow search by domain	domain:com

4.3. Home page optimization

It is important to optimize your site's home page for customers in order to make sure its efficiency. Home page is just a starting point for a website. The aim of home page optimization is to target the customers to the most important parts of the site. The Domes says, home page needs to be linked to every page of the site and to the major theme pages [6].

4.4. Link building & Building authority

This chapter will provide the most fundamental information about link building and building authority. Google's trust needs to be earned nowadays and the best way to earn that trust is by getting other sites that Google already trusts to link to back to the website. It includes sharing links to a news article through social media or posting a link to a photo from some interesting websites [1]. *Link building* and relevant content are the most important parts of achieving a high-ranking website in modern search engines. As such, there are many things that significantly impact the growth and spread of links to a website. Websites offer any visitor the opportunity to create links through guest book signings, forum signatures, blog comments, or user profiles. These links offer the lowest value, but in the aggregate can still have an impact for some sites.

According to reputable server Moz.com, “thanks to this focus on algorithmic use and analysis of links, growing the link profile of website is critical to gaining traction, attention, and traffic from the engines. As a SEO, link building is among the top tasks required for search ranking and traffic success. Any link building pattern that appears non-standard, unnatural, or manipulative will eventually become a target for advancing search algorithms to discount.”

5. SEO - ranking factors

5.1. On-page factors

The term *on-page SEO* refers to a set of particles we can put directly onto a page to improve its search engine rankings. Working on the *on-page SEO* ensures that content and code follow Google's best practices. It also helps to include the most important ranking factors that search engines use to rank content. In other words, on-page factors can make or break rankings. According to Horňáková, all *on-page factors* can be described as a list of what must be done for a successful website [18]:

- Include keyword in the title meta tag
- Include keywords in meta descriptions
- Page title including <h1> headline
- Include keyword in the URL
- Include keyword at the start of the copy
- Include related keywords in the copy
- Include keyword in image ALT tag
- Link to other relevant pages on the site
- Reference and link to authoritative resources
- Write lengthy content
- Use canonical tag to avoid duplicate content issue
- Improve page loading time [8]

5.2. Content

Another significant aspect of the on-page SEO is content. Despite the fact all other factors are important, content always will be the most valuable factor for a search engine. "If Google and the other search engines recognize that you have unique well-researched content you hold an extremely good chance of ranking well." [2]

All other things being equal however, the website will be propelled to the top especially thanks to excellent content. The content on site should be organized in a logical manner. It is not only appropriate for search engine optimization, but it also helps visitors find other

related content with ease. The best way to get really good content is to write every single day. SEO content can include any of following – Product Pages, Blog posts, Articles, Lists, Guides, Videos, Infographics, Slideshows, Glossaries, and Directories [37]

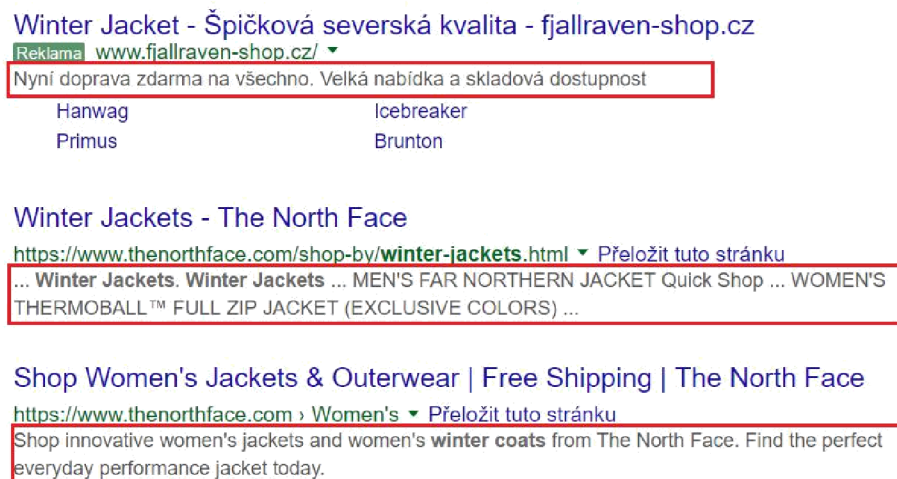


Figure 3 - Meta Description displayed in organic result of search engine Google [13]

5.3. Meta key words

Meta keywords are a part of a set of Meta Tags that appear in the header of Websites. Meta keywords are prominently used in search engine rankings. Instead of using meta keywords, search algorithms use other tags such as heading tags, site content, keyword density and back linking keywords to determine search engine rankings. [2]

5.4. Meta description

The meta description tag is one of the meta tags that are still used by search engines to display search results. This along with the title tag is used to display the name and description of the link on SERPs to the user searching information [2]. Appropriate meta description is shown in advertisement search engine result. Almost all search engines show just two rows of descriptive information no longer than 250 characters [7]

5.5. Page title

Adams (2014) also notes that “the HTML page title is the descriptive site title detail that resides within the page <title> tags. This information is displayed by the search engines and is used in ranking the site on the SERPs.” A good page title should be descriptive but not superfluous and should be about seven or eight words long. It is important to accomplish its goal in around 70 characters (the cut off point for most SERPs) with the usage of the primary keyword. We can include up to 12 words that will be counted as a part of a page title and should consider using main keywords in the first 8 words. The rest of the page title will be counted as normal text on the page. Some page titles do better with a call to action – a call to action which exactly reflects the searcher’s intent (e.g. to learn something, buy something or hire something) [2]

5.6. Webpage rank & domain authority

Experts state that one of the most important descriptors of a web page is the *page rank*. Webpage rank is ranging from 0 to 10. Sites like Facebook, Twitter, and Google’s home page achieve top page ranks of 9 and 10, while lower trafficked sites have lesser *page ranks* [2]. Domain authority is developed by portal MOZ. It describes how well a given domain is likely to rank in Google’s search result. It uses a machine learning model to predictively find an algorithm that best correlates with rankings across thousands of search results. Webpage rank in search engine result page is also connected to the age of the website [7]. Many newcomers to the web that register brand new domains and try to use every SEO trick will not rank as high as expected. However, once it does know that website’s content exists, Google records the date that it found that content in its indexes. The reason why some of the top listings are for articles that have been published years ago is that their content has become well aged. It is important to mention that not only did the content have all the other right factors for SEO, but also years had passed since that content was first found by Google, and Google trusts that content because it has been around for a very long time. [8]

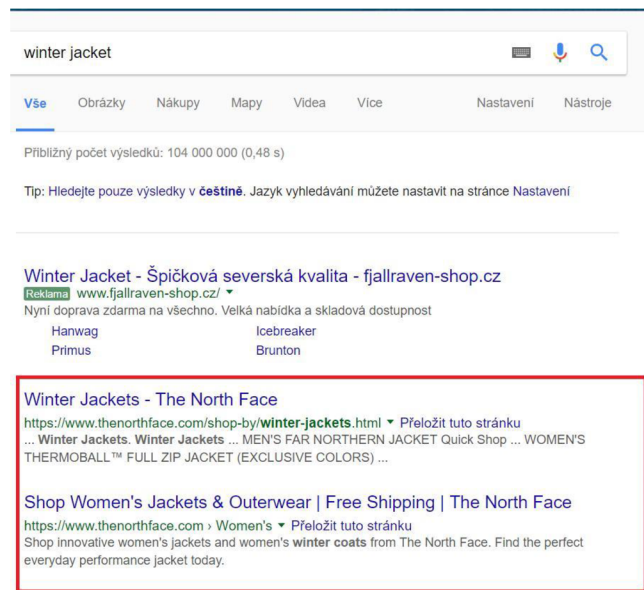


Figure 4 - Organic results in search engine result page [13]

5.7. Keyword

According to web portal Contentfac.com (n.d.), a *keyword* is a word or a phrase that is used to optimize website or webpage. Selecting *keywords* is one of the most important tasks in SEO work and selecting the right *keywords* in the outset can either make or break you. It is important to note that the *keyword* „Miami vacation“ and „vacation Miami“ will produce different search results, so the order and positioning of the words within the phrase is just as important [40].

