

# **Search engine optimisation for digital voice assistants and voice search**

Ritva Riikka Hautsalo

DEGREE THESIS

Arcada

Degree Programme: International Business

Identification number: 20309

Author: Ritva Riikka Hautsalo

Title: Search engine optimisation for digital voice assistants and voice search

Supervisor (Arcada): Mikael Forsström

Commissioned by:

The subject of this thesis was search engine optimisation (SEO) for digital assistants and voice search. The thesis investigated if marketers have adapted SEO practices to suit the requirements of digital assistants and voice search. In addition, the thesis examined the current situation of digital assistants and voice search in Finland. The thesis had two research questions: 1. How to execute SEO for voice search and digital assistants? 2. Current state for voice search and digital assistants?

As the research topic was quite extensive, it had to be limited. The focus of the study was based using Googles recommendations of SEO best practises. In addition, Apple's Siri, Google Assistant and Amazon's Alexa were selected for the study. Chinese digital assistant Baidu and Microsoft's Cortana assistant were excluded from the thesis. The material used in the thesis was collected from various online articles, blog posts, and the general help and product pages for the digital assistants involved in the research. From these sources the theoretical framework was drafted.

As the subject of the thesis was a relatively new, the qualitative research was chosen as the method. This method is particularly well suited for research of new phenomena and topics. The material of the empirical part of the thesis was collected through a series of expert interviews.

As the study's scope was rather board and interesting, the results of the research were rather narrow. At present, the use of digital assistants is not popular in Finland. According to the results, there were a few contributing factors: Finland is a small market area, and the Finnish language is complicated and challenging for digital assistants. Those examples highlighted why marketing companies in Finland are not active and why they are not utilizing advantages of SEO and its potential in voice marketing. The results also suggest that the availability of smart speakers is a contributing factor.

Despite the challenges mentioned above, the study found slight indications for the future use of digital assistants. However, there were detailed plans, arguments, and even direct examples of practical implementation. A somewhat surprising finding was the lack of actual knowledge how to execute search engine optimisation for both Alexa's skills and Googles actions.

Keywords:	Digital assistant, digital voice assistant, search engine optimisation, SEO, Amazon Alexa, Google Assistant
Number of pages:	74
Language:	English
Date of acceptance:	9.12.2019

OPINNÄYTE	
Arcada	
Koulutusohjelma:	International Business
Tunnistenumero:	20309
Tekijä:	Ritva Hautsalo
Työn nimi:	Search engine optimisation for digital voice assistants and voice search
Työn ohjaaja (Arcada):	Mikael Forsström
Toimeksiantaja:	
<p>Tämän opinnäytetyön aihe käsitteli hakukoneoptimointia digitaaliassistentteille ja äänihaille. Opinnäytetyön tarkoituksena oli tutkia ovatko markkinoijat sopeuttaneet hakukoneoptimointikäytäntöjä sopimaan digitaalisten assistenttien ja äänihauen vaatimuksiin. Lisäksi opinnäytetyössä tutkittiin millainen tämänhetkinen tilanne digitaalisilla assistenteilla ja äänihalla on Suomessa. Opinnäytetyössä oli kaksi tutkimuskysymystä: 1. Kuinka hakukoneoptimointia tehdään digitaalisille assistenteille ja äänihalle? 2. Millainen digitaalisten assistenttien ja äänihauksen tilanne on tällä hetkellä? Tutkimusaiheen ollessa varsin laaja, se oli rajattava melko tarkasti. Tutkimuksen pääpaino oli hakukoneoptimoinnissa, johon käytettävät teoriat olivat maailman suurimman hakukoneen, Googlen, suosittelmia yleisiä käytäntöjä. Lisäksi tutkimukseen käytettäviksi digitaaliassistentteiksi valikoituivat Applen Siri, Googlen Assistentti ja Amazonin Alexa. Opinnäytetyöstä rajautui pois muun muassa kiinalainen assistentti Baidu ja Microsoftin Cortana-assistentti.</p> <p>Opinnäytetyön materiaaliksi valikoitui kokoelma erilaisia online-artikkeleita, blogikirjoituksia sekä tutkimuksessa mukana olleiden digitaalisten assistenttien yleiset apu- ja tuotesivut. Näistä edellä mainituista lähteistä muodostui teoriakappaleen punainen lanka. Koska opinnäytetyön aihe oli varsin uusi ja vähän tutkittu ilmiö, tutkimusmenetelmäksi valikoitui laadullinen tutkimus. Tämä menetelmä sopii erityisen hyvin uusien ilmiöiden ja aiheiden tutkimukseen. Opinnäytetyön empiirisen osion materiaali kerättiin järjestämällä sarja asiantuntijahaastatteluita. Opinnäytetyön tärkeimpiä lähteitä olivat tutkimuksessa mukana olleiden digitaaliassistenttien yleiset, vapaasti käytössä olevat sivustot.</p> <p>Opinnäytetyön aiheen laajuudesta ja yleisestä kiinnostavuudesta huolimatta, tutkimuksen tulokset jäivät varsin kapeiksi. Tällä hetkellä digitaaliassistentteja käytetään Suomessa vähäisessä määrin. Tulosten mukaan tähän vähäiseen käyttöön oli muutama tekijä: Suomi on hyvin pieni markkina-alue, suomen kieli on monimutkainen ja haasteellinen digitaalisille assistenteille ymmärtää. Nämä edellä mainitut esimerkit toivat esille miksi markkinointi firmat Suomessa eivät juuri nyt toimi asian puitteissa kovinkaan aktiivisesti ja miksi ne eivät vielä tällä hetkellä hyödynnä hakukoneoptimointia ja sen tuomia mahdollisuuksia äänimarkkinoinnissa. Tästä löytyi vain suuntaa-antavia viitteitä. Tulosten mukaan myös älykaiuttimien vähäinen käyttö ja hieman haasteellinen saatavuus, vähensi digitaalisten assistenttien käyttöä.</p> <p>Edellä mainituista haasteista huolimatta, tutkimuksesta löytyi viitteitä ja ideoita digitaalisten assistenttien</p>	

käytöstä ja mahdollisuuksista tulevaisuudessa. Näiden viitteiden taustalta paljastui kuitenkin tarkempia suunnitelmia, argumentteja sekä suoria esimerkkejä käytännön toteutuksiin. Hieman yllättävä tutkimustulos oli myös digitaalisten assistenttien teknisen tietotaidon puute hakukoneoptimoinnissa niin Alexan skill-sien kuin Googlen actioneiden suhteen.

Avainsanat:	Digitaalinen assistentti, digitaalinen ääniassistentti, hakukoneoptimointi, SEO, Amazon Alexa, Google Assistentti
Sivumäärä:	74
Kieli:	Englanti
Hyväksymispäivämäärä:	9.12.2019

# CONTENTS

<b>1</b>	<b>Introduction.....</b>	<b>10</b>
1.1	Introduction.....	10
1.2	Research aim .....	12
1.3	Research questions.....	12
1.4	Limitations .....	12
1.5	Thesis structure .....	13
<b>2</b>	<b>Theoretical framework.....</b>	<b>14</b>
2.1	Search engine .....	14
2.2	Search Engine Optimisation.....	15
2.3	Three pillars of Search Engine Optimisation.....	15
2.3.1	<i>Content quality.....</i>	<i>16</i>
2.3.2	<i>Keywords and Longtail Keywords .....</i>	<i>17</i>
2.3.3	<i>Title tags, Meta descriptions and URLs.....</i>	<i>19</i>
2.3.4	<i>Structured data .....</i>	<i>20</i>
2.3.5	<i>Local SEO .....</i>	<i>20</i>
2.4	Importance of SEO for companies .....	21
2.5	Digital voice assistants and Voice search .....	22
2.5.1	<i>Digital voice assistant definition .....</i>	<i>22</i>
2.5.2	<i>Apple Siri .....</i>	<i>23</i>
2.5.3	<i>Google Assistant .....</i>	<i>24</i>
2.5.4	<i>Amazon Alexa .....</i>	<i>25</i>
2.5.5	<i>Voice search.....</i>	<i>25</i>
2.6	SEO for digital voice assistants and voice search .....	26
2.6.1	<i>Search engine optimisation for Google assistant.....</i>	<i>27</i>
2.6.2	<i>Search engine optimisation for Siri.....</i>	<i>31</i>
2.6.3	<i>Search engine optimisation for Alexa.....</i>	<i>31</i>
2.6.4	<i>Voice search engine optimisation.....</i>	<i>33</i>
2.6.5	<i>A brief summary of the theoretical framework chapter.....</i>	<i>35</i>
<b>3</b>	<b>Method.....</b>	<b>36</b>
3.1	Qualitative research method .....	36
3.2	Sample selection .....	37
3.3	Interviews .....	38
3.4	Interview guide .....	38
3.5	Data analysis and Data interpretation .....	40
3.6	Content analysis of study .....	40

3.7	Trustworthiness of study .....	41
<b>4</b>	<b>Results .....</b>	<b>41</b>
4.1	Search engine optimisation .....	42
4.2	Search engine optimisation for digital voice assistants and voice search .....	44
4.2.1	<i>Best practises</i> .....	44
4.2.2	<i>Types of companies and benefits</i> .....	47
4.2.3	<i>SEO differences for digital assistants and voice search</i> .....	48
4.2.4	<i>Current situation for digital assistants and voice search in Finland</i> .....	50
4.2.5	<i>Available guidelines</i> .....	53
4.2.6	<i>Future of digital assistants and voice search in Finland</i> .....	54
<b>5</b>	<b>Discussion and conclusions.....</b>	<b>55</b>
5.1	Best practises for SEO for digital voice assistants and voice search .....	55
5.2	Situation of digital assistants and voice search in Finland .....	60
5.3	Conclusions .....	61
5.3.1	<i>Future research</i> .....	62
	<b>References .....</b>	<b>63</b>
	<b>Appendices .....</b>	<b>71</b>
5.4	Appendix 1.....	71
5.5	Appendix 2.....	72
5.6	Appendix 3.....	73
5.7	Appendix 4.....	74

## Figures

Figure 1. Three pillars of SEO. Image credit State of Digital, <a href="http://www.stateofdigital.com">www.stateofdigital.com</a>	16
Figure 2. Keyword differences. Image credit Backlinko.com.....	18
Figure 3. Longtail Keywords % of search traffic. Image credit Backlinko.com.....	19
Figure 4. The voice search 4 step process explained. Image credit SE Ranking, <a href="http://seranking.com">seranking.com</a> .....	26
Figure 5. Illustration of a Google Action. Image credit <a href="https://miro.medium.com/max/946/0*Y83yZxrZKkTrgcoD">https://miro.medium.com/max/946/0*Y83yZxrZKkTrgcoD</a> .....	30
Figure 6. Google's Micro moments. Image credit <a href="https://alphametic.com/voice-search-seo-2018-playbook">https://alphametic.com/voice-search-seo-2018-playbook</a> .....	33



## FOREWORD

I would like to express my gratitude for all the involved parties for my journey toward this bachelor's degree at Arcada University of Applied Sciences. My studies started on August 2016. During this 3,5-year time, I met so many great teachers who all encouraged me toward my new goals in my path to a change of career, it would be a long list of teachers, but thank you all!

In addition to teachers, I found many good friends from my studies here at Arcada, you know who you are, I hope. We studied together so many things and did many assignments together.

Somehow studying again got me inspired and thanks to Arcada's flexible (a bit anyway, maybe I did bend some rules) study options I got to study many interesting subjects, to name some especially; the digital marketing module and the digital design gave me new directions and tools to use! Teachers in those lectures thank you were fantastic!

I would like to thank my supervisor Mikael Forsström, for all the help he gave for me during thesis writing process.

Lastly but not the least I would like to thank my family who supported me all the way and helped if I need some advice.

Finally, thank you Kari, my dear husband who supports and stands by me no matter what!

In Helsinki 17<sup>th</sup> of November 2019

Ritva Riikka Hautsalo

# 1 INTRODUCTION

## 1.1 Introduction

DeMers says [“The voice search revolution has been catalyzed by the rise of smart speakers.”] (DeMers, 2019, p. 18).

This thesis started on one first year student’s marketing class which the author attended on the fall 2018. The subject of the lecture was Search engine optimisation and how to do that with practical examples. At one point of the lecture the author asked if the lecturer had any ideas about voice search and the possibilities of it. The authors’ personal interest toward voice search and digital voice assistant rises from her home setting where she has access both to Amazon Alexa dot and Google Home mini. The habit of asking “Hey, Google...” or “Alexa...?” got the author wondering if marketers should adapt their search engine optimisation processes in order to tap into this growing market potential.

After conducting preliminary research subject, the author found out there is a sizeable research gap for this topic which needs to be filled in. At the first stages of thesis writing process was a bit challenging as there was not enough current and fresh material available. However, this changed after Christmas time and all kinds of research, articles and blog posts started to appear on various online sources.

The availability and better user experience (better accuracy from the responses and continuous conversation abilities) gained from the digital voice assistants has facilitated the rise and more commonplace use of the voice search through smart phones and smart devices.

The technological innovations in the world now beginning with smart devices like mobile phones and home-based smart devices have changed our awareness how to conduct and type of searches. In addition, the availability of fast internet connections on mobile devices has facilitated the shift from a desktop or a laptop computers text-based search conducted from home or working premises to the instantaneous “here and now” search

with mobile devices. With these devices the search is on our fingertips and voice search as hand-free application gives the user possibility to be engaged with something else while searching for information. (Paradiso, 2019)

Smart device applications, the digital assistants for instance Apples voice assistant Siri, Googles Assistant or Amazon's Alexa all use artificial intelligence and machine learning to decipher the spoken commands.

Voice search and the digital assistants change how to implement Search Engine Optimization (SEO) to the best effect and how to achieve the first position result on search result page. As the voice search yields only one answer according Sentence who says, ["with the vast majority of voice searches receiving a single answer read out by a digital assistant."] (Sentence, 2018).

Digital assistants and voice search first started to gain credibility when Apple launched voice assistant application Siri with the iPhone 4S on 14<sup>th</sup> of April 2011. Google responded soon with launching their own voice search assistant Google Now on 9<sup>th</sup> of July 2012, for Android phones. (Mutchler, 2018)

After the initial steps with voice search evolution, the second extensive advance was the development of smart speakers. The first company to introduce a smart speaker was Amazon. The Amazon Echo was brought to the market on November 2014. Alexa is the digital assistant residing within the Echo. Echo was available only to the Amazon prime members in the United States. It was launched officially on to the general market on June 2015. (Mutchler, 2017)

As smart speaker devices, in which the digital assistants mostly function, at home are becoming common and those are used to conduct more voice searchers every day. Google stated 2016 that 20% of all searches will be activated through voice commands (Google 2016). Current trends are showing that voice searches are growing fast. According to Statista ["16% of all searchers' voice search is the first choice in the United States"] (Statista.com, 2018).

This increasing trend using voice search is the main reason why digital marketers should implement slightly different Search engine practices from the beginning, when

starting to plan and create content for web pages, social media and even on the detailed level on product marketing. In other words, digital marketers should build solid and good quality content and while doing so having the foundations already digital assistant and voice search friendly.

As both the digital assistants and the voice search are relatively new phenomena in general and there is not much research done in Finland about search engine optimisation and the effect how the digital assistants and voice search has to the best practises of search engine optimisation. This is an important subject as the use of digital assistants and voice search is growing and is starting to appear more commonplace to the larger public using mobile devices to search information in the world.

## **1.2 Research aim**

The research aim of this thesis is to investigate if marketers have adjusted their search engine optimisation practises for the growing use of voice search and digital (voice) assistants. Furthermore, this study examines the present position of digital assistants and voice search.

## **1.3 Research questions**

1. How to execute SEO for voice search and digital assistants?
2. Current state for voice search and digital assistants?

## **1.4 Limitations**

This thesis cannot cover all the practises of search engine optimisation, voice search and digital voice assistants which are available around the world today. This thesis considers only the generally accepted best practises for search engine optimisation. In addition, many of the digital voice assistants are excluded, since after the launch of Siri, the development of voice search capable devices and the digital voice assistants have grown significantly, and this thesis will not cover all of those.

