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Search Engine Optimization and the connection with Knowledge Graphs

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Abstract

Title: Search Engine Optimization and the connection with Knowledge Graphs

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Aim: The aim of this study is to analyze the usage of Search Engine Optimization and Knowledge Graphs and the connection between them to achieve profitable business visibility and reach.

Methods: Following a qualitative method together with an inductive approach, ten marketing professionals were interviewed via an online questionnaire. To conduct this study both primary and secondary data was utilized. Scientific theory together with empirical findings were linked and discussed in the analysis chapter.

Findings: This study establishes current Search Engine Optimization utilization by businesses regarding common techniques and methods. We demonstrate their effectiveness on the Google Knowledge Graph, Google My Business and resulting positive business impact for increased visibility and reach. Difficulties remain in accurate tracking procedures to analyze quantifiable results.

Contribution of the thesis: This study contributes to the literature of both Search Engine Optimization and Knowledge Graphs by providing a new perspective on how these subjects have been utilized in modern marketing. In addition, this study provides an understanding of the benefits of SEO utilization on Knowledge Graphs.

Suggestions for further research: We suggest more extensive investigation on the elements and utilization of Knowledge Graphs; how the structure can be affected; which techniques are most effective on a bigger scale and how effectively the benefits can be measured.

Key Words: Search Engine, Search Engine Optimization, SEO, Knowledge Graphs, Google My Business, Google Search Engine, Online Marketing.

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ABBREVIATIONS

GMB - Google My Business

IT - Information technology

PPC - Price Per Click

RDF - Resource Description Framework

SEO - Search Engine Optimization

SERP - Search Engine Result Page

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Chapter 1. Introduction

This chapter presents the background of the study, explains the motivation of the study and the problematization of the topic is discussed. Additionally, the research aim and questions are stated.

1.1 Background

Ever since its introduction, the internet has become an important platform for businesses to interact with their customers (Pant and Srinivasan, 2010). With the number of web users continuously rising on a daily basis and surpassing half of the earth's population in 2017 (Ballatore, Graham, Sen, 2017), the need for companies to provide an online presence has become undeniable.

As a result of inherent growth, the internet has been cluttered with information that inhibits effective navigation and the location of key knowledge. Therefore, search engines have become increasingly important to access relevant information with many people utilizing them as a starting point for their web navigation. An indicator of their success can be seen by the search engine of Google accomplishing the feat of one billion unique monthly visitors as the first website in the world in 2011 (Baye et al., 2015). While searches encompass a broad spectrum, most commonly researched topics are in relation to products and services underlining the importance to businesses (Dou et al., 2010).

Through the introduction of the Knowledge Graph in 2012, Google has established further optimization for its search engine and provided an important technological advancement for the future of information search (Singhal, 2012). Defined as a database shaped by user searches and keyword applications, this machine learning technology provides information and recommendations beyond regular search terms to provide users an all-encompassing overview and incite further learning (Nigam et al, 2020). While primarily developed for search enhancements, businesses have adopted the tool and Knowledge Graphs have evolved to an unknown common practice utilized in many areas such as Social Media (Lian et al., 2017), provision of business intelligence (Bellomarini et al. 2019) and voice assistants (Dong, 2019).

In light of constant changes to search algorithms by search engines and modern techniques to reach audiences, businesses and marketers need to stay up to date to stand out from the masses. As such, search engine optimization (SEO), has become an often-utilized marketing strategy and valuable asset to distinguish products from competitors by increasing search engine rankings through the use of specified keywords by website integration (Dramilio, et al., 2020; Sheffield, 2020).

This study focuses on Search Engine Optimization and the extended connection to Knowledge Graphs. Our goal is to establish a profound overview of commonly utilized techniques in conjunction with a mostly undervalued topic in current business literature. By generating insights into current usage of SEO by marketing professionals and their respective companies we can establish links to Knowledge Graphs and the possibility to increase business visibility and reach.

1.2 Motivation of the study

Through our extensive literature review in the field of search engine optimization, we realized the existence of Knowledge Graphs and their growing effect on modern life from a consumer perspective. Moving forward we would like to investigate in which way businesses are aware of this topic and how they utilize search engine optimization to benefit from and influence Knowledge Graphs. As the recent development of Knowledge Graphs is not common knowledge to all marketers, we want to provide an overview and highlight the existence of this tool.

Our motivation is to firstly, demonstrate the marketing strategy of search engine optimization, the embedding of keywords, links, images in websites to generate website traffic through increased search rankings in search engines. Secondly, we link the topic with knowledge Graphs, a new tool which automates the collection of data from websites via algorithms to provide search engine users a fast and broader overview of their searched query. Nowadays, Knowledge Graphs are omnipresent and provide the basis for Google searches and many of the current recommendations on for example YouTube, Netflix, Facebook, LinkedIn, and many more (Nigam et al., 2020).

Previous research in this field has been conducted on Knowledge Graphs mostly from an IT perspective analyzing integration and advancement of technology (Fathalla et al. 2017; Coursey, Mihalcea, 2009; Xiaoxue,2019), the benefactors of Artificial Intelligence application (Bellomarini et. al, 2019), concise information sharing through Knowledge Graphs and social media (Lian et al., 2017). While there has been much research written from a business and marketing perspective in the form of blog posts (White, 2020; Job, 2019; Pecánek, 2020), little to no peer-reviewed academic research journals have focused upon this topic giving us a unique angle and opportunity to engage.

1.3 Problematization

Different digital marketing tools have been modifying the field of marketing over the past decade (Schaefer and Hetman, 2019). Because of the technology improvements, it is getting easier to target

consumers in more specific and personal content (Kostin, 2018) which makes the marketing more efficient and cost-efficient.

Since with the knowledge graph, the idea is to collect, store, and utilize the searched keywords data to offer results that are accurate and relevant (Brack et al., 2020), it makes the targeted marketing easier to put into practice.
With the knowledge graph, there are huge amounts of collected data that can be used and reused (Nigam et al., 2020) and the challenge comes, when choosing how to utilize it the most effective way.

In order for companies to appear in knowledge graphs, they need to have traffic on their website and most clicks on search results (Tran and Takasu, 2019). This means it is crucial for companies to have their SEO working for search engines to find the created content and make it accessible in the search results pages.
Companies can improve their visibility and rank on search results with SEO (Yang et al., 2019) and since it's linked to knowledge graphs modern-day marketers should be aware of how to utilize this connection.

Knowledge graphs have not been reviewed from a business and marketing perspective in many academic research journals but mainly in the industry experts' blog posts (Job, 2019; Pecánek, 2020). There is no research on how widely the tool is known among current marketers.

So far knowledge graphs have been researched mainly from the IT perspective of analyzing integration and advancement of technology (Fathalla et al. 2017; Coursey, Mihalcea, 2009; Xiaoxue,2011). We identified a research gap by the lack of academic research regarding the utilization of Knowledge Graphs from a business perspective. In addition, we believe SEO to have a positive business impact on Knowledge Graphs which will be focused upon in this research.

1.4 Research Aim and Research Questions

The aim of this study is to analyze the utilization of SEO and Knowledge Graphs. Firstly, business practices of SEO are studied. Secondly, our research engages common SEO practices and establishes current and potential usage on Knowledge Graphs to increase businesses visibility and reach. With our research we demonstrate a beneficial connection between the two topics.

To achieve the aim, two research questions are formed:

RQ1: How do businesses practice SEO?

RQ2: How can businesses utilize search engine optimization to benefit from and influence Knowledge Graphs?

1.5 Delimitations

Difficulties in the interview selection process due to a very specialized topic narrow the scope and responses of this study. In total 10 interviews were conducted with respondents from different backgrounds, experience levels and countries. Despite our interviewees being chosen carefully, and being handpicked marketing professionals, we could not ensure previously existing knowledge on the topics at hand. These factors and due to the nature of this research provide a specified scope which limits our analysis to the marketing field and specifically to SEO, whereas a broader approach could encompass the entirety of the field of Knowledge Graphs. While we provide an extensive overview of our research questions our qualitative research is mostly unrestricted, focusing entirely on marketing professionals regardless of industries, management positions or countries.

1.6 Disposition

This research begins with an introductory chapter that describes the research background, problematization, motivation of the study together with the aim and research questions. Chapter two consists of different theoretical frameworks of previous studies and relevant concepts are discussed in detail. Chapter three explains the methodology of this study. The choice of data collection is explained, and empirical data is presented, including the basic information about the respondents. Chapter 4 deals with the results of the empirical findings and chapter 5 follows an in-depth analysis with comparisons to the theoretical framework, applicability, and outcomes. In the last chapter, the conclusion of the study is presented along with the answered research questions and aim. The chapter ends with a summarization of contributions, limitations, and suggestions for future research.

Chapter 2. Literature Review

2.1 Knowledge Graph

This chapter explains the definition of Knowledge Graphs, its basis of semantic search, the Google knowledge graph and further in-depth analysis of Knowledge Graph business practices.

2.1.1 Definition of Knowledge Graph

In recent times, the term "Knowledge Graph" has been used abundantly by both businesses and researchers to describe a complex technology on the basis of data storage and search enhancement (Nigam et al., 2020). Coined and brought into popularity by Google's Knowledge Graph in 2012, the topic has risen in fame without the company giving a clear definition or explanation of its exact procedures (Ehrlinger & Wöß, 2016). Several researchers (Paulheim, 2016; Ehrlinger & Wöß, 2016) have noted the lack of generalized definition and attempted to create an overview and common ground for future utilization (see Table 1).

According to Pujara et al. (2013), Knowledge Graphs are described as systems encompassing techniques to gain new knowledge from the internet. Through the combination of facts an interrelation is created to enhance knowledge generation. This definition is supported by Paulheim (2016) who himself describes the term as, real world entities and connections combined in a graph form, to form probable relations specifically to allow affiliations with each other over the range of different confined topics. In contrast Färber et al. (2016) mention a more technical definition, describing the Knowledge Graph as an "Resource Description Framework" or RDF graph defined by a subject, predicate and object which act as translators of extracted knowledge. After a thorough analysis of similarities and issues in each definition Ehrlinger & Wöß (2016) combine existing knowledge to construct a clear description of knowledge graphs as a method to generate and include information into a complex knowledge base, also named ontology, where software establishes conclusions to assume new knowledge on the topic at hand. By storing large data sets derived from existing data throughout the internet, knowledge graphs can find relations and suggest further searches or results and therefore incite further learning or ultimately business value for companies. Simply put, a knowledge graph links information together to display the most probable search result despite user ambiguity.

Table 1: Summary of Knowledge graph definitions based on peer-reviewed journal articles.

Scholars	Research Issues	Contribution
Pujara et al., (2013)	Knowledge Graph Identification	Extraction of knowledge, Challenges of implementation, Definition
Färber et al., (2016)	Knowledge Graph Data Origin	Definition, Technical Viewpoint, Validity
Paulheim, (2016)	Knowledge graph refinement survey of approaches and evaluation methods	Knowledge graph construction, Definition, Refinement of existing knowledge graphs,
Ehrlinger & Wöß, (2016)	Definition of Knowledge Graphs	Overview of existing definitions, Summary, Knowledge graph explanation
Nigam et al., (2020)	Application of Knowledge Graphs for Service Providing Platforms	Overview of business applications, General usage, Definition

2.1.2 Semantic Search

To explain the basis of Knowledge Graphs we must first look at the evolution of search in the recent years (see Table 2). With increasing amounts of information and knowledge available throughout the internet, it has become more and more difficult to search and find relevant results. Improvements to search practices are mandatory to keep up with current standards, therefore searches have changed from a stationary tool to include further information or apparent intelligent thinking when displaying its results. This is the effect of semantic search.

First mentions of the concept arose by Guha et al. (2003), explaining in detail the development of the semantic web to include further linkage between terms beyond pure hyperlinks and therefore systematically laying the groundwork for inherent advantages for search engines in the form of semantic search. While the basis of their research was conjured around assumptions about future development, further studies since then have been created to optimize their ideas for increased information retrieval.

Fernandez et al. (2008) relay the first successes of semantic search systems with ontologies, advanced knowledge management systems storing numerous data, specifically for business intranets. While these results were promising for 2008, they also mention the lack of attempts of semantic search application to the internet and demonstrate research proving the possibility of semantic search based on ontologies in an unrestricted environment as the entirety of the world wide web.