5.8. Keyword research

Google has estimated that 50 percent of searches are unique. This means that the sum of unique searches is about the same as the sum of non-unique searches. Looking a little more closely at search terms will show a small number of high-volume searches, and then many lower volume searches stretching out to those unique searches. For the

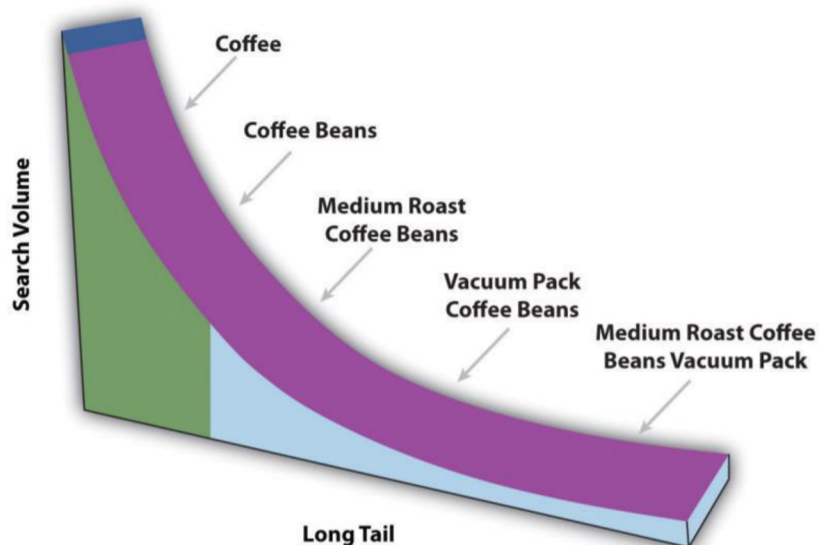
websites that want to generate traffic through searches, it is best to do *keyword research* first. [42]

Truby (2009) states that *keyword research* is at the core of the content creation geared towards SEO. Selecting and finding the right keyword is the first step in creating content that will rank for that *keyword*. The first thing to keep in mind is, that in the beginning the shorter the *keyword*, the harder it will be for the page to rank, especially if it has not created trust through age yet.

Examples of keywords can be seen below:

1. Renewable energy (short keyword phrase)
2. How to save the planet by renewable energy (long-tail keyword phrase)
3. Is possible to save the planet by renewable energy? (long-tail keyword phrase)

The first *keyword phrase*, renewable energy, is a short *keyword phrase*. A keyword phrase like this will have a lot of competition and it will be difficult to rank in the top spot even for an established website with high age and authority. For that reason, users should start out with long- tail keywords and keyword phrases with 4 or more words in them, for example customer is looking for a coffee [2]. The *figure 10* below shows an analysis of long-tail keyword “coffee”.



In the long tail, the sum of the low-volume searches matches the high-volume searches.

Figure 5 - Long tail keyword analysis [29]

A long tail keyword should be targeted in the beginning, especially with a new website and new domain name, since long-tail keywords have less competition and are far easier to rank at the top of Google's SERPs (Google's search engine result page). There is a chance of ranking in the top few spots for low competition keywords [2]. Following chapter is dedicated to the ranking factors descriptions.

5.9. Keywords ranking factors

Some of the keyword ranking factors, like Webpage rank and domain authority, have already been mentioned in the chapters above. In this chapter, keyword ranking factors are going to be summarized. According to reputable author Robert Mckee (2011) and Fishkin (2017), keywords are described by following four factors as there is no single score that is good or bad. The best keywords will be chosen from the average of all scores.

1. Difficulty score – Higher difficulty score means it will be more difficult to compete with the already-ranking results, and lower difficulty score means it is likely to be easier. The best way to think about a keyword difficulty score is as a predictor for the level of challenge an “average” website will have when ranking for that keyword [11]

2. Organic CTR (click-through rate) - CTR is a how Google determines which results for a query are valuable. Google says that “A high CTR is a good indication that users find your content helpful and relevant” The higher the number of organic CTR the better. [15]

3. Keyword priority – Keyword priority was conceived to help aggregate all the other metrics – Difficulty, Opportunity, Volume and Importance. Priority should be used to help you determine which terms and phrases to target first. If the priority is higher than 50%, it means that it could be difficult to compete with other websites. [23]

4. Monthly volume – Volume is expressed in a range, for example 200-500. These ranges correspond to data we have, suggesting, that in an average month that keyword is searched for a minimum of X to a maximum of Y, where X-Y is the volume range. Higher volume is usually better, as it means more demand. [11]

Results are computed by the formula (Priority + Difficulty) divided by Organic CTR. It means the lower resulted score is, the better the keyword seems to be for authors. [23]

6. Ten rules for writing SEO (Search engine optimization) friendly articles

In this chapter, top ten rules for writing SEO friendly articles are going to be summarized. These rules will be followed during writing the article example in chapter 10.

1. Before writing an article, keyword research is required in order to find keywords with as high searches as possible, but with lower numbers of sites competing for those keywords. [37]

2. Write titles and descriptions utilizing the best keywords.

Longer text content is a positive and is shown in studies to cause pages to rank better. Longer means 700-800 words, while the recommended minimum is at least 350 words per page. [37]

3. Information hierarchy – The most important information, images or video should go in the first couple of paragraphs. Less important information, bibliography or links should be further down the page. [35]

4. Information rich headers – according to a lot of SEO specialists, it is the easiest way to attract users. The standard behavior is, that instead of scrolling page, users scan these headers to find what they are looking for [35].

5. It is recommended to put the primary keyword for a given article somewhere within the first 100 words of the main article text [37]

6. Having a “terms of service” and “privacy” page is considered a positive for rankings.

7. Research shows that pages with 700-1300 words rank better. That is not to say users are going to write 1,500 or more words for every page. But if the user can write a longer copy for several pages, they will have a better chance of ranking higher. [23]

8. Using power words and action words – Power words evoke strong emotions in the readers. Power words are rarely used in everyday speech. Using power words is the

easiest way to elevate article beyond the ordinary [23]. Below, there is a short list of power words that are very useful for copywriting tasks:

Amazing, authentic, backed, best-selling, banned, breathtaking, certified, censored, controversial, defying, delight, exciting, epic, eye-opening, free, forbidden, greatest, guaranteed, inexpensive, incredible, jackpot, legendary, lifetime, mind-blowing, massive, no obligations, no questions asked, official, profit, proven, protected, priceless, risk-free, remarkable, rich, reduced, researched, refund, reliable, secret, select, secure, savings, staggering, stunning, surprising, targeted, triumphant, tested, unauthorized, victory, wonderful, try, taste, tell, test, understand. [34]

9. Some experts say that if publisher links from their webpage to other high authority sites, search engines interpret that as the site being more legit or authoritative. They recommend publishers to include 2-4 links per 1,000 words. [35]

10. Keep article simple – it is important to remove unneeded words and make your article easier to understand. This rule will allow users to appeal a broader audience. {35}

11. Include illustration picture after each paragraph. Pictures have a positive impact on reader's attention.

6.1. Advanced rules for writing SEO friendly articles

Chapter 6 has described the basic rules for publisher who wants to write SEO friendly articles. Chapter 6.1. is dedicated to more advanced rules for writing articles. It could be considered more technical than the previous chapter.

1. Include targeted keywords in the URL of the page, which in most cases means include the keyword in the name of the page. [33]

2. Page loading speed should be fast, preferably under 4 seconds. Otherwise, it will have a negative impact on the page ranking. It can be tested here:

<https://developers.google.com/speed/pagespeed/insights/> [33]

3. Ensure that the site is mobile friendly, with responsive being the format that Google prefers. Format of the site will positively or negatively impact the site's ranking. The site where the publishers could test their website is stated below:
<https://www.google.com/webmasters/tools/mobile-friendly/> [33]

4. It is appropriate to attach alt tags to all graphic and picture content, utilizing the targeted keywords. These are tags that attach to picture files and are just another valid way to add keywords onto a page [33]

7. Practical Part

As was mentioned in the introduction of this bachelor thesis, the practical part is considered to be a manual for authors who want to publish their articles but have a little to no knowledge about SEO. Following chapters will help them reach a public audience. Further on, a keyword research for English and Slovak language is conducted. In the last chapter of practical part, examples of article are provided. In the end of bachelor thesis author provides a post analysis of articles related to ten rules which need to be followed.