The focus of this investigation targets three of the most popular voice assistants and only from the point of time when voice search and digital assistants started to become popular. The selected digital voice assistants are Apple's Siri, Google's assistant, Amazon's Alexa. Due to time and language constraints for example Baidu, the Chinese digital voice assistant was excluded. Microsoft's Cortana was excluded as well due to the fact Cortana is not readily available in Finland.

As Google has the largest market share globally on the search engine market, more than 90% of all the searches (Statista.com, 2019), this thesis uses only Google's search engine optimisation as the basis and covers theories and key concepts of search engine optimisation and those of voice search and digital assistants.

There are several search engine practises left out from the theoretical part of this thesis. The excluded practises are for instance keyword research, how to name images, the benefits of using call to action buttons on web pages. The process of search engine optimisation is complex, so the author is leaving quite many elements from the practises without attention and instead uses those which are relevant to the digital assistants and voice search according available sources.

The research, the empirical part of this thesis consists of four expert interviews. The interviews are conducted as face to face interviews, phone interviews and email interviews. The interviews are conducted to find relevant data to in answer to research questions.

## **1.5 Thesis structure**

This thesis follows the IMRaD structure in 5 chapters. Introduction chapter presents the researched problem and relevance of the research. In addition, this chapter describes the subject of the thesis. Theoretical background and literary review are introduced in the second chapter. In this chapter the concepts and themes of the research are discussed through what has been written previously. The method chapter covers which research method was used, how the used data was collected and how it was analysed. In the discussion part the results are analysed, and conclusions are drawn from the results. The last part concludes everything and forges avenues for future research about digital assistants and voice search.

## **2 THEORETICAL FRAMEWORK**

In this theoretical framework the author defined using previous research and literature available online what are search engines, the best practises of Search engine optimisation, the digital voice assistants, voice search and finally the best practises for search engine optimisation for digital assistant and voice search. In addition, the benefits of SEO for companies are discussed in this chapter. All the elements considered in this theoretical framework are the key components necessary to create and execute well planned search engine optimisation. The theoretical framework presentation was grouped using the three pillars of SEO created by Barry Adams (Adams, 2015). In the following chapters Search Engine Optimisation is referred with abbreviation SEO.

### **2.1 Search engine**

Search engine is an internet-based service with vast databases that permits the searcher to access information from the web by entering keywords or phrases into a search engines search field like Googles search and get a list of sources aka search engine page to browse through to find searched information. (Techopedia.com a, n.d.)

Search engines help to determine, comprehend and categorise the web's information to find relevant content in answer to the search queries made. Moz.com explains Google search engines operation as follows; search engines have three key processes; crawling, indexing and ranking. Crawling means that the algorithms are combing the web for content and inspecting the code for each URL available. This process is run by the spiders or crawlers which aim to find new and good quality content. The process when recently added new content is organised and stored is called indexing. When a page is added to the index it is then visible and accessible to queries. Ranking is the last of the main process of the search engine operations. This shows the content which fits the best the query. The list of content the Search Engine Results Page, is referred in the following chapters abbreviation SERP is organised by the actual relevance of the content. (Moz a, n.d.)

## **2.2 Search Engine Optimisation**

According to Ledford [“search engine optimisation is the science of customizing elements of your web site to achieve the best possible search engine ranking”] (Ledford, 2007, p. 18). In addition, Search engine land defines SEO as follows: [“SEO stands for “search engine optimization.” It is the process of getting traffic from the free, organic, editorial or natural search results on search engines”] (Search engine land, 2019). SEO focuses in the free and organic results on the Google’s search results pages.

## **2.3 Three pillars of Search Engine Optimisation**

Within SEO is three fundamental segments which influence the results when conducting a search. These segments are called “The three pillars of SEO”. The three pillars of SEO can be described as the basic structure how to create the best possible visibility for web pages within the search page results (SERP) of Google. The three pillars are:

1. Technology which includes all the technical aspects of the web pages like html code, sitemaps, URL etc. so that search engine robots can crawl and index content.
2. Relevance which contains all the created content, titles, meta descriptions and keywords for instance. Relevance means that all the content is organised correctly, and the semantic elements of the pages are appropriate.
3. Authority which covers both the links to and from the page and e.g. the trustworthiness of the page. (Adams, 2015)

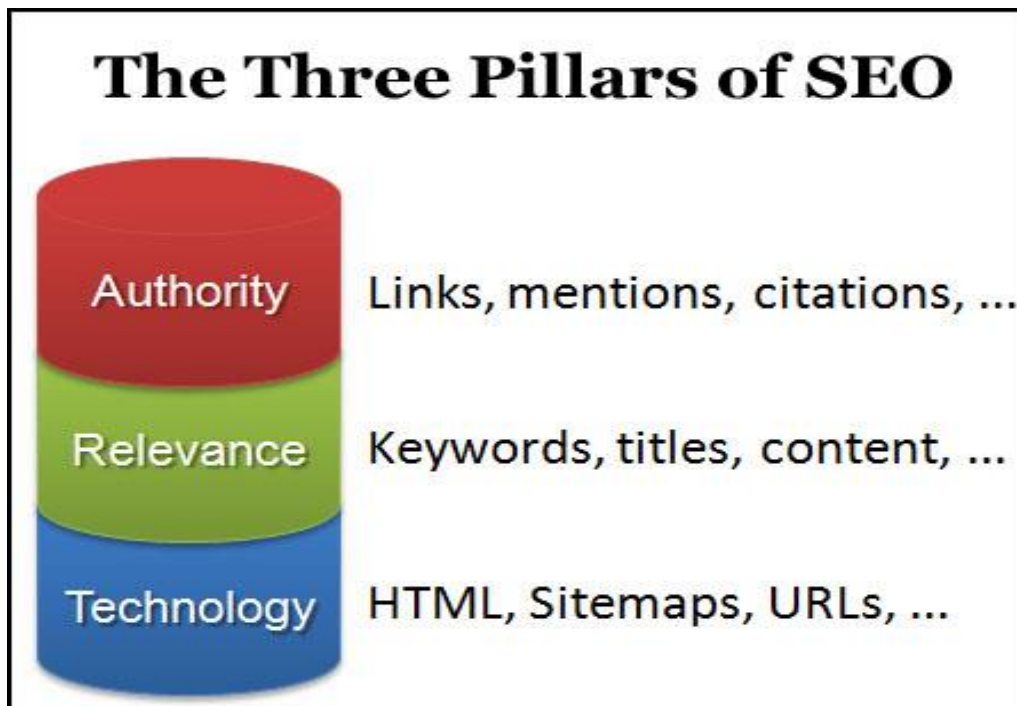


Figure 1. Three pillars of SEO. Image credit State of Digital, [www.stateofdigital.com](http://www.stateofdigital.com)

The three mentioned pillars of SEO are the core influencers whether Google's search engine or algorithms find the pages through the processes of crawling, indexing and ranking. These three pillars: relevancy, authority and technicality incorporate all the key elements from which a successful search engine optimisation is formed. Some of these elements are seen in the Figure 1 above.

### 2.3.1 Content quality

Quality content is the basic cornerstone of SEO. The most important rule of good content is the KISS principle (Rasnake, 2017), in other words, keep it simple and write easily readable text. Dean (2018), says that ["The average Google voice search result is written at a 9th grade level."] (Dean a, 2018).

Content creation which customers find interesting and relevant to their needs, is the first important step. Creation of texts, images, videos, every type of content which is unique to your web site. When writing a text, it is imperative to remember that customers and visitors to the web pages today are only skimming. They are only glancing the main headings and beginning of paragraphs, in other words, they are not reading everything



word by word. (Nodder, 2014) In addition, the aim of any content is to have more value for the site visitors i.e. to have unique information or different perspective for them. Using colours and adding images to the web site, it is more engaging for the visitors. Any errors in the pages and content makes customers to abandon their visit and encourages them to leave site in question. Pages content should be expertly written and at least 300 words in length. (Stox, 2016)

### **2.3.2 Keywords and Longtail Keywords**

In SEO framework keywords are specific words and terms which describe the content of a web page. Keywords aim to condense all the information of one page. Keywords are essential part of web pages meta descriptions. Those facilitates the search queries finding the corresponding information from the web pages and content (Techopedia.com, n.d.) Moz.com defines keywords as the ideas and topics that define what your content is about (Moz b, n.d.).

Wainwright describes longtail keywords so [“A longtail keyword is a very targeted search phrase that contains 3 or more words. It often contains a head term, which is a more generic search term 1 or 2 words in length”] (Wainwright, 2017). As can be seen from the Figure 2 below single keywords are highly competitive but low on conversion and longtail keywords are converting highly but low on competition. (Dean 2019)

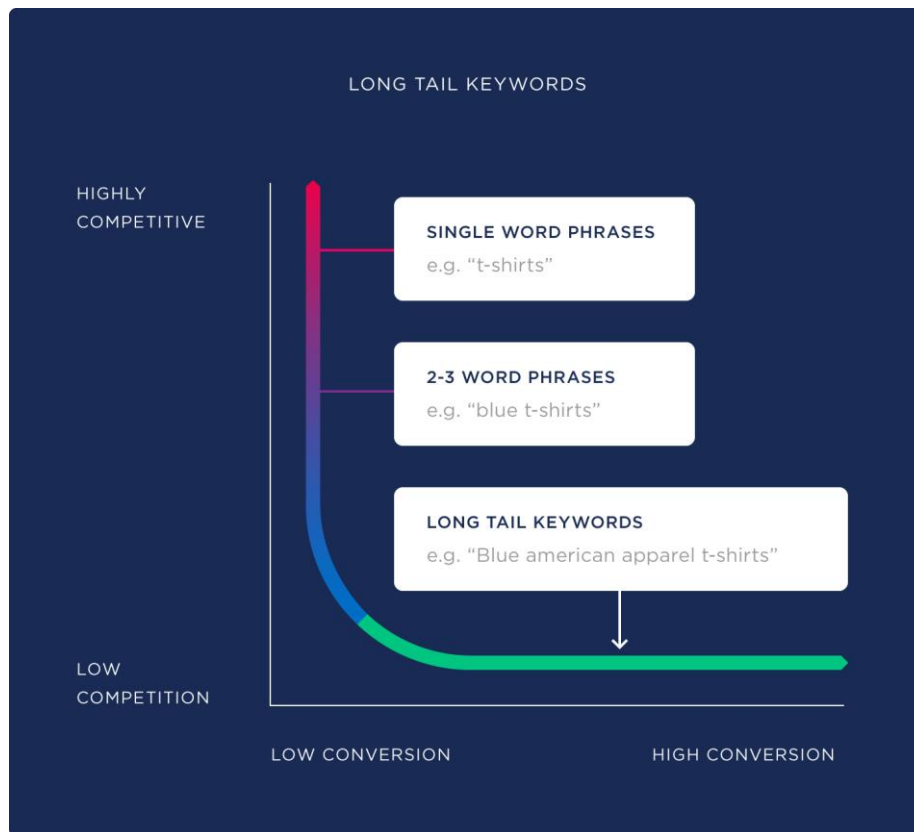


Figure 2. Keyword differences. Image credit Backlinko.com.

According to Hubspot use of longtail keywords, as seen from Figure 2 above, creates better quality traffic to a web site and longtails keywords yield better results for conversion rates. Using longtail keywords increases visits to a given web pages as the results are exact and more detailed. While the use of single keywords is rather competed area on modern SEO, the longtails are less competitive. Using specific keywords or phrases is easier and the possibility to gain better ranking for difficult search terms. (Hubspot, 2019) Longtail keywords generate 70 % of the search traffic as can be seen in Figure 3 below (Dean, 2019).

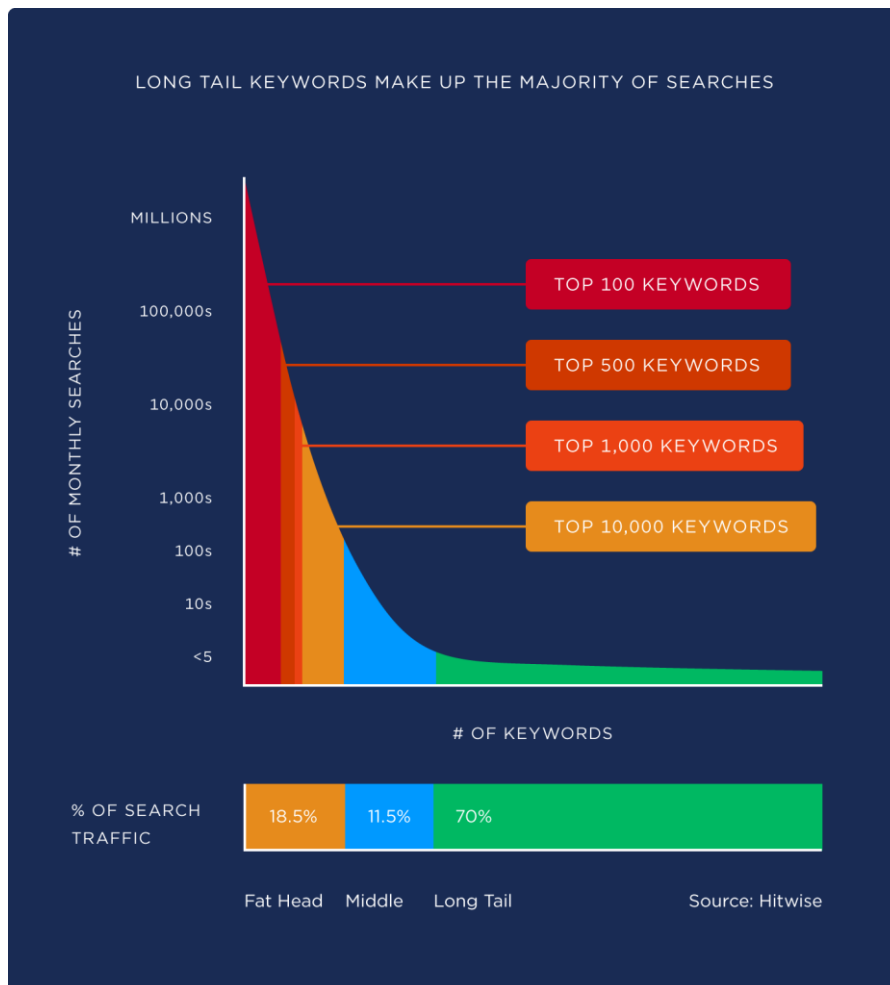


Figure 3. Longtail Keywords % of search traffic. Image credit Backlinko.com

### 2.3.3 Title tags, Meta descriptions and URLs

Title tags are snippets of code which form the title of a webpage. The titles create the clickable search engine results pages, the SERP headline for the searcher. The title should be short, maximum of 60 characters. The title tag is found also in the web pages URL. The title should describe succinctly the content of the web page for better visibility in the search engine. (Moz c, n.d.)

Meta descriptions are snippets which are created from the content of the page being optimised. The main function of a meta description is to have someone to click the link and see more, in other words meta description should create enough interest so the searcher will look for more information. Meta descriptions are part of the webpage's basic html code. The meta description should have content of the optimised page in

clear and concise form. For meta descriptions to operate properly and achieve their intended functions which is to get more clicks on links. There are five key best practises to use which have been proven beneficial. According to Yoast COO Heijmans the first is the right length of 155 characters. The second is to have inviting and actively written text. The third is to have a call to action in the snippet for customers to act on something immediately. The fourth is to have the focus keywords included in. The fifth is to match the content in a unique way to create interest. (Heijmans, 2018)

Techopedia.com defines URL followingly: [“A uniform resource locator (URL) is the address of a resource on the Internet. A URL indicates the location of a resource as well as the protocol used to access it.”] URL is commonly known as the web address of a page (Techopedia.com b, n.d.).

#### **2.3.4 Structured data**

Yoast CEO van de Rakt defines structured data as follows: [“Structured data is code in a specific format, written in such a way that search engines understand it. Search engines read the code and use it to display search results in a specific and much richer way.”] (van de Rakt, 2019).

Schema markup created by Scema.org, is a convenient way to structure web site data in such a way that search engines understand better the content of web pages. This service is a joint endeavour of interested parties, all the major search engines support this service to their advantage. Schema.org provides users of structured data readymade categories for effortless way to utilise this service when planning their SEO efforts for development of web pages. Using structured data splits the information on the web site to smaller and easier manageable pieces and therefore making it more accessible and easier to index for search engines such as Google. It is possible to use these readymade schema categories or create new ones to specific need. (Schema.org, n.d.)

