Czech University of Life Sciences Prague

Faculty of Economics and Management

Department of Information Technologies

Bachelor Thesis

The optimal use of SEO and SERP Techniques

Milad Sahragard

CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE

Faculty of Economics and Management

BACHELOR THESIS ASSIGNMENT

Milad Sahragard

Informatics

Thesis title

The optimal use of SEO and SERP Techniques

Objectives of thesis

The primary objective of this thesis is to collect and assess criteria and indicators for evaluating web pages, with the aim of recommending a range of SEO techniques to enhance their ranking and visibility.

Partial objectives include:
Identifying three websites with varying SEO rankings.

Conducting a comprehensive analysis of these websites based on predetermined criteria and indicators.

Suggesting SEO techniques to improve the rank and visibility.

Methodology

The theoretical part of the thesis will be based on the study and analysis of information resources. The basis of the practical part will be an examination of criteria and standards for SEO. This analysis will be conducted to assess website rankings across various search engines in order to suggest several SEO techniques to improve websites in general and gain insights into the performance of selected websites and identify areas for improvement.

Moreover, the practical phase will involve the SEO techniques tailored to address the specific shortcomings identified during the analysis. Given the pivotal role of SEO ranking in the success of online businesses, this methodology will be approached with meticulous attention to detail and a commitment to delivering actionable recommendations that align with contemporary best practices in the field.

Based on the theoretical findings and results of the practical part, a conclusion and recommendations will be formulated.

The proposed extent of the thesis

30-40 pages

Keywords

SEO, Rank, Web site, Google, Page Rank.

Recommended information sources

ANDERSSON, V., LINDGREN, D. Ranking factors to increase your position on the search engine result page (Bachelor's Thesis). Supervisor: Conny Johansson. BTH – Blekinge Institute of Technology: Faculty of Computing 2017. Available at: http://bth.divaportal.org/smash/get/diva2:1119358/FULLTEXT01.

CLARK, Adam, 2021. SEO 2022 Learn Search Engine Optimization With Smart Internet Marketing Strategies: Learn SEO with smart internet marketing strategies. s.l. : Independently published, 2021.ISBN: 979-8763238075.

DEAN, B. We analysed 1 million Google search results here's what we learned about SEO (online). 28 April 2020. https://backlinko.com/search-engine-ranking. Accessed May 2022

GUNDI, Gabrielle 2017. Seo the Sassy Way of Ranking #1 in Google When You Have No Clue!: Beginner's Guide to Search Engine Optimization and Internet Marketing. s.l. : CreateSpace Independent Publishing Platform. ISBN: 9781543146530.

HINES, K. The absolute beginner's guide to Google Analytics (online) 16 November 2016. https://moz.com/blog/absolute-beginners-guide-to-google-analytics. Accessed May 2022

KHOA, Bui. How to increase your website traffic: For Website Owners, Small Businesses, Internet Marketers, and Web Developers (Kindle) Entrepreneur Press, 2011 ISBN 9781613081174.

searchengine watch. Why your site architecture and search strategy must be aligned (online) August 25,2017. https://www.searchenginewatch.com/2017/08/25/build-it-and-they-shall-come-why-your-site-architecture-and-search-strategy-must-be-aligned/Accessed May 2022

Expected date of thesis defence

2023/24 SS – PEF

The Bachelor Thesis Supervisor

John McKeown

Supervising department

Department of Languages

Electronic approval: 12. 3. 2024

PhDr. Mgr. Lenka Kučírková, Ph.D.

Head of department

Electronic approval: 12. 3. 2024

doc. Ing. Tomáš Šubrt, Ph.D.

Dean

Prague on 12. 03. 2024

Declaration

I declare that I have worked on my bachelor thesis titled " The optimal use of SEO and SERP Techniques " by myself and I have used only the sources mentioned at the end of the thesis. As the author of the bachelor thesis, I declare that the thesis does not break any copyrights.

In Prague on 15.03.2024   _Milad Sahragard_____

Acknowledgement

The optimal use of SEO and SERP Techniques

Abstract

Search Engine Optimization (SEO) plays a crucial role in determining the visibility and ranking of web pages in search engine results. This thesis examines criteria and indicators essential for assessing web pages, aiming to propose effective SEO techniques for bolstering visibility and ranking. Through a blend of theoretical inquiry and practical analysis, the study meticulously evaluates three websites with varying SEO rankings leading to the identification of areas for improvement. Tailored SEO strategies are then proposed to address these shortcomings, encompassing facets such as on-page optimization, off-page strategies, and technical considerations.

By contributing to the body of knowledge surrounding SEO and SERP optimization, this study provides actionable insights to enhance website visibility by suggesting techniques for improvement.

Optimální využití SEO a SERP technik

Abstrakt

Optimalizace pro vyhledávače (SEO) hraje zásadní roli při určování viditelnosti a hodnocení webových stránek ve výsledcích vyhledávačů. Tato práce zkoumá kritéria a ukazatele nezbytné pro hodnocení webových stránek s cílem navrhnout efektivní SEO techniky pro posílení viditelnosti a hodnocení. Prostřednictvím kombinace teoretického dotazování a praktické analýzy studie pečlivě vyhodnocuje tři webové stránky s různým hodnocením SEO, což vede k identifikaci oblastí pro zlepšení. Poté jsou navrženy přizpůsobené strategie SEO, které tyto nedostatky řeší, včetně aspektů, jako je optimalizace na stránce, strategie mimo stránku a technická hlediska.

Tím, že tato studie přispívá k souboru znalostí o optimalizaci SEO a SERP, poskytuje užitečné poznatky ke zlepšení viditelnosti webových stránek tím, že navrhuje techniky pro zlepšení.

Table of content

1 Introduction

SEO or search engine optimization is a response to the main needs of global websites, namely targeted traffic, or a high number of site visitors. Almost 90% of Internet users are familiar with and use at least one search engine. 50% of Internet users search every day, and more than half of these searches are for goods or services. One of the first things a new network user does is search in one of the search engines. The need for search engines is undeniable. Due to the high volume of the web and the information that is added to the web daily, the user has trouble finding a specific topic on the web and finding search engines is the answer to this need of users. For better visibility of any website on the Internet, website optimization for search engines, which is called "SEO" in this research, plays a very important role. Search engine optimization is the process of attracting as much traffic as possible to a website with the help of SEO strategies. It is a technical term that makes the website rank better compared to its competitors. In the past, the number of websites and the competition between them were less, but now the website scenario has become a complex and large and complex issue and website owners are using various methods to improve their website page rank. (Kumar Jadav and Shrivastava, 2020). Apart from these, the most important role of SEO is in online business, where the presence of the viewer is the most important issue. Big companies invest a lot to place their site in the list of major search engines, this is the reason for the prosperity of the SEO market. Getting a top ranking in search engine results is essential to keep users visiting websites, and this is where the value of search engine optimization comes into play. HTML pages are analyzed by search engine algorithms to organize them, and because of this function, relevant pages can be retrieved. The focus of the current research is to optimize web pages for search engines to get a higher rank in search engine results pages. SERP stands for Search Engine Result Page and refers to the search engine results page when searching for a term. Every SERP is unique, even when two people search for the same keyword. Because search engines use criteria beyond words to display more relevant results. For example, physical location, browsing history, interests and even keyword meanings are checked." search engines have become the default navigational device for the web, and represent the single most important tool for connecting people with the information they seek."(John Battelle,2005)

2 Objectives and Methodology

2.1 Objectives

The primary objective of this thesis is to collect and assess criteria and indicators for evaluating web pages, with the aim of recommending a range of SEO techniques to enhance their ranking and visibility.

Partial objectives include:

- Identifying three websites with varying SEO rankings.
- Conducting a comprehensive analysis of these websites based on predetermined criteria and indicators.
- suggesting SEO techniques to improve the rank and visibility.

2.2 Methodology

The theoretical part of the thesis will be based on the study and analysis of information resources.

The basis of the practical part will be an examination of criteria and standards for SEO. This analysis will be conducted to assess website rankings across various search engines to suggest several SEO techniques to improve websites in general and gain insights into the performance of selected websites and identify areas for improvement.

Moreover, the practical phase will involve the SEO techniques tailored to address the specific shortcomings identified during the analysis. Given the pivotal role of SEO ranking in the success of online businesses, this methodology will be approached with meticulous attention to detail and a commitment to delivering actionable recommendations that align with contemporary best practices in the field.

Based on the theoretical findings and results of the practical part, a conclusion and recommendations will be formulated.

3 Literature Review

3.1 What is SEO?

Search Engine Optimization or SEO is the process of optimizing a site so that search engines know it better, in other words, by improving the internal and external aspects of a site, it gets the best possible ranking in the results pages and increases the number of visitors to that site. SEO is the process of taking steps to help a website or piece of content rank higher on Google. The key difference between SEO and paid advertising is that SEO involves "organic" ranking, which means you do not pay to be in that space. To make it a bit simpler, search engine optimization means taking a piece of online content and optimizing it so search engines like Google show it towards the top of the page when someone searches for something. "Search engine optimization (SEO) is the practice of getting targeted traffic to a website from a search engine's organic rankings. Since organic search is one of the ways through which people discover content online, higher rankings can translate to higher organic traffic to a website." (Dean , 2023). In other words: SEO is all about improving a site's rankings in the organic (non-paid) section of the search results.