7.1. Set up Instant Articles and connect to Facebook fan page

As described in chapter 3.4, Facebook Instant articles are the easiest way for publishers or independent authors to earn money from the internet. This chapter will describe how to set up Instant Articles. First the user has to sing up on Facebook Instant Articles and connect their account to relevant Facebook fan page. In case of a new user, or if users want to set up Instant Articles for a new fan page, they need to visit a website - <https://instantarticles.fb.com/> and follow the instructions.

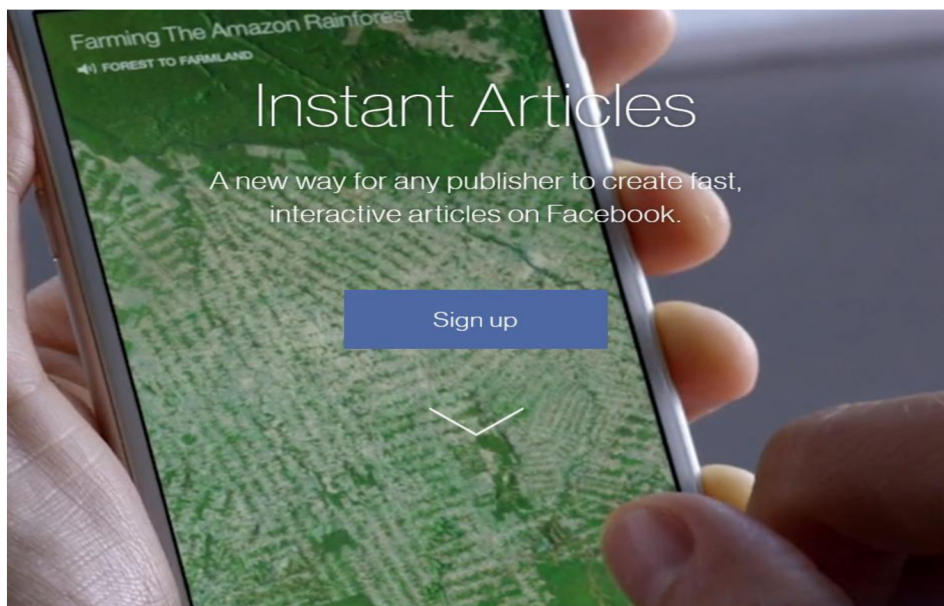


Figure 6 - Facebook Instant article webpage [24]

User has to choose which one of his Facebook pages he wants to sign up with. In author's case it is the Facebook page Educan. After that check the box to agree with Instant Articles terms and the click on "Access instant Articles Tools" button.

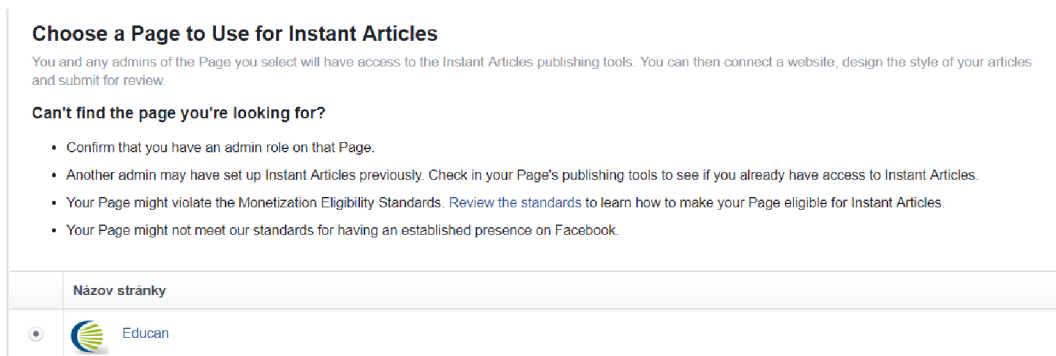


Figure 7 - Facebook instant article [24]

7.2. Ownership of website

When all tasks in the chapter 7.1. are successfully finished, user is able to proceed further. It is mandatory for all users to prove the ownership of the website by claiming URL address of their website. In the *Figure 5* below, we can see HTML tag that needs to be placed into the header of the WordPress site. After finishing this step, it is recommended to clear the cache of his computers and browser, which is described in the chapter 7.3. Another very important step is customized style, logo and branding which will also be discussed in the chapter 7.3.

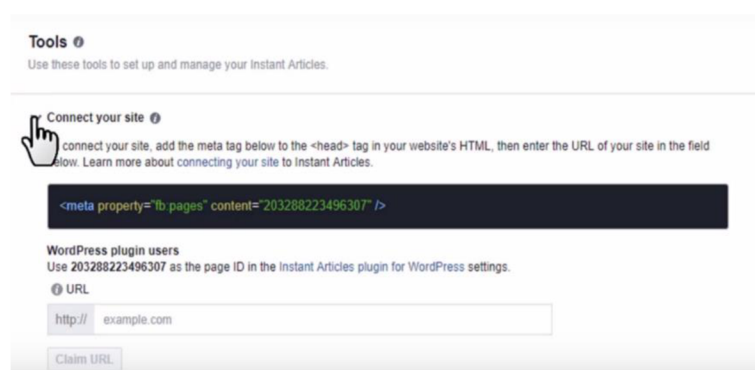


Figure 8 – Meta tag [24]

7.3. Clearing cache

This chapter describes how to clear all types of cache from the computer or browser. This is an important step in setting up the Facebook Instant Articles. Cache is the part of memory, which is put aside to allow quicker responses from the browser or computer. The basic problems with cache are, that cache takes a lot of space on computer's hard-drive and in some cases, users might encounter issues with access to websites. The first step is to go to Windows directory and click on "Software distribution". All the files stored there are Windows update data which were already used and windows does not need them anymore.

Other files that the computer does not need are temporary files, where all the temporary files downloaded from the internet are stored. To clear temporary files needs to run command line by pushing "Windows key" which is the little flag key on left hand bottom corner and click on "Run". Type "%temp%" into the command line that opens up, which takes the user to a folder where all the temporary files are stored. The user can delete the entire content of this folder. Another directory where PC stores unnecessary data which can have negative impact on users is the prefetch directory. To clear the prefetch temporary files users need to run the command line again and type "prefetch" into it. Again, it is safe to delete the entire content of the opened folder. When the cache clearing process is done, author is able to proceed to import articles which is described in the next chapter 7.6.

7.4. Setup style, logo and branding

It is very appropriate to create a custom style and adjust the look of the dashboard for Instant Articles. A logo is requested as it will appear in each of the articles published via Instant Articles. What can be seen in the *Figure 6* is a logo made using the Adobe Photoshop. Colors play a key role in logos. Author has chosen a specific green and blue color. Green can be described as serene and peaceful and it conveys the idea of growth. Blue represent feelings of strength, dependability, and peace [35].

To modify styles, click on "Configuration" in "Publishing Tools".



Figure 9 - Logo of Educan Project [22]

7.5. Import articles

Most of the amateur authors are using a third-party publishing platform WordPress, they also use a plugin to simplify the setup and maintenance. Author chose plugin “*WordPress Instant Articles*” created by Titanas Khromov. The cost of this plugin is around 4,99€/month. In the *figure 7* below is a detailed description of this plugin. [41]

WordPress Instant Articles
By khromov, titanaz Install

Upgrade to the Business plan to install plugins. >

Description

Instant Articles for WordPress will let you configure DNS prefetching URLs and will automatically prerender the last 2 posts on the front page, plus next and previous posts when viewing a single post. You also have the option to pre-render sticky posts.

It is not recommended to use more than 4-5 URLs for DNS prefetching.

Enabling page prerendering will likely increase server and client (browsers) load.

Enabling subresources will let you specify URL's to hint the web browser for high priority files, likes JS or .CSS, for fetching these even before they appear in the HTML document.