After further advancement Amerland (2014) discusses the large-scale implementation of semantic search in the world wide web and describes the transition from single web page results based on keyword-activation with a probability of entailing relevant information to a search mechanic providing intelligent results leading to a direct answer. The switch from links provided by keywords to semantic search proved beneficial for the end user to find direct access to web pages related to the search question. According to the author the reasoning for the delayed launch across the internet was in part mostly due to difficulties in handling large amounts of data and scalability. To ensure semantic search works over the trillions of existing web pages it has to be firstly automatic and secondly still ensure the required quality. While quality in searches used to be also reliant on the users search queries, semantic search diminishes ambiguity and allows the search engine to make assumptions on the expectations of the searcher by calculations based on user preferences and previous searches.

To demonstrate the impact and importance on the construction of Knowledge Graphs we must look at the 3 components of semantic search which paved the way for its development.

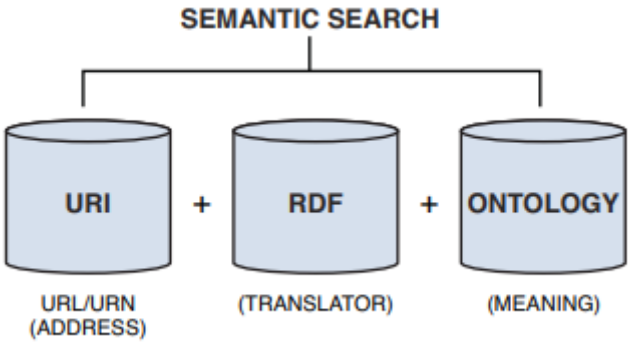

Figure 1: Semantic Search by Amerland, 2014, page 11.

- URI or Universal Resource Identifier defines a weblink, or name of an entity, which can be established as the initial set of data starting the search. It contributes to amassing large numbers of raw data about the search query without further defining or categorizing its validity. Its use is therefore limited and requires further classification.

- This is achieved via the RDF or Resource Description Framework translating the data via a set list of rules from one database to another. Amerland describes the process as giving meaning to raw data indexed for machine use and the translation into understandable human terms. During the transcription procedure the technology can fail to distinguish between distinct words, as uses and meanings can be differential depending on relevant context therefore an additional step is mandatory to fulfil an adequate search.

- To provide a reasonable answer for ambiguous queries and provide context beyond the search term an Ontology is used. These are a database collection of meanings based on classes with specific rules to combine data. Through the usage of ontologies data can be linked with logical connections which are similar to human comprehension and intelligence.

Ultimately the combination of all factors of semantic search led to the construction of knowledge graphs as an extension of the existing technology (Cheng et al., 2017). At this stage we can establish few differences in technological standpoints but more so in visual representation by businesses covered in the next chapters.

Table 2: Concise overview of the evolution of semantic search as basis for knowledge graphs.

Scholars	Research Issues	Contribution
Guha, McCool, Miller, (2003)	Semantic Search	Concept of semantic search, Implementation, Suggestion
Fernandez et al., (2008)	Semantic Search for the Internet	Expansion of semantic search, Evolution from intranets, Unrestricted Ontologies
Amerland, (2014)	Google Semantic Search	Definition of semantic search, explanation of widespread implementation in the WWW, definition of knowledge graphs
Cheng et al., (2017)	Three level customer service knowledge graphs	Knowledge graph technology, implementation, practical uses

2.1.3 Google Knowledge Graph

With their blog post in 2012 Google introduced their newest product update as the Knowledge Graph to enhance their semantic search in a way to incorporate real life figures, objects, places, or entities more engagingly with increased user friendliness (Singhal, 2012). They disclosed the scope of their knowledge graph to contain over 500 million objects and 3.5 billion facts interrelated within each other at its implementation. With the technology updating based on users' search terms, frequency and relevant data backed by renowned sources, Google promises the relevance of search results. Applicable for both Desktop and Mobile search, this implementation proved a new age for search engines (Lee, 2012). Since then, the blog post has been cited over 600 times according to Google Scholar and sparked interest in Knowledge Graphs of both researchers and businesses.

The Google knowledge graph contains summarized information in Knowledge Fields aiming to give a concise overview of the specific topic and establish further recommendations of connected fields (Sullivan, 2020). Below, the search query for “Shakespeare” resulted in detailed information of William Shakespeare’s life and work. The information is generated automatically and displayed directly without further need of additional search. Related searches containing similar famous artists can be found which have been frequently used as follow-up to the initial search query and could be of interest to the user.

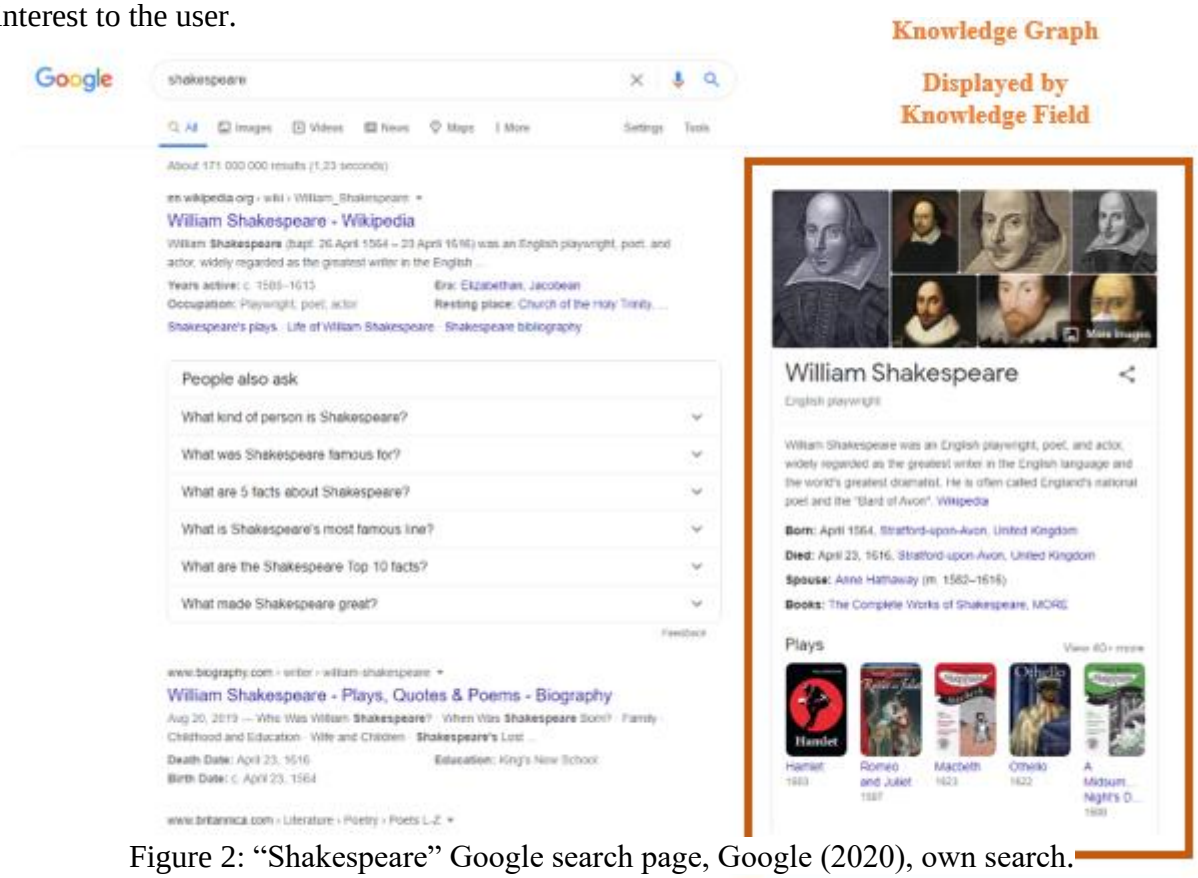

Figure 2: “Shakespeare” Google search page, Google (2020), own search.

According to Venetis et al. (2011) approximately 20% of all web searches are based on finding local information, with this number doubling for searches from mobile phones. With advanced technology able to pinpoint the exact location of users the importance of having a company listing, available across search platforms, has been increased. Khan et al. (2015) demonstrate the importance of local search for marketeers by highlighting the users' need of quick decision making on the spot. Generally local searches on mobile phones are made by people wanting fast decisions and answers, therefore factors such as reputation, closeness and visual representation are important for users' choices. Clear business listings can provide major value for companies and let them stand out from the masses.

To display relevant information about businesses “Google My Business” is utilized to enable automatically generated business listings via Knowledge Graphs. Companies can claim these fields by providing valid proof of ownership for customization of information for their customers. This platform includes display of Google Maps, opening times, Q&A sections, reviews and links to social media. Companies also have the option to show special offers, promotions and upload relevant business photos. Customers can directly engage with companies and ask questions or leave their comments in the form of reviews with ratings ranging from 1-5.

Below the search page for “Galleria Nian”, a shopping center in Gävle, Sweden, can be found which displays its Google My Business listing automatically generated by the Knowledge Graph. In this case, the business has taken care of their GMB page by providing an additional informative description of the available services and up-to-date information regarding COVID-19 practices and regulations. Regular engagement with customer Questions in the Q&A section as well as a large amount of google reviews provide an overview of what a customer can expect by visiting this shopping center.

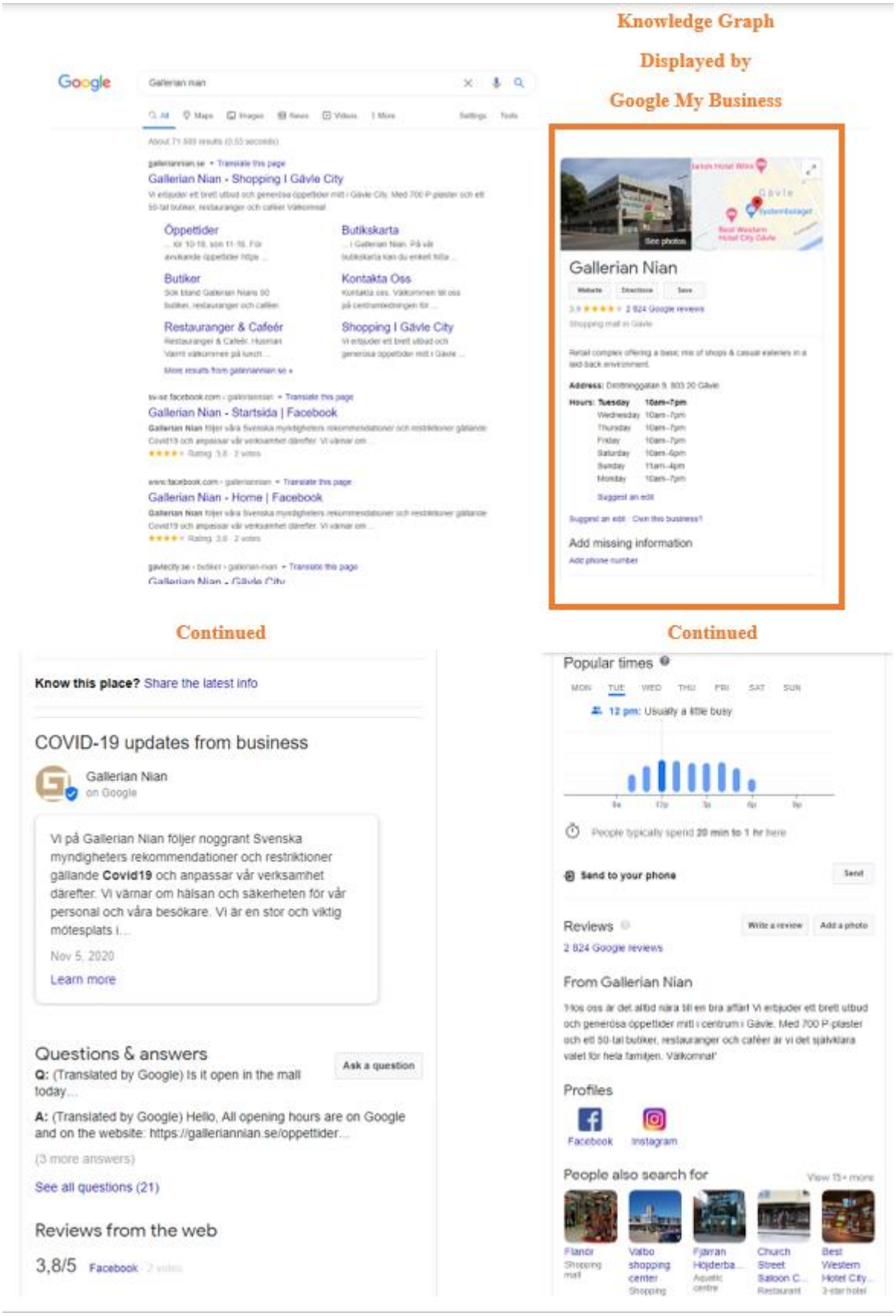

Figure 3: “Gallerian Nian” Google search page and Google My Business listing, Google (2020), own search.