3.1.1 The benefits of SEO for business

Increased Website Traffic: SEO helps businesses rank higher in search engine results pages (SERPs), leading to more organic traffic to their website.

- **Improved User Experience**: SEO involves optimizing website structure, content, and performance to enhance user experience, resulting in longer sessions and higher conversion rates.
- **Enhanced Brand Visibility and Awareness**: Ranking high in search results increases brand visibility and exposure to potential customers, establishing businesses as authorities in their industry.
- **Cost-Effectiveness:** SEO offers a cost-effective marketing strategy with potentially higher returns on investment (ROI), attracting consistent traffic without ongoing advertising expenses.
- **Targeted Traffic and Qualified Leads**: SEO allows businesses to target specific demographics, locations, and user intents through keyword optimization and content targeting, attracting highly relevant leads.

- **Long-Term Sustainability**: The benefits of SEO are long-lasting, providing ongoing visibility and traffic without continuous investment, maintaining, and improving search engine rankings over time.
- **Competitive Advantage:** A strong SEO strategy is essential for staying ahead of competitors, capturing a larger market share, and attracting potential customers.
- **Measurable Results and Analytics**: SEO provides access to valuable data and analytics tools for tracking performance, monitoring website traffic, and refining strategies for better results.

3.1.2 Navigating SEO Strategies

When you are developing your SEO campaign, it is important to understand the different types of SEO your business can use and ensure you choose the type of SEO that will drive the best possible results for your business.

3.1.2.1.1 White Hat

"White hat SEO techniques aim to optimize the user experience and provide high-quality content that is easily accessible by search engines. These techniques typically involve making improvements to the website's structure and content, ensuring that the website is easily crawlable and indexable by search engines, and building high-quality backlinks from other reputable websites." (Eric Enge, Stephan Spencer, and Jessie Stricchiola) White hat SEO focuses on ethical practices, optimizing user experience, and adhering to search engine guidelines. It offers long-term sustainability, builds credibility, and improves user satisfaction. While it takes time, the results are more lasting, making it an effective choice for website owners aiming for sustained success.

Examples of white hat SEO include:
- writing relevant, useful content that helps your search audience do what they need to do.
- organizing the content on your site to help people (and search engines) find what they're looking for faster.

3.1.2.2 Black Hat

Black Hat SEO entails aggressive tactics solely focused on search engines, neglecting the human audience, and often violating search engine guidelines. As described by (Eric Enge, Stephan Spencer, and Jessie Stricchiola), these techniques may lead to penalties or a complete ban from search engines. The importance of ethical and sustainable SEO practices is underscored, aligning with White Hat SEO principles. Examples of black hat SEO include:

- keyword stuffing or hiding (e.g. white text on white background).
- plagiarism.
- backlinks and citations that are purchased or bartered for vs earned.

3.1.2.3 Gray Hat

Grey hat SEO is between black hat and white hat techniques because its tactics and techniques are usually not in Google's guidelines. You should also be careful about adopting this method. Just because a certain technique ilabelledabeled as deceptive by Google, does not guarantee it will not negatively affect your ranking.

"Techniques that may be viewed as manipulative or deceptive but are not strictly against search engine guidelines". (Eric Enge, Stephan Spencer, and Jessie Stricchiola,2016)

Figure 1comparing types of SEO.
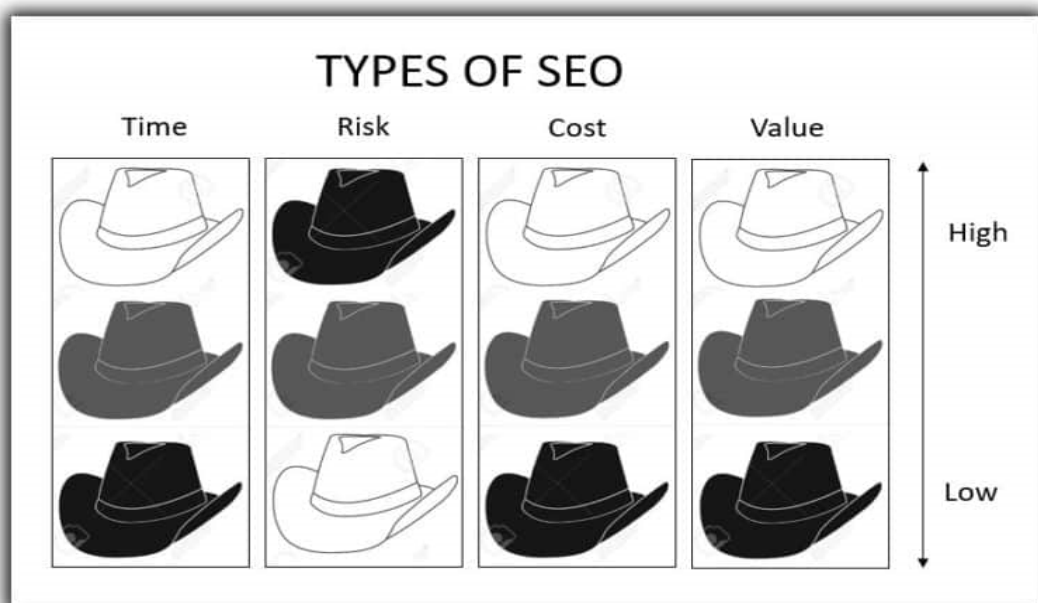
3.1.3   The future of SEO

Considering the importance of SEO that we have discussed and made clear, SEO will evolve further in the future. In this part of the research, we will examine some of the key trends that will shape the future of SEO.

"The future of SEO is not about optimizing for search engines but optimizing for humans. It's about creating high-quality content that resonates with your target audience and providing a seamless user experience that keeps them engaged and coming back for more. As search engines continue to evolve and become more sophisticated, they will increasingly prioritize user experience and engagement metrics over traditional ranking factors like keywords and backlinks."(Neil Patel,2021)

3.1.3.1 Voice Search

With the rise of voice search and digital assistants, SEO is no longer just about optimizing for keywords typed into a search box. Now, it is about optimizing for conversational queries spoken into a smart speaker or mobile device. To succeed in this new era of search, businesses need to focus on understanding the intent behind these queries and providing the most relevant and helpful content possible." (Patel, N. (2019).

3.1.3.2 Artificial Intelligence

AI is already being used to help Google and other search engines understand the meaning behind search queries and to better match search results with user intent. As AI continues to evolve and improve, it will become an even more integral part of the search process, with the potential to completely transform how we think about SEO and search rankings." (Southern, M. (2021).

"AI is driving a new era of search that is more focused on understanding the intent behind queries, rather than simply matching keywords. This means that businesses need to think carefully about the user's journey and how to deliver content that meets their needs at every stage. It's not just about optimizing for search engines, but about creating a great user experience." (Fishkin, R. (2021).

3.1.3.3 Mobile-First Indexing

Nowadays, with the ever-increasing internet traffic that comes from mobile phones, Google has prioritized its search algorithm in building a list through mobile phones. Websites that prioritize mobile phone optimization are likely to rank well in Search results. It is possible that in the future, mobile optimization will be more of a priority for sites, and websites that do not pay attention to this agenda will have significant losses. "Mobile-first indexing is not just a buzzword or a trend, it is the present and future of search engine optimization (SEO). With more and more people accessing the internet through their mobile devices, websites must prioritize mobile optimization to remain competitive in search rankings." (Raimist, A. 2021).

3.1.3.4 User Experience

"User experience is a major factor that Google uses to determine search rankings. The more satisfied users are with your site, the more likely it is to rank well in search results. That's why it's critical to optimize your site for user experience. From mobile responsiveness to page speed, every aspect of your site's user experience can impact its search performance." (Dean, B. 2020)

3.2 On-page SEO

SEO techniques are divided into two categories: internal SEO and external SEO. Internal optimization deals with the content of the website, and this is what determines the value of the website because the only reason a user visits a website is its content (Wang and Zhang, 2011); Therefore, if reliable and valuable content is prepared for the website, this website is on the right track in terms of SEO criteria and therefore the website will be well received. The use of schema is the site's markup language. In other words, the Schema coding and markup language, using pre-defined instructions and codes, introduces the site to the Google search engine better. Specifics such as purpose, content, author, events, etc. about the site are introduced to the Google search engine by the schema. This method improves topic analysis by the search engine. Adding metadata in this way makes the topic of the text clear and generally specifies the sub-topics of the text. Using Expired Image

Metadata, when a page is loaded, if there is an image in the user's browser, the image and file are not reloaded, and when a domain is redirected to the parent domain, the domain is redirected. Keywords are phrases that represent the content of a website. Keywords play an important role in website indexing, and by choosing better and more appropriate keywords, the user can access the website more easily (Wang and Zhang,2011). Creating a list of related keywords is the most important thing that should be done for the SEO of the site so that the website can get a better ranking than the competing sites using them. Keyword search tools track and suggest the most suitable keywords according to the target audience and website and thus help to optimize the website. In the minimization index of style sheets and scripts, by removing tabs, spaces, additional codes, and descriptions, they make these files smaller. The goal of internal SEO is to help search engines and users understand the content of each page, identify the content of the website as the most relevant to the search terms, and evaluate the page as a valuable page that can be displayed in the search results pages (SERP). JavaScript errors are errors that cause the page not to load completely, not to present or incompletely present the content of the site. Mastering the art of on-page SEO is like laying the foundation for a sturdy and visible online presence. It's not just about sprinkling keywords; it's about crafting valuable content, optimizing technical elements, and enhancing user experience. By doing so, you're not only speaking the language of search engines but also resonating with your audience. Remember, in the digital landscape, visibility is key, and on-page SEO is your secret weapon to unlock it. So, dive deep, optimize diligently, and watch your website soar to new heights in search rankings and user engagement. In simple terms, on-page SEO is about making your website easy for search engines to understand and rank higher in search results. By using the right keywords, creating valuable content, and improving technical aspects like page speed and mobile friendliness, you can attract more visitors to your site and achieve your goals online. So, remember, optimizing your website's individual pages is key to standing out in the digital world.