Visit the Instant Articles homepage for more info: <http://wpinstant.io/>

Figure 10- Wordpress Instant Articles plugin description [41]

8. Video

Vogler (2011) explains that one type of content that still is underutilized in the world of SEO is the online video. If used correctly, video can be an extremely powerful form of content and can make a significant contribution to your overall SEO strategy in more than one way. Although producing a video might seem like a nice idea, it is very important to do it well. Video can generate a large number of links for a website and often from some pretty reputable domains, too. The videos do not necessarily have to be funny to attract links. They just have to offer something viewers want to see. One good way to do this is to create a video that is educational.

8.1. Creating an educational video

Same as for articles, it is very important to determine basic rules before starting with the creation of educational video. First, the topic of the educational video needs to be identified. In author's case, the topic of the video is the Čína, zelená supervel'moc. Next, it is very important to make sure that the information provided in the video is correct. Vogler (2011) also stresses that we do not know how many millions of people will watch this video. And last, the video must be concise. Research has shown that the average attention to videos on social platforms such as Facebook and Twitter last anywhere from 2 to 3 minutes.

Filmora Wondershare can be considered as the best video editor that is suitable for almost all beginner publishers. This video editor is easy to learn for anyone, even if they have never edited a video before. When the program is launched, Filmora gives two main options: Easy Mode and Full Feature Mode. The more advanced authors are usually going to use Full Feature Mode, as it gives them complete control over the video project. This mode offers the standard trimming, transitions, overlays and effects expected from this kind of software. It gives authors the ability to import, edit and export fast-moving and HD footage. The Windows version costs 59.99\$ per year. Filmora offers most of the common output options, including AVI, FLV, MKV, MOV, MP4, and WMV.

8.2. Submitting video

To gain popularity and traffic the video needs to be published to a site like YouTube or Vimeo where it will reach a broad audience. YouTube can be considered as a great starting point. YouTube offers “YouTube for Creators” tutorial on the YouTube site. This site helps to build video production skills, understand the audience, and improve the related YouTube channel.

9. Keyword idea generation

This chapter can be used as a blueprint to help raise unique visitors and find a specific keywords. Keywords scoring will be discussed in the next chapter. Brainstorming of keywords could be done by using tools such as Google Suggest or answerthepublic.com. Google Suggest works on the principle, that users type a topic into the search field. After that, they are able to look at the keywords that Google suggests. These are usually long-tail keywords. Users can type a few spaces before the keyword which will show a completely different set of keyword ideas. Another tool is Quora.com, a massive community of people that ask and answer questions on every topic under the sun. All that needs to be done, is search for the topic in the Quora and see which keywords tend to show up. Next tactic for finding keywords is to use Reddit. Like Quora, Reddit is a massive community of people that discussed every topic imaginable, from pets to politics. To use Reddit for keywords research, simply head over to Reddit and search for a topic. It is important to keep an eye out for words and phrases that tend to come up. Users are also able to use Google's Searches Related to feature. To use this feature, simply type a topic into Google. Then scroll to the bottom of the results. Google then show a user other searches that are related to the keyword that was put in. These are usually long tail keywords that authors can target with content. Author used tool "answerthepublic.com". This tool provides thousands of results listed into categories such as: "questions" (what, how, which, can, why, when, who etc.), "prepositions" (near, can, with, to,, for, is etc.), "comparisons" (and, or, versus, like, vs) and according to the alphabet. Keywords listed by the category "questions" can be seen in the figure below. Keyword generation is done by choosing the best keywords from the answerthepublic.com tool, making sure they suit author's intentions and double checking with another mentioned tools such as Google Suggest or Quora. After this it is safe to proceed to keyword scoring.

9.1. Keyword scoring

In this chapter author is going to do a keyword research for the articles that will be published in the next chapter. The main difference between Slovak and English keywords is in the volume of searches. It is obvious that people use English language to search much more often than Slovak. Keywords are described by four factors as there is no single score that is good or bad. The best keywords which will be used further in the articles, will be chosen from the average of all scores. The results are computed by the formula (Priority + Difficulty) divided by Organic CTR. It means the lower the resulting score is, the better the keyword seems to be for authors. [23] In the tables below it can be seen that author uses more than 14 keyword phrases for keyword scoring. The best keyword phrases are marked with green color.

Table 2: Keyword research for Slovak article

<u>Keyword phrase</u>	<u>Monthly volume</u>	<u>Difficulty score</u>	<u>Organic CTR</u>	<u>Priority</u>	<u>RESULTS</u>
Čistá Čína	100-250	32	61	31	1,03
Čínska ľudovo-demokratická republika	500-1000	52	83	64	1,40
vzostup ekonomiky	500-1000	37	54	43	1,48
spotreba uhlia na výrobu tepla a energie	100-250	25	48	35	1,25
podpora elektrifikácie vidieka	50-100	16	51	24	0,78
emisie	1000-2500	52	76	65	1,54
znečistenie ovzdušia	1000-2500	56	68	71	1,87
peak carbon	100-250	19	43	9	0,65
elektrická energia	5000-10000	53	75	76	1,72
obnoviteľné zdroje elektrickej energie	2500-5000	47	71	54	1,42
dopyt po nerastnom bohatstve	100-250	34	63	32	1,05
klimatické zmeny	500-1000	45	71	58	1,45
nerastné suroviny	2500-5000	56	70	47	1,47
Parižska dohoda	100-250	42	68	42	1,24
spaľovanie fosílnych palív	100-250	45	74	29	1,00
fotovoltaické články	100-250	49	64	47	1,50
energetická bezpečnosť	500-1000	52	75	51	1,37
energetický systém	100-250	41	72	47	1,22

Table 3: Keyword research for English article

<i>Keyword phrase</i>	<i>Monthly volume</i>	<i>Difficulty score</i>	<i>Organic CTR</i>	<i>Priority</i>	<i>RESULTS</i>
revolution in electricity	5000-10000	42	89	43	0,96
the field of renewables	1000-2500	52	83	64	1,39
new energy regimes	2500-5000	58	65	53	1,7
smart infrastructure	10000-15000	62	84	68	1,54
communication technology	50000-100000	76	67	71	2,19
fourth industrial revolution	5000-10000	43	72	40	1,15
when the first industrial revolution hit	500-1000	41	71	47	1,24
social impact of industrial revolutions	1000-2500	24	51	26	0,98
effects of the industrial revolutions	5000-10000	47	75	29	1,01
how industrial revolution change the world	5000-10000	53	80	31	1,05
what caused industrial revolution	1000-2500	75	63	52	2,02
who benefit industrial revolution	500-1000	21	71	31	0,73
how technology revolutions changed the world	2500-5000	25	76	47	0,95
industrial revolution	2500-5000	58	71	43	1,42

The keywords with score under 1.25 points are going to be our primary keywords. As was stated in the theoretical part of bachelor thesis, for articles with length over 700 words it is recommended to choose at least 5 keywords.

For Slovak article author is going to use keywords such as: Čistá Čína, dopyt po nerastnom bohatstve, Parížska dohoda, spaľovanie fosílnych palív, energetický systém.

For English article the keywords used are: revolution in electricity, fourth industrial revolution, social impact of industrial revolution, effects of the industrial revolutions, how industrial revolutions change the world, how technology revolution changed the world.

10. Articles

In the chapter 10 author is going to write examples of two SEO friendly articles, based on an analysis of the keyword research. Keywords will be related to the topic of Fourth industrial revolution and to improvements in the Chinese's solar energy infrastructure.

The first task of this part is to find the best topics, keywords and phrases. As author has sufficient experience and knowledge of what we have encountered in the recent

years in modern technology, he offers his opinions and insight on potential of an upcoming Fourth industrial revolution. An article will include short recapitulation of the first and second industrial revolutions. Second article describes progress in the renewable energy, especially in the solar energy field in China. Illustration pictures are added to both articles after each paragraph as it has positive impact on reader's attention.