2.1.4 Business applicability of Knowledge Graphs

In modern times knowledge graphs have become widespread in their business application with companies engaging the practicality and benefiting from their uses. According to Ehrlinger & Wöß (2016) large corporations like Facebook, Microsoft and Yahoo have followed suit after Google's own implementation and developed knowledge graphs to support semantic searching and visualization. The usage has become a standard procedure rather than an exception.

Zou (2020) analyzes in detail the usage of knowledge graphs and categorizes four main areas which have been identified for application:

- Question answering systems, by enhancing semantic awareness of social chatbots & digital assistants (Siri, Alexa etc.)
- Recommender systems, support of accuracy and diversity
- Information retrieval, in form of search engine enhancements
- Domain specific utilization, e.g., in the medical, cyber security, news, and education sectors

Nigam et al. (2020) focus primarily on clarifying the current uses of knowledge graphs in daily life, mentioning specifically the underlying impact they have had on service providers. Enriching recommendation systems has been a primary use of knowledge graphs to ensure connections which make sense and will be beneficial for users. In this regard the authors mention specific examples which have benefitted from this development such as the financial sector, LinkedIn, Facebook, and Netflix. By engaging more frequently with the platform, recommendations can be enriched to enhance not only personal but recommendations of all users. For video on demand providers such as Netflix, Hulu and Youtube this research proves valuable due to the increasing amount of content available on the web (Orlandi et al., 2018). Via knowledge graphs users receive accurate representations of their preferences which proves beneficial for all parties involved.

Lastly, it is worth mentioning a current research topic by Amazon which is focusing on developing a product graph for all products in the world (Dong et al., 2020). Upon successful implementation this construction will provide improved accuracy, consistency, and completeness of data for Amazon's product catalogue potentially changing the way we search for products and shop in the future.

2.2 SEO

This section describes the core concepts of SEO: search engine, search engine optimization, the key methods and White & Black Hat SEO.

2.2.1 Search engine and Search engine result page (SERP)

A web search engine is software, such as Google and Bing, which collects data from websites that are stored in databases and from there provide the most relevant result for the searched topic (Li et al., 2019). The search engine shows search engine result pages (SERPs) consisting of a list of indexed websites for specific keywords (Rana, 2016). As figure 4. indicates the search engine result page shows how a specific website is displayed and evaluated by the search engine.

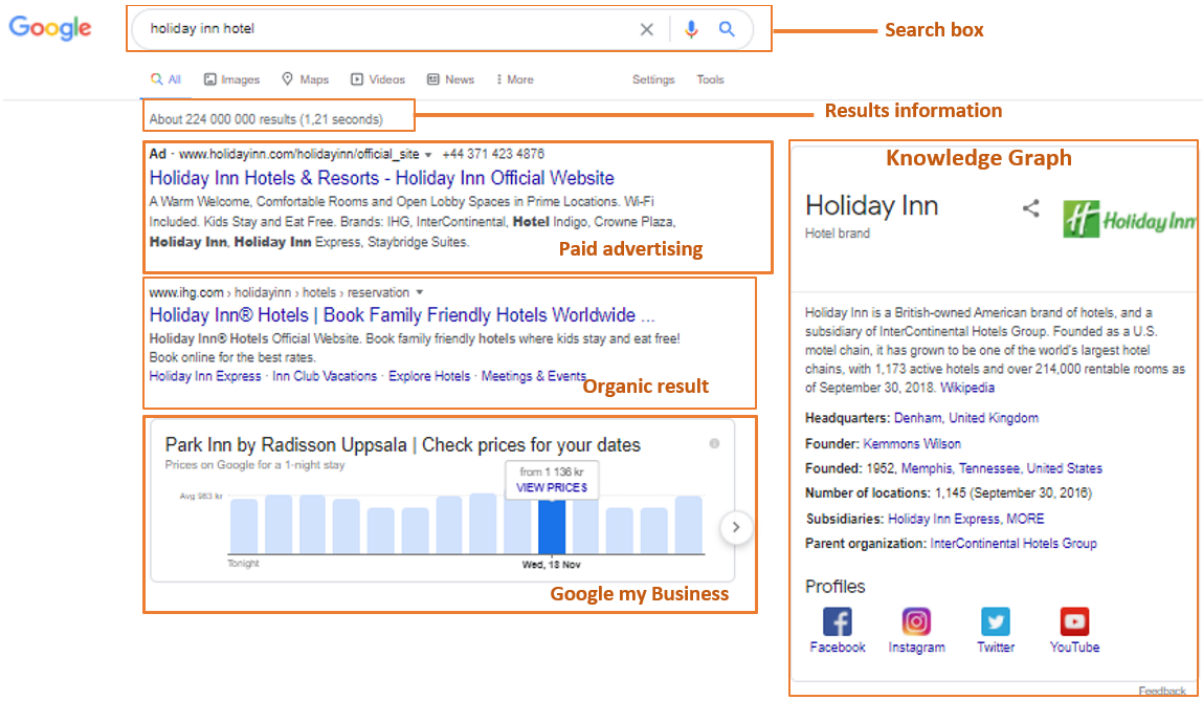

Figure 4: Google search result page, Google (2020), own search.

The highlighted sections on the Google search result page are discussed further:

- The search box is the input section of a search engine where users can place their word, phrase, or sentence. The search can also be made by using a speech by recording and pressing the microphone image in the right corner of the search box.
- Results information shows the information on the total number of results relevant to the specific search word or phrase.
- Paid advertising is also known as Price-per-click (PPC) shows the results which are bought by companies from the search engine. This is an advertisement section where the results are

shown based on the variables such as relevancy, bid amount and click-through rate (Rana, 2016).

- Organic results are appearing in this section exclusively based on their quality and relevancy.
- Google My Business is a tool offered by Google, which helps companies by giving it a public identity and presence with a listing. The provided information appears in Google Search and Google Maps.
- Knowledge Graph, as already discussed, is an automated summary of information about the business entity

Search engine components itself mainly offer two functions: indexing process and query process (Heng, 2014). The indexing process creates searchable data, and the query process utilizes that data to come up with a list of the results (Croft et al., 2009) and since the user only considers the selected few, it is crucial for companies to be on top of those lists (Gregurec, and Koruga, 2012).

Search engines can be classified into three different categories: crawler-based search engines, human-powered directories, and hybrid search tools (Bansal & Bhandari, 2018.) Modern and current search engines operate crawler programs that create databases automatically by recovering data from destinations (Kumar, 2013), a more old-fashioned human-powered directory, relies upon manual work, and does not offer efficient results when a search is very specific (Burghard et al., 2012).

The third one, hybrid search engine tools, uses both crawler-based and manual work for creating the result lists. Some of the crawler-based web indexes like Google utilize crawlers as the main component and manual screening as a supporting tool (Ahlers, 2012).

Search engines are important, because they offer effective access to a wide range of topics and information and provide the most relevant search results for the user (Wu et al., 2019). For companies, utilizing search engines in the correct way is vital, since new customers often enter a company's website through search engines when searching for information about the product or service (Falcão and Isaías, 2020).

2.2.2 Search engine optimization (SEO)

Search engine optimization (SEO) is a process which improves the quantity and quality of website traffic to a website via search engines and its goal is to achieve visibility to a website by utilizing the organic search engine results (Kaukoranta, 2015). These results appear in the non-sponsored section

of the SERP and unlike with paid advertisement, when a user clicks the result and goes to the website, there are no marketing costs for the specific company (Kritzinger and Weideman, 2013).

The importance of having a good place in a SERP on specific terms is undisputed since users tend to view results only within the first three pages (Pohjanen,2019) or only the first page of search results (Kritzinger and Weideman, 2013). This possibly means that if the website is not on the first SERP or in the top 30, it has almost no chance of being clicked by a user (Mohammad, Mohammad and Patel, 2019).

SEO can be seen as a process of creating a website that ranks effectively for chosen keywords within the organic search results and simultaneously through those keywords improving the quality and volume of traffic to the website (Iskandar and Komara, 2018).

There are multiple ways how to use SEO, and the main ways are related to on and off-page aspects. With on-page SEO, everything that happens inside the website and what is controlled by the owner of the website such as the meta description, heading, content, and images are being measured (Lopezosa et al., 2020).

According to Sharma and Verma (2020), in order to rank higher and gain meaningful traffic from the search engines, the website should be user-friendly, provide unique content and have a well-described meta description. In addition, the longer content the website has the longer time the user spends to read it which itself extends the time spent on site. This phenomenon has a tendency to lift the website higher in search results (Kaukoranta, 2015).

The off-page SEO techniques are mostly related to external aspects that have a relevant influence on Google ranking. The most efficient factor is the usage of links, which direct the user to the company's page (Faustine et al, 2020). Search engines consider external links as trustworthy and high-quality which automatically improves the site ranking (Kaukoranta,2015).

The equalization of external links is called link building, meaning creating multiple roads to the site. The other effective off-page factors are blogging and utilization of social media (Pohjanen, 2019) whose functionality is also based on keyword selection and link building.

2.2.3 Keyword selection

Keyword selection is one of the most important factors which influence SEO (Wang et al., 2017). Understanding users' search patterns and trends is crucial when identifying the demand for specific

content and facilitating its improvement. Keywords are the words which users type into the search box in search engines and these words are being categorized by Google when crawling and indexing web pages (Kaukoranta, 2015). Keywords are the main factor that matches the search engine and website together, meaning that search engine's algorithms lift pages with correct keywords on the search result list (Özkan et al., 2019).

The best keywords for a company depend on the industry itself and which are the search terms customers use when using search engines. For example, a sports equipment company should select keywords to cover all the different sport genres and aim to place as high in SERP as possible. Keywords such as "sport equipment online" and "sport equipment shop" are too general, so a good way to improve the listing would be using specific keywords to match the customer's needs. In conclusion, keywords are the words consumers use when searching specific things from the internet. In keyword selection, companies need to identify those words and add those into their content so the search engines can categorize them based on the coverage and suitability. Naturally, the more relevant words a company uses, the better chance it has of rising to the top of the result page and enticing customers to click on the link to the desired website.

The two most common types of keywords are short and long-tailed keywords, which both have a specific function and purpose.

The short tail keywords are as the name implies one-word search terms and very popular to use, because of the multiple daily searches (Choudhari and Bhalla, 2015). Because of the high level of searches, the competition with short tail keywords is tough between the players wanting to rank as high as possible with the keyword on SERP.

The importance of placing high on search results is apparent since users are more likely to click the results on the first page (Kritzinger and Weideman, 2013). Also, with popular keywords it is more likely not to convert into sales because users searching with short keywords are usually mainly looking for information on the topic, product, or service, rather than making effective decisions (Falcão and Isaías, 2020).

The long-tail keywords consist of 2 or more descriptive words and are more customer-focused, with lower competition than short-tail words. Since these are more specifically searched, they tend to attract more quality customers and convert more sales (Wang et al., 2017).

Long-tail keywords are less used than short-tail keywords, and there are fewer monthly searches which makes it easier to rank high on SERP since the competition is lighter (Rana, 2016). Moreover,

it is more likely for the user who is aiming to buy a specific product or service to type a long tail keyword, and that can be a signal of purchase decision (Mohammad et al., 2019).

2.2.4 Black Hat SEO vs. White Hat SEO

There are two types of SEO techniques how the non-sponsored search engine visibility of the website can be accomplished, designing the site to be more consumer-friendly or focusing on strategies that influence only the search engine's quality ranking process (Pohjanen, 2019). These are called White Hat SEO and Black Hat SEO.

In the early years of search engines, controlling algorithms was easier which often led marketers to abuse the search engine in order to improve the ranking of the site (Xiulin, 2018). This Black Hat SEO does not focus on the quality of the website or intends to chain the internal content to match users' needs but only intends to "cheat" search engines to consider so (Jha and Saraswat, 2018). Techniques like keyword stuffing, which refers to placing multiple irrelevant keywords to the site just to boost rankings for those keywords (Sheffield, 2020), excessive tagging, and using unnatural links (Bello and Otobo, 2018), are invented to present the page in good light, but are conflicting the sole purpose of the existence of search engines.

There are rules, more specifically official guidelines published by the search engines, which purpose is to clarify the acceptable and undesired techniques (Jha and Saraswat, 2018) and in serious cases search engines might remove websites which use black hat SEO activities from the organic list (Le, 2019). Search engines justify this severe retaliation by claiming that manipulation of search engine results decreases the level of customer satisfaction and degrades the result of "honest" websites' (Bello and Otobo, 2018).