3.3 Off-page SEO

External SEO is a technique for creating backlinks. Backlinks usually refer to links that are created from other websites to the desired website. Backlinks are important in terms of SEO because search engine algorithms will consider if a website has a lot of backlinks. If it has, they give it credit. Increasing the number of backlinks increases the popularity of the website (Patil, 2018).

Off-page SEO refers to optimization techniques employed outside of your website that contribute to its authority, relevance, and trustworthiness in the eyes of search engines. Unlike on-page SEO, which focuses on optimizing elements within your website, off-page SEO involves activities conducted elsewhere on the internet.

A significant aspect of off-page SEO is link building. This involves acquiring backlinks from other websites to yours. Backlinks act as "votes of confidence" from other sites, indicating to search engines that your content is valuable and authoritative. It's essential to focus on acquiring high-quality backlinks from reputable websites within your industry or niche.

Social media engagement is another crucial component of off-page SEO. Active participation on social media platforms can increase brand visibility, drive traffic to your website, and encourage social sharing of your content, which can indirectly impact your search engine rankings.

Online reputation management is also part of off-page SEO. Monitoring and managing online reviews, mentions, and references to your brand across the web can influence how your website is perceived by both users and search engines.

Additionally, off-page SEO encompasses various other activities such as guest blogging, influencer outreach, and participation in online communities and forums. These efforts help increase your website's exposure, authority, and credibility in the eyes of search engines.

3.4 Technical SEO

Technical SEO refers to the process of improving a website's architecture and backend elements to improve its visibility and performance on search engines. Tackling such SEO projects often requires collaboration between technical SEO specialists and web

developers, especially for large sites. Technical SEO examines page load speed, site architecture, security, internal linking, etc., to eliminate friction points that might hinder search bots from properly crawling, indexing, and rendering a website. (James Allen). Technical SEO Focuses on website's technical aspects and code-level optimization. Aims to enhance the site's crawlability and overall technical health. Addresses issues like metadata errors, broken links, and site architecture.

3.4.1 Security and SEO

In the rapidly evolving realm of digital marketing and search engine optimization (SEO), keeping pace with developments is imperative. SEO experts continually adjust their strategies in response to algorithmic alterations, shifting trends, and emerging best practices. Among the noteworthy transformations in recent times, the heightened significance of security in SEO, notably the integration of HTTPS (Hypertext Transfer Protocol Secure), stands out.

Search engines like Google are continuously evolving to provide the best possible user experience. One critical aspect of this evolution is the refinement of their algorithms. These algorithms determine how websites are ranked in search engine results pages (SERPs). Google has been at the forefront of these changes, frequently updating its algorithms to deliver more relevant and secure results to its users. Google's ranking algorithm considers numerous factors when determining a website's position in SERPs. While Google keeps the exact details of its algorithm a closely guarded secret, it has confirmed that HTTPS is one of the ranking signals it uses. This means that websites using HTTPS have a potential advantage over their HTTP counterparts. The correlation between HTTPS and SEO becomes apparent when one considers Google's objective of delivering top-notch search results. Websites that are secure face reduced vulnerability to nefarious individuals, shielding users from potential risks. Consequently, Google recognizes and elevates the rankings of websites that place a premium on security as a means of fostering safer online experiences. (Martyn Lenthal,2023)

3.5 What is SERP?

SERP stands for Search Engine Results Page. It is the page that search engines like Google, Bing, or Yahoo display in response to a user's search query. The SERP includes a list of organic results, which are web pages that the search engine deems most relevant to the user's query. In addition to organic results, SERPs may also feature paid advertisements, featured snippets, knowledge graphs, and other rich features designed to provide users with immediate and relevant information. "The organic results are "earned" placements that are determined by Google's algorithm to be the overall best, most relevant results for a given search. "(Dean , 2023). Understanding SERPs is crucial for businesses and website owners as it directly impacts the visibility and traffic a website receives. Optimizing for better SERP rankings is a fundamental aspect of Search Engine Optimization (SEO).

3.5.1 SERP Features

One common SERP feature is the featured snippet, also known as position zero. Featured snippets provide concise answers to users' queries directly on the SERP, often appearing above the traditional organic results. Optimizing content to appear in featured snippets can increase visibility, drive traffic, and establish authority in a particular niche or industry.

Another prevalent SERP feature is the knowledge panel, which displays essential information about entities such as businesses, organizations, people, or places. Knowledge panels typically appear on the right side of the SERP and include details sourced from trusted databases like Wikipedia and Google's Knowledge Graph. Optimizing your online presence to qualify for a knowledge panel can enhance brand credibility and provide users with valuable information at a glance.

Additionally, rich snippets are structured data markup that enhances search listings with additional information, such as star ratings, reviews, prices, and event dates. Rich snippets make search results more visually appealing and informative, potentially increasing click-through rates and driving qualified traffic to your website.

Other SERP features include local packs, image packs, video carousels, and site links, each serving specific purposes and catering to different types of user queries. Understanding these

features and optimizing your content and website accordingly can help maximize your visibility in search results and improve overall search performance.

In summary, SERP features offer valuable opportunities for website owners to enhance their online presence, provide users with more relevant information, and increase click-through rates. By understanding and optimizing for these features, businesses can improve their visibility and ultimately drive more traffic and conversions.

3.6 Website Ranking

Website ranking refers to the position a website holds in search engine results pages (SERPs) for specific search queries or keywords. It plays a crucial role in determining a website's visibility and accessibility to potential visitors. In essence, higher rankings typically translate to greater visibility, which can lead to increased traffic and potential conversions.

According to Moz, a leading authority in search engine optimization (SEO), website ranking is influenced by a multitude of factors, including relevance, authority, quality of content, user engagement metrics, and technical aspects such as website speed and mobile friendliness. Search engines employ complex algorithms to evaluate these factors and rank websites accordingly.

3.7 User Experience (UX) and SEO

SEO and UI/UX are not mutually exclusive; they are interwoven elements that should complement each other. While users navigate search results, they click the title and description that resonates with them the most, but if they do not have a good experience when they land on the page, they will bail and go to another result. (Jenn Mathews,2024)

User experience (UX) and search engine optimization (SEO) are two intertwined aspects of digital marketing that significantly impact a website's performance and success. While UX focuses on enhancing the overall experience of website visitors, SEO aims to improve a site's visibility and ranking in search engine results pages (SERPs). Understanding the relationship between UX and SEO is crucial for developing a successful online presence. One key aspect of this relationship is

website usability. A well-designed website that offers intuitive navigation, fast loading times, and mobile responsiveness not only provides a positive experience for users but also signals to search engines that the site is valuable and worthy of ranking higher in search results. Optimizing UX elements such as clear call-to-action buttons, readable fonts, and logical site structure can lead to higher engagement metrics and ultimately improve SEO performance.

3.8 How search engines work

"Search engines are answer machines. They exist to discover, understand, and organize the internet's content to offer the most relevant results to the questions searchers are asking. To do this, the search engines need to crawl and index the content of web pages, and then apply complex algorithms to determine which pages are most relevant to queries."(Danny Sullivan,2019). This process is done through 3 basic steps:

3.8.1 Crawling

Search engines have robots that are also known as crawlers and spiders. They send their bots to evaluate the content of newly created websites or recently changed content. The task of these robots is to carefully examine the web pages to find out in what context each of them was created and what is their topic. Then, by following the links on the pages, they go to other pages and crawl those pages as well.

3.8.2 Indexing

After a website is crawled, search engines must decide how to classify that information. Indexing is the process of storing crawled pages in search engine databases. Each search engine has its database.

3.8.3 Ranking

When a user performs a search, search engines go to their database to provide relevant information from all the pages they have already indexed. But in what order should this information be presented? All pages found are listed based on a user rating system

and are not in any random order. Search engines perform the ranking process by considering various factors based on quality and relevance to the user's query.

3.9   Search engine algorithms

Search engine algorithms are complex sets of rules and calculations used by search engines to determine the relevance and ranking of web pages in search results. These algorithms consider various factors such as keyword relevance, content quality, backlink profile, user experience, and more to deliver the most relevant and useful results to users. It is important to note that the field of search engine algorithms is vast, with numerous other algorithms and updates playing roles in shaping search results.