#### **2.3.5 Local SEO**

Brian Harnish defines local SEO as [“local SEO is a strategic process that focuses on emphasizing the optimization efforts of local brick-and-mortar businesses.”] (Harnish,

2018). Local SEO incorporates search terms like local, nearby and next to me. Smaller brick and mortar businesses like restaurants, hairdressers and the like benefit greatly from using the local SEO. The local SEO process is focused tightly on the locality and access local searches (Harnish, 2018) One excellent way to boost up visibility on searches is to use Google my business service. This is a free service provided by Google for the businesses where input information is listed for the searcher looking for information. It is possible to add detailed information on Google my business account, for instance specific location information (address), phone numbers, opening hours, and other relevant data for the searcher even videos and images. (Google my business help, 2019)

## **2.4 Importance of SEO for companies**

Utilisation of SEO is imperative and even critical for all sized companies as SEO improves the company's visibility as consumers are searching information about products and services more and more online. Google brings about 75% from the overall brand visibility due to the marked leader position. The organic, unpaid optimisation generates and diverts most of the traffic onward from the search listing for instance Google's search results page, to the pages of a company. Having a web page optimised well, so it ranks well on the organic results, gives to the customers and page visitors a sense of trust and integrity. The overall process of SEO takes time and some effort to achieve results. User experience is enhanced by good SEO process; content needs to be clear and informative, use of local SEO especially small brick and mortar businesses, and overall website structure is well executed, these create more interest and more clicks toward the goals of the web page. In addition, updating the pages is important as the customers are looking for information which is relevant to their needs. However, using SEO is a relatively inexpensive marketing effort for companies, and the results it yields can be measured through various metrics and reports. Free organic SEO is also a prospecting channel, when customers are browsing for information, they click onwards to the company's webpages to take a better look. (Hollingsworth, 2018)

## 2.5 Digital voice assistants and Voice search

### 2.5.1 Digital voice assistant definition

ComputerHope.com (2019) explains digital assistant so; [“A digital assistant is a computer program designed to assist a user by answering questions and performing basic tasks.”] (ComputerHope.com, 2019).

Krupansky (2017) defines an intelligent digital assistant followingly:

An intelligent digital assistant is a software service, possibly coupled with a specialized hardware device, such as a smart speaker, or simply a feature offered on a general purpose computing device such as a personal computer, tablet, smartphone, or wearable computer (such as a digital wristwatch), which offers some interesting set of the abilities of a traditional, human assistant, most notably answering questions and performing tasks using voice and natural language processing (NLP) backed by artificial intelligence (AI). (Krupansky, 2017).

Digital assistants have three key processes:

1. Voice input, this is the voice activated search
2. Natural language processing
3. Voice output, this is the artificial intelligence application responding to a query.

(Krupansky, 2017)

Digital assistants can perform increasing number of tasks or services. These actions started from the basic voice-enabled enquiries and questions, then advancing to more complex tasks such making phone calls, making reservations and shopping and finally even access other cloud-based services such as Spotify to access and play music from own account. (Krupansky, 2017)

As Krupansky mentions the digital assistants are available on many different platforms. After manual activation process and set up of the device – smart phone or smart speaker, it is possible to use most of the assistants by using activation key command like “Ok, Google or Hey Alexa..”. Most of the digital voice assistants are accessible through mobile phones, tablets, computers, smart devices and even some car brands have digital assistants integrated. Amazon has its own eco-system of devices where Alexa is available.

Digital assistants learn constantly from their incorrectly answered queries and misunderstood search questions by using that data and machine learning to achieve better accuracy to the responding replies. (Ciligot, 2019) Hosch defines machine learning: [“Machine learning, in artificial intelligence (a subject within computer science), discipline concerned with the implementation of computer software that can learn autonomously.”] (Hosch, 2016).

Digital voice assistants are entities powered by artificial intelligence applications. Copeland defines Artificial intelligence so;

Humanlike thinking or performing capability of computers or robots. This means that the machines are starting to have the skills to learn from the past events, to reason like intelligent beings or generalize. It is also the intellectual abilities of machines. (Copeland, 2019).

Artificial Intelligence is referred in later chapters with abbreviation AI.

There are three main categories of artificial intelligence:

1. Artificial Narrow Intelligence, which is used for smaller feats like filtering junk email.
2. Artificial General Intelligence is capable for [“humanlike feats”] (Teksun, 2018)
3. Artificial Super Intelligence is the most evolved system and has some capabilities beyond human intelligence. (Teksun, 2018)

Most of the digital assistants powered by AI systems falls into the second category, the Artificial General Intelligence level. (Teksun, 2018) Most of the major digital assistants have their own artificial intelligence system which powers the digital assistants’ operations. Digital assistants depend on, in addition, information available freely on the internet, for instance the Wikipedia database. (Mutchler & Kinsella, 2019, p. 21)

### **2.5.2 Apple Siri**

Siri is Apples virtual assistant which comes with Apple’s products like iPhone, Apple TV, Homepod and laptops. As common to all digital assistants Siri answers to questions, makes recommendations, and finds relevant information to vocal queries by inte-

grating with several internet services like Yelp. With Siri it is even possible to send emails or make phone calls. (Siriuserguide, 2011-2019)

Siri learns to perform more efficiently and more accurately if the user keeps constantly using it. Siri uses at least partially the speech recognition engine software from Nuance to interpret and answer cleverly the spoken commands addressed to it. (Kay, 2014) Siri was originally created by the SRI International Artificial Intelligence Center and it was available as an own separate application. Apple realised soon the potential of Siri and purchased it and the official launch of Siri was on October 2011. (Macrumors, 2019). Siri is activated by pressing the home button on iPhone and Siri is triggered by saying “Hey, Siri” This feature needs to be set up separately from device settings. (Siriuserguide, 2011-2019)

Since the first public generation of Siri, it has gone through extensive improvements to the user interface, to Siri’s voice and it also gained the ability to interact with databases. Siri has acquired many new competences or skills like intelligent calendar scheduling, predictive texting abilities. Apple decided that Siri should be a core technology which means all the features would be improved and even new possibilities for technology developers to further enhance the abilities of Siri by using CoreML to advance machine learning skills and experience. (Evans, 2018)

### **2.5.3 Google Assistant**

Google assistant is the voice activated digital assistant invented and designed by Google. The assistant provides answers to inquiries and it can complete various actions when the assistant is activated using a command “ok, Google” or “Hey, Google and it is asked a question. To use Google assistant effectively it is necessary to match users voice with the assistant. Google assistant needs to learn users’ tone of voice and timbre. This activation and voice matching are done from for example Android phones settings. (Google, 2019)

The Google assistant can be found and used with many products such as Android mobile phones, Google home smart speakers and even some cars have it integrated. In ad-



dition, the assistant can be used as a normal text search on smartphones. The Google assistant was first released on May 2016 and it became available for Google Pixel phone on October 2016. (Forrest, 2018)

Google assistant utilises artificial intelligence technologies like natural language processing and machine learning when performing and answering queries from the user. Using these AI applications Duplex and Continued Conversation, the Google assistant understands and responds accordingly to inquiries and commands from user and can carry on conversation. (Forrest, 2018) According to Moz, Google assistant manages to construct mostly full-sentence queries out of our mostly full-sentence questions, and it can accurately link together topical queries. (Moz c, n.d.)

#### **2.5.4 Amazon Alexa**

Alexa is the voice assistant service of Amazon. The inspiration for Alexa came through the popular sci-fi TV show Star Trek and the talking computer. (Silva, 2019) This assistant differs from Google assistant and Siri from the fact that the Alexa is build-in digital assistant mostly within the smart Echo speakers product line. The Ecco speakers was first launched by Amazon first on November 2011. (Mutchler, 2017)

Amazon defines Alexa by saying [“The Alexa Voice Service (AVS) is Amazon’s intelligent voice recognition and natural language understanding service that allows you to voice-enable any connected device that has a microphone and speaker.”] (Amazon, 2019). However, the scope of Alexa’s domain has expanded to include more devices not only smart speakers, but also to for instance cars, certain mobile phones via the Alexa app and other Echo products. (Silva, R 2019)

#### **2.5.5 Voice search**

Using voice is a natural way to communicate for humans. Voice search is hands-free multitasking permitting technology where the searcher uses only a voice command to search information about something. Spoken search is faster as humans can speak up to

150 words in a minute where typed text is 40-60 words in minute, so using voice to inquiry something is significantly faster. (Boyd, 2018)

According to Rouse [“Voice search is a speech recognition technology that allows users to search by saying terms aloud rather than typing them into a search field. The proliferation of smart phones and other small, Web-enabled mobile devices has spurred interest in voice search.”] (Rouse 2009).

Google’s assistant and other digital voice assistants use automatic speech recognition which converts the audio search to a basic text search. After conversion process the search proceeds as a normal Google search. The voice search process is divided into four core sections. These four key sections are: noise filtering, audio digitizing, voice analysis and pattern identification and detection. (Avet, 2018) The four-step process of voice search is illustrated in Figure 4 shown below.



Figure 4. The voice search 4 step process explained. Image credit SE Ranking, seranking.com

## 2.6 SEO for digital voice assistants and voice search

The general SEO process and the best practises are akin to the search engine optimisation executed toward the digital assistants and voice search. The basic tenets of optimisation are the same. However, the digital assistant and voice search engine result pages are radically different from Google’s search result pages. A voice query will yield only one main hit as the top position instead of long listing of links. This difference between the results page affects the best practises of creating SEO successfully for digital assistants and voice search. (Pedestal, n.d.) The main challenge is how to attain that one sweet spot, the number one position.

Google provides an access point where it is possible to present specifically digital assistant voice optimised search results, the Google knowledge graph. The Knowledge graph is Google's way to share information for easy access. Google connects various data points to a knowledge panel which is located on the right side of SERP. The collected information in the Google Graph can be rich results, like featured snippets and images carrousel. To acquire an access to this panel it is necessary to have enough information about the subject in question. This panel is filled with every kind of relevant data which the users and information searchers are looking for, for example images or featured snippets. Google knowledge graph is used by Siri and Google assistant when providing answers to voice queries. (Yu, 2017)

### **2.6.1 Search engine optimisation for Google assistant**

Best practises SEO for Google assistant are like the general optimisation practises. Content is king, so it should be adjusted to be more conversational and spoken language, instead of just writing keywords after one another. Content aimed for Google assistant should contain more complete and grammatically correct sentences, as it more likely that the original inquiry with voice search is a complete sentence. (Pedestal, n.d.) Long-tail key phrases are already like spoken queries, so more attention should be given to the formulation of these. In addition, hyperlocal SEO is advisable when aiming SEO for Google assistant. Hyperlocal SEO according Mango is

Hyperlocal SEO is search engine optimization on a micro level to increase online visibility to potential customers in a very granular way—down to a specific block or neighborhood in some cases. This is ideal if you are a local restaurant, mechanic, or other business looking to serve a certain area within a city, town, or locale.

(Mango, 2019). Hyperlocal SEO is achieved by selecting very local keywords to use, and as in normal local SEO process, set up Google my business account, and use the selected hyperlocal keywords on web pages. (Mango, 2019)

In addition, Google has provided for developers and marketers search optimised assistant applications, which are called Actions. Actions are the way to create effective SEO for the Google assistant. Thomas Muter (2018) defines Google Actions followingly:

Actions on Google is a developer platform that lets you create software to extend the functionality of Google Assistant, Google's virtual personal assistant, across more than 500 million devices, including smart speakers, phones, cars, TVs, headphones, watches, etc. Users engage with

Google Assistant to get things done, e.g., to buy tickets or book a taxi. As a business owner, you can use Actions on Google to easily create and manage delightful and effective conversational experiences between users and your 3rd-party fulfillment service.” (Muter, 2018).

Moreover, Google adds conversational aspects to their definition for Google actions; “Conversational Actions extend the functionality of the Google Assistant by allowing developers to create custom experiences, or conversations, for users on the Assistant. In a conversation, your Conversational Action handles requests from the Assistant and returns responses with audio and visual components. Conversational Actions can also connect to external services for added conversational or business logic before returning a response. For example, users can invoke your Conversational Action to get a response from your external fulfillment service when they want to look up information, get a personalized recommendation, or perform transactions involving digital payments.” (Google, 2019).

User or searcher interacts with conversational actions when they are communicating with Google assistant in back and forth conversation, this is activated through beginning and ending command. In addition to the voice response, the Google actions have visual and text form as well. In conversational actions are three principal categories which can be described as the “best practises” for user-engagement:

- [“Things people can easily answer”] (Google, 2019). Actions like asking “What time it is?” falls into this segment
- [“Quick, but compellingly useful Actions”] (Google, 2019). Actions asking information about some event in the near future, these actions yield direct answer.
- [“Actions that are inherently better suited for voice.”] (Google, 2019). These kind actions are aimed toward hands free activity for instance cooking or receiving instructions for yoga. (Google, 2019)

For the searcher to engage with actions, an invocation is needed. There are two basic types of invocations. First is the explicit invocation, this occurs when the searcher asks something definite. Second is the implicit invocation occurs when the searcher wants to accomplish a task and the assistant engages the action in order to fulfil that task. There is a third possibility to describe the purpose of the action; an invocation phrase. (Google, n.d.) Google recommends instructions for the best ways to create names for invocations explaining in detail how words with several pronunciations should be avoided and create easily recognised name for the invocation. In addition, there are recommendations for how to formulate invocation phrases, what should be avoided and what is not recommended. (Google, 2019)

Action responses are equally important for achieving results with SEO for Google assistant: Simple responses have visual appearance of a chat bubble, in which the answer appears. There is a limitation of 640 characters in one bubble, so the answers need to be short and simple. Rich responses are used when the developer or marketer wishes to add images as visual guide for better interaction with the user. Rich responses have more possibilities for adding content than simple responses; a rich response can include one or two simple responses, one basic card, and suggestion chips (they are prompts to continue forward or not) and out linking chip. Basic cards are used mainly for browsing purposes. The content should be concise and short and present the key information for the user. The basic card can have more elements within, for instance an image, a title, a sub-title, some text, link button and border. Browsing carousel is a rich response with a scrollable screen across. The carousels are designed specifically for web content in mind. This element has the most of elements included, images, text, interaction with user, voice input and so on. Suggestion chips are hints to the searcher whether the conversation should continue or not. Suggestion chips has only plain text supported. (Google Assistant, 2019)

In the Figure 5 below some examples of the elements of a Google Action are shown and it illustrates how the simple responses, cards and carousels are situated within a screen those are developed. (Medium, 2015)