The SEO tactics which follow the guidelines and rules given by search engines and do not harm the ranking of a website are called White Hat SEO (Mittal et al., 2018). According to Duk et al. (2013), these techniques might not give fast results but in the end, slowly improves the SERP ranking and there is less chance for the website to be declined by the search engines. In addition, the traffic coming from White Hat SEO to the website is often better and optimization lasts for a longer duration of time (Scott, 2015).

The main and most commonly used White Hat SEO tactics are keyword generation and link exchange (Mittal et al., 2018). Keywords are the base of SEO which puts weight on keyword generation. It is a

process to choose the most accurate keywords which will be detected by search engines and which match with the content of the site. There are multiple online tools, such as Google Ad words keyword tool and Word trackers, available which generate relevant keywords to match specific needs (Jha and Saraswat, 2018).

The other method is the link exchange which places links on other websites to boost traffic (Mittal et al., 2018). This method is like a collaboration between different websites since both parties benefit from the link clicks, by improving the ranking in the search engine (Duk et al., 2013). A summary of the most common search engine optimization techniques is presented in Table 3, where they are divided according to whether they belong to a White Hat or a Black Hat category.

Table 3: Examples of white hat and black hat SEO methods (own compilation).

SEO method	White Hat	Black Hat
Methods following the search engine guidelines *(Pohjanen, 2019)*	X	
Methods violating the search engine guidelines *(Xiulin, 2018)*		X
Keyword analysis and selection *(Jha and Saraswat, 2018)*	X	X
Link exchange/building *(Mittal, Kirar and Meena, 2018)*	X	
Keyword stuffing *(Sheffield, 2020)*		X
High quality content for website users *(Pohjanen, 2019)*	X	
Link manipulation *(Bello and Otobo, 2018)*		X

In conclusion, comparing the White Hat SEO and Black hat SEO together is obvious that White Hat SEO is more beneficial, since it focuses on the consumer-satisfaction, drives to improve the actual on-page content and there is less chance for the website being penalized or banned by search engines.

2.2.5 The benefits of SEO for business

According to multiple studies (Su et al., 2014; Strzelecki, 2019; Iskandar and Komara, 2018) search engines favor high quality sites by placing them higher on SERP, which results in more link clicks because of the users' favoring for links placed on the top positions.
The one reason why users tend to click links from the list of most "relevant" search results is also connected to the website quality and brand equity (Gao and Li, 2018). This means that in order to keep the constant and quality traffic flowing to the website, companies should invest in making the site user-friendly and provide additional value and services to the user (Mpinganjira, 2016).

In the field of digital marketing every process and technique should be measurable (Hayu et al., 2020). Several studies have proven the positive effect of SEO on different markets and as Matta et al. (2020) discuss, over 80% of all website traffic originates on generic search sites such as Google. This means for companies who do not utilize SEO a huge loss in site traffic and sales.

There are multiple studies proving the effectiveness of SEO to companies. According to Bansal and Bhandari's (2018) study, in the e-commerce environment, the understanding and utilization of SEO is crucial to reach and maintain a steady traffic flow to the website. Therefore, it is necessary for marketers to understand how to develop the marketing strategies including SEO since they can reach a long-lasting effect on several marketing variables.

Shafiee et al., (2016) study the connection of SEO with E-tourism websites. In the study, multiple SEO techniques were used, and to prove the positive effect each individual site's search engine ranking was measured in each phase of the project. The results prove the SEO's effectiveness by seeing the improvement in search engine ranking, site traffic and improvement in sales.

Sharma and Verma's (2020) recent study state that every modern company which has an online presence should include SEO, especially keyword selection, to improve the website's effectiveness

and SERP listing. In their study, companies with clear SEO strategies reached higher rankings when comparing the new customers, sales, and site traffic.

Lastly, Zhang and Cabage's (2017) research shows websites that use SEO link building get the most traffic, better SERP ranking and increased revenue. These results occur exponentially and gradually, especially when using the White Hat SEO. The table 4 summarizes all the relevant studies related to SEO and its importance. As can be seen, SEO itself has not been studied for a long time which makes it a relatively new and timely research topic.

Table 4: Emphasizing the importance of SEO for marketing in previous studies.

Scholars	Research Issues	Contribution
Kritzinger & Weideman, (2013)	Examining the differences in marketing strategies between SEO and PPC (price-per-click)	SEO strategies, Online marketing, Search engine marketing
Heng (2014)	Finding links to how White Hat SEO and algorithms affect SEO performance	User-friendliness, White Hat SEO, Algorithm utilization
Kaukoranta (2015)	Customer reach level when using SEO	SEO utilization, Customer-centric approach, Online marketing
Rana (2016)	Marketing strategy development while considering the key characteristics of SEO	Digital Marketing, SEO strategy, Visibility of marketing
Bansal & Bhandari (2018)	SEO utilization as a marketing tool and the effects of website traffic	Web traffic, SEO, Digital campaigns
Mittal et al (2018)	The comparison of SEO strategies, focusing on White Hat SEO	White Hat SEO, Black Hat SEO, On-page optimization, Off-page optimization, SEO strategies
Jha & Saraswat (2018)	A most effective approach for website optimization	White Hat SEO, Black Hat SEO, Marketing strategies, Search engine effectiveness

Iskandar & Komara, 2018)	Comparison of marketing elements from an SEO perspective	Marketing strategy, SEO techniques, Marketing Tools
Pohjanen (2019)	Search engine visibility and the SEO benefits for business	Search engine visibility, SEO, Search engine
Mohammad et al (2019)	The results of SEO practices combined with effective keyword research	Keyword segmentation, keyword search, SEO
Falcão & Isaías (2020)	The links between effective digital marketing and search engine utilization	Social networks, Search engine, Digital marketing
Faustine et all (2020)	The comparison between multiple SEO techniques	SEO techniques, Digital marketing effects
Sharma and Verma (2020)	Website improvement and analysis using multiple SEO techniques	On-page optimization, off-page optimization, search engine usability, marketing tools

2.3 Theoretical Framework

With our extensive literature review of Knowledge Graphs and SEO we have provided an overview of both topics and highlighted relevant business practices. We have established the importance for businesses of ranking high in searches and the prevalence of Knowledge Graphs as an emerging tool throughout the business world.

The constant development by developers, such as Google, to enhance search engine algorithms to combat the effects of SEO and the possibility of cheating the system by generating improved search results for businesses, has developed into an arms race between both involved parties (Amerland, 2014). To remain trustworthy and high standard quality, search engines must develop more and more complex algorithms to establish competitiveness with exploitative actions. On the contrary, SEO professionals are required to become inventive with their strategies and rely on experimentation and

observation, as so far, no company has managed to fully discover the ranking details of search engines (Luh, Yang, Huang, 2016).

We believe, with the knowledge graph Google has introduced a new tool for information collection upon which SEO can benefit from. While very little academic research has been directed in connecting knowledge graphs and SEO thus far, Amerland (2014) mentions the importance for businesses to capitalize upon this new technology to enable increased reach, marketing growth, authority, trust, and reputation. Furthermore, the value of brand interconnectivity and providing support above regular means are benefactors of a good online presence developed by knowledge graphs. Additionally, another author directly correlates businesses knowledge graph visibility with SEO and demonstrates the adoption of "Google My Business" as a major contributor (Pecánek, 2020).

To discover awareness and current marketing practices by professionals regarding knowledge graphs we investigate the use of common SEO techniques to create an overview of applicability. For our research, we have decided to exclusively focus on White Hat SEO strategies, specifically "Keyword Selection", "Keyword Generation" and "Link Exchange". These techniques are relevant and legal strategies regarding SEO for businesses in today's day and age and fall under the approval of all search engine guidelines contrary to Black Hat techniques. Ultimately benefits are the promotion of customer-satisfaction and improvements to usage. By utilizing these strategies and implementing them directly into the knowledge graph, for example via Google My Business (GMB), companies can enhance their footprint on the internet and gain business value. Job (2019) mentions the impact of GMB on local businesses increases by up to 25% with correct usage of SEO.

Our theoretical framework is built up to analyze a connection between SEO and Knowledge graphs. With the analysis of common SEO techniques, namely "Keyword selection", "Keyword Generation" and "Link Exchange", described in-depth in the literature review, by established businesses we are generating insights into current business practices regarding SEO and show the benefits thereof. With the help of our research results by experienced marketers we plan to provide proficient evidence to support our claim and raise awareness for future managers to integrate SEO procedures into Knowledge Graphs to increase their businesses visibility & reach and profit beneficially from this connection.

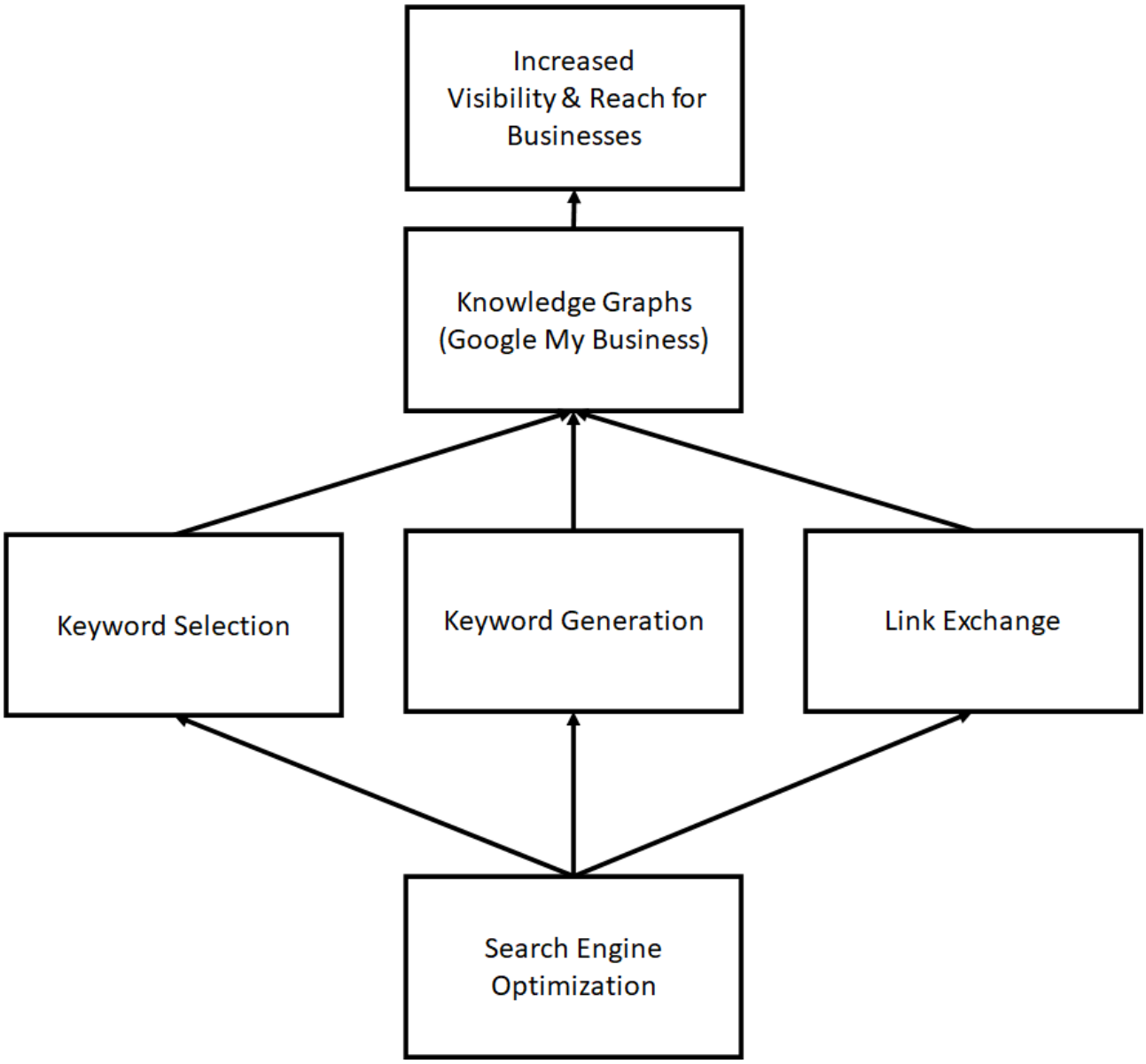

Figure 5: Theoretical Framework.