3.9.1   PageRank

PageRank is an algorithm developed by Sergey Brin and Larry Page at Stanford University in 1998. It evaluates the importance of web pages based on the quantity and quality of links pointing to them. The original research paper detailing PageRank is titled "The Anatomy of a Large-Scale Hypertextual Web Search Engine" and is available from Stanford University.

3.9.2   Hummingbird

The Hummingbird algorithm, unveiled by Google in September 2013, represents a significant advancement in search engine technology. Unlike previous updates that focused primarily on keyword matching, Hummingbird revolutionized how Google interprets and processes search queries. (done.J.2020)
At its core, the Hummingbird algorithm is designed to better understand the context and intent behind user queries, enabling more accurate and relevant search results. It achieves this by incorporating advanced semantic search capabilities, natural language processing, and the use of the Knowledge Graph.

3.9.3   Rank Brain

"Rank Brain is a type of artificial intelligence (AI) used by Google to help process its search results. It uses machine learning to better understand the intent behind user queries and deliver more relevant results." (Neil Patel,2016)

3.9.4 Panda

Google's Panda algorithm, introduced in 2011, aims to penalize low-quality or thin content and promote high-quality, relevant content in search results. Matt Cutts, former head of Google's Web spam team, provided guidance on building high-quality sites in a blog post on the Google Webmaster Central Blog. (Cutts, M. 2011)

Figure 2 Updates of all google algorithms Images.
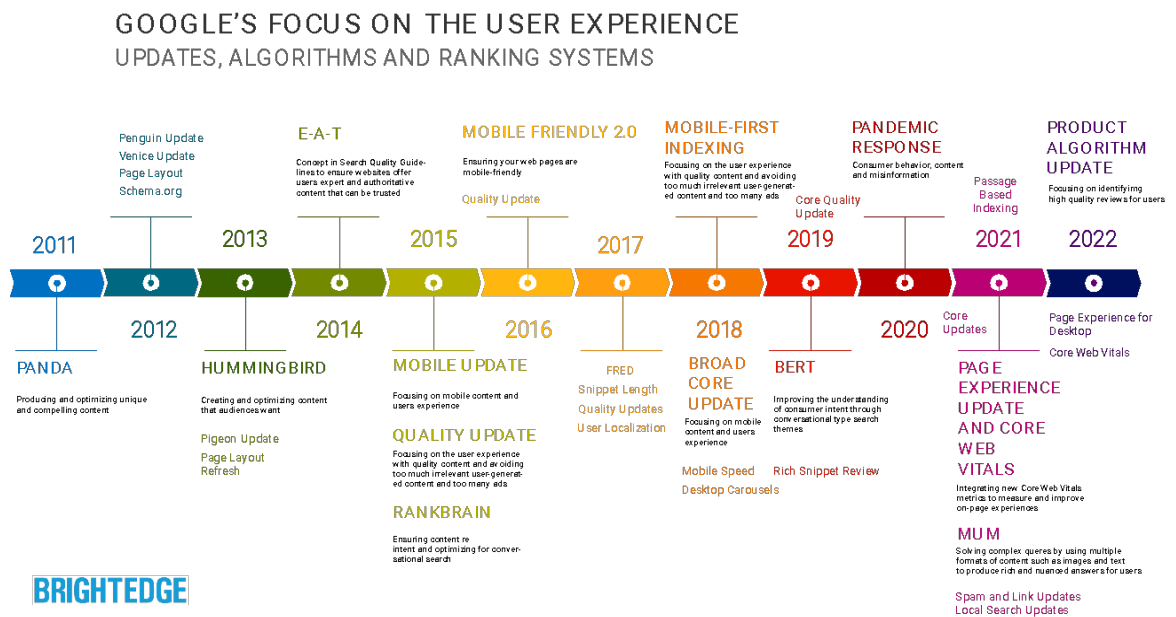
(BrightEdge, July 2022)

4 Practical part

4.1 Criteria and indicators for evaluating web page optimization tools for search engines.

In this research, to answer the first question about determining the criteria and indicators of content optimization tools, an analytical review of backgrounds and texts was done, and these features were extracted. The sources from which the indicators were extracted, including Sharma and Verma (2020), Jadav and Shrivastava (2020), Patil (2018 a&b), Onaifu and Rasmussen (2013) and the (WWW.Moz.com) website after extracting and classifying indicators and criteria, in this step 6 Criteria indicators were identified. The checklist was prepared based on these criteria and indicators, and for evaluation, it was in the form of a checklist. Table 1 shows the evaluation tool (checklist) to monitor the features of web page optimization tools for search engines.

Table 1 Tools evaluation of web page optimization tools for search engines.

Table 1evaluation of web page optimization tools

ROW	EVALUATION CRITERIA OF TOOLS	INDICATORS
1	On-page SEO	**Title Meta Tag:** Explore related keywords to find the best title tag keywords. **Description Meta Tag** (describing the content of the website). Optimized content includes identifying duplicate web content, indexing problems, reporting errors such as site errors, JavaScript errors, schema usage, possible access errors, duplicate content detection, text-to-code ratio, site visualization, content search, review Tips for better user experience and website performance improvement, Expiration metadata of images, nested tables, minimization of style sheets and scripts, content management, content optimization. **HTML:** CSS codes inside HTML code, HTML file compression. **Heading tag**: (H1, H2, H3, H4, H5, H6) **Internal linking**: hypertext links **Keyword Density**: The number of times a keyword or phrase appears on a web page. **Sitemap**: Important website links with an updated website page history and information. **URL structure:** The website address and the protocols used in the website domain, like HTTP, FTP, Redirect, and standardization IP, address standardization. **Alt attribute**: For image tags, only the alt attribute is read by search engines.

2	**Website analysis**	Analysis of user searches including accessibility, active pages, number of viewed pages by users, the current location of users, how many people are on the site at any moment, what each person is doing, gender of users, their interest, length of stay on the site, user bounce rate, incoming traffic, how visitors were attracted, what pages they viewed, the number of regular users, the peak user demand, the topics that their searches are increasing (popularity and search volume and related topics), traffic analysis, click rates.
3	**Off-page SEO**	**Backlink Analysis**: Check and analyze backlinks, compare with competitors. **Social Media Usage:** Assess the impact of social media on website visibility.
4	**Website security**	**Security Protocols:** Implement SPF, server signing, and SSL. **Malware Check:** Regularly scan for malware. **Domain Security**: Secure brand name, register similar domains.
5	**Access to the website by search engine**	**Canonical Tag:** Utilize canonical tags. **Robot File:** Implement and monitor the robot file. **Google Crawler Access:** Ensure proper access for search engine crawlers.
6	**Website specifications and technologies**	**mobile usability:** responsible on mobile version **Hreflang Tag:** Optimize for internationalization. **Programming Issues**: Identify and address programming problems.

The contents of Table 1 show the criteria and indicators for evaluating web page optimization tools for search engines, which includes seven main items and indicators. These items are extracted from the reviewed records related to the current research and compiled coherently in Table 1. In future research, researchers can use

Table 1 to evaluate content optimization tools and examine the seven characteristics of other tools. SEO tools help website owners to improve SEO and track this progress. The common features of most tools are word analysis and content analysis. This ensures that the website uses relevant language and content. The more relevant the website content is to the target audience, the better the SEO ranking will be. In other words, SEO makes the website speak and helps websites to speak the "language of the web" and helps websites to be discoverable by search engine crawlers and accessible to visitors.

4.2   Analytical Framework

4.2.1   Sample Selection

To ensure a comprehensive analysis of SEO practices across various industries, a deliberate and diverse sample of web pages has been chosen for this study. The selection process aimed to represent different sectors and niches, providing a holistic view of SEO strategies across the digital landscape.

4.2.2   Chosen Web Pages:

After careful consideration of the selection criteria, the following three web pages were chosen for in-depth analysis:

1) Penzeys Spices (www.penzeys.com) - Representing the e-commerce sector with a focus on spices and culinary products.

Figure 3 SEO rank Overview of Penzeys in Semrush

(Semrush)

2) The Spice Suite (www.thespicesuite.com) - An example from the hospitality industry, specifically a spice lounge with a unique niche.

Figure 4 SEO rank Overview of Thespicesuite in Semrush

(Semrush)

3) Alza (www.alza.cz) -Selected to represent the technology and electronics retail sector, providing a contrasting perspective.

Figure 5 SEO rank Overview of Alza in Semrush

(Semrush)

4.2.3   SEO Metrics Analysis

In order to comprehensively assess the SEO performance of the selected web pages, a variety of industry-standard tools were employed. The following metrics were meticulously measured using tools such as Semrush, Google Analytics, and Moz.

4.3   Analyzing Phase

This study seeks to uncover insights into successful SEO practices through a comprehensive analysis of URL structures, content quality, title tags,Backlink and other pertinent factors. Utilizing cutting-edge SEO analysis tools and methodologies, quantitative and qualitative data will be gathered to evaluate current strategies and identify areas for improvement. By identifying patterns, trends, and best practices among high-performing websites, tailored

30

recommendations will be formulated to optimize visibility, increase organic traffic, and improve search engine rankings.