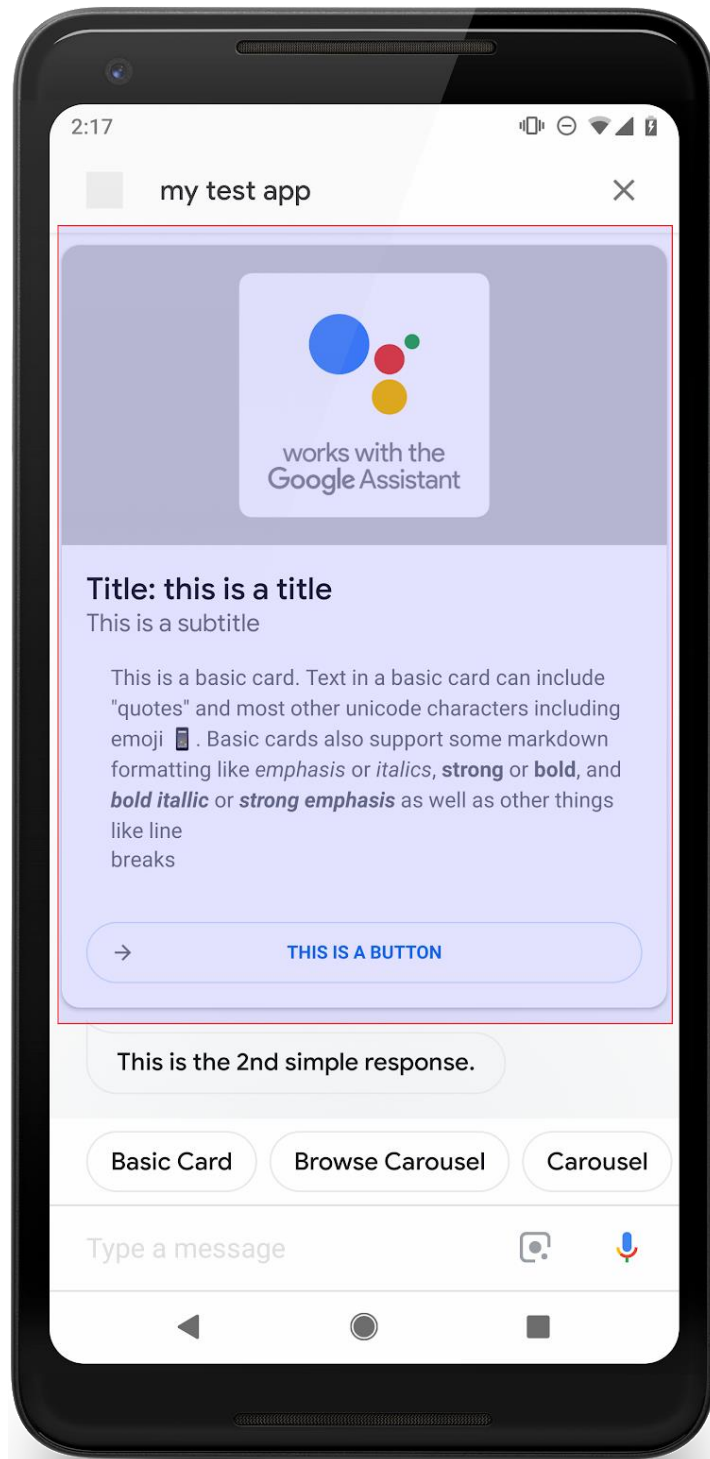


Figure 5. Illustration of a Google Action. Image credit [https://miro.medium.com/max/946/0\\*Y83yZxrZKkTrgcoD](https://miro.medium.com/max/946/0*Y83yZxrZKkTrgcoD)

### **2.6.2 Search engine optimisation for Siri**

Best practises of SEO process for Siri is essentially the same as the process for Google assistant or search since Apple changed the Siri's default search results provider to be predominantly Google. Siri also uses the Google Knowledge graphs when searching and providing for information for voice queries. (Yu, 2017)

Fundamentally the optimisation process for Siri is same as for most digital assistants and voice search. These include micro-moments, using longer more natural queries, having fast loading pages especially for mobile sites and searchers, hyper local content, and keep refining every element and monitor from data if there is any need to make more changes. (Yu, 2017)

### **2.6.3 Search engine optimisation for Alexa**

The SEO best practises for Alexa are parallel to Googles SEO process. However, there are a few differences as well. Alexa utilises Amazons own specific ranking methods which uses voice search engine optimisation and data within Amazon store, to which Alexa drives consumers to. (Browning, 2018) It is argued that Amazon store is the largest search engine for shopping searchers at the moment. (Ridler, 2019)

The same basic principles of SEO process work for both Amazon and Google. The content should be fresh and updated on a regular basis and it should offer extra value for customers and users. The site within Amazon optimised should have authority too (Browning, 2018) Keyword utilisation is where Amazon differs from Google the most; keywords should be used on every product description and as many as possible, Amazon, unlike Google, even encourages marketers to use keyword stuffing. Also, on longer keywords or phrases, the order of the words in not as important for Amazon as the search can understand the intent for the search term. Although, it is advisable to use logical order when planning keywords. (Johnson, 2017) Similarly, competitor analysis done correctly gives a better understanding where focus more effort and what steps a seller should update or modify. (Browning, 2018)

Alexa provides for the searcher detailed information about the product, pricing and offers an option to purchase the item which fits best to the searcher's query. (Browning, 2018) In order to reach this top position on the Amazon search it is necessary to do a few extra steps to achieve the place where Alexa will automatically promote the item to the searcher. These extra steps according to Browning are:

- [“Make your products Amazon Prime ready, or even grab the Amazon Choice certification.”]
- [“Optimize your Amazon store page for user experience.”]
- [“Respond to all product reviews, even the bad ones.”]
- [“Optimize item descriptions and images for the Amazon store and Alexa.”]
- [“Fill out all details involving structured data filter fields (including colors, fabrics, ingredients, etc.).”]
- [“These Amazon-store specific SEO techniques will help mobilize your products for Alexa voice search results and help increase conversions through the voice-enabled device.”] (Browning, 2018).

To further help and develop Alexa SEO process and voice activated searches, Amazon has created Alexa Skills. Edenergy (n.d.) explains Alexa Skills:

“Alexa skills are like apps. You can enable and disable skills, using the Alexa app or a web browser, in the same way that you install and uninstall apps on your smart phone or tablet. Skills are voice-driven Alexa capabilities. You can add Alexa skills to your Echo to bring products and services to life. You can view available skills and enable or disable them using your Alexa app.” (Edenergy, n.d.).

Alexa skills are applications which ease the communication between Alexa and its users. There are various different types of applications available. These can be used to control smart home like “Alexa turn the lights on.” and request Alexa to look for information. Alexa skills kits allow users of Alexa to create skills of their own. There are specific skills for instance music skill or video skills. There are readymade Alexa skills available as well. Skills are activated as Alexa is “Alexa...” Within the skills there are build-in responses which then reply accordingly to queries made to Alexa. (Amazon Alexa, n.d.)



## 2.6.4 Voice search engine optimisation

The general best practises for voice search engine optimisation process is quite like the basic SEO process. There are slight differences or different emphasises what is considered effective.

Google has issued brief guidelines of search quality especially intended to evaluate voice search results. These guidelines are used to assess the voice answers from Google assistant. There are several categories which needs to be on acceptable level. These main categories are information satisfaction for the user, overall length of the answer, formulation of the content and elocution in other words the pronunciation should be proper. (Schwartz, 2018)

In addition to those guidelines for voice search optimisation process, Google has developed four main intentions or intents called micro-moments, which searchers have when they perform a search using voice activated search. These four intents for voice search are; When they wish to know something, when they want to go somewhere, when they want to do something, when they want to buy something. Figure 5 below explains how use of voice search has grown between 2015 and 2018. It can be seen from the Figure 5 that local searchers, to which “I want to go” and “I want to do” can be classified, the use of micro moments and searches have grown. (Capala, 2019)

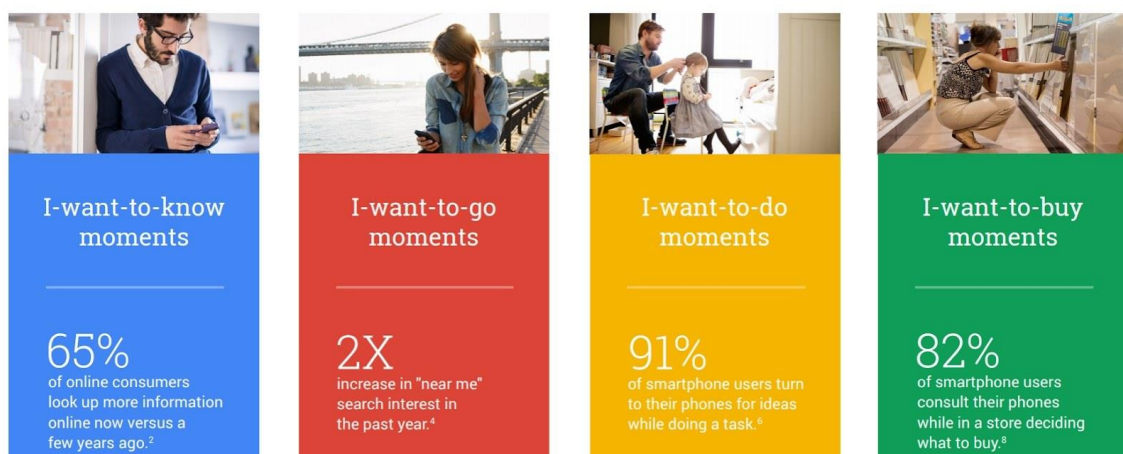


Figure 6. Google's Micro moments. Image credit <https://alphametic.com/voice-search-seo-2018-playbook>

As the AI powered voice search gains more use, the style of employed language transforms from typed questions, which are often a non-sentence queries, to more natural language voice searches which are frequently whole sentences, to properly formed questions and grammatically correct language. This difference in search style is affecting how the assistants will answer. For example, Alexa will not offer any answer to an inquiry if the search is only close to correct response, the answer should be as exact match. Whereas Google assistant lists only the top result on SERP, which makes it imperative to have the best position and visibility. (Desmond, 2018)

The main challenge for voice search and for the digital assistants as well, arises from the fact that voice search does not have visible SERPs, as the text-based search has, and the answer to a voice query is the first direct hit, the top position on the SERP. However, the result page exists as the search is converted to digital form and that access Googles search information (Avet, 2018)

The AI powered digital voice assistants are evolved now to the point where they can answer with human like way and they use available text on for example web pages to accomplish that. In order to create conversational language in the content it should be written in clear and concise way and as grammatically pure answers to detailed **queries** beginning with for example who, where or why? (Desmond, 2018).

In addition to the conversational content, also the location or **local SEO** has proven to be relevant. Voice searchers are often looking for information where something e.g. a business is located or when it is open. So, the integrated locations from Google maps is vital to have optimised with correct information. Likewise, the listings on Google my business needs to be up to date and accurate (Caldwell, 2018). Furthermore, the long-tails keywords need to be crafted followingly says Desmond:

Long-tail keywords formulated as complete and conversational questions, answers to those questions, or location (“near me”) searches are becoming more important because they often answer voice search queries. While a text-based search may seek broad information, a voice search generally seeks key information that can be concisely communicated, such as hours of operation, location, and directions. (Desmond, 2018).

FAQ pages where a collection **frequently asked questions** is situated, are also convenient way to divide content for answering voice queries. (Amaresan, 2019)

To craft a web page or a landing page according to the above-mentioned strategic information, this will most likely affect and increase page rank for AI-powered voice search results on SERP.

Voice search has risen to be popular, mostly with the wide acceptance and use of smartphones. This consequently leads to the importance of having **mobile optimised sites and fast loading web pages**. As the users are often on the go with their smartphones, the voice queries made to the voice assistants such as Siri and Google Assistant are dominantly questions about navigation and location. (Desmond, 2018)

**Featured snippets** are summaries of web pages presented in a separate box and visible on the top of SERP. The featured snippet includes a summary of a page, URL of the page, and a link to the page. (Google, 2019) **Featured snippets** aim to give users short and concise answers. There are three main types of featured snippets. Paragraphs are typically short sections of text which can have an image as well. Lists, the answer is in list format and a table where information is presented on table form. (Smarty, 2017) According to Dean [“40.7% of all voice search results came from a Featured Snippet.”] (Dean, 2018).

**Conversational natural language**, when optimising for SEO for voice search and aiming to utilize featured snippets, it is advisable to remember that voice search uses more conversational natural language. As voice search offers only one search hit to the searcher, using a featured snippet is a good way to ensure that top position on search and consequently have the “visibility” in voice search. (Moore, 2017) When the response to a voice query comes from a smart device e.g. Google Home, a significant portion of the answer comes from featured snippets. (Caldwell, 2018)

#### **2.6.5 A brief summary of the theoretical framework chapter**

According to previously written research, there are not so obvious differences for search engine optimisation practices between the general SEO and the practices for digital assistants and voice search. Most of the best practices follow the same principles;

- Create good content according to the following set of rules stated earlier in the chapter
- Use either single or longtail keywords in that content.

- Write according Kiss principle and write easily readable content
- Use FAQ pages
- Use featured snippets
- Write conversational text aimed for voice results
- Use meta descriptions
- Keep in mind how Alexa is different when compared to others
- Use structured data and local SEO

The above-mentioned elements briefly describe how to create effective search engine optimisation for both the general SEO search and for the digital assistant and voice search optimisation. It is good practise always remember to write for the person searching and not only for the for instance, algorithms of Google search engine. The benefits for companies are well worth to remember and visibility and general knowledge needs to be easily accessible for the customers searching something.

### **3 METHOD**

In this chapter the author describes in detail how the research was planned, how the research was executed and what research method was used in this study. In later paragraphs the sampling method and sample size are described in more detail. In addition, interviews and interview guide are explained. Furthermore, the data collection and the data analysis used in this thesis are specified in detail.

#### **3.1 Qualitative research method**

The author of this thesis decided to conduct a qualitative research as the method in order to answer the thesis research questions. The qualitative research method is utilised to get more detailed, rich data from the interviews in order to gain insights from the industry. (Bryman, 2012) The research focus of this thesis is SEO for digital assistants and voice search. The study seeks to investigate how to execute search engine optimisation for digital assistants and voice search, and in addition what is the current status of voice search and use digital assistants in Finland.

The secondary resources used in the thesis's theoretical chapter were mostly online sources: articles from journals, blog posts, and information gathered from the help pages

of discussed entities or platforms. As the topic of voice search and digital assistants is rather new, the author could not find adequate number of academic sources to cite in the theoretical framework. Primary research data for the empirical part was gathered from four expert in-depth interviews.

According to Bhat, the qualitative research data gathered is descriptive. (Bhat, 2019) and it is used to obtain answers to questions beginning “how” and “why”. This thesis uses the qualitative research interviews to obtain as rich data as possible and gain deeper understanding (Bryman, 2012) to the phenomena of voice search and of digital assistants. (Bryman, 2012) In addition, a qualitative research also seeks to understand why someone thinks a certain way. (Bhat, 2019)

The qualitative interviews were conducted to gather data for the author to acquire information about researched topic to ascertain if the use of digital assistants and voice search has influenced best practises of SEO as stated in the thesis research aim. The detailed interview questions were derived from the theory chapter of this thesis. (Bryman, 2012)

### **3.2 Sample selection**

Using this thesis’s research aim as a guiding point the purposeful sampling selection was chosen as the sampling method for this study. This was to ensure the data’s relevancy and make certain that research questions had required answers. Bryman defines purposeful sample so; [“The purposeful sample happens when the author wishes to have relevant participants to the research in such a way that the research questions will get necessary answers. Purposeful sample is a non-probability sample.”] (Bryman, 2011 pp. 727).

All the interviewed participants chosen to be interviewed for this thesis were selected carefully from marketing firms based in Helsinki in order to have reliable and relevant data to analyse. In addition, all the chosen interviewees worked currently in firms which are primarily focused-in on digital marketing and search engine optimisation. This made the selected companies and the interviewed personas the perfect choice for the

needs of this research as the interview questions are within their field of expertise and it can be assumed that they have at least considered how to approach digital voice assistants' and voice searches effects on search engine optimisation process.

### **3.3 Interviews**

The data for this research was collected by the author by organising a series of in-depth expert interviews. For the purpose of this thesis four expert in-depth interviews were planned and conducted. The interviews were conducted as face to face, an email and as a phone interview. The used interview methods and the location of the face to face interview depended on the interviewee and his or her choices and timetables. Participants were interviewed in English or Finnish. Interview questions were given to the participants in English or in Finnish depending of their preferences.

### **3.4 Interview guide**

All the interviews were semi-structured in form in order to gather more research data and to give the author possibility to pose more probing questions to the interviewees. Semi-structured interviews are more guided discussions than strictly interviews as the interview questions are open-ended and the interviewees affect which questions are asked. (Bryman, 2011) The semi-structured interview also ensures the interviewees are asked the same questions, only the order of the questions might vary. The author took field notes while interviewing the participants.

The interview questions were closely related to the research aim and research questions of this thesis and those were formulated carefully to generate relevant data to the research. The interview guide, the interview questions, the Microsoft Excel file and the used consent form are found under appendices. In addition, an image from the analysis phase is found on the appendices.

The interviews took on average 50 minutes, depending on the interviewees answers and if the author asked more probing and clarifying questions. The face to face interviews were easier to gauge the reactions of the interviewees by observing the body language

and other non-vocal indications of the participant to questions. The lack of the non-vocal observation and interaction with the interviewee was evident in the email interview as there was no face to face contact at all. The phone interview was easier to interpret the reactions such as tone of speaker's voice, pauses in text, or even laughter could be interpreted in context of the question. (Bhat, 2019)

The author prepared the interview questions beforehand and there were 13 questions and 2-3 sub questions, and the questions were sent to the participants via email before the interview, either in English or Finnish depending of the choices of the interviewees.