10.1. Goal of the articles

The goal of the articles is to keep people, especially young generation, informed about the fascinating upcoming of the 4th industrial revolution and about the possibilities and advancements in the solar energy. We want to share our insight for the future, and it has unique features and benefits. The aim is to evoke emotions that drive actions and to persuade the young people to be more environmentally friendly and supportive in upcoming new era of robotics. Author would like to persuade people that instead of panic, we should take part in these changes and take all the benefits this revolution has to offer. Next chapter deals with the choosing of appropriate topic of an article according to rules from chapter 7.

10.2. Topics of the articles

What can be seen in recent months is that the most trending topics are related to the ecology or environment. These topics are: renewables, global warming, Paris agreement, Antarctica etc. Author knows that renewables are the primary key for modern civilization. As could be seen in the *Figure 11*, the trend for search queries "solar energy" and "climate change" is between 50 to 75% which can be defined as very popular. From business point of view, what author has experienced over the last months on social media platforms such as Facebook, Twitter and Instagram, the content with educational function gains more shares and organic traffic than other types of content. It could be hundreds or thousands of new visitors on webpages with educational content. People do not share any old rubbish these days. So, to get the success author is looking for, it is important to really think about what to share. Essentially, articles including videos have to offer something to the viewer. They might make them laugh, educate them, amaze them, shock them, or annoy them (or even a combination of these).

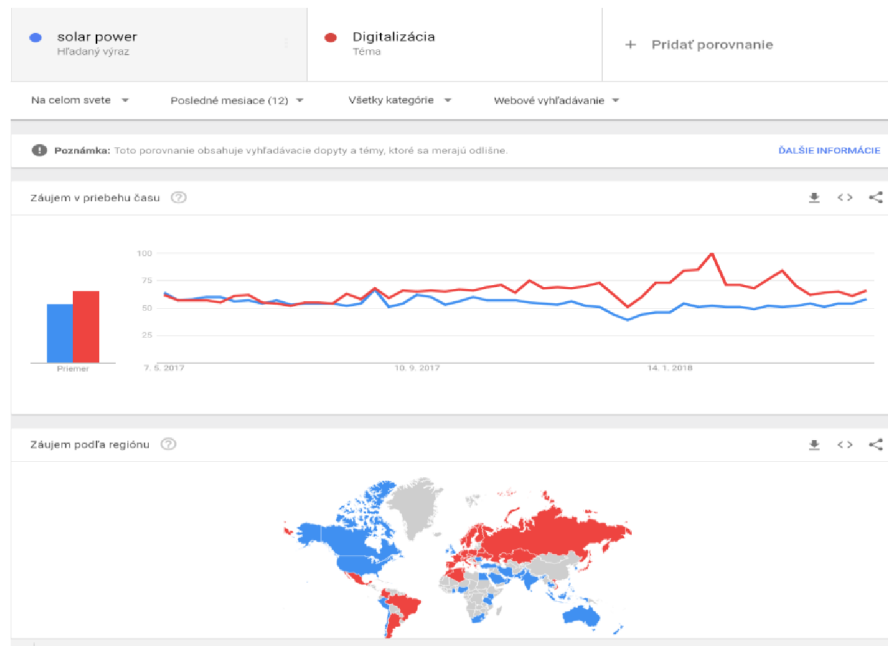


Figure 11 - Graph described popularity of “solar energy” and “Digitalization” [14]

After Topic and Keywords research author has completed the theoretical part of writing the articles. The most important thing now is to follow the rules described in chapter 7.

11. Article - How technology revolutions changed the world

Maybe, some of us are wondering what is happening to the world. Everything is changing. We are now in the early stages of the Fourth Industrial Revolution, which is bringing together digital, physical and biological systems. Founder of World Economic Forum said: „One of the features of this Fourth Industrial Revolution is that it does not change what we are doing, but it changes us“. In other words, we are on the way to shift to a new system with new modern consciousness.

First Industrial revolution

The first original industrial revolution was driven by the discovery that we were able to use coal to do all kinds of interesting things. We invented the steam engine and soon

after that, we realized, that if we would put the steam engine on rails it would be breakthrough invention, a locomotive.

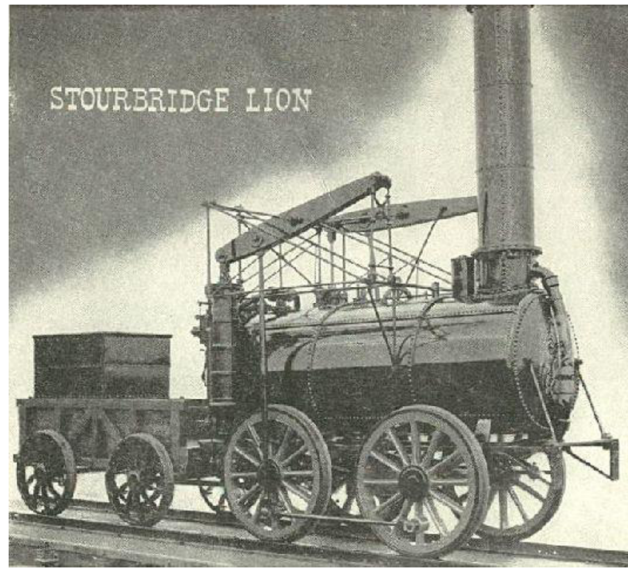


Figure 12- The first steam locomotive [9]

Locomotive changed everything including society, economics and technology. It was followed by additional revolutions in electricity and communication technology. When the [First Industrial Revolution](#) hit, all the people who were working on the fields moved to work in the factories, because world moved to mechanical agriculture very quickly. We can say, that the original Industrial Revolution was an energy revolution in the first place.

In the second place, during the first industrial revolution we have encountered the most important communication revolution in our history. Major invention in the communication technology was steam-powered printing. No more manual print presses. Steam power printing was a big leap forward, because it allowed us to produce very cheap print, very quickly.

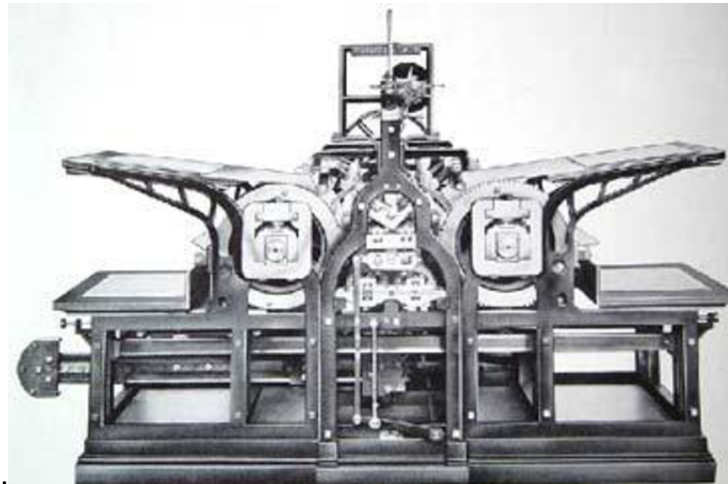


Figure 13- First steam powered print machine [17]

Then, in the second half of the 19th century, the Brits lay out a telegraph system across the British Isles and it changed everything. Suddenly, people who benefit the most from the industrial revolution were able to communicate at vast distances at the speed of light. These inventions took us into the Second Industrial revolution in the United States. Second industrial revolution could be easily described by centralized electricity and especially by new communication technologies such as the telephone and radio.

These communication technologies converged in the United States with a completely new energy source. Cheap Texas oil. Henry Ford put everybody on the road with cars, buses, and trucks. There have been at least three major economic shifts in history and they all are very interesting because they share a common denominator. In the first place, people invented new communication technologies to allow us to manage our lives more efficiently.