4.3.1 Meta title

Assessing the length of the meta title and description to ensure they are within optimal character limits for search engine display means checking that they're not too long or too short. Search engines like Google display meta titles and descriptions in their search results, and they have specific limits on how much text they'll show.

For example:

Meta Title: Google typically displays up to 50-60 characters of the meta title. If it's too long, the end might get cut off in search results.

Table 2 Meta Title Tags of 3 websites

	website	Meta Title Tag
1	https://www.alza.cz/	<title>Alza – Fast and convenient shopping from anywhere | Alza.cz</title>
2	https://www.penzeys.com/	<title>HomePage | Penzeys</title>
3	https://www.thespicesuite.com/	<title>Home | The Spice Suite</title>

1) The *<title> tag for "Alza – Fast and convenient shopping from anywhere | Alza.cz"* effectively incorporates several key elements for SEO optimization. It prominently features the brand name "Alza," ensuring brand recognition and association. The title also succinctly communicates the primary benefit of the website, emphasizing "Fast and convenient shopping from anywhere," which is likely to resonate with potential visitors. Additionally, the inclusion of the website's domain "Alza.cz" reinforces brand identity

31

and aids in brand recall. However, the title's length may be at the upper limit for optimal SEO, as it exceeds the recommended 50-60 characters. Furthermore, consideration should be given to whether users specifically searching for "Alza" might find the title redundant, potentially impacting click-through rates.

2) The *<title> tag for "HomePage | Penzeys"* effectively incorporates several key elements for SEO optimization. It prominently features the brand name "Penzeys," ensuring brand recognition and association right from the start. Additionally, the inclusion of "HomePage" clearly indicates that it is the homepage of the website, providing users with essential navigational information. The title is concise and to the point, which can enhance readability and user experience. However, the term "Homepage" might not be as descriptive to users as other alternatives, potentially leading to confusion or ambiguity. Moreover, the title's brevity leaves room for additional information that could provide more context or enticement for users, potentially improving click-through rates and search engine visibility. Consideration should be given to incorporating more descriptive keywords or phrases while maintaining brevity for optimal SEO performance.

3) The *<title> tag for "Home | The Spice Suite"* effectively incorporates essential elements for SEO optimization. It prominently features the brand name "The Spice Suite," establishing brand recognition and association. The title is short and straightforward, contributing to readability and user experience. However, similar to the previous example, the term "Home" might not offer sufficient information to users or search engines, potentially leading to ambiguity. Depending on the website's content and objectives, a more descriptive title could enhance relevance and visibility in search results. Consideration should be given to incorporating keywords or phrases that better reflect the website's offerings or value proposition while maintaining brevity for optimal SEO performance.

4.3.2 Meta Description

Google usually shows up to 150-160 characters of the meta description. If it's too long, it might get truncated, and if it's too short, it might not provide enough information to users. So, you want to make sure that your meta title and description are concise and informative within these character limits, ensuring that they effectively communicate the content of your page while also enticing users to click on your link in search results.

Table 3 Meta Description Tags of 3 websites

	website	Meta Description
1	https://www.alza.cz/	<meta name="og:description" content="Best shop and deals for electronics, computer technology and much more, with over 40,000 different products in stock and ready for immediate delivery!">
2	https://www.penzeys.com/	<meta name="description" content=" ">
3	https://www.thespicesuite.com/	<meta property="og:description" content="The Spice Suite is a specialty spice shop and dream incubator. We carry unique and fun spice blends, olive oils and cooking essentials. We also host small businesses for pop up shops, completely free of charge. ">

1) The *<meta name="og:description" content="Best shop and deals for electronics, computer technology and much more, with over 40,000 different products in stock and ready for immediate delivery!">* effectively promotes an electronics shop, emphasizing its wide range of products and immediate delivery service. The description succinctly communicates the nature of the business and the benefits for customers, highlighting the availability of over 40,000 products. At 157 characters, it falls within the recommended range, ensuring clarity and readability without truncation issues. Overall, this meta description effectively informs users about the shop's offerings and encourages engagement.

3) The *<meta name="description" content="The Spice Suite is a specialty spice shop and dream incubator. We carry unique and fun spice blends, olive oils and cooking essentials. We also host small businesses for pop up shops, completely free of charge.">* effectively introduces "The Spice Suite," a specialty spice shop, and highlights its unique offerings, including spice blends, olive oils, and cooking essentials. Moreover, it emphasizes the shop's support for small businesses by hosting pop-up shops free of charge. However, at 240 characters, the description exceeds the recommended limit. To ensure optimal visibility in search results, consider shortening it to 150-160 characters while preserving essential information about the shop's specialties and supportive initiatives.

The first two meta descriptions provide informative and relevant details about their respective businesses, effectively describing the products or services offered and highlighting unique aspects. However, the third meta description is empty, containing no content. An empty meta description is not helpful for search engine optimization or providing information to users. It's essential to ensure that all meta descriptions are filled with relevant content to improve visibility in search results and provide valuable information to users browsing the web.

4.3.3   URL structure

The analysis of URL structure involves evaluating the format and organization of website URLs to determine their effectiveness in conveying relevance to search engines and users. A well-structured URL can contribute significantly to a website's SEO performance by providing clear indications of page content and hierarchy.

Key aspects of URL structure analysis include assessing the use of descriptive keywords, the incorporation of logical categorization, the avoidance of unnecessary parameters or session IDs, and the implementation of hyphens to separate words for readability.

Table 4 URL Structure of 3 websites

	website	URL
1	https://www.alza.cz/	https://www.alza.cz/EN/phones-smartwatches-tablets
2	https://www.penzeys.com/	https://www.penzeys.com/shop/spices/?categoryId=126
	https://www.thespicesuite.com/	https://www.thespicesuite.com/gift-card

1) The website's URL structure presents several strengths and weaknesses. Notably, it employs HTTPS, ensuring secure browsing for users. Additionally, it establishes a clear hierarchy by starting with the English version of the site and subsequently delineating product categories such as phones, smartwatches, and tablets. However, a drawback lies in the inclusion of multiple categories within the path, potentially resulting in lengthier and more intricate URLs. This complexity may hinder user readability and could impact search engine optimization efforts.

2) The website's URL structure demonstrates several notable advantages and drawbacks. Firstly, it utilizes HTTPS, ensuring secure data transmission for users. Furthermore, it effectively communicates the "shop" section, specifically highlighting the category "spices" along with an associated category ID. The incorporation of parameters in the URL enables dynamic content generation based on the category ID, enhancing user experience and website functionality. However, a notable drawback is the lengthiness of the URL, compounded by the inclusion of a parameter. This may detract from user-friendliness and aesthetic appeal, potentially impacting navigation and overall user satisfaction.

3) The URL exhibits several strengths and weaknesses. On the positive side, it is clear, concise, and uses HTTPS, ensuring secure data transmission. Additionally, it includes a descriptive path segment, "gift-card," providing users with a clear indication of the page's content. However, the absence of a subdomain may be considered a drawback depending

on the website's structure and branding strategy. Subdomains can help organize content and facilitate easier navigation for users, and their absence may impact the site's overall organization and branding consistency.

4.3.4 Image Alt attributes

Image Alt Attributes, also known as alt text or alt tags, play a crucial role in both accessibility and search engine optimization. Alt attributes provide a textual description of images, helping users with visual impairments understand the content and enabling search engines to comprehend the context of the images on a webpage.

Table 5 Image Alt attributes of 3 websites

	website	Image	Alt attributes
1	https://www.alza.cz/	*Figure 6 product example of Alza Website*	*<img src=https://image.alza.cz/products/NA748t3m5/ NA748t3m5.jpg?width=190&height=190* **alt="ASUS ROG Harpe Ace Aim Lab** *Edition" width="165" height="165" class="carousel4-alz-30" loading="lazy" decoding="async">*
2	https://www.penzeys .com/	*Figure 7product example of Penzeys Website*	*<img* **alt=""** *ng-show="Product.SkuImageURL.length > 0" ng-src="https://penzeyswestus.azureedge.net/medi a/8366/seasoned_salt_penzeys_2oz_pot_th.jpg? v=2468" align="center" src="https://penzeyswestus.azureedge.net/medi a/8366/seasoned_salt_penzeys_2oz_pot_th.jpg? v=2468">*
3	https://www.thespice suite.com/	*Figure 8 product example of thespicesuite Website*	*<img src=https://static.wixstatic.com/media/90e7c7_ 9095e19ef4b3440ca0b59084fcce8289~mv2.jpg/ v1/fill/w_1160,h_1160,al_c,q_85,usm_0.66_1.0 0_0.01,enc_auto/90e7c7_9095e19ef4b3440ca0 b59084fcce8289~mv2.jpg* **alt="Okra Champion Sweatshirt"** *style="width: 928px; height: 928px; object-fit: cover; object-position: 50% 50%;" fetchpriority="high">*

1) *alt="ASUS ROG Harpe Ace Aim Lab*

The first image features an appropriate usage of the alt attribute, providing a descriptive text - "ASUS ROG Harpe Ace Aim Lab Edition." This is a positive practice for SEO, as search engines rely on alt text to understand the content of images, contributing to better accessibility and ranking potential.