All the interviewees were informed about the thesis project, the scope of the thesis, confidentiality of the interview data and the anonymity of the participants before the interview began. In addition, they were given a consent form to read and sign. For those interviewees not interviewed face to face, the consent form was sent via email beforehand.

The interview questions were divided into three sections: the first part questions were basic: "Who are you? Where do you work? and "What is your expertise in the company you work in?"

The second section of the questions were about SEO in general

- What do you find important in SEO process? Technically?
- Have you noticed changes in the optimisation process?
- In your opinion, how do the companies benefit from SEO?

The third section questions addressed the digital assistants and voice search and search engine optimisation practises for those.

- Describe briefly what voice search is?
- Do you think companies should consider optimising for voice search?
- Which of the digital assistants are familiar for you?
  - Which of those you would use?
- Are you familiar with the SEO process for digital assistants?
  - For which assistants?
  - Can you describe that process?
- Are there differences compared to "basic" SEO?
- Is it possible to affect voice search and digital assistants using SEO processes?
- What do you consider important or relevant in SEO?
  - For voice search?

- For digital assistants?
- Have you perceived any differences
- Have you set any set guidelines for voice search or digital assistant SEO?
- How do you see the future for voice search SEO and digital assistant SEO?

The interviews were concluded with closing questions “Is there anything you would like to add? Is there something I have not thought to ask?”.

A few of the interview questions had two possible lines of inquiry depending on the answers of the interviewees. Question number six had three sub-questions which were asked depending on the answer given by the interviewee. Also, in similar fashion to question six the question number ten had two sub-questions.

### **3.5 Data analysis and Data interpretation**

After all the interviews were conducted, the author transcribed the interviews to examine results and started to organise the materials to categories and themes. As the qualitative research attempts to find similarities and recurring descriptions from the answers gathered, to gain understanding of the subject the author compared the interview’s open-ended questions answers.

Order of the questions was intentionally planned in a specific way, in order to ensure the participants being in relaxed and attentive state of mind. Furthermore, to avoid possible errors in the collected data, the interview questions were first drafted, then tested with two test subjects, reconsidered and reflected again according the theoretical framework on chapter two, and finally written out again after deliberation.

### **3.6 Content analysis of study**

Data analysis method used in this thesis is the qualitative content analysis theory as the data was analysed and categorised to find connecting themes from the content of interviews. Bryman defines qualitative content analysis

Qualitative content analysis is an approach to documents that emphasizes the role of the investigator in the construction of the meaning of and in texts. There is emphasis on allowing categories to emerge out of data and on recognising the significance for understanding the meaning of the context in which an item is being analysed (and the categories derived from it) appeared (Bryman, 2012 pp. 714).



After the transcription process the interviews were listened again by the author with the transcriptions to find possible errors to ensure correctness of the data. After ensuring the correctness of the transcriptions the author read the transcriptions carefully through four times to understand the data. After the reading the author started to analyse the data by first organising everything together and grouping the data by following the order of interview questions, in order to find common themes and categories. The first organisation of the data was done in Microsoft Word. The Second step was to start coding the data into categories. This was accomplished by colour coding the mutual and common answers emerging from the data. The third step after coding all the data, was to transfer everything to Microsoft Excel file for easier reading and to analyse further in order to find additional common themes, categories, keywords and citations from the interviewees. After the main categories and citations were found, the citations from interviewees were translated by the author. The Microsoft Excel file used to find common themes and keywords is found in the appendices.

### **3.7 Trustworthiness of study**

It should be recognised that limited number of interviews were conducted for the purpose of this study. The author aimed not to generalise any results based of this study, instead the author aimed to understand the phenomena of digital assistants and voice search by seeking the opinions and personal views of the interviewees. As a qualitative method seeks to attach meaning and understand the thoughts and opinions of the study participants. The author formed the interview questions carefully to avoid researchers bias and to avoid leading nature questions. For the sake of the study it was accepted that the interviewees did not have any reasons provide the author any false information and misleading answers in the interviews.

## **4 RESULTS**

In this chapter the results from the empirical research are presented.

The interviews were analysed according to themes which surfaced from the interview data. The interview questions were formed using the theory of three pillars of SEO by

Adams and the questions followed order of theoretical framework in chapter two. The questions were targeted to find out what the current situation of voice search and digital voice assistants is and how to create effective SEO for those. All the interviewees discussed these themes and categories from their own perspective and from their own experiences on the field of digital marketing.

## 4.1 Search engine optimisation

First part of the themes discussed follow closely the order of theoretical framework first the general best practises of SEO was discussed, then any perceived changes to SEO process and finally the benefits of SEO for companies. These themes concluded the first part of the questions from the interview.

The second section of interview questions deliberated about SEO processes for voice search and digital voice assistants and answered the first research question “How to execute SEO for digital voice assistants and voice search?” There were three main themes which grew from the interview data; the best practises for digital assistants and voice search, the differences of SEO process’, and digital voice assistant and voice situation at present in Finland. The last surfaced theme answers the second research question; “Current situation of digital assistants and voice search (in Finland).

Common factors emerged for all the interviewees four when asked the interview question 1(Define briefly what SEO is?), they all agreed with interviewee 4 who stated [“Search engine optimisation can be described briefly as the process where persons search experience is being optimised, in other words we aim to produce answers to the needs what people have when they are using search engines.”]

Interviewee 2 commented people have affected more changes to SEO process commented to illustrate (question 2, Have you noticed changes in the optimisation process?)

I would say people did, as we have become more demanding and impatient as users and our expectations have grown. Companies are forced to optimise their websites to meet these expectations. For example, content is no longer being created for search engines, but for real people. It has to provide value to attract audience. The rise of mobile and social media has also had a great impact on SEO.

Interviewee 1 disagreed with all the other interviewees and has not perceived so many extensive changes to SEO practises and comments as follows: [“I’ve been working cou-

ple of years, and during that time, I wouldn't say there has been any significant, really big changes.”] However, interviewee 3 states however the SEO practises changes constantly [“It changes constantly! Like, use of keywords, how we create links, use of sub-headings... among other things.”]

When discussed about the benefits for companies (question 3, In your opinion, how do the companies benefit from the Search engine optimisation?) all the interviewees agreed that there are advantages for companies utilising SEO. After asking for illustration interviewee 3 commented

I think search engine optimisation is critical for companies... it's difficult to think an industry where at some point during the buying process a customer would not search information about services or products and if companies have not made sure that their products or services information is available when a search is being conducted... there are big business opportunities lost. In other words, there are business transaction potential missed out.

Interviewee 4 also commented also on the company benefits arguing some industries where the role of SEO has diminished

Well, I would say that the benefits change according the industry one operates, you might say there are some business areas where SEOs role has diminished significantly, and if you look Googles search results, you see there are every kinds of bought results like paid adverts, maps, and other things, to the top positions of search page which means the organic, unpaid results can drop down in the results when scrolling down the page. For those industries where SEO is beneficial, the gain to be found of the top levels of search results, seem very credible for customers, and signals that these companies are not just some random businesses who have bought their search page ads. ...There are of course items like ad blockers (which block the paid ads), and to target the people using those, the only way to be found and to be visible in the Googles results, is to take care of the search engine optimisation to survive in the game. It is significant channel for companies for prospecting... from there sales and leads coming, or whatever the web pages goals are. And of course, there are these customer service-related searchers: people are looking information about something they bought, and they have some sort of a problem and they wish to received answers to their questions.

Interviewee 2 also mentioned about online searches specifically as online search is essential for companies to be found easily or even existing

As nowadays almost everyone conducts an online research before buying, if your website's name is not among the first five listings on search results, your company does not exist. Companies that dominate search results sell more, have greater website traffic, are more credible and enjoy better trust. They simply stand out from competition.

## 4.2 Search engine optimisation for digital voice assistants and voice search

### 4.2.1 Best practises

The second portion of interview questions dealt with SEO for voice search and digital voice assistants and answered the first research question “How to execute SEO for digital voice assistants and voice search?” was answered in this section. There were four major themes which grew from the interview data; the definitions of digital voice assistants and voice search, the best practises for digital assistants and voice search, differences of SEO process, and digital voice assistant and voice situation in Finland. The last surfaced theme answers the second research question; “Current situation of digital assistants and voice search (in Finland).

All the interviewees were familiar with the three main digital assistants which were discussed in this thesis. In addition to Siri, Google assistant and Amazon Alexa some digital assistants beyond this thesis’s scope were mentioned; like Microsoft’s Cortana and the Chinese digital assistant Baidu.

All the interviewees responded in similar fashion when the author asked them to define digital voice assistants and voice search (question 4, Describe briefly what voice search is?) Interviewee 2 defined voice search as follows [“Voice search is a way to conduct search using a voice command, meaning that instead of typing a search query you speak to a device.”] Interviewee 1 however commented in addition about voice search results being vocal:

I mean that if someone is searching by voice or that the results are also vocal... it depends on one view’s, if voice search is something that I ask from my mobile “ok, the best restaurant nearby?” and the results are all pictures, and maps and... are in away, are “normal” results or if there is a single answer for example, that comes vocally: ok, the best restaurant nearby? It is the Chinese called the Red wall. ...15 meters, have fun. So, I am not really fundamental..., I do not really mind, I am happy with both, I mean both definitions but, I think maybe people ... are really talking about, more.... they are using... I mean the search is vocal, maybe not the answer.

This answer indicates how the voice search mechanism operates using the normal search engine results to give the answer to a voice query. Interviewee 4 stated also very similarly when asked about definition on voice search:

Voice search is when a search is done by speaking, as a gesture through mobile phone or laptop microphone, meaning the environment can vary a bit. For instance, when using Google, it is possible to click a microphone icon and then start speaking or then it is possible to use these assistants like Apple Siri or Microsoft Cortana or Google assistant.

Interviewee 4 connected voice search and digital assistants as part of the same entity, by commenting [“The digital assistants are just one way to reach voice search.”] Digital assistants exist for the most part in a smart device such as smart phone or smart device.

When discussed about the SEO best practises from the interviewees more common factors started to emerge again. They all agreed that SEO process for digital voice assistants and voice search is remarkably like the general SEO principles. (Questions 7& 10, Are you familiar with the SEO process for digital assistants? What do you consider important or relevant in SEO?) Interviewee 1 commented:

If we are doing the right kind of SEO, so we are already working towards also queries, and answers, and services that are already working also for the voice. Of course, it is very different if you are developing a skill for Alexa, so, that is bit different, but if you are talking about ... for example. optimising your Google my business page, or something else, that is already both; the ordinary SEO and it is also voice friendly.

Furthermore, common factors emerged from the interview data regarding the importance of *content* and how it should be structured *using structured data*, and how the content needs organisation by the utilisation of *headings* and *subheadings* in the broader text. All the fore mentioned items were discussed by all the interviewees and they all agreed that those are *part of the general best practises of SEO*. In addition, the usage of *Conversational spoken language* was stated by all the interviewees. According to interviewee 1 the content is the most important factor to consider when thinking about voice search and digital assistant search engine optimisation process.

Depends on the nature of the optimisation but if focusing on the SERP-side of the optimisation, one has to think the context maybe a bit more. What kind of content, what kind of entertainment, what kind of., whatever they are looking for. They are looking for diversity, they are looking for chats, if they are looking for whatever.

Interviewee 2 remarked also about the importance of content and emphasised how the long-tailed keywords are a good way to structure content

Stop thinking about algorithms and focus on brand building and delivering relevant content. "Include more long tail keywords in your content, as when people conduct voice search, they use longer phrases than when they type search query into Google. Write like people speak. Also, concentrate on local-based content.

Interviewee 3 stressed about the importance of understanding intent of the user when given the interviewee question 10, (What do you consider important or relevant in SEO?) to ponder

We should consider carefully when a person is asking something, how to serve him or her the best possible way, just like this person would be in actual shop instead searching information,, we must have totally different content and probably different technology on the backend for support. If now I describe some travel destination or some random shoes, this means there can be more static content about those. When instead it is asked about if a flight is available or is there shoes available in the warehouse, then we need to connect, in fact, the actual technology to the real time information about our warehouses or the availability of our flights.

Interview 3 added how the processes need to be much more compact for the voice queries [” But, if the query is just a purchase, which uses only one sentence, then suddenly we need to think our processes significantly more compressed.”] Interviewee 3 then continued more to specify even more about the user intent, how queries or purchases need to be considered carefully to understand the meaning of the user.

That question is in itself somewhat deeper, we should think what is really meant by if someone is voicing a command to search something, to figure out what was actually meant by that.”, ”We are not always just looking for information, but it needs to be understood that the question might be request to do something, not just a query for information, for instance to order something.

The user’s need is important for interviewee 3 as the interviewee mentions this several times and even gave as an example how there must be altered content and technology behind the scenes operating warehousing information or the availability of flights.

It is essential what the user needs. We must think carefully, when that person is now asking something, how are we serving that person in the best possible way. Like in an actual shop someone asks something about shoes, about sizes or why these are good, we need to have totally different content and probably different technology on the background. If I describe a travel destination versus shoes, there can be a little more static and more describing content available. But if we are asked about the availability of flights or are there those shoes in the warehouse, then we need to connect the answering technology to our real-time knowledge about our warehouses or the availability of our flights.

Moreover, when discussed about content and how it should be created, interviewee 4 mentioned also about the reading levels of content and how general reading level should be easy to read and not to be on any kind of academic level. [“It has also investigated what kind of content there is in these answers, so the main thing is to avoid high level academic text, it is advisable to use reading level proper for 9<sup>th</sup> grader.”]

A few of the interviewees also agreed the more *spoken nature of the voice searches*, the queries are longer and often complete sentences, which in effect creates the need for the

content being more *conversational* or even *question-answer* pairs. Interviewee 1 stated simply about conversational content [“Write conversationally, address people’s search intents and needs.”] Interviewee 4 added how information is searched: [“Information search is often in the form of questions and more conversation like, and sometimes it is enough for people if they get the answer, they are looking for directly from the assistant they use.”]

Interviewee 3 remarked how search is conversational

Currently it is a bit like conversation anyways. I think that will be a starting point of speaking with these assistants. ...Speaking would not be technical, following strict preformed syntax, but more like speaking with humans, so then we need to have the ability to be both technically and socially competent how we answer something and recognise certain questions.

When discussed about the best practises of SEO and in detail about content the interviewee 4 emphasised use of structured content pages and the frequently asked questions. [“These frequently asked pages (FAQ), that content is perfect when thinking about voice search.”]

Then interviewee proceeded to add about the use of featured snippets [“As a text form as an excerpt, voice search is somewhat related to these... well, the English term is featured snippets, these are related to the search results text excerpts.”]

A few of the interviewees emphasised strongly that the use of structured data or writing style is important to the voice search and digital assistants. Interviewees 2 and 4 both commented on this [“Use structured data”] (Interviewee 2),

There are certain things which can be luckily considered when creating content, already., those don’t serve not only voice search but also broader like rich results and one example it to use subheadings with in longer text, which then answers to peoples queries and within that there are sub questions and under those are short sucking around 30 words answers to those first questions, and use of structured writing style. (Interviewee 4)

#### **4.2.2 Types of companies and benefits**

When asked the interviewees what type of companies would find value and assistance by using digital voice assistants and voice search for companies, (question 5, Do you think companies should consider optimising for voice search?) all the interviewees agreed that there are certain types of companies, for instance customer service sector of companies like interviewee 4 remarked

It depends a bit, what kind of company it is. If the company is customer service organisation, let us say many customer service persons working as call centre service, in there the benefits may start show... but this kind of prospecting and lead generation business, voice searches meaning is quite small typically. That is because voice search characteristics are not very commercial often.

Moreover, interviewee 1 remarked how use of digital assistants or voice search should be connected on one's business goals.

It depends on one business goals. For companies' perspective, voice search optimisation and digital assistants can be quite far apart: optimising for a voice query "Where is the nearest gas station" done via mobile phone versus digital assistants that can have skills "Alexa, play Rihanna". So, it would depend on the company's goals.