Chapter 3. Methodology

This chapter explains how the research was done and what criteria were used in the research method selection. In addition, this chapter discusses how the empirical study was arranged, how data was collected and analyzed in this study.

3.1 Research Approach

3.1.1 Qualitative and quantitative approach

The research can be conducted using two main strategies: a qualitative strategy and a quantitative strategy (Adams et al., 2014). The aim of a qualitative strategy is to study the phenomenon in depth by gathering information that is not limited to specific concepts but focuses on explaining its features (Walle, 2015). Ways to use the qualitative research method are,for example, applying literature-based theories to real-life cases or to gathering extensive knowledge of a new or specific phenomenon (Saldana, 2011).

The data collected using this method can be in visual or verbal form and can be collected via interviews, observation, and focus groups (Walle, 2015). Because the nature of the data is rich and multilevel, the researcher must first interpret it in order to be able to synthesize and organize it into text (Bansal, Smith & Vaara, 2018). The quantitative research method, on the other hand, is based on numerical data and is collected using a large sample size (Adams et al., 2014).

Since the aim of our study was to gain a thorough understanding of the Knowledge Graphs in use and the impact of SEO, we decided to focus on a qualitative strategy. The first reason for choosing the qualitative method is due to the nature of the research. As mentioned earlier, we wanted to gain a deeper understanding of the subject and believed this was possible by asking questions like “how” and “why”. With those questions, it was also possible to gather the opinions and motivations of people who know or use Knowledge Graphs and SEO.

Secondly, qualitative analysis allows different aspects to be explored without focusing too much on one theory or process and encourages continuous comparison between theories and reality (Doz, 2011). Thirdly, since the results of qualitative research are more descriptive than predictive (Stenbacka, 2001), we thought it would benefit our research on a topic that is not yet widely researched.

3.1.2 Inductive approach

This research has an inductive approach, which is customarily implemented in qualitative research methods (Adams et al., 2014). The main purpose of an inductive approach is to generate the basis on which new theories and findings can be built by collecting and investigating raw data, without the restriction of existing theories (Walle, 2015). There is another approach, deductive, in which a theory is first developed and then tested in action (Woiceshyn and Daellenbach, 2018). This approach is often associated with quantitative methods since it requires a larger sample size in order to be proven valid (Woiceshyn and Daellenbach, 2018).

We found an inductive approach to be appropriate to this research since as Walle (2015) explained with an inductive approach the aim is to develop a conceptual framework and contribute to the literature with new findings. This study has a small sample, which prevents us from drawing a generalized conclusion, so moving forward the deductive approach was not applicable. Our decision is also based on Woiceshyn and Daellenbach (2018) statement that an inductive research approach allows more open-minded approaches and more flexibility to make adjustments throughout the study.

3.2 Data collection

3.2.1 Secondary data

At the beginning of this study, a literature review was conducted that focused on finding out whether the connection between SEO and Knowledge Graphs had been studied before. Both topics, especially search engine optimization, have been researched, but given that both are relatively new inventions there are still not a wide range of in-depth literature. Despite this, we succeeded to gather relevant literature to support our work and found commonalities that we were able to exploit at a later stage of the research.

Relevant search terms must be mapped out in order to conduct an effective and comprehensive literature review (Price, 2017). Since our topic consists of two sub-topics, SEO and Knowledge Graphs, we needed to define the main search terms from both of them and decide which concepts will be researched more in detail.

In the case of SEO, it was crucial to first start with a “search engine” and “search engine result page” because those concepts are a key part of the SEO process. In the second reading process “search engine optimization” and more specifically “search engine optimization strategies” were used as search terms, and since that concept itself is relatively wide we chose to focus on SEO strategies and

techniques, which we thought would be the most beneficial and effective linked with Knowledge Graphs.

To find relevant literature for our second topic, we had to define a clear-cut strategy on how to approach the topic. As this technology is quite specific and its utilization unknown to most users, we decided to first engage the search terms for "definitions of knowledge graphs" to provide an overall understanding, as to our research no definitive definition of the topic exists. To follow our strategy, we used search terms regarding "semantic search" to understand and clarify how knowledge graphs came into existence and how they work. With our research focusing on SEO strategies, we next analyzed the search terms for "Google Knowledge Graph" and "Google My Business", which found few results therefore we had to expand further to encompass literature related to "business listings". Lastly, a search for "knowledge graph business" provided multiple peer-reviewed journal articles to incorporate to show the importance of the topic in the current day and age.

Because both topics are related to technological innovation and are constantly changing with new information as well as reforms emerging at a rapid pace, we decided to create a time frame from 2010 to 2020. Older articles were only utilized to explain historic backgrounds and to support our research in a meaningful way. We wanted to include the latest information in the research so we could provide the most current view of the topic.
All the referred articles were retrieved from Emerald and other journal databases such as Academic Search, Google Scholar and EBSCO. The literature review has an important part of this study, but it is accompanied by empirical study findings.

3.2.2 Primary Data

There are multiple primary data collection techniques, and with a qualitative method, the main ones are conducting face-to-face interviews, through observation, and sending surveys (Bryman and Bell, 2015). The semi-structured interviews have been considered to be the most effective method (Walle, 2015) since they enable answers that are often broader and more detailed. In addition, with that method interviews are often more interactive, and the questions can variate and change according to the answer.

In this research, the qualitative research method was chosen and within that, the data collection was conducted via structured survey which was distributed online. As Bryman and Bell (2015) discussed, the useful aspect of reaching out to respondents via the Internet is effective data handling, which is

one of the reasons why we chose the method. In addition, we want to make sure that answering was as effortless and convenient as possible for the respondents. Like for instance, the online form allowed respondents to decide for themselves the most appropriate time to respond.

The majority of the questions were open-ended, which gave the respondents the possibility to explain their point of view in a more detailed manner. The one negative aspect regarding the online data collection was the absence of participant observations and personal touch, which as Walle (2015) explained, can provide additional data, like visual or auditory cues for the researchers.

Still, with chosen methods the objective and neutral view was easier to maintain, because the interviewee's reactions were not visible, and the interviewer could not change the original questions. In order to avoid a situation where the desired person would not answer the questionnaire him/herself, we sent a questionnaire link to each respondent personally.

In total we had 10 interviewees to gather primary data from. All of the participants received the same form, without any additional questions. This procedure is common with structured interviews (Bryman and Bell, 2015). With this we wanted to make sure the data would be comparable, and the differences and similarities would be noticeable. The main aim of this interview method was to build effective participation for both the interviewee and the interviewer. The data were collected for approximately a month.

3.3 Selection of respondents

The selection of participants for this study started with evaluating and comparing the need and expectations with the study's aim. The selection continued through purposive sampling, which meant contacting each responded personally (Walle, 2015) and the method includes selecting participants purposely and on the basis of their relevance to the topic, instead of randomly (Bryman and Bell, 2015).

We found it to be crucial for our research since the topic requires specific industry base knowledge and the research would not have benefited from answers that would have been given to an individual without that knowledge. As Bryman and Bell (2015) explained, this way the answers will not represent the common populations´ point of view.

The proper sample size for qualitative studies has been discussed greatly, and as Saunders et al (2018) explained, the right sample size can be difficult to decide before conducting the study. Bryman and Bell (2015) pointed out that in-depth results do not always require a large sample size, therefore this means that the quality of responses, e.g., content and coverage, is more important than the number of responses.

We did not want to limit our research to specific companies, instead, we decided to focus more on the industry itself, which in this case is marketing and more specifically digital marketing. We decided to conduct the research this way because the topic is not company-specific, and we thought that by selecting respondents from multiple and different companies, more diverse results would be reached. In addition, by using this technique, we were able to identify the differences between different companies working in similar industries.

The selected respondents needed to fill several requirements, such as working in the digital marketing field, having a basic level of knowledge regarding SEO strategies, and understanding the links between those processes. All the selected respondents have been working in the mentioned field for several years in an international environment, which increases the value of their responses.

All interviews were conducted in English and all followed the same method of structured interview survey with open questions. Table 5. demonstrates respondents' professions, how long they have worked in marketing and dates when answers were received.

Table 5: Interview information (own compilation).

Interviewee	***How many years of experience in marketing***	***Industry***	***Date of received answer***
A1 *Digital marketing Specialist*	4	Advertising	*27.11.2020*
A2 *Marketing Assistant*	3	Health Supplements	*28.11.2020*
A3 *Commercial Development Executive*	8	Tobacco	*28.11.2020*
A4 *E-commerce Manager*	15	Tobacco	*29.11.2020*
A5 *Marketing Specialist*	7	E-Commerce (Furniture)	*29.11.2020*
A6 *Marketing Specialist*	2	E-Commerce	*30.11.2020*
A7 *Paid Marketing Specialist*	3,5	Marketing	*2.12.2020*
A8 *Ecommerce Shop Manager*	3	E-Commerce (Pet supplies)	*7.12.2020*
A9 *Marketing Specialist*	5	IT	*7.12.2020*
A10 *Marketing Specialist*	6	E-Commerce (Fashion)	*8.12.2020*

3.4 Operationalization of the interview questions

The design of the interview is based firstly on, establishing background information on the respondents to qualify the validity of their knowledge and secondly, on gathering relevant data to analyze the proposed research questions in accordance with demonstrated theories. Each respondent was chosen on the basis of being a marketing professional of their respective business area. The intent and purpose of each question in relation to the research questions and the established theories in the literature review is listed below:

Table 6: Interview questions and purpose (own compilation).

Question	***Targeted Research Question***	***Purpose***	***Theories***
SEO			
1. *Are you familiar with the concept of SEO?*	***RQ1***	*Knowledge test, background information*	*SEO utilization as a marketing tool (Bansal & Bhandari, 2018)*
2. *Does your work include SEO?*	***RQ1***	*Create further insights of respondent's knowledge of the subject matter*	*The links between effective digital marketing and search engine utilization (Falcão and Isaías, 2020)*

3. Which techniques have you used in your SEO process? *o Keyword selection* *o Keyword generation* *o Link exchange* *o others*	***RQ1***	*Demonstration of key knowledge regarding common SEO techniques, discovery of usage for their business*	*The comparison of SEO strategies with a focus on White Hat SEO (Mittal et al., 2018)* *Search engine visibility and the SEO benefits for businesses (Pohjanen, 2019)*
4. Which technique proved to be the most effective?	***RQ1***	*Overview of business applicability, business impact*	*Differences in SEO marketing strategies (Kritzinger & Weideman, 2013)*
5. Which search engines did you utilize?	***RQ1***	*Background information of SEO, buildup for knowledge graph questions, animate thinking outside the box*	*Classification and types of search engines (Bansal & Bhandari, 2018)*
6. Have you noticed increased business value by using SEO strategies? (profitability, reach,)	***RQ1***	*Business applicability, business impact, investigating continuous usage*	*Business impact of using multiple SEO techniques (Sharma & Verma, 2020)* *Customer reach and SEO (Kaukoranta, 2015)*
7. Did you outsource your SEO process to a professional agency or complete it yourself?	***RQ1***	*Extraction of business strategy, handling of challenges, cost effectiveness, skills*	*Methods for following search engine guidelines (Pohjanen, 2019)*

Knowledge Graphs			
1. *Are you familiar with how Google search works? Specifically, how search results are returned?*	***RQ2***	*Thought provoking entry question, establishing a background of the topic*	*Functions of search engines (Heng, 2014)*
2. *When you search for your company, are you satisfied with its representation by Google?*	***RQ2***	*Providing background of the topic, insights into topic awareness*	*Visibility of information on Google's search engine (Sullivan, 2020)*
3. *Do you believe customers are influenced by your company's representation on Google?*	***RQ1, RQ2***	*Generating insights into business applicability, importance of business representation*	*Impact of search results on users (Wu et al, 2019)*
4. *Have you heard of the Google Knowledge Graph?*	***RQ2***	*Introduction with image, overview of knowledge regarding the subject matter*	*Advanced intelligent search provision via technology (Singhal, 2012)*
5. *Are you aware of practices to influence the Google Knowledge Graph? If yes, which does your company utilize and have you been able to quantify positive results for your business?*	***RQ2***	*Providing an overview of business applicability, business impact, and results*	*The impact of knowledge graphs on service provision (Nigam et al., 2020)*

Google My Business			
1. *Do you believe Google My Business can be profitable for your company?*	***RQ2***	*Background information with image, insights into business needs for knowledge graphs*	*Impact of locality on searches (Venetis et al., 2011)*
2. *Does your company actively manage its GMB listing? If yes, how:* o *Updating promotions* o *Answering customer reviews or Q&A's* o *Providing up to date information* o *Other*	***RQ2***	*Discovery of business practices, business applicability, business need*	*Influencing factors for business listings (Khan et al., 2015)*
3. *Does your company integrate SEO techniques in GMB? If yes, which:* o *Keyword selection* o *Keyword generation* o *Link exchange* o *others*	***RQ1, RQ2***	*Linking of SEO + Knowledge Graphs, business applicability*	*Clear SEO strategies as driver of business impact (Sharma & Verma, 2020)*

4. *Google My Business profiles are automatically generated by the Knowledge Graph. Was relevant information correctly provided for your business?*	***RQ2***	*Creating awareness of business profiles generation by knowledge graphs, creating information regarding accuracy and benefits*	*Knowledge graphs as search engine enhancements via information retrieval (Zou, 2020)*
5. *Do you believe SEO can influence the Knowledge Graph?*	***RQ2***	*Summary of opinion, mental stimulation*	*Effectiveness of SEO as a marketing tool (Shafiee et al., 2016)*

3.5 Data analysis

Content analysis is a common method to extract relevant results from qualitative research (Kohlbacher, 2006). We have utilized this approach to analyze our empirical findings and enable demonstration of our research results in accordance with the statement of Baxter and Jack (2008), that the researcher is responsible for summarizing the empirical findings from diffuse concepts into clear and precise writing for the reader. Our qualitative study was conducted in English, with results collected mostly online via software dedicated towards provision of secure questionnaires. We divided our study into three major themes, SEO, Knowledge Graphs and Google My Business to generate insights valuable to answer our research questions. During the review process, research material was broken down into sections to promote enhanced overview and security of information in line with the recommendations of content analysis (Kohlbacher, 2006). Original material and questionnaire answers were collected and maintained separately to increase validity. Common ideas and discoveries were noted and included in the empirical findings section along with remarks in accordance with our literature review. This allowed us to analyze our research questions on the basis of our qualitative study.