2) *alt=""*

The second image raises some SEO concerns. The alt attribute is currently set to an empty string, which is suboptimal for SEO. Providing meaningful and descriptive alt text is crucial for search engines to comprehend the image content.

3) *alt="Okra Champion Sweatshirt"*

The third image exhibits both positive and noteworthy SEO considerations. The alt attribute is appropriately utilized, describing the image content as "Okra Champion Sweatshirt." This contributes positively to both accessibility and SEO.

4.3.5 Canonical Tags

The canonical tag is an HTML element used to indicate the preferred version of a web page when there are multiple versions of the same content. It helps search engines understand which URL should be treated as the authoritative or primary version.

Table 6 Canonical Tags of 3 websites

	website	**Canonical Tags**
1	https://www.alza.cz/	\<link rel="canonical" href="https://www.alza.cz/EN/"\>
2	https://www.penzeys.com/	-
3	https://www.thespicesuite.com/	\<link rel="canonical" href="https://www.thespicesuite.com"\>

This canonical tag indicates that the preferred or canonical version of the page is *"https://www.thespicesuite.com."* It tells search engines that this is the authoritative URL for the content. and same for Alza website.

4.3.6 Mobile usability

The mobile version of the site has priority over the desktop version for ranking sites in Google, and this search engine ranks based on the degree of compatibility of sites with mobile. The reason for this prioritization can be found in the significant increase in mobile users and the use of smartphones to search on Google. According to the published statistics, the number of searches made through mobile phones in Google is equal to 60% of the total statistics.

4.3.6.1 Responsibility on mobile screen

Ensuring that your website adapts seamlessly to various mobile devices enhances user experience, accessibility, and brand reputation. With search engines prioritizing mobile-friendly websites, responsiveness can significantly impact SEO rankings and organic traffic. Moreover, a responsive design fosters higher conversion rates by providing users with a smooth and intuitive browsing experience, ultimately driving business growth. In essence, responsibility on mobile screens is not just a design principle but a strategic imperative for success in the mobile-driven landscape of today.

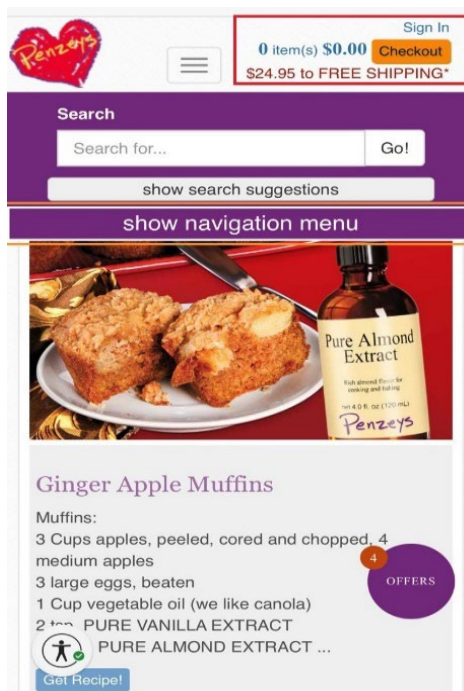*Figure 9Penzeys website mobile screen.*

(own result Penzeys website)

38
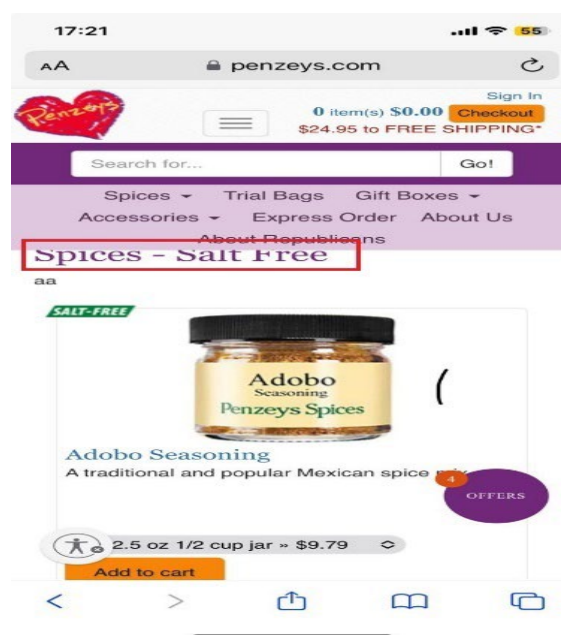
An irresponsible mobile screen design can be frustrating and detrimental to the user experience. Websites that fail to adapt to different screen sizes and resolutions may result in distorted layouts, inaccessible content, and navigation challenges for mobile users. Such irresponsibility not only reflects poorly on the brand's credibility but also leads to increased bounce rates and diminished user engagement.
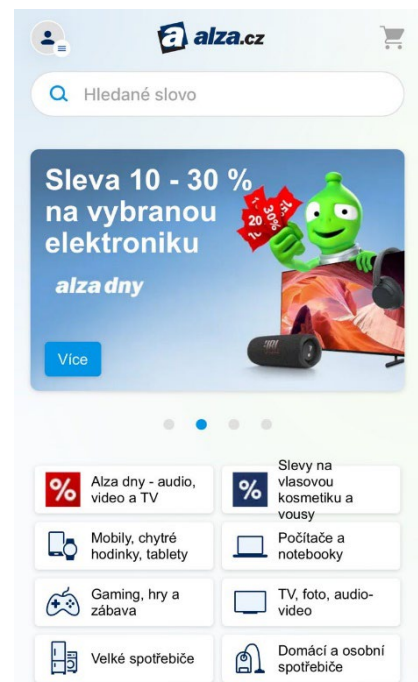
4.3.6.2 Mobile Navigation

Mobile navigation plays a crucial role in providing users with easy access to website content and functionality while navigating on smaller screens. Effective mobile navigation should prioritize simplicity, accessibility, and intuitiveness to ensure a seamless browsing experience for mobile users. This often involves using collapsible menus, hamburger icons, or tabbed interfaces to conserve space and streamline navigation options. Additionally, touch-friendly buttons and gestures should be implemented to facilitate effortless interaction on touchscreens. By prioritizing mobile navigation design, websites can enhance usability, engagement, and ultimately, user satisfaction on mobile devices.

Figure 10 Penzeys website mobile screen.

Figure 11 Alza website mobile screen.
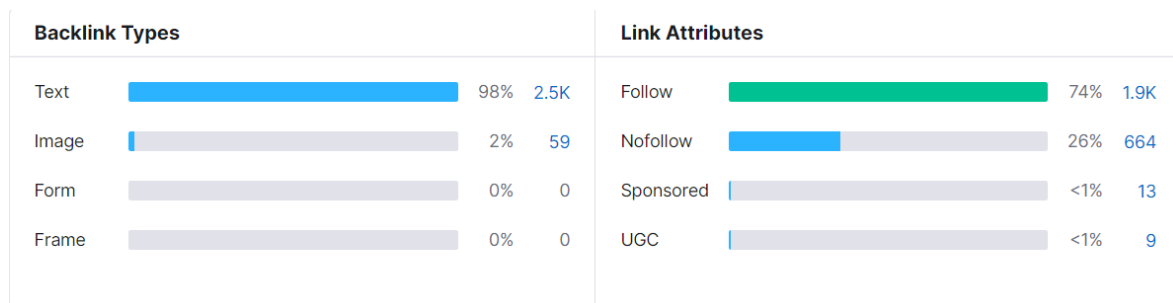

(Own result, Penzeys website)

(Own result, Alza website)

Here are two examples of mobile navigation. The Penzeys.com website exhibits subpar mobile navigation due to its inadequate font and design choices, rendering it less user-friendly. Users encounter difficulty in interacting with buttons, detracting from the overall navigational experience. Conversely, Alza.cz provides a commendable illustration of effective mobile navigation. Its navigation interface incorporates intuitive icons and buttons, facilitating easy comprehension and utilization of all elements and links.

4.3.7 Backlink type

A backlink, also known as an inbound or incoming link, is a link from one web page to another. These links are essential for search engine optimization (SEO) as they can influence a website's ranking in search engine results. There are different types of backlinks based on their characteristics and how they are acquired. Some common types include Natural Backlinks, Manual Backlinks, Dofollow, Nofollow Backlinks, Image and Anchor Text Backlinks and so on.

Figure 12 Backlink types analyse of Alza

| Backlink Types				Link Attributes			
Text		98%	2.5K	Follow		74%	1.9K
Image		2%	59	Nofollow		26%	664
Form		0%	0	Sponsored		<1%	13
Frame		0%	0	UGC		<1%	9

(Semrush)

Alza's backlink profile appears solid, with 99% text-based links, indicating a strong emphasis on contextually relevant and high-quality links beneficial for SEO. The small percentage of image links adds diversity, while the absence of form and frame backlinks suggests a clean and traditional profile. Most of its links are follow links (99%), contributing positively to authority, and the minimal presence of nofollow and UGC links aligns with a predominantly organic strategy. To optimize further, Alza should maintain the focus on acquiring quality text-based links while monitoring for any unexpected changes.