Interviewee 4 specified by stating that a company with many customers would benefit having voice search and digital assistants in use: as the customers would find answers with better user experience:

If we think about a business which has a huge customer base, and the customers have different problems to which they are looking answers, in such a case voice search and digital assistants could enhance their customer service experiences... with that they (the customers) do not have to struggle about at the company's web site, or in the worst case, they must phone to the call centre and listen for muzaki..instead getting the answer they are looking for instance from Google assistant or even as an snippet from the search results directly, without having to visit the company's pages at all.

Interviewee 4 also remarked that benefits to use the voice search or digital assistants depend a bit of the what type of company it is when asked about if companies should start thinking using the voice search and start also using the search engine optimisation process. (question 5, Do you think companies should consider optimising for voice search?)

It depends a bit, what kind of company it is. If the company is customer service organisation, let us say many customer service persons working as call centre service, in there the benefits may start show... but this kind of prospecting and lead generation business, voice searches meaning is quite small typically. That is because voice search characteristics are not very commercial often

### **4.2.3 SEO differences for digital assistants and voice search**

When inquired about the differences of SEO the interviewees were all in agreement that there are not so many differences to the SEO process when compared the "basic" SEO processes to the SEO process for voice search and digital voice assistants (question 8, Are there differences compared to "basic" SEO?)

Interviewee 2 stated there are no major differences between how SEO for voice search is executed

Include more long tail keywords in your content, as when people conduct voice search, they use longer phrases than when they type search query into Google. Write like people speak. Also,



concentrate on local-based content. For example, if you want to search the best marketing agencies, you would probably type “best marketing agencies”, but if you used voice search, you would probably say something like “OK, Google, what are the best marketing agencies in the world?”

This is confirmed also by interviewee 4 who remarks similarly

To begin with there is no point to choose any singular way to optimise for the digital assistants or the voice search, that’s because the means is better to select in a such way that those will scale up to as big spectrum of channels as possible, in other words the means to prepare for voice search are fairly universal. There is not any data to only optimise for Siri, or for Google... well Google assistant might support some items which aren’t available for other platforms, or aren’t yet supported on those...is that case we should consider on other things as well, like Google is an innovator of such matters. ... The means are, and which we need to think about are the general best practises which we should follow.

Interviewee 3 emphasises about conciseness of good web text

Well, yes, it is good practise to use good web text in which to use plenty of subheadings and does not ramble about too much, to use such concise feeling of text in other words use of general best practises can reward voice searches.... Too broad rambling writing style is not a good answer for the user.

Interviewee 3 states about SEO practises for digital assistants that Alexa skills and the search engine optimisation used to gain visibility for Alexa is somewhat different (question 8, Do you think companies should consider optimising for voice search?) as interviewee 3 remarks

Well, one example from digital assistants could be Alexa skills. It is possible to create skills for Alexa in other words create your own skills for it and then import those on Amazon skills store from where Alexa then draws more detailed and broader information what was asked. So, the user does not need to explain in detail again as Alexa has that question in use as a skill with all the information. Alexa skills are kind of shortcuts, which means optimisation process is way to ease the interaction between Alexa and the user...One example is Wikipedia, if you ask something from an assistant, then it starts read some Wikipedia article.

Interviewee 4, however commented that Alexa optimisation process is not different at all

Then there are these digital assistants own things, like Alexa’s skills, but pretty much the same things apply when optimising these to the search results, there certain things which can be luckily considered when creating content, already., those don’t serve not only voice search but also broader like context.

Interviewee1 stated about the differences on SEO process for Alexa by stating simply without elaboration [“it is very different if you are for example developing a skill for Alexa, so, that is bit different.”]

Interviewee 4 remarked about Google assistant optimisation process when asked about the SEO for digital assistants and voice search:

Last spring arrived one straightforward way -- those means to do when optimising for voice search- are search engine optimisation are the generally accepted best practises which to use— especially in context of Google assistant, this new form of structured form of data, this kind of FAQ-page form, which can be configured or specified to the code this sort of question-answer pairs and Google assistant supports these directly for instance if the assistant recognises this query from before it is capable of picking answer from the structured data.

#### 4.2.4 Current situation for digital assistants and voice search in Finland

When asked the interviewees about the current situation of voice search and digital assistants in Finland, the interviewees were all agreeing that there are several factors which have and will affect to the general use and popularity of these in Finland; the most commented were *Finnish language, small market, cultural habits, availability of smart speakers in Finland*. Language barrier rose to be a common factor for all the interviewees as an obvious reason why voice search and use of digital voice assistants is not well functioning and not much used in Finland. Interviewee 1 remarked [“I think that Finnish language is also something that if we will have any of these that can for example work, work and function a bit better in Finnish it can also change things.”]. Interviewee 2 expressed a view that Finnish language is so small, and it is difficult for the digital assistants to understand stating [“Finnish language is still too complicated for voice assistants to understand.”] Interviewee 4 expanded this still a bit further commenting how Finnish is small language area, and how it is not on a high on priority lists for any of the digital assistant providers and in addition commented how Finnish people anyway use English when searching for something online

Finland is such a small language area, that it is not high on list of priorities to handle, maybe at some point they will provide better use and services for Finnish language speakers... but it is a bit of a question mark, when you think about Google’s services and where their money comes from- it is in the advertising systems- so quite slowly those things arrive to Finland to Finnish market. Surely it is not the first priority to support our language use in voice searches in the best possible way.

I have myself thought to switch the language of my Siri to English from Finnish at some point just because there is not so much information available in English than in Finnish... Even now part of the Finnish speakers uses more likely English anyways to search for information than Finnish, just to find better information.”

Interviewee 3 expressed similar view on Finnish language and how the Finnish are comfortable using it.

And people, in principle, know the English language well enough, so I am not surprised if none of those come to Finland to be used in Finnish ever”, ”This Finnish language area is so small and we are also a tiny market and Finnish is one of the hardest languages in the world.

In the above comments the interviewees strengthen idea how Finnish is difficult language to master. Moreover, smallness of Finnish market was mentioned by interviewee 3 in the comment above. This came up on several interviewees’ comments as well. Interviewee 1 remarked [“I understand this is not really a market to go for, with 5 million people, and, well not really top priority. but hopefully we someone to that we can prove our case to inspire our case...”]

In addition to language difficulties and smallness of the Finnish market, also cultural habits were mentioned by interviewees 1 and 2. Interviewee 1 expressed this stating [“I wouldn’t want to be seen walking around with a phone and walking around asking “ok google...”]

These cultural factors were stressed by interviewee 2 as well and extended the same view to include other Scandinavians as well

I personally believe that in Nordic region voice search will never beat traditional search due to a cultural factor. To me Nordic people will always prefer typing to speaking. Of course, it also depends on a situation. If you’re driving a car then voice search is the best option, but if you’re on a bus full of people or at any other public place, I don’t see what would force a shy Scandinavian to perform a voice search and let everyone hear it.

When inquired about use of digital assistants and voice search or ongoing projects generally in Finland Interviewee 1 commented when asked about ongoing or future projects for digital assistants and voice search:

Of course, we have (in Finland) some cases for example Kotipitsa I think a year ago, had the Amazon, how did they call it...Kotipitsa game robot or something..?. So, there are some who already to try, but I think they did not make a big fuss about it. I think no one knows... that they had this... I think the beta testers, but. there are some bigger projects as well, one has to see what kind of results one will get.

Interviewee 3 gave a possible project as an example how voice search and digital assistants could be utilised and be beneficial for companies in Finland

Well yes, we have one customer who has very many workers all around Finland, the workers are from several professional groups. The main issue is efficient communication on the whole company level and on the super local level, how can we on an organisation where are thousands of employees, especially when part of the employees do not have access to a computers, how can we, if they have a team smart phone with them always, enable ... so they could have access to information simply by asking or otherwise just information about what is going in the company, so this could be example of using both voice search and digital assistants for a business’s benefit.

We have been working with this customer for a long time and previously the lack of even an email addresses have been a problem. How can you communicate with them, if the workers do not have computers or emails, the technology has been causing problems, they do not have even a personal mobile. They only have a team's common mobile while working at a wherever. Voice-enabled digital assistant could be the solution here because it is possible work while using a headset and through that to communicate or have a dialogue with an assistant concerning for instance what is happening new week at the office or order a necessary item to the work place, and the that assistant would take care of that order or provide information about something important.

While discussing voice search and the use of digital assistants in Finland, one common theme came up. Interviewees 1 and 2 and 3 commented about how challenging it was to acquire any of the smart devices some years back in Finland. Interviewee 1 stated [” When we ordered our home pod here, it was really tricky, I think we had to get ours from Germany, it was really, really tricky .... A year ago, I think it was”]

Interviewee 3 remarked how the smart speakers are at the moment for the innovators and early adopters [“Well, if we now have some of these assistants available in Finland, but not necessarily in actual use. And some amount of these home-based smart speakers as well, I feel those are still things items for innovators or early adopters still.”]

A few of the interviewees mentioned a dubious view when discussing about the use of voice search and digital voice assistants in Finland, they commented how unlikely it is that voice search and digital assistants will ever be used in Finnish or how long time it will take for those arrive to Finland in reality. Interviewee 2 stated [“In Finland, voice search hasn't changed the game yet... Perhaps the situation will change in a couple of years.”]

Interviewee 3 commented [” I am not surprised at all, to find out that some of these never come to Finland to be used with Finnish. And I will not be surprised to see that it will be a long time behind arriving, as there are so many uses for those for instance in the States.”] and rushed to comment more and indicated there are many things needs to advance

I have not seen myself yet that with our customers we have not been able to start using those, but I am looking forward to finding such opportunities where we could try more these, but it requires many things to go forward. A bit of those reasons why search engine optimisation changes constantly; partly due technology, partly of the customers uses.

Interviewee 4 stated more cautious comment about the future of digital assistant and voice search use in Finland (question 12, How do you see the future for voice search SEO and digital assistant SEO?)

Voice search and digital assistants have been couple of years a hyperbole for the upper levels of management: that we must now somehow consider voice search and this is a big thing and it is surely coming and behind the scenes there must be something going on regarding voice search and digital assistants.”...“I hope someone has explained for them that the significance of voice search and digital assistants are less that hyped.

Interviewee 3 and 4 however were in agreement and commented similarly about the uses of digital assistants and voice search, as demonstrated by their comments, interviewee 1 said [“ I am sure voice search and digital assistants are perfect just for making restaurant reservations, so it would be possible make a voice query and ask, “Is there tables available in that restaurant”] and interviewee 4 remarked [“Surely examples like making appointment and make instant restaurant reservations with voice.”]

#### **4.2.5 Available guidelines**

When inquired the interviewees about presence of guidelines (question 11, Have you set any set guidelines for voice search or digital assistant SEO?) for their companies or their customers most of them had something concrete at present or contingencies for the future. Interviewee 1 remarked how they have something for their customers on the process [“Not for this company us but we are working with some customers to create that kind of guidelines.”]

Interviewee 3 stated they have some initial plans for utilising voice search and digital assistants in their company, but nothing concretes such as planned guidelines

I would say yes. Right when it is possible to plan and use for instance projects with our customers where... let’s say where we try to develop for them and their customers abilities to use voice based searches or operations to interact with digital assistants, we have some ideas and future plans how to proceed with this, but as we do not have yet such possibilities to do that with our customers, so no we do not have a reference which we did, and which worked so and so.. It is more like we have general interest and a vision how it should be done, but it will clarify in time with a customer.... With the case and situation at hand.

Interviewee 4 commented that they have some examples [“This is always case by case, while we have cases where voice search and digital assistants are in any way relevant to the operations of that business.”] And added to elaborate

Yes, we have considered this for some while now in our operations, as one more argument to consult weather a FAQ page, structured information page is worth it and the we have added that this in addition works quite nicely with voice search. When considering voice search, there are

such organisations which do not wish to get calls from frustrated people calling to us and listen for muzaki for a while, but instead they could find answers quickly to their problems or questions about their purchased products or services., so yes we have this as an additional argument for some operations and practises. It depends on the case always as there are some companies for which voice search is not any kind relevant for the operations for the company at hand.

In contrast to the other interviewees interviewee 2 said [“Not exactly, as our company is not specialised only in SEO” [...] “And as our customers are mostly B2B businesses”]

#### **4.2.6 Future of digital assistants and voice search in Finland**

For every participant the future of digital assistants and voice search in Finland was mostly positive when inquired about the future of those (question 12, How do you see the future for voice search SEO and digital assistant SEO). The strength of the comments was varied in tone and enthusiasm. Interviewee 1 simply answers [“Bright!”] when asked about the future of digital assistants and voice search, whereas interviewee 2 was more cautious commenting [“In Finland, voice search hasn’t changed the game yet... Perhaps the situation will change in a couple of years.”] Interviewee 3 stated a similar view

This is not something people will speak openly about... I cannot say for sure, I think these are something which we have had the capabilities to develop in Finland for some year or two, I do not have any reasons to doubt that many are considering these things and would like to do something new, but it is not (digital assistants and voice search) yet any basic ding/undertaking.

Interviewee 3 then continued to enhance [“I believe it looks like things will come anyway, and those will develop so that it will be important for everyone, but personally I have such a feeling that it will take longer what you care to think about, especially in Finland.”] Interviewee 4 stated of future trends and development of digital assistant and voice search use in Finland [” This is surely a future trend and most likely it will rise up and develop what it is at the moment.”] In addition, interviewee 4 commented still more to clarify in detail what possible uses for digital assistants’ future development will bring

Future will be especially interesting, knowing that Google has demoed some functionalities...of from these assistants, who/which are already capable to take care of issues of cases for users, and this type of self-direction will probably increase, so it will be possible to give them/those various clarification ? tasks and make robotic calls instead of the user at least in the world languages, in other words to have the ability to perform more and more complicated series of tasks. The future might resemble kind of concierge service.

## 5 DISCUSSION AND CONCLUSIONS

In this chapter the author will discuss and reflect the results of the empirical research in context of the theoretical framework to address the research aim of the study. The aim of this study was to find out what is the current situation of the digital assistants and voice search and how the marketers can execute SEO for those, as is stated in the research aim of this study by posing two research questions to which the author is looking an answer to fulfil the research aim.

The research questions are as described below:

1. How to execute SEO for voice search and digital assistants?
2. Current state for voice search and digital assistants?

The interviewees responded in surprisingly similar fashion to the presented interview questions. In all probability as the interviewees all follow closely the development of their chosen profession and industry field, making it likely that the author used unknowingly same online sources and articles to formulate the theoretical framework. The use of certain online sources might instigate nearly same answers.

### 5.1 Best practises for SEO for digital voice assistants and voice search

Based on the results of the interviews there were mostly minor details that were varied on the interview analysis and results concerning the best practises of general SEO and SEO for the digital assistants. As interviewee 1 stated that well written content is already voice friendly [“If we are doing the right kind of SEO, so we are already working towards also queries, and answers, and services that are already working also for the voice.”] This is explained on the theoretical framework in the SEO and SEO for digital assistant and voice search chapters in detail.

Well executed and optimised web pages with relevant content and using good SEO processes is covered by Hollingsworth (2018) on the theoretical framework chapter *Importance of SEO for companies* on pages 21-22.

Furthermore, this was confirmed as even more comprehensive and deeper interview analysis was conducted. This further analysis revealed more about the elements and details needed to execute SEO for digital assistants and voice search well. Moreover, the analysis revealed which of the best practises of SEO should be considered when optimising for digital assistants and voice search. The common keywords which emerged from the interviewees be applied and reflected when optimising for digital assistants and voice search were **content, use structured data, conversational spoken language, question answer pairs, use of long-tailed keywords, user intent, spoken nature of voice searches, FAQ pages, and featured snippets**. These fore mentioned keywords are addressed and explained point by point in both the general *Search engine optimisation* and in *SEO for digital assistants and voice search* chapters how and why those are critical. The essential and vital keywords are described according theoretical framework below:

Rasnake says on page 16 of *the Search engine optimisation* chapter that the most important rule of good **content** it the KISS principle (Rasnake, 2017), in other words, keep it simple and write easily readable text.

The use of **structured data** explained on chapter *Structured data* page 20 by Schema.org and van de Rakt (2019) [“Structured data is code in a specific format, written in such a way that search engines understand it. Search engines read the code and use it to display search results in a specific and much richer way.”] (van de Rakt, 2019). In addition, Schema.org explains how using markup is a convenient way to structure web site data in such a way that search engines understand better the content of web pages. Using structured data splits the information on the web site to smaller and easier manageable pieces and therefore making it more accessible and easier to index for search engines such as Google. (Schema.org, n.d.)