3.6 Validity and reliability

According to Bryman (1989), the validity of data can be supported by the familiarity of the researcher and interview prospects. On the basis of an existing connection, the interview process and the final results can be enhanced to ensure exact and true responses more so than anonymous questioning. We can profit from this theory with our research as we primarily utilize our firsthand network connections to receive honest and valid responses.

The validity aspect of the study often raises the question if the aim is being fulfilled and that the study focuses on it (Bryman and Bell, 2015). The importance of good validity of a study is great because, without it, it is possible that the results of the study are irrelevant. The validity of this study is proven by collecting answers from the interview questions and linking them to the research.

The reliability of this study is linked to the utilization of the peer reviewed secondary data and the explanation of the whole primary data collection process. All the steps were shown in detail and the questionnaire answers were unveiled in their original form. Lastly, all the interpretations stated in this research have been justified according to the respondents' perceptions and valid scientific articles.

3.7 The ethical aspects

Ethics is an important aspect that has to be taken into account throughout the entire research process (Walle, 2015). Our theoretical framework and concepts were built using relevant literature with integrity and accuracy, stating all the references used in the research. All of the used references are taken from databases approved by the University of Gävle. This ensures the authenticity of the sources and eliminates the possible presentation of false information in this study.

As Bryman and Bell (2015) discussed, the treatment of the participants is a matter of ethical principles. Complete anonymity will be maintained when presenting the results of the study and the respondents' answers will only be applied for this particular research. The respondents were informed regarding the procedures and were given the option to withdraw or change the given answers if they wanted. All of the respondents were contacted personally, and they were communicated with without intermediaries.

With this procedure, we aimed to provide certainty for the respondents to answer more freely and avoid situations where the respondent would knowingly fail to answer a particular question. In

addition, we aimed to maintain objectivity and truthfulness when conducting the research by ensuring that the answers are given by selected people and that the data is analyzed correctly without alterations.

3.8 Limitations of the Methodology

While our methodology was planned meticulously there remain gaps and limitations when looking back retroactively. The intended design choice of an online questionnaire proved valuable in many ways, such as effective data handling via the internet (Bryman & Bell, 2015) but had negative side effects which also need to be considered. While this method allowed respondents to complete the answers in ample time and to their highest convenience, we could establish shorter responses than expected by individual interviewees. This issue could have been combated via alternative methods such as structured interviews with allotted time slots. An open question remains if the individuals would have been able to find the necessary time slot in their busy work schedules. Furthermore, keeping in mind the positions of the respondents we managed to capture a broad spectrum of different opinions with various managerial powers. Including more and diversified managers of different positions could have granted further validity and meaningfulness to our study.

Chapter 4. Empirical Results

This chapter presents the results of our qualitative study divided into four separate sections in line with the questionnaire setup. We focus on the background, SEO, Google Knowledge Graph and Google My Business. Results have been separated and findings are displayed based on assigned numbers (R1-R10), therefore individual respondents can be tracked, and anonymity is maintained.

4.1 Background

At first the questionnaire focuses on the background of the respondents to establish their qualifications and general knowledge of the subject matter at hand. In total responses from 3 males and 7 females were tracked with the respondents ranging from age 25-40 with an average being 29 years old. R4 being an older outlier with 40 years of age in comparison to the rest of the interviewees. This factor correlates with the length of employment in the field of marketing averaging 5.5 years showing an extensive background knowledge qualifying the respondents as advanced marketeers and validating their input for our research.

Company industry and size varies depending on respondent allowing us to gain an overview from different perspectives and angles. Common industries named by the respondents are e-commerce (R5, R6, R8, R10), selling a variation of different products, and the tobacco industry (R3, R4). Other mentions include IT (R9) and health supplements (R2) showing differential businesses and operations. Company size ranged from start-ups with 1-10 employees (R9), to MNC's with 500+ employees (R3, R4, R8, R10).

In line with their job titles at their companies the respondents are all marketing experts with multiple interviewees being entry level specialists (R1, R5, R6, R7, R9) or marketing assistants (R2). Additionally, we also received responses from senior level managers (R4, R8). When looking at the marketing fields where each respondent works, we can see common themes especially being social media (R1, R2, R3, R5, R6, R7, R8, R10) and SEO (R1, R3, R4, R9, R10). While other fields such as content production, paid advertising and CRM are mentioned they are individual rather than frequent answers.

Regarding employed marketing strategies the respondents in particular mention SEO (R1, R2, R3, R7) as one of the main ways to differentiate themselves from competitors and reach more consumers. Google is used as an example of a platform where SEO can be effective:

> *"Heavy focus on collecting emails, and outranking competitors on Google through SEO" (R2)*

Furthermore, the basis of marketing strategies on data (R6) and dependency of clients plans (R7) is highlighted. This description shows that not one strategy can be followed but strategies must be constantly adopted to effectively reach customers and ultimately achieve business goals. In the following quote one respondent mentions the necessity of having an objective to strive for but the need of having constant evaluation of the key performance indicators or "KPI's" to ensure reaching the desired end goal:

> *"Depends on the clients field but I start from the key business objective of the campaign and plan some strategies around that with KPI's and audience" (R7)*

Lastly, the responses show a multitude of different approaches reaching from seasonal campaigns (R4, R8, R10), through marketing directly through social media (R1, R3, R5, R10) to establish a focus group to engage upon (R9) which shows the importance of being up to date with the newest technology and customer flow:

> *"Engaging content for a younger audience. Keeping up with trends and being a first adopter" (R9)*

This concludes the background of the respondents and allows us to paint a more accurate picture of the interviewees and their qualifications to contribute towards our research questions and aim. As with this entire chapter the empirical findings below are split into different sections in accordance with the questionnaire design. This follows a conscious decision to give the respondents the opportunity to fully focus on the individual topic at hand, allow in-depth answers and present the results in a streamlined manner for increased overview.

4.2 SEO

In the second section of the questions the focus lies on SEO. The interviewees were questioned on their familiarity with the concept, their experience with commonly utilized techniques and the effectiveness thereof for their company. Furthermore, the respondents provided answers on which search engines the SEO process was carried out on, if their company outsourced the work to professionals or managed it in-house, and ultimately if they could notice a realized business benefit by the usage of SEO strategies.

In line with their marketing experience all 10 interviewees disclosed knowledge of the concept of SEO. The second question of this section investigates if the respondent work involves SEO and was designed as a decision tree. Negative responses automatically skipped questions 3-6 which were regarding further in-depth working procedures and effects and proceeded with question 7 which was designed to be more general and didn't require prerequisites. In total, the majority of respondents work with SEO (R1, R2, R3, R4, R8, R9) qualifying them for more detailed follow-up questions.

When it comes to utilizing SEO techniques all interviewees indicated the usage of keyword selection, while R2 was the sole respondent which had not taken advantage of link exchange and keyword generation. The option for other techniques was not ticked by any of the respondents. Regarding the effectiveness of these procedures there are diversified answers. While R1 mentions keyword selection to be most effective for their company, R3 indicates the benefits of keyword generation to include certain words which provide increased search rankings. Furthermore, the inclusion of link exchange and keyword selection has proven valuable for R8. A concept which provided benefits to two respondents (R4, R9) is the combination of the entire SEO process and inclusion into the user experience with helpful links which are useful for both the company and the customer.

> *"Allround increase of user experience without knowledge of obvious SEO. Including keywords and links wherever possible whenever it made sense" (R4)*

Regarding the utilized search engines for their SEO process all interviewees mention Google as their first choice, with individual respondents (R3, R4) also working with Bing and Yahoo search engines.

All respondents agree on the positive effects of SEO strategies on their business operations with increased traffic and higher rankings in search engines as main outcomes (R3, R4, R8, R9).

> *"More traffic, visibility and better search rankings" (R8)*

Most interviewees (R1, R2, R3, R4, R7, R8, R9) complete their SEO process themselves while some (R6, R10) rely on a combination of in-house and outsourcing. Only one respondents' company (R5) outsources entirely and receives external help by professional SEO agencies.

4.3 Google Knowledge Graph

The third section of the questionnaire engages the topics of google search and the google knowledge graph. The interviewees were questioned on their knowledge of these subjects and googles representation of their company through their search engine. Furthermore, the respondents were asked if they were aware of techniques to influence the google knowledge graph and if yes, which their companies have utilized and if they had been effective for the business operation.

As a bridging question towards knowledge graphs the familiarity of the respondents with google search and the exact retrieval of search results is questioned, to which mostly positive responses were given and only 2 respondents (R6, R7) declined further knowledge. Following this, our findings indicate that 80% of our interviewees are satisfied with the representation of their companies by Google, with responses (R4, R8, R9) mentioning the fact that they are easily found on the internet and rank as number one spot when searching with relevant keywords. Furthermore, other opinions include advanced knowledge like the description of the use of Google My Business to directly engage with customer reviews on the search page (R3) and the fact that information and search results could have been more specific and up-to date in some cases (R5).

The next part introduces the google knowledge graph via screenshot to which almost all respondents, bar R6, R7, reply that they are aware of this technology. When it comes to knowledge and utilization of practices to influence the google knowledge graph, we can establish only few respondents' answers. While one interviewee (R1) mentions the focus of their company to lay on the improvement of the provided content, other respondents' answers include more detailed oversights of the use of SEO in the company's website to show intended content through the knowledge graph (R4, R8). Two respondents mention similar concepts with the strategy of engaging Google My Business profiles with SEO techniques and enriching answers to customer reviews with link exchange and specific keywords (R3, R4).

> *"We engage the knowledge graph mostly by enriching our websites with SEO to make our intended results show. Some of my colleagues actively work with google my business where we include SEO when answering customer reviews. Basically its all about linking our answers with relevant information so our customers can find exactly what they're looking for from their first search." (R4)*

Lastly, when it comes to establishing quantifiable business impact on the respondents companies the opinions are split due to difficulties in measuring the effect on customers. While all respondents are convinced of positive results for their businesses, numbers are not disclosed and R4 even mentions that the impact is not measured in their company due to it being a side effect of the entire SEO process of their e-commerce platform. R3 discloses further insights as to the difficulties of measuring results in part due to the automatic generation of the knowledge graph and the need to rely on external tracking procedures due to lack of integration:

> *"Its difficult to measure since the knowledge graph is shown in the search page and not something the customers generally click on unless they want to write a review. But with google analytics we can see increased traffic towards our home page" (R3)*

4.4 Google My Business

In the final section of the questionnaire the relation between the google knowledge graph and Google My Business is discovered. The respondent's opinion regarding the profitability of GMB, shown and clarified via screenshot, is questioned. Next the interviewees specify if their companies manage their GMB listings, in which way they do so and if they have integrated any SEO techniques into this process. An explanation for the automatic creation of Google My Business profiles via the google knowledge graph is given and the respondents answer if accurate information was displayed for their business. Lastly a direct question asks the interviewees if they believe SEO can influence the knowledge graph.