4.3.8   Top countries Referring Domains

'Referring Domains' are reports or analyses that identify and rank the countries from which a website receives the most significant number of referring domains or backlinks. This information can be valuable for SEO strategies, outreach efforts, and understanding the international impact of a website's content. It helps website owners focus their efforts on areas where they are gaining the most traction or identify potential opportunities for expanding their online presence in specific regions.

Figure 13 Top countries referring domain analyse of Alza
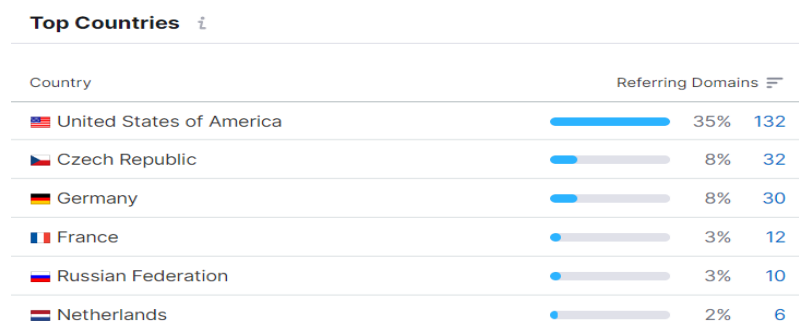
(Semrush)

In the above list of countries, the largest source of referring domains is the USA then the Czech Republic, and so on. While this diversity is commendable, because this domain is in the Czech Republic it should have most referring domains in the Czech Republic.

4.3.9   New and Lost Backlinks

Keeping an eye on these metrics allows website owners and SEO professionals to adapt their strategies based on the changing landscape of their backlink profile. Strategies to acquire new backlinks might involve content creation, outreach, or partnerships, while addressing the reasons for lost backlinks can involve improving website quality, fixing broken links, or addressing any issues that might have led to the removal of links.

Figure 14 New and Lost Backlinks of thespicesuite

New and Lost Backlinks *i*

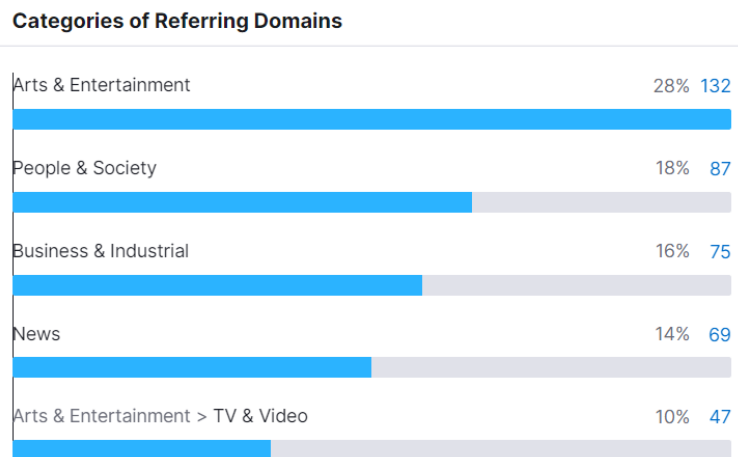☑ New   ☑ Lost   Last 6 months

(Semrush)

The commonest reason for losing links in Thespicesuite website is removed links, a large number of which are not advantageous to lose. Thespicesuite website should carefully investigate the reason behind this high percenetage of removed backlinks.

4.3.10 Categorize of referring domain

Referring domains can be categorized based on various criteria to gain insights into a website's backlink profile.

Figure 15 categories of referring domain of thespicesuite

Categories of Referring Domains

Arts & Entertainment	28%	132
People & Society	18%	87
Business & Industrial	16%	75
News	14%	69
Arts & Entertainment > TV & Video	10%	47

(Semrush)

The Thespicesuite website focuses on selling food stuffs, but we see most of the domain categories allocated for other topics than food and drinks categories.

42

5 Result and discussion

Following the meticulous gathering and analysis of data and information, I am poised to propose a series of techniques aimed at enhancing the Search Engine Optimization (SEO) ranking of websites within Search Engine Results Pages (SERP). It is imperative to note that all recommendations stem from the comprehensive evaluation of three distinct websites.

1.1 Recommendations For Webpages

5.1.1 Meta Title

When crafting titles, it's beneficial to condense them while maintaining essential details. For instance, "Alza - Fast & Convenient Shopping" effectively summarizes the key aspects of the service. In the case of two other website examples, titles could be made more descriptive to enhance appeal and convey specifics. For example, "Explore Spices at Penzeys - Your Spice Destination" captures the essence of Penzeys as a comprehensive spice hub. Similarly, "Discover Unique Spices at The Spice Suite - Home of Exquisite Flavors" emphasizes the distinctiveness and quality of spices available at The Spice Suite. These adjustments not only shorten titles but also enhance their informativeness and attractiveness to potential customers.

5.1.2 Meta Description

The first Meta description **show in Table 3**, pertaining to an electronics shop, is commendable for its informative nature but could benefit from the inclusion of specific keywords related to the products or services offered, such as popular brands or specific types of electronics, to attract more relevant traffic. Similarly, the second meta description, concerning a spice shop, is engaging and informative but could be enhanced by integrating keywords related to spices, cooking, or culinary themes to improve visibility in relevant search engine results. However, the third meta description is currently empty and requires meaningful content that accurately represents the webpage's content. It's crucial to summarize the main purpose or content of the webpage concisely and engagingly while

incorporating relevant keywords for improved search engine visibility. In conclusion, while the first two meta descriptions effectively convey relevant information about their respective businesses, the third requires improvement through meaningful content addition. Furthermore, optimizing all meta descriptions with relevant keywords can significantly bolster their efficacy for search engine optimization purposes.

5.1.3 URL structure

(https://www.penzeys.com/shop/spices/?categoryId=126:)

Consider optimizing the URL for better user-friendliness. You might use a more descriptive path, and if possible, avoid exposing the category ID directly in the URL. For example, something like ***https://www.penzeys.com/spices/shop/*** could be more user-friendly.

5.1.4 Image Alt attributes

A comprehensive recommendation for optimizing SEO across the provided images is to consistently provide descriptive and meaningful alt attributes for each image. This ensures that search engines can accurately interpret and index the content of the images, positively impacting the website's search engine rankings. Specifically, for the second image, in **Table 5,** where the alt attribute is currently empty, filling it with relevant and descriptive text related to the image content will significantly enhance its SEO performance. This practice aligns with accessibility standards and supports improved visibility on search engine results pages.

5.1.5 Canonical Tags

Ensure consistent implementation by using the same canonical URL across all versions of a page. This helps provide a clear signal to search engines, preventing potential duplicate content issues. Regularly audit and validate your canonical tags using online SEO tools or browser extensions to ensure correct implementation. Stay informed about SEO best practices and guidelines, adapting your strategy as needed to align with evolving standards. Monitoring and addressing any warnings or errors related to canonicalization in the Google Search Console is crucial for maintaining a healthy website structure.

5.1.6 Mobile Usability

To enhance the mobile user experience on Penzeys.com, several key improvements are recommended. Firstly, focusing on font and design choices is crucial. Increasing font size and refining design elements will contribute to better visibility and interaction on smaller screens, ultimately improving user experience. Additionally, optimizing button interaction is paramount. Ensuring that buttons are adequately sized and responsive to touch gestures will facilitate smoother navigation, addressing any challenges currently hindering user-friendly mobile interactions. Embracing responsive design principles across the entire website, beyond navigation, is also recommended. This involves optimizing images, text, and other elements to ensure consistency and a positive experience across various mobile devices.

Moreover, for a comprehensive improvement strategy, it's essential to prioritize touch-friendly interactions throughout the website. Implementing buttons and links that are easy to interact with on touchscreens will further enhance the overall mobile experience. Conducting thorough user testing on a variety of mobile devices is advised to identify and address any additional usability challenges that might arise. Such testing provides valuable insights into real user experiences, helping tailor the website to meet user expectations effectively. Lastly, aligning the mobile design with SEO best practices is crucial for improved visibility on search engine results pages. By incorporating these recommendations, Penzeys.com can significantly elevate its mobile responsiveness and navigation, leading to heightened user satisfaction and potential gains in search engine rankings.

5.1.7 Back link type

While image-based links form a small percentage, ensure that alt text for images is optimized. This optimization can enhance the SEO value of image links and contribute to a well-rounded backlink profile. Explore opportunities to diversify link sources while maintaining a focus on quality. Building connections with reputable websites within your niche can contribute positively to your backlink portfolio. Given the low percentage of UGC links, explore opportunities for user-generated content that aligns with your brand. Encourage organic engagement that may result in valuable UGC links.

5.1.8 Top countries Referring Domains

Identify the top countries contributing the most referring domains to your website, also prioritize these countries in your SEO efforts, as they are already showing a strong interest in your content.

5.1.9 New and Lost Backlinks

If the links were removed due to outdated or low-quality content, consider updating and improving the affected pages, try to have High-quality and relevant content to attract and retain backlinks. Or if the lost backlinks are a result of broken links on your site, fix them promptly. Also keep an eye on your competitors' backlink strategies. Identify new opportunities based on their successes and learn from their experiences. This can provide insights into effective link-building techniques.