The benefits of utilising **long-tail keywords** are described by Desmond (2018) on chapter *Keywords and long-tailed keywords* on pages 33 on the theoretical framework on chapter *Voice search engine optimisation*

Long-tail keywords formulated as complete and conversational questions, answers to those questions, or location (“near me”) searches are becoming more important because they often answer voice search queries. While a text-based search may seek broad information, a voice search gen-



erally seeks key information that can be concisely communicated, such as hours of operation, location, and directions. (Desmond, 2018).

Google created four main **User intents** also called micro-moments, to describe searchers intentions when searching. These user intents are important marketers to acknowledge, in order to create interesting and relevant content for voice search. These micro-moments are illustrated by Capala (2019) on chapter *Voice search engine optimisation* on page 33 as follows: When they wish to know something, when they want to go somewhere, when they want to do something, when they want to buy something. (Capala, 2019)

The **nature of voice searches** is different language when compared to typed questions. Desmond (2018), on chapter *Voice search engine optimisation* on page 33, says: voice search uses more **natural language**, and properly formed questions and grammatically correct language. (Desmond, 2018) As the nature of voice search is more conversational also the content should be formed accordingly utilizing featured snippets as Moore (2017) says on page 35 in the chapter *Voice search engine optimisation*. In addition, Pedestal (n.d.) strengthens the nature of voice search by saying: longtail key phrases are already like spoken queries, so more attention should be given to the formulation of these. Pedestal (n.d.) comments this is on page 27 on chapter *SEO for Google Assistant*.

The use of **Frequently Asked Questions or FAQ pages (question answer pairs)** is confirmed on page 34 on chapter *Voice search engine optimisation* by Amaresan (2019) saying FAQ pages situated, are also convenient way to divide content for answering voice queries. (Amaresan, 2019)

**Featured snippets** are one section of the best practises described on the theoretical framework on chapter *Voice search engine optimisation* on page 35 by Smarty (2017) Featured snippets are useful to structure and present information, as those aim to give users short and concise answers. In addition, Google (2019) says on pages 34-35 that featured snippets are a summaries of web pages presented in a separate box and visible on the top of SERP. The featured snippet includes summary of a page, URL of the page and a link to the page. (Google, 2019)

The search engine process for Google assistant was mentioned only by interviewee 4, who commented that some time ago a straightforward way to optimise for that came about. This was expected and it was discussed in detail in chapter *Search engine optimisation for Google assistant*. As Google assistant is a Google product, most of the SEO elements used for it are the same. The exact tool by Google for assistant SEO, the Google actions was mentioned only in passing by interviewee 1. This was surprising result as all the interviewees professed familiarity for Google assistant and the SEO process to attain good standing and ranking for Google search, that none one of the interviewees were familiar with Google actions. The theoretical framework however dived deeper into the Google actions to explain how to use those. Thomas Muter (2018) defines Google Actions followingly on *SEO for Google assistant* chapter on page 28:

Actions on Google is a developer platform that lets you create software to extend the functionality of Google Assistant, Google's virtual personal assistant, across more than 500 million devices, including smart speakers, phones, cars, TVs, headphones, watches, etc. Users engage with Google Assistant to get things done, e.g., to buy tickets or book a taxi. As a business owner, you can use Actions on Google to easily create and manage delightful and effective conversational experiences between users and your 3rd-party fulfillment service.” (Muter, 2018).

Furthermore, none of the interviewees did not mention the guidelines for Google assistant to which the author also referred in the theory chapter. The guidelines are discussed briefly on the chapter *Voice search engine optimisation* on pages 32-33. According to Schwartz these guidelines are used to assess the voice answers from Google assistant. There are several categories which needs to be on acceptable level. These main categories are information satisfaction for the user, overall length of the answer, formulation of the content and elocution in other words the pronunciation should be proper. (Schwartz, 2018) As why both Google actions and the guidelines are not well known in Finland could be simply that Google assistant is not used so much yet by marketers to create SEO.

The SEO process for Amazon Alexa was perceived to be the most different when compared to the Google optimisation proves, this was mentioned by three of the interviewees. The SEO process for Alexa is detailed in the theoretical framework on chapter *Search engine optimisation for Alexa* on pages 31-32. Browning describes how the same basic principles of SEO process work for both Amazon and Google, for instance how the content should be fresh and updated regularly. Use of keywords is where SEO for Amazon differs mostly from Googles. Keywords should be used on every product

description and as many as possible. In addition, on longer keywords or phrases, the order of the words is not as important for Amazon as the search can understand the intent for the search term. (Browning, 2018) According to Browning there are several extra steps to the SEO process for Alexa, which are explained below:

- [“Make your products Amazon Prime ready, or even grab the Amazon Choice certification.”]
- [“Optimize your Amazon store page for user experience.”]
- [“Respond to all product reviews, even the bad ones.”]
- [“Optimize item descriptions and images for the Amazon store and Alexa.”]
- [“Fill out all details involving structured data filter fields (including colors, fabrics, ingredients, etc.).”]
- [“These Amazon-store specific SEO techniques will help mobilize your products for Alexa voice search results and help increase conversions through the voice-enabled device.”] (Browning, 2018).

As interviewee 1 said [“it is very different if you are for example developing a skill for Alexa”] However, interviewee 3 added a bit more information about Alexa skills agreeing mostly with what is in the theoretical framework on chapter *Search engine optimisation for Alexa*. Amazon developed Alexa skills to advance and develop the Alexa SEO process and voice-activated searches. On page 32 Edenergy (n.d.) explains Alexa Skills:

“Alexa skills are like apps. You can enable and disable skills, using the Alexa app or a web browser, in the same way that you install and uninstall apps on your smart phone or tablet. Skills are voice-driven Alexa capabilities. You can add Alexa skills to your Echo to bring products and services to life. You can view available skills and enable or disable them using your Alexa app.” (Edenergy, n.d.).

In that chapter what the Alexa skills are is described briefly, and what the differences were explained. It seems that only one of the interviewees was familiar with operations of Alexa skills to mention those. One reason why this is a reality now, might be the availability of the Echo smart speaker where Alexa resides mostly and the commented fact that smart devices are still for a small niche of interested customers, in other words mostly used by innovators and early adopters. As stated by interviewee 3, and confirmed in addition how difficult it is to purchase smart devices from Finland as interviewee 1 said.

## 5.2 Situation of digital assistants and voice search in Finland

The interview data suggests an overall positive but slightly cautious opinions to whether digital assistants and voice search will be used by the general public in any time soon in Finland. This became evident after compiling all the interview data together. The interviewees' comment for instance how Finnish language is difficult was corroborated by other interviewees. As the theoretical framework mentions on chapter *Google assistant* on page 25, and on chapter *Amazon Alexa* on page 25 the digital assistants like Google assistant and Amazon Alexa use natural language processing to decode the vocal inquiry. According to Forrest (2018) Google assistant utilises artificial intelligence technologies like natural language processing and machine learning when performing and answering queries from the user. (Forrest, 2018).

This is the point which causes the digital assistants such difficulties with Finnish, the NLP systems do not recognise or understand Finnish so well that often the answers from those are either totally wrong or the pronunciations are off as well.

The more digital assistants are in active use, and the more they have data available for instance Finnish, the more they are capable to learn and in that process utilise machine learning to answer to vocal queries better and in detail as explained in the theoretical chapter about digital assistants. On the theoretical framework chapter *Digital voice assistant definition* on page 21 Ciligot (2019) explains how digital assistants learn constantly from their incorrectly answered queries and misunderstood search questions by using that data and machine learning to achieve better accuracy to the responding replies. (Ciligot, 2019)

The fact that Finnish language area is small, and the smallness of the Finnish market area are contributing factors why the developers of digital assistants and voice search have not developed the language skill sets within digital assistants.

The interviews indicated that there are ongoing projects for the uses of digital assistants and voice search, and interviewee 3 gave a detailed practical example in chapter three how to utilise digital assistants and voice search on communication between workers and the home office.

This illustrates that the digital marketing companies in Finland are at least considering the use of digital assistants, but as interviewee 4 expressed [” This is surely a future trend and most likely it will rise up and develop what it is at the moment.”] This was further explained by interviewees 1,3 and 4 as they all revealed how they have some guidelines currently for their customers or they are using voice search optimisation as one more argument for their customers to execute better quality general SEO efforts.

The interviewees all were somewhat cautious when they expressed their opinions about the future of digital voice assistants and the voice search. They commented how cultural factors might be one reason for the digital assistant use might not be so popular in Finland. This change of behaviour was not considered in the theoretical framework at all, since the author did not consider this kind factors at all.

### **5.3 Conclusions**

It needs to be acknowledged that use of any kinds of digital assistants and voice search is still in its infancy. The persons or companies owning any of the smart speakers belong to innovators or early adapters in other words to the computer geeks and who are interested in the newest technology. The reasons affecting might be the poor availability of smart speakers where the digital assistants mostly reside. Finnish being shy and the general public frowns on the idea of being seen in public conversing with a phone seems a bit of a challenge now. In addition, our language is difficult for the AI powered entities like Alexa and Google assistant residing in smart devices. Furthermore, Finnish is demanding to understand properly and even more importantly to pronounce it well. As poorly pronounced answers from any of digital assistants is frustrating and stops the inquiries immediately.

There are possibly many tentative beginnings in Finland to start utilising the possibilities of SEO aimed toward digital assistants and voice search. As more and more companies start realising the vast potential these digital assistants and voice search offer for marketers and companies alike, it seems feasible that use of SEO practices with digital assistants and voice search will grow.

It was quite a surprise to find out that there was not enough knowledge or detailed information about the Google actions, the Alexa skills and how those can be used to create more efficient SEO for better organic results. Maybe this comes down to the fact that Finland is small and rather insignificant market area.

### **5.3.1 Future research**

There are many possibilities to conduct future research to investigate for instance the changes to the situation currently about the uses of digital assistants and voice search, as one of the problems for this study was to find enough knowable experts from Finland.

## REFERENCES

- Adams, B., 2015. *The Three Pillars of SEO*. Available from <https://www.stateofdigital.com/three-pillars-seo/> Accessed 20.3.2019
- Adams, B., 2015. *Image of Three Pillars of SEO*. Available from <https://www.stateofdigital.com/three-pillars-seo/> Accessed 25.3.2019
- Amaresan, S., 2019. *10 FAQ Page Examples You'll Definitely Want to Copy*. Available from <https://blog.hubspot.com/service/faq-page> Accessed 10.10.2019
- Amazon Alexa, n.d. *Build Skills with the Alexa Skills Kit*. Available from <https://developer.amazon.com/docs/ask-overviews/build-skills-with-the-alexa-skills-kit.html> Accessed 19.5.2019
- Avet, S., 2018. *All you need to know about voice search SEO*. Available from <https://seranking.com/blog/voice-search-seo/> Accessed 12.4.2019
- Avet, S., 2018. *All you need to know about voice search SEO*. Available from <https://seranking.com/blog/voice-search-seo/> Accessed 12.4.2019 Figure 5
- Boyd, C., 2018. *The Past, Present, and Future of Speech Recognition Technology*. Available from <https://medium.com/swlh/the-past-present-and-future-of-speech-recognition-technology-cf13c179aaf> Accessed 21.3.2019
- Browning, R., 2018. *Alexa SEO techniques for ranking on voice search*. Available from <https://www.rob-bro.com/seo-techniques-for-ranking-amazon-alexa-2018/> Accessed 19.10.2019
- Bryman A., 2012. *Social research methods*. Published in the United States. 3<sup>rd</sup> edition. Oxford University Press Inc., New York. Pp. 809.
- Bryman, A. et Bell, E., 2011. *Business research methods*. Published in the United States. 3<sup>rd</sup> edition. Oxford University Press Inc., New York. Pp. 765.

Caldwell, G., 2018. *Voice search: SEO in the age of conversational interfaces*. Available from <https://www.advancedwebranking.com/blog/voice-search-seo-age-conversational-interfaces/> Accessed 18.4.2019

Capala, M., 2019. *Voice Search SEO Playbook: How to Optimize for Siri, Alexa and Cortana*. Available from <https://alphametic.com/voice-search-seo-2018-playbook> Accessed 25.5.2019

Ciligot, C., 2019. *7 Key Predictions for The Future Of Voice Assistants And AI*. Available from <https://clearbridgemobile.com/7-key-predictions-for-the-future-of-voice-assistants-and-ai/> Accessed 1.9.2019

Computer Hope, 2019. *Digital assistant*. Available from <https://www.computerhope.com/jargon/d/digital-assistant.htm> Accessed 18.10.2019

Copeland, B.J., 2019. *Artificial intelligence*. Available from <https://www.britannica.com/technology/artificial-intelligence> Accessed 20.3.2019

Dean, B., 2018. *Voice search SEO study*. Available from <https://backlinko.com/voice-search-seo-study> Accessed 7.10.2019

Dean, B., 2019. *How to find Long Tail Keywords in 2019*. Available from <https://backlinko.com/long-tail-keywords> Accessed 8.4.2019

DeMers, J., 2018. *Why do you need to prepare for a voice search revolution*. Available from <https://www.forbes.com/sites/jaysondemers/2018/01/09/why-you-need-to-prepare-for-a-voice-search-revolution/#76162a6734af> Accessed 10.1.2019

Desmond, T., 2018. *How are Alexa and Siri changing SEO: AI and voice search*. Available from <https://searchenginewatch.com/2018/07/30/how-alexa-and-siri-are-changing-seo-ai-and-voice-search/> Accessed 4.4.2019

Dolcourt, D., 2018. *Google Assistant gets 6 new voices, and later John Legend's Best yet, you can map different voices to different users*. Available from <https://www.cnet.com/news/google-assistant-gets-six-new-voices-including-john-legend/> Accessed 7.4.2019



Evans, J., 2018. *The evolution of Apple's Siri - A look at the many Siri enhancements Apple has introduced at WWDC over the years*. Available from <https://www.computerworld.com/article/3275224/wwdc-the-evolution-of-apples-siri.html> Accessed 9.4.2019

Forrest, F., 2018. *Google Assistant will soon make your business calls, and other developments from I/O 2018*. Available from <https://www.techrepublic.com/article/google-assistant-will-soon-make-your-business-calls-and-other-developments-from-io-2018/> Accessed 7.4.2019

Forrest, C., 2018, *Google Assistant: A cheat sheet*. Available from <https://www.techrepublic.com/article/google-assistant-the-smart-persons-guide/> Accessed on 7.4.2019

Gebhart, A., 2019. *Everything you need to know about Google Home*. Available from <https://www.cnet.com/how-to/everything-you-need-to-know-about-google-home/> Accessed 9.4.2019

Google, 2017. *Evaluation of search speech guidelines v1.0* Available from [https://storage.googleapis.com/guidelineseyesfree/evaluation\\_of\\_search\\_speech\\_guidelines\\_v1.0.pdf](https://storage.googleapis.com/guidelineseyesfree/evaluation_of_search_speech_guidelines_v1.0.pdf) Accessed 13.4.2019

Google, 2019. *Featured snippets in search*. Available from <https://support.google.com/webmasters/answer/6229325?hl=en> Accessed 18.4.2019

Google, 2019. *Use "Ok Google" voice searches & actions - Android - Google Search Help*. Available from <https://support.google.com/websearch/answer/2940021?co=GENIE.Platform%3DAndroid&hl=en> Accessed 7.4.2019

Google my business help, 2019. *About Google my business*. Available from [https://support.google.com/business/answer/3038063?hl=en&ref\\_topic=4539639](https://support.google.com/business/answer/3038063?hl=en&ref_topic=4539639) Accessed 16.10.2019

Griffin, T., 2018. *Three Ways Machine Learning And SEO GO Hand in Hand*. Available from <https://www.forbes.com/sites/forbestechcouncil/2019/04/12/three-ways-machine-learning-and-seo-go-hand-in-hand/#77a4b945630e> Accessed 15.4.2019

Harnish, Brian, 2018. *What Is Local SEO & Why Local Search Is Important*. Available from <https://www.searchenginejournal.com/local-seo/what-is-local-seo-why-local-search-is-important/> Accessed 16.10.2019