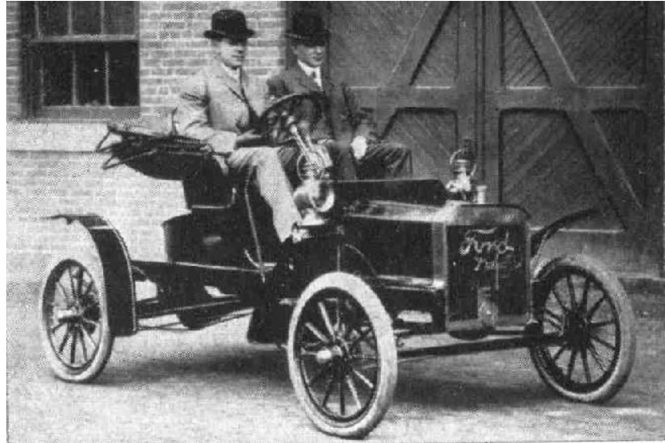


Figure 14- Henry Ford riding in a Ford Model N around 1906 [12]

Second, new sources of energy allowed us to more efficiently power our daily economic activity. And third, new modes of mobility, transportation and logistics allowed us to move the economic activity more effectively. So, when the communication revolution joins with new energy regimes and with new modes of transportation it does change the way we manage power and live our lives. We are on the edge of three new revolutions. Environmental, industrial and social revolutions.

These revolutions will involve every industry. Renewables allow us to use environmentally friendly types of unlimited sources of energy. Solar, wind and hydro energy are the most widespread types of renewables. Many nations including USA, Germany, Norway, China etc. are investing billions of dollars every year into research of new improvements in the field of renewables. This digital revolution, as it is officially named, will take part in developing countries also.

A lot of people think that it could be hard to integrate modern system for them because they have no infrastructure. But it is not true. It is easier to build virgin infrastructure from scratch than to take an old infrastructure and transform it. I see the opportunity that the developing world can let's say omit the 1st and 2nd Industrial Revolution and jump forward into the 3rd. I always wonder what future generations will think of us, maybe in a hundred thousand years from now. They' will say, "Oh, yes, we remember them." "There was the Bronze Age, the Iron Age." These were the fossil fuel people." and created a short-lived dramatic and very dangerous civilization." It is all about fossil fuels.

Our fertilizers and pesticides are made from fossil fuels. Our construction materials are made from fossil fuels. Most of our pharmaceutical products are made from fossil fuels. Our synthetic fiber, our power, our transport, our heating lights - all is moved by fossil fuels. Despite the constant 'red alerts' about the weather, the truth is that without fossil fuels, it would be disaster. Of course, we should strive to develop new energy technologies that are economic and cleaner. But the idea that we could just wish away fossil fuels any time soon is dangerous nonsense.

How electricity affected the society

The biggest problem in the developing world is no electricity. It comes to the question how electricity affected the society? We have got a billion people that have no electricity. They are in the dark. We have 40% of the human race with infrequent, not reliable electricity. It has direct impact to quality of life of billions of people. I would like to point on very interesting fact, what keeps women enslaved in this world? It is no electricity.

What we see in these big families, in these patriarchal, brutal conditions, and male-oriented cultures? No electricity. Why? Because, with no electricity, women are the slaves, the children of the slaves, more children are more hands-on deck that can actually carry the energy load. We forget the relationship between electricity and freeing women in the history. Women were the slaves at the heart until electricity came in. Electricity freed women from that slavery. Electricity created new skills that did not require upper-body strength. Electricity revolution created all sorts of new skills. And, when that happened, as women became more educated and more independent it has direct impact to fewer babies. Pan Ki Mun said: "You can give out millions of condoms; it will make no difference, until you bring electricity into the developing world, free the women, and you have them get educated, and have them be recognized as half the human race."



Figure 15 - Woman slavery in the Islamic State [32]

Fourth industrial revolution – impact on work

Well, next important question is, how we will we define work? Our future is filled with new robotic technologies and new interesting opportunities but for some the future does not look so bright. For that reason, I would like to raise some concerns with you. Construction, manufacturing, services, public health and education: these industries will always exist. A study done at Oxford University found out that 45% of all current jobs will disappear in the next 10 years.

For example, drivers, shopping assistant etc. If your job consists of driving any type of machinery, you are going to be out of a job soon. It is same for another jobs including farmers, printers, cashiers, travel agents, manufacturing workers, soldiers, bankers etc. As was said in [World Economic Forum](#) in the Davos this year, “the factory of the future will only have one human and one dog. The human will be there to feed the dog and the dog will be there to keep the human from touching the machines.” What I'm suggesting here is that we have one last surge of massive employment involving semi-skilled and unskilled labor



Figure 16 - Fully automated Tesla Factory [30]

We must build out smart infrastructure. Robots are not going to do this. We must take the entire energy complex of the Europe and convert all that infrastructure from fossil fuels and nuclear power to distributed renewable energy. And then we must install all the renewable energy technology. Human beings must install that technology, and all the smart technologies that monitor the equipment, and put in the digital advanced meters. This requires professional talent and unskilled and skilled labor for two generations.

The biggest challenges, we are heading in upcoming 4th industrial revolution are ethics of innovation and civil society preparedness. To sum up, world is on the edge of fantastic progress. Everything what we know for now, will be changed. I am sure you will all agree with me, when I say that people are going to be born to enjoy every second of their life.

12. Article - Čína, solárna superveľmoc

Vplyv ľudstva sa na zemskú biosféru za posledných 30 rokov dramaticky zmenil. Problémy okolo nás nie sú výsledkom zlej politiky, legislatívy, inflácie alebo hospodárskeho cyklu ako je expanzia a kontrakcia ako tvrdí ekonomická teória. Samotný základ ekonomickej štruktúry je vnútorne vadný. Inými slovami, politika, morálka, konkurencia a vojny sú dôsledkom mechanizmu stojaceho na sociálne darwinistickej teórie, že nie je dostatok prírodných zdrojov pre všetkých. Počet obyvateľov Zeme sa zdvojnásobil, čo sa odzrkadlilo najmä v množstve spotrebovaných surovín. Ak sa pozrieme na štatistické data tak uvidíme, že viac než 1 miliarda ľudí žije z menej než 1 doláru na deň a 3 miliardy žijú z menej ako 2 dolárov na deň. Na následky nedostatku potravín denne zomrie viac než 21000 ľudí napriek tomu, že vo svete existuje až cez 50% neskonsumovaných potravín, čo je približne 1,2 miliardy ton ročne. To nás privádza k údaju, že až 99% z tovarov, ktorý si kúpime je do 6 mesiacov vyhodných. V súčasnosti zo Zeme čerpáme až 2x viac zdrojov než si je Zem schopná obnoviť. Dopyt po nerastnom bohatstve predbehol ponuku a mnohé krajiny, ktorých ekonomika ťažila najmä z lacnej ropy sa začali obzerať po obnoviteľných zdrojoch energie. Okrem ekonomických dôvodov je zámerom každej krajiny odbremeniť atmosféru od toxínov vylúčených pri spaľovaní fosílnych palív. Z štatistík publikovaných WHO je známe, že až 7 miliónov ľudí zomrie ročne na respiračné ochorenia zavinené znečisteným ovzduším. To nás privádza k myšlienke, že ľudia sú ľahostajný takmer ku všetkému, čo sa ich priamo fyzicky nedotýka.

Parížska dohoda alebo inými slovami biblia v boji proti globálnemu znečisťovaniu hovorí, že do roku 2060 musí byť 50% spotrebovanej elektrickej energie vyrobených z obnoviteľných zdrojov. Mimo boja proti globálnemu otepľovaniu na vlastnom území sa vyspelé štáty ako USA, Čína a Európska Únia zaviazali finančne podporovať menej rozvinuté štáty poskytnutím 100 miliárd dolárov ročne. Z pohľadu štatistiky, až 47 percent všetkých emisií vytvárajú tri štáty a to Čína, USA a India.



Figure 17: Najmodernejšia čínska atómová elektrárň [20]

Čistá Čína

Čínska ľudovo-demokratická republika rok čo rok obhajuje prvenstvo nie len v počte obyvateľov, ale taktiež aj za svetovo najväčšieho znečisťovateľa. V článku sa bližšie pozrieme na spôsoby boja proti znečisteniu v tejto obrovskej krajine.