Most of the interviewees believe Google My Business to be profitable for their company with only one respondent (R6) disagreeing with this statement but not providing further information as to the reasoning. When it comes to the maintenance of an active Google My Business listing and in which way the respondent' companies engage with this tool we can identify three main outcomes: "Providing up to date information", "answering customer reviews or Q&A's" and "updating of promotions". Especially the first two outcomes seem to be prominently represented options for multiple of the interviewee's companies (R3, R4, R8) that simultaneously engage in both activities. Whereas other businesses utilize only one option (R3, R7) or all three of the above mentioned at the same time (R8). One aspect that is noteworthy to mention is that the regular updating of promotions

through GMB is only mentioned by one respondent although this seems to be a relevant marketing strategy to engage more customers for other companies.

Of the respondents which shared that their company uses GMB (R2, R3, R4, R7, R8) most also include SEO techniques to enhance their business profiles to further increase their companies reach and visibility. The use of keyword generation and keyword selection are mentioned by three respondents (R3, R4, R8) to be beneficial techniques for this purpose, while link exchange is highlighted by few interviewees (R4, R8) to also be a useful tool for increased engagement.

In the next part of the questionnaire, the attention of the respondents is drawn to the fact that GMB profiles are automatically generated by the Google knowledge graph before they are released as business listings for the companies to gain control over, if they have the means to do so. The follow up question asks the interviewees if relevant information was gathered and displayed accurately for their company to which diversified responses were recorded. While few respondents could not give a relevant response due to not being involved with the team and creation process (R4, R10), others conveyed the correctness of the shown information regarding their companies (R1, R6, R8, R9), with some interviewees indicating failures of the knowledge graph to combine factual data in a useful manner for customers (R2, R3, R5, R7). Major errors, mentioned by multiple respondents, seem to be in the provision of relevant photographs of the business location or the sold products which were solved by engaging with the GMB profile:

> *"At first no but after taking care of our business profile we could upload new pictures which were more representable" (R3)*

The last question of the questionnaire engages the respondent's opinion if they believe SEO can influence the knowledge graph, which was answered with positive agreement by almost all. Most interviewees are of the same opinion, that by utilizing SEO the technology behind the knowledge graph can gather and display more exact information about the company which benefits both businesses and customers (R4, R8, R9, R10). Illustrating this fact one respondent says:

> *"Yes by giving additional information and links wherever possible the end results of the knowledge graph will be more accurate and useful for customers" (R4)*

Nevertheless, according to one respondent an issue arises when trying to track the effect of the individual SEO techniques on the knowledge graph as Google does not provide tracking measures to follow:

"Yes definitely we already see positive results. It would be better if google included a way to measure the amount of people using it so we can see exactly what type of SEO helps most" (R3)

4.5 Summary of Empirical Findings

Table 7: Summary of Empirical Findings.

Topic	Empirical Findings
Background	● Experienced marketeers with several years of experience ● Multitude of companies ranging in size and industries from e-commerce, health supplements, IT, to tobacco ● Search Engine Optimization belongs to the main marketing strategies to achieve differentiation from competitors ● Marketing strategies need to be monitored to remain effective ● Approaches including seasonal campaigns and social media highlighting the need to stay technologically savvy as a business to remain competitiveness
SEO	● Keyword selection, link exchange and keyword generation are the mainly used techniques in SEO ● Depending on the respondent's business the individual methods seem to work more or less effective ● Main benefits have come from adapting a SEO process including all three SEO techniques mixed with an encompassing user experience ● Google is the predominantly used search engine to engage with SEO ● SEO strategies have a positive effect on business operations increasing traffic and higher search rankings ● SEO is mostly conducted in-house rather than by professional SEO agencies

Google Knowledge Graph	● Marketeers are aware of the in-depth background workings of search responses and are familiar with the concept of Knowledge Graphs ● Googles representation of companies generated by the Knowledge Graph is mostly accurate ● Businesses engage the provided content by the Knowledge Graph with improvements and SEO techniques directly through Google My Business profiles ● Commonly used techniques are link exchange and keyword generation included in responses to customer reviews ● Influence on the generated content is achieved through SEO on the company's website ● Measuring quantifiable business impact proves difficult due to limitations on Google's tracking procedures ● From the point of view of the respondents, engaging Knowledge Graphs brings positive results for businesses
Google My Business	● Google My Business is profitable for companies ● Businesses engage GMB by providing up to date information, answering customer reviews or Q&A's and to a lesser degree updating of promotions ● Inclusion of SEO techniques into GMB is practiced increasing visibility and reach for the businesses ● GMB creation via Knowledge Graph leads to mostly accurate results, drawbacks being outdated information and errors in visual representation ● Errors can be solved by the business's engagement with the GMB profile ● The effect of SEO on Knowledge Graphs will improve precision of information benefiting both customers and businesses

Chapter 5. Discussion

In this chapter, the major findings from the empirical chapter are analyzed and linked to the theoretical frame. We focus on the main areas of SEO, Google Knowledge Graph and Google My Business to portray the meaning, importance, and relevance of the research on the basis of the research questions.

5.1. SEO

The importance of SEO in modern marketing has been emphasized for several years (Pohjanen, 2020; Sharma and Verma, 2020) and its different techniques are being tested and utilized in order to increase website visibility and reach (Lopezosa et al., 2020). There are multiple methods to apply and the use is linked to the company's objectives. As Kaukoranta (2015) emphasized, SEO is effective and crucial for companies who aim to stay involved in a competition that, thanks to the internet, encompasses almost the entire world.

Our first research question focused on finding out how companies practice SEO and based on the results we can indicate that there are certain common techniques which are widely used regardless of the industry or company.

These were keyword selection, link exchange and keyword generation. These three methods are also included in the created framework (Figure 5).

Keyword selection involves evaluating and anticipating the right search terms and thus placing them on a website (Özkan et al., 2019). Utilizing them, companies can easily and efficiently increase their SERP rankings (Wang et al., 2017). The popularity of this method was also evident in our study. All the respondents who answered question number 3. reported using keyword selection as part of their SEO strategy. The popularity can be explained with the effectiveness and with this method companies improve their ranking with ease by placing the most accurate keywords on their pages. So forth, we think that companies utilize this also because of its ease and that it does not require deep knowledge. Meaning, that even a marketer with less experience could use and exploit it successfully. Also, for more experienced marketers, keyword selection seems to be an important method which emphasizes the functionality of the method.

The second method, keyword generation, was widely used by the respondents of our study and as Jha and Saraswat (2018) the benefits of this method are derivatives to the extensive data utilized by

keyword generation tools, such as Google Ad words and Word trackers. The popularity of use can be explained by the free usage and fast access to precise results.

The last of the mentioned methods, link exchange, was popular among the respondents. With this method, multiple links are placed on the other websites to increase the traffic by creating multiple channels for customers to find and enter the site (Mittal et al., 2018). For companies this method offers an easier to find and the ability to reach also those customers who did not directly search for that page (Duk et al., 2013).

Our research shows that these mentioned methods are not only widely used but also the most effective ones and only one respondent did not utilize either the link exchange and keyword generation. None of the respondents indicated an alternative to other techniques. This does not mean that there are not any other possible techniques which companies could apply on their SEO strategy but confirms the assumption that these three are the most utilized and tied to SEO's basic usage. However, it is possible that while research shows the popularity of these particular methods, different techniques may also yield results.

The previous studies (Falcão and Isaías, 2020; Iskandar and Komara, 2018; Mittal et al., 2018; Özkan et al., 2019) discuss the complex and method-specific benefits when using the specific SEO techniques. In the end, all of them have the same desired end-result; increase the visibility and the reach of the website. In our study, we also found diverse opinions regarding the effectiveness of these methods.

As mentioned, all of the respondents mention the usage of keyword selection in their SEO strategy. According to Wang et al., (2017) this method is the base of SEO and without it, companies most likely will face substantial difficulties when trying to increase their customer reach. As Özkan et al., (2019) emphasize, it is also crucial to know the customer base and what search term they use when searching specific products or services. Since, if the company has not placed those keywords on the website, search results will not be placed on the top of the SERP. Likewise, this aspect appeared in our study, when the respondent clarified that with help of keyword generation accurate keywords are easier to find so the results match with the customers' needs as well as increasing the search rankings. With all of this we can draw the conclusion that companies are aware of the benefits of chosen methods and the overall similarities in responses indicate that these methods are common and widely used. This supports our assumption of the popularity of those methods that we have expressed throughout the research.

The most effective SEO strategy involves combining and implementing multiple methods (Bansal and Bhandari,2018; Gao and Li, 2018; Sharma and Verma, 2020). Our respondents had differing views on which combinations are most effective; link exchange and keyword selection with the basic functions raised to be one. Still, the concept which benefited users the most was the overall utilization of all of the three methods together in order to offer the most convenient and effective user experience to the customer.

Our respondents mentioned that they use only the White Hat methods such as keyword selection and link exchange when it comes to successful SEO. According to Sheffield, (2020) search engines accept these methods because they are fair and work according to regulations and would not harm the result listings, which is the opposite of how Black Hat methods work.

Also, according to Mittal et al., (2018) with White Hat methods, companies are more likely to reach longer term commitment from the customers who end up on the pages through these methods.So forth is clear that our respondents are aware of the high level of functionality of SEO and we can conclude that companies believe these methods will yield better results. This can be explained with the similarities in answers, since all of the respondents mentioned the same methods. In addition, the proof of the effectiveness of the methods can be concluded for the re-utilization and inclusion in the marketing practices, which were mentioned by multiple respondents.

When working with SEO, one crucial factor must be taken into consideration, search engines itself. As Matta et al (2020) stated, a bit over 80% of all website traffic initiate on search sites such as Google, which emphasizes the use of the right search engine. Since our first research question was about the current SEO practices in the business, naturally, we asked the interviewee's what search engine they primarily make use of. Majority of them mentioned Google as the main one, and only two mentioned Bing and Yahoo. This outcome supports the study presented by Pohjanen (2019), where the results show that 67% of people give priority to Google, meaning that with skillful SEO utilization companies have the ability to approach a large number of potential customers.

A tactical SEO is a holistic and complex process, and it requires taking into account multiple aspects. Among our respondents, the majority complete their SEO process themselves and only one mentioned to receive external help by professional SEO agencies. From this it can be concluded that companies, regardless of the industry, strive to create and implement SEO strategies themselves and not to resort to external assistance.

As Falcão and Isaías, (2020) discusses, the SEO process takes more time compared to the paid advertising strategies, but the results are often longer-term, such as deeper customer connection and more returning customers, and benefit both the user and the business.

5.2 Google Knowledge Graph

To answer the second research question, we first demonstrate the applicability and demand for Knowledge Graphs in the business world.

In this day and age, Knowledge Graphs have been established as a standard practice rather than an exception with companies such as Facebook, Yahoo, Microsoft and many more, relying on this technology to enhance their semantic search (Ehrlinger, Wöß, 2016). While applications are plentiful especially service providers have proven to become the biggest benefactors by enriching their services to contain apparent intelligent choices, enhanced recommendations, and provision of superior customer engagement (Nigam et al., 2020). With the focus of consumers on technology making their life easier and more comfortable, Knowledge Graphs are implemented to please this drive by developing features automatically for the benefit of customers and businesses which engages our research and our empirical findings alike.

As one of the largest service providers Google and its own implementation, the Google Knowledge Graph, focuses on one of the main areas of knowledge graph application identified by Zou (2020), specified as improved information retrieval and visualization, to enhance their search engine. Despite users being familiar with the feature and actively using it on a regular basis, the complexity of the background behind Google search remains a mystery to most casual observers. Contrary to this statement we could establish a more advanced level of knowledge of Google search and the Google Knowledge Graph with 80% of our interviewees responding positively to the corresponding questions, influenced by the fact of them being established marketeers with prior SEO experience in their respective fields. This prevalence of awareness among our respondents indicates a first glimpse and support of the notion of the growing importance of Knowledge Graphs to the business world. While most consumers benefit from its effects without knowing the exact source, these findings show that businesses are in fact knowledgeable about Knowledge Graphs and have started to invest resources in the direction of this innovation to benefit from its uses by the inclusion of SEO strategies.

Amerland (2014) claims the need and value of interacting with Knowledge Graphs by increasing influential business factors such as reach, marketing growth, authority, trust, and reputation. The

author theorizes positive outcomes by engaging with the feature and urges companies to utilize the opportunity.