5.1.10 Categorise of referring domain

When categorizing referring domains, it is advisable to implement a systematic approach to enhance clarity and organization:

- Geographical Classification: Categorize referring domains based on their geographic origin. This provides insights into regional trends and preferences.
- Industry Segmentation: Classify referring domains according to the industries or sectors they predominantly represent. This aids in understanding the specific interests and needs of diverse business sectors.

5.2 Recommendations for the future

Given the rapid evolution of search engine algorithms and user behaviour, future research recommendations for "The optimal use of SEO and SERP Techniques" could include:

- **Local SEO Strategies**: Analyse the effectiveness of local SEO techniques, such as Google My Business optimization, local keyword targeting, and geo-tagged content, for improving visibility in local search results.

- **Voice Search Optimization**: Explore the- impact of voice search on SEO and SERP techniques, including differences in keyword usage, content structure, and user intent.

- **AI and Machine Learning in SEO**: Investigate how AI and machine learning algorithms are influencing search engine algorithms and SEO strategies and identify emerging techniques for leveraging AI technologies to improve search visibility.

- **Ethical and Sustainable SEO Practices**: Explore the ethical implications of SEO techniques, such as link building, content optimization, and keyword targeting, and identify sustainable SEO strategies that prioritize long-term value and user satisfaction.

6 Conclusion

In conclusion, this thesis has delved into the optimal use of SEO and SERP Techniques to suggest several SEO techniques to improve the rank of websites.

In the theoretical foundation, established through an in-depth study and analysis of information resources, I tried to create a substantial foundation for understanding the criteria for the practical part. The theoretical part provided ways for a significant role of SEO for web pages to have attract organic traffic and tried to understand the fundamentals of how the search engine works by considering SEO techniques (On-page, Off-page, technical SEO).

In the practical part, for the first step, I provided 6 main criteria for evaluation web page optimization which were subjected to future analyses throughout the practical part. for the second step, I have chosen three websites and analyzed them to represent different sectors and niches to examine SEO techniques. By examining elements such as Meta title, Meta description, URL structure, mobile usability, and backlink types, actionable recommendations have been proposed to optimize web pages effectively. These recommendations not only serve as immediate strategies but also pave the way for future enhancements in SEO practices.

This study underscores the critical connection between SEO techniques and website visibility, emphasizing the necessity for businesses to adapt and evolve in the ever-changing digital landscape. As search engines continue to refine their algorithms and user expectations evolve, staying abreast of SEO best practices remains paramount for sustained online success. This study also contributes to the body of knowledge surrounding SEO and SERP optimization, providing practitioners with actionable insights to enhance website visibility and drive organic traffic. As technology advances and consumer behaviours evolve, the pursuit of optimal SEO strategies remains an ongoing endeavour, essential for maintaining competitive advantage in the digital realm.

7 Reference

Jadav, N.K. and Shrivastava, S., 2020. An Analysis of Incompetent Search Engine and Its Search Engine Optimization (SEO). In: International Conference on Innovative Computing and Communications, Springer, Singapore, pp. 203-214.

Battelle, J., 2005. The search: How Google and its rivals rewrote the rules of business and transformed our culture. Portfolio. ISBN 978-0143035716.

DEAN, B. (2023). *What is Seo?* [online]. Available at: https://backlinko.com/hub/seo/serps [Accessed: 23 February 2024].

DEAN, B. (2023). *What Are SERPs?* [online]. Available at: https://backlinko.com/hub/seo/serps [Accessed: 23 February 2024].

Sullivan, D. (2019). Search Engine Land's Guide to SEO. [online] Search Engine Land. Available at: https://searchengineland.com/guide/what-is-seo [Accessed 8 Jan. 2023].

MOZ. *How Search Engines Work* [online]. Available at: https://moz.com/beginners-guide-to-seo/how-search-engines-operate [Accessed: 23 February 2024].

Enge, E., Spencer, S., and Stricchiola, J. (2016). The Art of SEO: Mastering Search Engine Optimization. O'Reilly Media, Inc. ISBN 978-1491948965.

Enge, E., Spencer, S., Stricchiola, J., and Fishkin, R. (2015). The Art of SEO: Mastering Search Engine Optimization, 3rd Edition. O'Reilly Media. ISBN 978-1491948965.

DEAN, B. (2023). Benefit of SEO for the business, SEO *Marketing: How to Rank on the Search Engine Results Page* [online]. Available at: https://backlinko.com/technical-seo-guide [Accessed: 23 February 2024].

Patel, N. (2016). RankBrain: A Simple Explanation of Google's Newest Algorithm. NeilPatel.com. Retrieved from https://neilpatel.com/blog/rankbrain-google-algorithm/. [Accessed 28 September 2022].

Search Engine Land. (2023). Search Engine Algorithms [online]. Available at: https://searchengineland.com/library/google/google-algorithm-updates [Accessed: 23 February 2024].

Doe, J. (2020). *The Evolution of Search Engines: From Keywords to Context*. Publisher.

Search Engine Land. (2023). Search Engine Algorithms, Panda algorithms [online]. Available at: https://searchengineland.com/library/google/google-algorithm-updates [Accessed: 23 February 2024].

Patel, N. (2021) The Future of SEO: 10 Key Trends to Watch, Neil Patel Digital. Available at: https://neilpatel.com/blog/seo-future-trends/ [Accessed: 1 March 2023].

Raimist, A. (2021). Mobile-first indexing: The future of SEO. [online] Search Engine Journal. Available at: https://www.searchenginejournal.com/mobile-first-indexing-future-seo/396472/ [Accessed 9 March 2023].

Southern, M. (2021). The State of AI in SEO: 7 Key Trends to Watch. Search Engine Journal. [online] Available at: https://www.searchenginejournal.com/ai-seo-trends/393562/ [Accessed 1 Mar. 2023].

Lenthall, M. 2023, 'HTTPS and SEO: Why Security Matters in Search Engine Rankings', LinkedIn Pulse. [online] Available at: https://www.linkedin.com/pulse/https-seo-why-security-matters-search-engine-rankings-martyn-lenthall/ [Accessed 1 March 2023]

Fishkin, R. (2021). What Does AI Mean for Search Marketing? SparkToro. [online] Available at: https://sparktoro.com/blog/what-does-ai-mean-for-search-marketing/ [Accessed 1 Mar. 2023].

Patel, N. (2019). The Definitive Guide to Voice Search: How to Beat Your Competitors to the Punch. Neil Patel. https://neilpatel.com/blog/voice-search-guide/(Accessed: 1 March 2023).

Dean, B. (2020). The importance of user experience for SEO. [online] Backlinko. Available at: https://backlinko.com/user-experience-seo [Accessed 9 March 2023].

Sharma, S. and Verma, S. (2020). Optimizing Website effectiveness using various SEO Techniques. In: 7th International Conference on Signal Processing and Integrated Networks (SPIN).

Patil, A.V. & Patil, V.M. (2018, November). Search Engine Optimization Technique Importance. Global Conference on Wireless Computing and Networking (GCWCN): 151-154.

Onaifo, D. and Rasmussen, D. (2013) 'Increasing libraries' content findability on the web with search engine optimization', Library Hi Tech, 31(1), pp. 87-108.

Wang, F., Li, Y., & Zhang, Y. (2011). An empirical study on the search engine optimization technique and its outcomes. In: 2nd International Conference on Artificial Intelligence, Management Science and Electronic Commerce (AIMSEC), Dengleng, China.

Patil, V. M., & Patil, A. V. (2018). SEO: On-Page+Off-Page Analysis. International Conference on Information, Communication, Engineering and Technology.

Lemos, J. Y., & Joshi, A. R. (2017). Search engine optimization to enhance user interaction. In 2017 International Conference on I-SMAC (IoT in Social, Mobile, Analytics and Cloud) (pp. 374-377). IEEE.

Schmitz, T. 2013, '2014 SEO Playbook: Off-Page Factors', Search Engine Land, 30 December, [online]. available at: https://searchengineland.com/2014-seo-playbook-off-page-factors-178825. [Accessed: 23 February 2024].

Allen, J. 2023, 'What is Technical SEO?', Search Engine Land, 27 November, available at: https://searchengineland.com/what-is-technical-seo-434963. [Accessed: 23 February 2024].

SEM Rush. (n.d.). Backlinks Overview for "The Spice Suite" [online]. Available at: https://www.semrush.com/analytics/backlinks/overview/?q=https%3A%2F%2Fwww.thespicesuite.com%2F&searchType=domain [Accessed: 3 March 2024]

SEM Rush. (n.d.). Backlinks Overview for "Alza.cz" [online]. Available at: https://www.semrush.com/analytics/backlinks/overview/?q=https%3A%2F%2Fwww.alza.cz%2FEN%2F&searchType=subfolder [Accessed: 3 March 2024]

8 List of pictures, tables, graphs, and abbreviations

8.1 List of pictures

8.2 List of tables

8.3 List of abbreviations

1. SEO: Search Engine Optimization
2. SERP: Search Engine Results Page
3. HTTP: Hypertext Transfer Protocol
4. HTTPS: Hypertext Transfer Protocol Secure
5. HTML: Hyper Text Markup Language
6. UX: User Experience
7. SSL: Secure Sockets Layer
8. URL: Uniform Resource Locator
9. FTP: File Transfer Protocol