Čína si svoje miesto pod slnkom vybojovala hlavne vďaka neobmedzenej pracovnej sile a veľkým zásobám nerastných surovín. Raketový vzostup ekonomiky z posledných 30 rokov si však vybral svoju daň. Tisíce vodných zdrojov bolo znečistených chemikáliami a smog z tepelných elektrární pohltil do svojich útrobov celé mestá. Až do prelomu milénia bola Čína považovaná za krajinu, ktorej je osud zemskej biosféry a zdravie svojich obyvateľov viac než ľahostajný. Populácia cicavcov, vtákov, plazov a rýb sa od roku 1978 v tejto obrovskej krajine znížila takmer o 38%. To sa však komunistická strana, ktorá vládne na čele Číny posledných 50 rokov rozhodla razantne zmeniť.

Dopyt po nerastných surovinách klesá

Obrovskými investíciami do obnoviteľných zdrojov a taktiež do modernizácie výrobných procesov sa Čína predrala na čelo tzv. zelených krajín. Kľúčové vládne rozhodnutia, ktoré sa kapitalistické štáty snažia presadiť dlhé roky, Čína zaviedla len počas pár rokov. Ambiciózny plán s menom “Čistá Čína” s finančnou dotáciou 365 miliárd dolárov, hovorí že v horizonte 13 rokov bude až 30% všetkej energie vyrobenej v Číne, získaných z obnoviteľných zdrojov. V súčasnosti je Čína najväčším producentom solárnej energie na svete. Za prvých 8 mesiacov roku 2017, zdvojnásobila kapacitu vyrobenej elektrickej energie na neuveriteľných 109 gigawatov. Tým prekonal všetky doterajšie rekordy a predstihla svoj 5 ročný plán až o 3 roky!



Figure 18: Najväčšia čínska solárna elektrárňa v Zhejiagu [44]

Len za mesiace jún a júl úrady do rozvodnej siete pripojili až 24 gigawatov energie vyrobených solárnymi elektrárnami, čo je viac než je celková kapacita Austrálie.

Mimo solárnu energiu, bolo počas siedmich mesiacov do rozvodnej siete pripojených cez 1.09GW nukleárnej energie, 7.3 GW z hydro energie, 7.3 GW veternej energie a 18.84 GW energie z tepelných elektrární.

Je zmena

Z globálneho hľadiska bol rok 2014 prelomový. Neustále stúpajúce hodnoty CO₂ v zemskej atmosfére sa po prvý krát po 40 rokoch zastavili, a dokonca začali veľmi mierne klesať. Pokles emisií je dôsledkom znižovania spotreby uhlia a najmä dostupnejšími obnoviteľnými zdrojmi elektrickej energie.



Figure 19: Povrchová ťažba ropy [26]

Spotreba uhlia na výrobu tepla a energie sa má podľa odhadov čínskych úradov do roku 2020 znížiť až o neuveriteľných 500 miliónov ton na 3 miliardy ton ročne. Ďalším krokom je obmedzenie ťažby prebytočného uhlia na vlastnom území o 1 miliardu ton ročne a obmedzenie výrobnnej kapacity ocele o 150 ton. Týmito krokmi sa

Čína dostane na zoznam štátov ako USA, Japonsko a Nemecko, ktoré už svoj „peak carbon“ dosiahli.

Ďalším článkom v skladačke je India. Krajina kde až 65% z celkovej elektrickej energie je vyrobených z nerastných zdrojov tvrdo pracuje na odklone od uhlia. Krajina pod vládou progresívneho premiéra Mondiho vybuďovala ohromný energetický systém.



Figure 20 Veterné elektrárne postavené v rámci elektrifikácie vidieka v Indii [36]

Veľkým krokom bolo podporiť elektrifikáciu vidieka výstavbou moderných elektrární s kapacitou 175 GW. Z celkového objemu energie bude 100 GW z fotovoltaických panelov, 60 GW z veterných elektrární, 10 GW vodných elektrární a 5GW z biomasy. Veľká nádej sa taktiež vkladá do zákona, ktorý zdaní továrne spaľujúce uhlie. Bohužiaľ ani obnoviteľné zdroje energie nie sú odolné voči geopolitike a medzinárodným udalostiam. Odstúpenie USA od Parížskej dohody a rozsiahle konflikty na Blízkom východe môžu snahy o energetickú bezpečnosť v týchto obrovských krajinách veľmi skomplikovať. Napriek všetkému, môžeme ale vidieť, že pre tieto krajiny prichádza obrovská zmena. Ľudia už nechcú tráviť celé dni a celý svoj život v neproduktívnych zamestnaniach. Prichádza doba, keď podnikatelia budú môcť využívať stále dokonalejšie stroje napájané zelenou energiou aby ľudia nemuseli robiť

to čo nechcú a mohli robiť to čo má pre nich a spoločnosť význam. Krásou tejto zelenej technologickej revolúcie je to, že dovoľuje každému obyvateľovi Zeme byť kreatívny a produktívny v tom v čom sám uzná za vhodné. Vďaka progresívnym nápadom z dielni Elona Muska, Jeffa Bezosa a iných popredných technologických mágov bude veľmi vzrušujúce sledovať ďalší vývoj v tejto oblasti. Ako raz povedal americký astronaut Neil Armstrong – „Je to malý krok pre človeka, ale veľký pre ľudstvo“. Vo veľmi optimistických výhľadoch je cítiť, že sa blížíme ku dňu kedy bude čistá elektrická energia všade, zadarmo a pre každého.

13. Articles post-analysis

The first goal of the articles was to create eye-catching titles, that attract the readers' attention and suggest the theme of the articles. For an English article author chose title: „How the technology revolutions changed the world“ and for the Slovak article autor used the title „Čína, zelená supervel'moc“. Both articles are divided into several parts. Subheadings is placed before each paragraph. The main body of an article consists of 2-4 paragraphs in which the topic is further developed in detail.

English article: The author used appropriate vocabulary and descriptive language. Furthermore, he would like to describe more features which are included in pragmatic study. Author used a metaphor in the second utterance, when he said that „everything is changing“. Several times, author used rhetorical question and informal language. The second part of an article shows that author does not hesitate to use jokes and sarcasm. Another stylistic feature used in the articles is sentence addressed directly to readers such as „I'm sure you'll agree with me when I say that..“. In the conclusion of the Slovak article author finished with punchline „Ako raz povedal americký astronaut Neil Armstrong – „Je to malý krok pre človeka, ale veľký pre ľudstvo“. Articles consist of an introduction which clearly defines the topic to be covered. The main bodies of the articles describe the problems and the conclusions include author's final opinions.

Slovak article: The language in first part of an article stresses urgency of the situation in the world. Author demonstrates that only cooperation between all nations leads to success. Many times he uses a very sad and negative statistic to illustrate how climate changes are affecting the world. Many times, these examples move from general statements to specific occasion. Author tries to emphasize our future actions that improve the equality of nations and stability of ecosystem. Creating a strong sense of community is a highly effective persuasive technique because it helps people feel like they have a place. Author used formal but easily understandable complex language. Logos, appeal to reason, is an effective persuasive technique to use because everyone wants to be rational and reasonable, especially when the nature is involved. Author many times used comparisons and repetitions to stress up importance of utterances. Author used a usual way to join parallel structures with the use of conjunctions such as „and“ or „or“.

14. Conclusion

The aim of this bachelor thesis is to provide an analysis of a keyword research for two different articles and summarize advanced rules for creating original educational content and video. The theoretical part deals with introduction to search engines and described the options of advertisements. The theoretical part also introduces many ways to raise popularity of the website by paid and unpaid advertisement. In the chapter seven, step-by-step instructions are included on how to set up Facebook Instant Articles. In this chapter author designed a new logo and described factors that should be considered during its creation.

The second part of bachelor thesis deals with keyword analysis and provides rules for writing SEO friendly articles. An article is a piece of writing usually intended for publication in a newspaper, magazine or journal. The main part of this thesis describes the keyword research, articles creation and creation of educational video. When author started to write, there were many rules which needed to be followed. Author did a keywords research and calculated the keyword coefficient for the English and Slovak language.