Overall, the empirical study shows all respondents being confident in a positive impact on their businesses. Although there exist different approaches in influencing the Google Knowledge Graph the main access point seems to be the usage of SEO either through the company website to develop the creation of the Knowledge Graph in a specific way or via direct enrichment of the created content of Google My Business with SEO to enable increased visibility. Despite these positive answers drawbacks are apparent in the difficulties of measuring end results and effectiveness of individual SEO techniques. According to the empirical findings the Google Knowledge Graph lacks tracking mechanisms and the nature of automatically created content displayed on the search page hinders standard tracking procedures. Additionally, a comment is made, that the importance of tracking does not seem valued highly enough in one of the respondent's companies due to this procedure being a side product of the entirety of the SEO process. This shows that while the awareness is apparent for individual companies, some do not realize the effect and gains that could be established as of yet, as far as we understand it.

5.3 Google My Business

Khan et al. (2015) demonstrates the importance of clear business listings to be especially relevant for letting businesses stand out from the masses and differentiate themselves from their competitors. This statement is essential for users searching for local venues, restaurants or hairdressers but must be applied to all companies especially in the age of internet and mobile searches. With an estimated 20% of web searches looking for local data (Venetis et al., 2011) determinants which can influence reputation, closeness, and visual representation are representative factors for any business and bear significance for customer retention and acquisition. In light of the aforementioned claims Amerland (2014) describes the automatic creation of business presences by Knowledge Graphs to provide improved brand visibility and support directly in Google to engage customers previously out of reach.

We can demonstrate similar results with our empirical findings indicating an overall agreement to the profitability of Google My Business. Our results establish important factors to be the provision of updated information and the response to customer reviews or Q&A's to maintain an active and engaging business listing which remains relevant for an extended period of time without high maintenance.

Job (2019) believes the positive effects of correct SEO usage to increase the effectiveness of Google My Business on local businesses considerably. While our respondents did not provide any quantitative data to validify this theory we can see a trend in the way that most companies which are engaged in GMB also utilize SEO techniques to enhance their business listings. Specifically, keyword generation and keyword selection seem to be the most beneficial approaches to follow while some companies also engage in link exchange to solidify an encompassing SEO process. One aspect that stood out in our empirical results was the issue of the correctness of the information provided in the Knowledge Graph. While some respondents indicated a reliable summary of business information generated by the automatic procedure, some revealed factual inaccuracies especially when it comes to photographs, locations, and missing information. This issue could demonstrate a risk for companies that do not regularly check their Google My Business page and could therefore be open to a loss of customers. Increased SEO activities to improve the variance of data for collection could potentially counter these concerns.

To underline a potentially beneficial connection between Knowledge Graphs and SEO to increase visibility and reach, Pecánek (2020) advocates the usage of SEO in Google My Business to increase the individual results of the business's Knowledge Graphs. According to our empirical findings the respondents are of the universal opinion that SEO techniques have a positive effect on knowledge graph creation and development. With correct utilization, accuracy and amount of data can be increased leading to a beneficial outcome for both customers and businesses.

Chapter 6. Conclusion

This chapter presents the results of the study and the answers to the research questions. In addition, the limitations, suggestions for future research and limitations are discussed.

6.1 Discussion of the research questions

The aim of this research was to examine SEO practices in a modern business environment and how marketing professionals use it to influence Knowledge Graphs. The research is aimed to gain deeper and extensive knowledge on the different SEO techniques and if and how those can be utilized in Knowledge Graph creation. The two research questions are presented and answered below. The section is divided into two parts, discussing both research questions individually. On those parts, the conclusions are being stated based on the interview answers. In addition, the results are being analyzed and the link to the theory has been stated.

6.1.1 How do businesses practice SEO?

This study has identified that modern marketing utilizes much the same techniques when it comes to SEO. The most effective methods are used regardless of the industry and there are no significant differences between them. The study proved that three specific White Hat SEO methods form the basis of the most common and effective SEO strategy which is used among the digital marketers.

We found that those methods are keyword selection, link exchange and keyword generation. Each of these methods have a unique operation function but the purpose between them is identical; increase the visibility of the targeted website on the search results and reach the largest possible number of the possible customers. Multiple different combinations of the methods were used among the respondents, but the ultimately effective one was found to be keyword selection. The study shows that companies favored the so-called “White Hat” methods, to maintain their websites popularity on search engines. These methods are the most effective methods since they are approved by the biggest search engines like Google, Bing, and Yahoo. Therefore, websites utilizing these are automatically placed higher on the search results page compared to websites which use Black Hat methods. Additionally, we found Google to be the most used search engine and that the design and implementation of SEO strategies are primarily part of the company’s internal operations and not outsourced to external marketing agencies.

Among those included in our study, there were a few who did not use SEO in their daily work, but still for the most part reported being aware of its use as well as its potential benefits. The reason why we chose to mainly focus on people working with SEO on a daily basis was since we believe them to provide more insightful and beneficial content related to our research. Also, since we also wanted to find out if marketers know how to influence Knowledge Graphs with SEO, we thought that people who do not work with SEO are not aware of the link between those two. Our assumption was correct in this matter, as those few who did not use SEO in their daily work were not aware of Knowledge Graphs.

It became clear that SEO is an effective and central part of modern marketing and its utilization also has diverse effects on the rest of the brand / company's online presence. All in all, there are few conclusions which can be drawn from this part. The first conclusion is that companies prefer to utilize the White Hat SEO methods, as just to be sure not to be executed from the search result pages and that these methods are widely used. The second conclusion is that regardless of the years worked in marketing and industry, the marketers use the similar SEO methods such as keyword selection, link exchange and keyword generation.

6.1.2 How can businesses utilize search engine optimization to benefit from and influence knowledge graphs?

To answer the proposed research question our study investigates the business applicability of Knowledge Graphs in particular with focus on the Google Knowledge Graph. Our research demonstrates the existence of advanced knowledge amongst marketing professionals indicating apparent awareness of the topic throughout the business world. To further extrapolate our empirical findings, align with proposed theories regarding the positive interaction with Knowledge Graphs to increase business objectives such as reach, growth, reputation, trust and authority.

Following up on this statement we can consider our respondents indicating SEO to be one of the most beneficial tools to engage and influence the Google Knowledge Graph with. Despite these factors there are shortcomings in the ability to track data provided by the Knowledge Graph and also by the utilized SEO techniques, maintaining difficulties to show adequate numeric evidence.

Another method which proved valuable to demonstrate an impactful business benefit is the inclusion of SEO strategies directly into the Google My Business entity which was provided via automatic generation of the Knowledge Graph. With the importance of correct SEO usage highlighted in our literature review our empirical findings show similar results with many companies opting for keyword

generation and keyword selection as main drivers. Additionally, link exchange is used to a lesser degree but also an option. To expand upon this point, our respondents are of the comprehensive opinion, that SEO techniques have a positive impact on Knowledge Graph development as well as creation. This follows the trend of many current blogs which mention these advantages and illustrate the need to engage with Knowledge Graphs as an avenue to increase business gain. While there is a distinctive lack of theories regarding this topic from a business standpoint, we can underline previous favorable statements with our research and demonstrate a positive effect on SEO application for Knowledge Graphs.

A negative aspect which needs to be considered is the reliability of data generated by the Knowledge Graph. While usually effective in summarizing adequate information to a concise form, companies should include mandatory double checks to limit the possibility of errors in their business listings. These can reach and be seen by many potential and frequent customers, illustrating the need for correctness and appropriate visual representation.

6.2 Implications

With our study we hope to generate food for thought for current and future marketers to pay attention to Knowledge Graphs and their business applicability. We believe we have demonstrated the effectiveness of utilizing SEO to influence and form the Google Knowledge Graph. Specifically, managers can adopt our findings of including keyword generation, link exchange and keyword selection as main SEO techniques into GMB profiles to achieve a considerable business gain in the form of reach and visibility. As the current application of this subject is severely lacking in the business as well as academic world, we hope to have generated adequate incentives to warrant further acknowledgement and implementations.

Our theorized framework establishes a connection between Knowledge Graphs and SEO within three common techniques which are applicable to most companies. Namely these are keyword generation, keyword selection and link exchange which are clarified throughout our literature review and empirical findings. We demonstrate the underlying effects of the connection of these topics and prove our theory to be correct. By extending the current literature on Knowledge Graphs from a business standpoint we believe to add a valuable contribution to the academic world.

This research can help the society to gain a deeper understanding of how SEO is practised in business environments as well as the logic behind the individual's search results. The terms are explained in a way that the reader understands the processes without experience in the digital field, and, therefore, we help people who use the Internet, to understand its activities better. Furthermore, our research could influence the development and interaction with Knowledge Graphs in a positive way allowing for holistic benefits for businesses and users alike. For the consumers, understanding the basic functions of SEO could improve the search and shopping experience by reaching the wanted outcome effectively. Also, knowing the functions behind the processes gives the customer power to influence on the search results by searching with specific terms. From the customer's perspective, information about Knowledge Graphs can increase access to information for the searched topic. So forth we suggest a study made from the consumer perspective; how aware of these two topics they are, do they benefit from it in everyday day life and how these could be improved in order to increase the value for the user. In addition, an interesting aspect could be to study the consumers' attitudes towards these topics.

6.3 Limitations and suggestions for future research

The study has a number of limitations. One of the most important one is related to the low sample size which may have influenced the results of the study, focusing only on a small number of opinions and responses. We had difficulties in the data collection phase because the nature of the topic made it challenging to find knowledgeable interviewees. SEO is a relatively known topic and used by many marketeers, but Knowledge Graphs is still a new phenomenon and has not been studied and or used by many individuals.

Additionally, having quantitative data as a source could have backed up the agreement and strengthened the overall result. Yet, we believe that the results represent a realistic situation because we selected individuals with strong expertise as respondents. Therefore, we believe quality is a substitute for quantity.

Furthermore, the major difficulty that marketers are facing when interacting with Knowledge Graphs is the lack of reliable tracking tools. So far Google has not enabled easily accessible features to establish quantifiable data from Knowledge Graphs making it difficult to establish the best techniques to implement. Meaning our study is limited in this aspect not only on its responses but also by technical standpoints.

We found this topic incredibly interesting and important, not only from the professional point of view but also from the technical aspect. In today's marketing field, the internet has the most crucial role when considering the image of the brand/company. People search information daily via search engines and simultaneously provide data for the marketers to exploit. Therefore, it could be useful to include a more data-specific approach in future research; how to successfully collect and analyze an ever-increasing amount of data.

As previously mentioned, there is a multitude of research proving SEO to be an effective part in the marketing strategy but there are not many academic publications on the usefulness or even use of Knowledge charts. For this reason, we suggest more extensive and deeper investigation of the topic; the most effective methods to influence them, how to improve content and the most profitable ways for business to benefit from them. Such a new function could confuse companies and prevent potential benefits from being achieved, therefore it could be useful to carry out a case study that takes all these aspects into account.

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Appendices

Appendix 1

Interview Questionnaires

1. Age
2. Gender
3. The industry where you work
4. How many people are employed at your company?
5. What is your title at your company?
6. How long have you been working in marketing?
7. In which digital marketing field do you work?
    - Content Producer
    - Paid advertising
    - SEO/SEM
    - Inbound Marketing
    - CRM
    - Social Media
    - Other (what)
8. Which marketing strategies does your company employ?
9. Are you familiar with how SEO works?
10. Does your work include SEO?
    - yes
    - No
11. Which techniques have you used in your SEO process?
    - Keyword selection
    - Keyword generation
    - Link exchange
    - others
12. Which proved to be the most effective?
13. Which search engines did you utilize?
14. Have you noticed increased business value by using SEO strategies? (profitability, reach)
15. Did you outsource your SEO process to a professional agency or complete it yourself?
16. Are you familiar with how Google search works? Specifically, how search results are returned?
17. When you search for your company, are you satisfied with its representation by Google?
18. Have you heard of the Google Knowledge Graph?
19. Are you aware of practices to influence the Google Knowledge Graph?
20. Which practices does your company utilize?
21. Have you been able to quantify positive results for your business?
22. Do you believe Google My Business can be profitable for your company?
23. Does your company actively manage its GMB listing?
24. How?
    - Updating promotions
    - Answering customer reviews or Q&A's
    - Providing up to date information
25. Does your company integrate SEO in GMB?
26. How?

- Keyword selection
- Keyword generation
- Link exchange
- others

27. Google My Business profiles are automatically generated by the Knowledge Graph. Was relevant information correctly provided for your business?
28. Do you believe SEO can influence the Knowledge Graph?