The most problematic part of the article writing is creating the content itself. We can see that publishing web content is very difficult because it is a very creative work. Articles should be written in an interesting or entertaining manner and should give opinions and thoughts, as well as facts. This process of creating original content, or in other words copywriting, can be used for any website or fan page on the internet. Rules for writing articles are described in the chapter 7. Google makes it intentionally difficult to climb the rankings on SERPs because it does not want to give away those jeweled top spots to just anyone. SEO optimization in this thesis is focused on website with environmental content.

To sum up, it was a challenge to implement all described SEO factors to articles. This bachelor's thesis can serve as a navigation for diploma thesis in which author will create brand-new website "Educan" from the technical point of view.

15. Apendix

Apendix contains video. On the enclosed CD is this bachelor thesis in a PDF file and a video.

16. References

- [1] Adams, R.L. (2017). *SEO 2017: Master Search Engine Optimization*. CreateSpace Independent Publishing Platform. ISBN 1540694003
- [2] Adams, R. L. (2013). *SEO black book: learn the secrets to Google search engine optimization.*: CreateSpace Independent Publishing Platform. Lexington KY.
- [3] Adams, R. L. (2014). *SEO white book: The organic guide to google search engine optimization.*: CreateSpace Independent Publishing Platform. Lexington KY.
- [4] *Affiliate program.* (n.d.) Business dictionary.com. Retrieved from <http://www.businessdictionary.com/definition/affiliate-program.html>
- [5] Barnet, T., (2011). *The dawn of the zettabyte era.* CISCO.com. Retrieved from <http://blogs.cisco.com/news/the-dawn-of-the-zettabyte-era-infographic>
- [6] Domes, M. (2011). *SEO: jednoduše*. Brno: Computer Press.
- [7] *Doporučený počet znaku.* (2010). *SEOmistr*. Retrieved from <http://www.seomistr.cz/seo/doporuceny-pocet-znaku>
- [8] Dover, D., & Dafforn, E. (2012). *SEO: optimalizace pro vyhledávače profesionálně*. Brno: Zoner Press.
- [9] *First steam locomotive is introduced.* (2016). *Pinterest.com*. Retrieved from <https://www.pinterest.com/pin/13792342579727456/>
- [10] Fishkin, R. (2017). *What is a Good Keyword Volume Score?*. In Moz.com. Retrieved from <https://moz.com/community/q/what-is-a-good-keyword-volume-score>
- [11] Fishkin, R. (2018). *What is a Good Keyword Difficulty Score?*. In Moz.com. Retrieved from <https://moz.com/community/q/what-is-a-good-keyword-difficulty-score>
- [12] *Ford Quardicycle.* (2017). *Wikipedia.org*. Retrieved from https://en.wikipedia.org/wiki/Ford_Quadricycle

- [13] Google. (2016). Google.com. Retrieved from www.google.com
- [14] *Google Trends*. (2018). *trends.google.com*. Retrieved from <https://trends.google.com/trends/explore?q=solar%20power,digitalization,global%20warming>
- [15] Gotch, Nathan. (n.d.). *Why Does Organic CTR Matter?*. Gotch SEO.com. Retrieved from <https://www.gotchseo.com/ctr-click-through-rate/>
- [16] *Growing popularity & links*. (n.d.). *MOZ.com*. Retrieved from <https://moz.com/beginners-guide-to-seo/growing-popularity-and-links>
- [17] *History of design graphic*. (2018). *DesignHistory.com*. Retrieved from http://www.designhistory.org/BookHistory_pages/Letterpress.html
- [18] Horňáková, M. (2011). *333 tipů a triků pro WordPress*. Brno: Computer Press.
- [19] *How to find information on the internet*. (n.d.). In *Computer Hope*. Retrieved from <http://www.computerhope.com/issues/ch000082.htm>
- [20] *China's State Nuclear Power Technology*. (2015). *SCMP.com*. Retrieved from <http://www.scmp.com/business/companies/article/1701900/chinas-state-nuclear-power-technology-merge-china-power>
- [21] *Internet live stats*. (n.d.). Retrieved from <http://www.internetlivestats.com/>
- [22] *Logo of Educan Project*. (2018). Facebook/educan. Retrieved from <https://www.facebook.com/edukan.sk/>
- [23] McKee, Robert. (2011). *Story: Substance, Structure, Style, and the Principles of Screenwriting*. New York, NY.: HarperCollinsPublishers Inc, ISBN 0060391685
- [24] *Meta tag. Facebook Instant articles*. (2018). FacebookInstantArticles.com Retrieved from https://www.facebook.com/instant_articles/signup
- [25] *Pay per click advertisement*. (2012). Retrieved from <http://2012books.lardbucket.org/pdfs/online-marketing-essentials/s10-pay-per-click-advertising.pdf>
- [26] *Povrchová těžba ropy. National observer*. (2015). *NationalObserver.com*. Retrieved from <https://www.nationalobserver.com/2015/10/07/news/canadian-oil-sands-responds-hostile-suncor-bid-poison-pill-defence>

- [27] *Saylordotorg.* (n.d.) Saylordotorg.com. Retrieved from https://saylordotorg.github.io/text_emarketing-the-essential-guide-to-online-marketing/s10-pay-per-click-advertising.html
- [28] *SEARCH AND YOU WILL FIND.* (2016). Digitalarcheology.com. Retrieved from <http://digital-archaeology.org/search-and-you-will-find/>
- [29] *SEO: What Is the Long Tail And Why focus On It.* (2016). smartboomerincome.com. Retrieved From <https://smartboomerincome.com/seo-what-is-the-long-tail-and-why-focus-on-it>
- [30] *Tesla motors: Luxuriously green.* (2018). *rctom.hbs.org*. Retrieved from <https://rctom.hbs.org/submission/tesla-motors-luxuriously-green/>
- [31] *The history of Search engines – An infographic.* (n.d.). *WordStream.com*. Retrieved from <https://www.wordstream.com/articles/internet-search-engines-history>
- [32] *The persistence of history.* (2018). *Economist.com*. Retrieved from <https://www.economist.com/news/international/21661812-islamic-states-revival-slavery-extreme-though-it-finds-disquieting-echoes-across>
- [33] Tonkin, S., Whitmore, C., & Cutroni, J. (2011). *Výkonostní marketing s Google Analytics: [strategie a techniky maximalizace online ROI]*. Brno: Computer Press.
- [34] *Trendy vo vyhľadávani.* (2016). *GoogleTrends.com* Retrieved from <https://www.google.com/trends/topcharts>
- [35] Truby, John. (2009). *The Anatomy of Story: 22 Steps to Becoming a Master Storyteller*. Berkeley, California.: North Point Press ISBN 0865479933
- [36] *Veterné elektrárne postavené v rámci elektrifikácie vidieka.* (2018). Renewablesnow.com. Retrieved from <https://renewablesnow.com/news/india-eyes-250-gw-solar-in-2030-under-40-renewables-goal-report-493953/>
- [37] Vogler, Christopher. (2011). *The Writer's Journey: Mythic Structure for Writers*. Seattle, United States.:Michael Wiese Production. ISBN 193290736X.
- [38] *Webopedia.* (n.d.). *Webopedia.com*. Retrieved from https://www.webopedia.com/TERM/P/pay_per_lead.html
- [39] *What is domain authority?.* (n.d.). *MOZ.com*. Retrieved from <https://moz.com/learn/seo/domain-authority>

- [40] *What is keyword?.* (n.d.). Content Factory. Retrieved from <https://www.contentfac.com/keyword-seo-basics-guide/>
- [41] *Wordpress plugins.* (2018). Wordpress.com. Retrieved from <https://sk.wordpress.org/plugins/fb-instant-articles/>
- [42] Zhang, S., & Cabage, N. (2016). *Search Engine Optimization: Comparison of Link Building and Social Sharing* [Online]. *Journal Of Computer Information Systems*, 1-12. <http://doi.org/10.1080/08874417.2016.1183447>
- [43] *Zvratený Humor.* (2018). Zvratenyhumor.sk. Retrieved from www.zvratenyhumor.sk
- [44] *Zhejiang Province.* (2018). *Skyscrapercity.com.* Retrieved from <http://www.skyscrapercity.com/showthread.php?t=1809315>