Haughn, M., n.d. *Smart speaker definition*. Available from <https://whatis.techtarget.com/definition/smart-speaker> Accessed 4.4.2019

Heijmans, M., 2018. *How to create the right meta description*. Available from <https://yoast.com/meta-descriptions/> Accessed 4.4.2019

Hollander, R., 2017. *Apple's Siri ditches Bing for Google*. Available from <https://www.businessinsider.com/apple-siri-google-bing-2017-9?r=US&IR=T> Accessed 10.10.2019

Hollingsworth, S., 2019. 12 reasons why your business absolutely needs SEO. Available from <https://www.searchenginejournal.com/why-seo-is-important-for-business/248101/#close> Accessed 12.10.2019

Hosch, W., 2016. *Machine learning*. Available from <https://www.britannica.com/technology/machine-learning> Accessed 20.3.2019

Johnson, R., 2017. *The Complete Guide to Amazon Alexa SEO*. Available from <https://www.searchenginejournal.com/complete-guide-amazon-alexa-seo/185383/> Accessed 19.2019

Kay, R. 2014. *Behind Apple's Siri Lies Nuance's Speech Recognition*. Available from <https://www.forbes.com/sites/rogerkay/2014/03/24/behind-apples-siri-lies-nuances-speech-recognition/> Accessed 7.4.2019

Krupansky, J., 2017. *What is and intelligent digital assistant*. Available from <https://medium.com/@jackkrupansky/what-is-an-intelligent-digital-assistant-3f601a4bb1f2> Accessed 18.10.2019

Ledford, J., 2007, *SEO: Search Engine Optimization Bible*, Wiley, Hoboken. Available from: <https://ebookcentral-proquest-com.ezproxy.arcada.fi:2443/lib/arcada-ebooks/reader.action?docID=331516> Accessed 15.3.2019

Lincoln, J., 2019. *Back to Basics: A beginners guide to voice search and digital assistants in 2019*. Available from <https://searchengineland.com/back-to-basics-a-beginners-guide-to-voice-search-and-digital-assistants-in-2019-314010> Accessed 9.4.2019

Lincoln, J, (n.d.) *Google Actions: the new form of SEO you need to invest in*. Available from <https://ignitevisibility.com/google-actions/> Accessed 10.10.2019

Macrumors, 2019, *Siri on MacRumors*. Available from <https://www.macrumors.com/roundup/siri/> Accessed 7.4.2019

Mango, Kelly, T., 2019. *Hyperlocal SEO Tips To Increase Your Visibility In Search Results*. Available from <http://www.openvine.com/small-business-internet-blog/hyperlocal-seo-tips-to-increase-your-visibility-in-search-results> Accessed 22.20.2019

Marr, B., 2018. *How Much Data Do We Create Every Day? The Mind-Blowing Stats Everyone Should Read*. Available from <https://www.forbes.com/sites/bernardmarr/2018/05/21/how-much-data-do-we-create-every-day-the-mind-blowing-stats-everyone-should-read/#7e0da53060ba> Accessed 7.3. 2019

Moore, J., *How to optimise for voice search*. Available from <https://searchenginewatch.com/2017/09/04/how-to-optimize-featured-snippets-for-voice-search/> Accessed 30.3.2019

Mutchler, A. 2017. *Timeline voice assistants a short history*. Available from <https://voicebot.ai/2017/07/14/timeline-voice-assistants-short-history-voice-revolution/> Accessed 20.4.2019

Mutchler, A. & Kinsella B., 2019. *Voice assistant report for brands*. Available from <https://voicebot.ai/2019/07/09/new-data-on-voice-assistant-seo-is-a-wake-up-call-for-brands/> Accessed 12.10.2019 p. 21.

Muter, T. 2018. *7 Ideas for Growing Your Business with Google Assistant*. Available from <https://www.thedroidsonroids.com/blog/7-ideas-for-growing-your-business-with-google-assistant> Accessed 10.10.2019. p. 21.

Moz c, n.d. *The influence of voice search on featured snippets*. Available from <https://moz.com/blog/voice-search-influence-featured-snippets> Accessed 18.4.2019

Moz b, 2019. *Title Tag- What is a meta title tag?* Available from <https://moz.com/learn/seo/title-tag> Accessed 8.4.2019

Moz a, n.d., *How search engines work: crawling, indexing, and ranking*. Available from <https://moz.com/beginners-guide-to-seo/how-search-engines-operate> Accessed 2.4.2019

Nodder, C., 2014. *Learning to write for the web*. (Online course) Available from <https://www.linkedin.com/learning/learning-to-write-for-the-web/next-steps?u=56747801> Accessed 1.11.2019

Pedestal. (n.d.). *How to rank with Digital Assistants / SEO For Google Assistant*. Available from <https://pedestalsearch.com/seo-rank-google-digital-assistant/> Accessed 15.20.2019

Rasnake, J., 2017. When it comes to your website just KISS! Keep It Simple, Stupid! Available from <https://www.nextflywebdesign.com/websites-kiss-keep-simple-stupid/> Accessed 20.4.2019

Ridler, M., 2019. *Is Amazon a search engine*. Available from <https://medium.com/@realmikeridler/is-amazon-a-search-engine-bc66cc2bfbbb> Accessed 21.10.2019.

Schema, (n.d.). *About Schema*. Available from <https://schema.org/docs/faq.html> Accessed 11.10.2019.

Schwartz, B., 2018. *New search quality raters guidelines for Google Assistant and voice search evaluations*. Available from <https://searchengineland.com/new-search-quality-raters-guidelines-google-assistant-voice-search-evaluations-289114> Accessed 13.4.2019

Silva, R., 2019. *What Is Alexa? How to interact with Amazon Alexa*. Available from <https://www.lifewire.com/amazon-alexa-voice-assistant-4152107> Accessed 9.4.2019

- Singh, J., 2018. *WaveNet: Google Assistant's Voice Synthesizer*. Available from <https://towardsdatascience.com/wavenet-google-assistants-voice-synthesizer-a168e9af13b1> Accessed 7.4.2019
- Siriuserguide, 2011-2019. *What is Siri? - Siri User Guide*. Available from <https://www.siriuserguide.com/what-is-siri> Accessed 7.4.2019
- Siriuserguide, 2011-2019. *Set up 'Hey Siri' on an iPhone or iPad - Siri User Guide*. Available from <https://www.siriuserguide.com/set-up-hey-siri-on-an-iphone-or-ipad> Accessed 7.4.2019
- Smarty, A., 2017. *How to optimise for Google's featured snippets to build traffic*. Available from <https://moz.com/blog/optimize-featured-snippets> Accessed 18.4.2019
- Techopedia a, n.d. *Search Engine*. Available from <https://www.techopedia.com/definition/12708/search-engine-world-wide-web> Accessed 13.3.2019
- Techopedia b n.d., *Uniform Resource Locator (URL) mean?* Available from <https://www.techopedia.com/definition/1352/uniform-resource-locator-url> Accessed 8.4.2019
- Techopedia c, n.d., *What does Smart Device mean?* Available from <https://www.techopedia.com/definition/31463/smart-device> Accessed 9.4.2019
- Teksun, 2018. *The use of Artificial intelligence (AI) in SEO*. Available from <https://medium.com/swlh/the-use-of-artificial-intelligence-ai-in-seo-4c9a2803e63> Accessed 15.4.2019
- Statista 2018. *The first choice performing searches*. Available from <https://www.statista.com/statistics/900960/first-choice-performing-searches/> Accessed 17.2.2019
- Statista, 2019. *Worldwide desktop market share of leading search engines from January 2010 to January 2019*. Available from <https://www.statista.com/statistics/216573/worldwide-market-share-of-search-engines/> Accessed 10.5.2019

Statista, 2019. *Quarterly unit shipments of smart speakers with intelligent personal assistant worldwide from 2016 to 2018 by vendor (in millions)*. Available from <https://www.statista.com/statistics/866029/worldwide-smart-speaker-unit-shipment-google-amazon/> Accessed 9.10.2019

Stox, P., 2016. *What is quality content*. Available from <https://searchengineland.com/what-is-quality-content-251071> Accessed 7.4.2019

Subramanian, K., 2015. *Announcing the Java & Kotlin client library for Actions on Google*. Image. Available from [https://miro.medium.com/max/946/0\\*Y83yZxrZKkTrgcoD](https://miro.medium.com/max/946/0*Y83yZxrZKkTrgcoD) Accessed 17.11.2019

Van de Rakt, M., 2019. *SEO basics What is structured data?* Accessed 12.10.2019. Available from <https://yoast.com/what-is-structured-data/>

Wainwright, C., 2017. *The Ultimate Guide for Mastering Long Tail Search*. Available from <https://blog.hubspot.com/blog/tabid/6307/bid/28912/The-Ultimate-Guide-for-Mastering-Long-Tail-Search.aspx> Accessed on 3.4.2019

Weinberger, M., 2017. *How Amazon Echo went from a smart speaker to the center of your home*. Available from <https://www.businessinsider.com/amazon-echo-and-alexa-history-from-speaker-to-smart-home-hub-2017-5?r=US&IR=T&IR=T> Accessed 9.4.2019

Welch, C., 2018. *Google just gave a stunning demo of Assistant making an actual phone call*. Available from <https://www.theverge.com/2018/5/8/17332070/google-assistant-makes-phone-call-demo-duplex-io-2018> Accessed 7.4.2019

Yu, Jim, 2017. *Siri, Safari and Google Search: What does it mean for marketers?* Available from <https://searchengineland.com/siri-safari-and-google-search-what-does-it-mean-for-marketers-285464> Accessed 21.20.2019

Yu, J., 2018. *Supercharging your SEO with AI: Insights, automation and personalization*. Available from <https://searchengineland.com/supercharging-your-seo-with-ai-insights-automation-and-personalization-299900> Accessed 14.4.2019

# APPENDICES

## 5.4 Appendix 1

### Interview guide

#### INTERVIEW GUIDE – INTERVIEW GUIDE

##### Search engine optimisation for voice search and digital voice assistants

This interview is part of my thesis at Arcada university of applied sciences. Theses subject is Search engine optimisation for digital assistants and voice search. In the thesis I conduct a research about how search engine optimisation has changed since digital assistants and voice search has become more common place and how those should be considered when optimising.

Tämä haastattelu kuuluu opinnäytetyöhöni Arcada ammattikorkeakoulussa, jossa tutkin onko hakukoneoptimointiin tullut muutoksia äänihaun ja digitaalisten assistenttien käytön yleistyessä ja kuinka hakukoneoptimointi tulisi tehdä ne huomioiden

- Describe who you are and what do you do? – Kerrotko kuka olet ja mitä teet?
- Describe briefly what your company you work for does? – Kerrotko lyhyesti mitä yrityksesi tekee?
- What is your area or expertise in the company? – Mikä on erikoistumisalueesi yrityksessä?

##### Perus hakukoneoptimointi kysymykset – basic search engine optimisation questions

1. What do you find important in Search engine optimisation process? – Mikä on tärkeintä hakukoneoptimoinnissa?
  - a. Technically? Teknisesti?
2. Have you noticed changes in the optimisation process? – Oletko huomannut muutoksia optimointiprosesseissa?
3. In your opinion, how do the companies/businesses benefit from the Search engine optimisation? – Kuinka yritykset hyötyvät hakukoneoptimoinnista?

##### Voice search and digital assistants (search engine optimisation) questions – Äänihakuun ja digiassistentteihin liittyvät kysymykset

4. Describe briefly what voice search is? – Kerro lyhyesti mitä äänihaku on mielestäsi?
5. Do you think companies should consider optimising for voice search? – Luuletko että yritykset hyötyisivät äänihakuun panostamisesta?
6. Which of the digital assistants are familiar for you? – Mitkä digitaalisista assistenteista on sinulle tuttuja?
  - a. Which of those you would use? – Mihin noista edellisistä mielestäsi kannattaa panostaa?
7. Are you familiar with the SEO process for digital assistants? – Oletko tutustunut niille tehtävään optimointiin?
  - a. Which assistants? – Mille assistenteille?
  - b. Can you describe that process? – Millaista hakukoneoptimointia niille tehdään?
8. Are there differences compared to “basic” SEO? – Oletko huomannut eroja (tavallinen SEO vs. digi assarit)
9. Is it possible to affect voice search and digital assistants using SEO processes? – Voiko SEO:lla vaikuttaa vaikuttaa molempiin? (äänihakuun ja digiassistentteille)
10. What do you consider important or relevant in SEO? – Mikä on mielestäsi tärkeää tai relevanttia hakukoneoptimoinnissa?
  - a. For voice search? – Äänihauille?
  - b. For digital assistants? – Digiassistentteille?
  - c. Have you perceived any differences? – Onko niille tehtävässä SEOssa eroja?
11. Have you set any set guidelines for voice search or digital assistant SEO? – Onko teillä suuntaviivat olemassa äänihauille tai digitaalisille assistenteille suunnattuun optimointiin?
12. How do you see the future for voice search SEO and digital assistant SEO? – Kuinka näet äänihaun ja digitaalisten assistenttien tulevaisuuden?

Is there something you would like to add? Something I have not thought to ask? – Haluaisitko lisätä jotain?  
Olenko jättänyt jotain oleellista kysymättä?  
Thank you for your time! Kiitos ajastasi!

## 5.5 Appendix 2

Used consent form

### Consent Form

#### Search engine optimisation for voice search and digital voice assistants

#### Contact Information of Researcher:

Ritva Hautsalo  
Arcada University of Applied Sciences  
Jan-Magnus Janssonin aukio 1,  
00550 Helsinki  
[ritva.hautsalo@arcada.fi](mailto:ritva.hautsalo@arcada.fi)  
+358505631656

- I have been given the opportunity to ask questions about the Study and any questions have been answered to my satisfaction.
- I understand that my participation in the Study is voluntary.
- I understand that taking part in the Study will involve me being interviewed and I agree to this interview being audio-recorded and the recordings transcribed
- I understand that my personal details such as name and employer will not be revealed to people outside the project.
- I understand that my words may be quoted in this Study, so data collected about me during the Study will be anonymized before it is submitted for publication.
- I understand that I can withdraw from the Study at any time and I will not be asked any questions about why I no longer want to take part.
- I understand that if I withdraw from the Study my data will not be used.

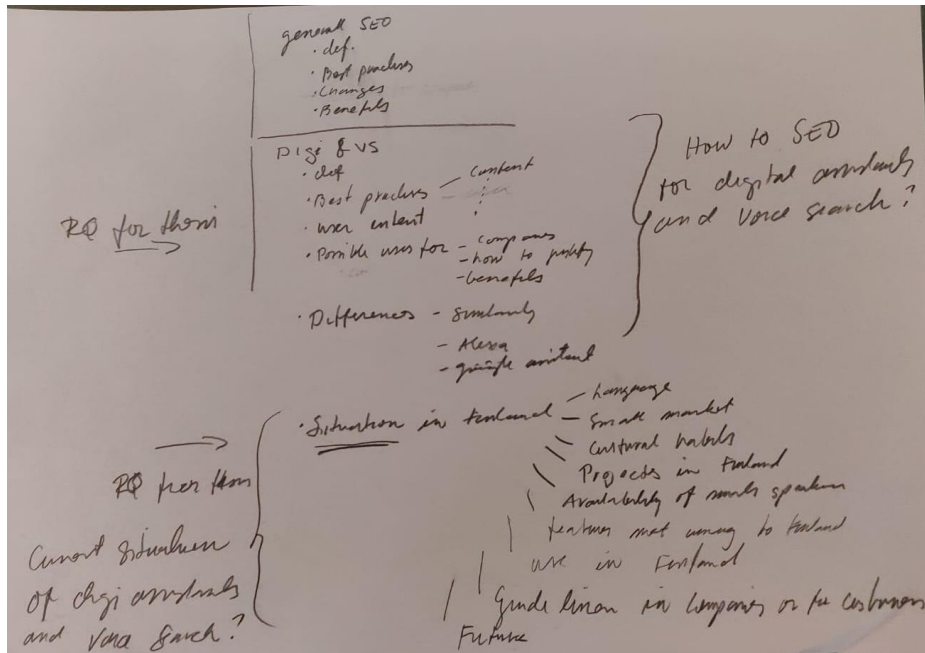
Name of participant: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name of researcher: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_



## 5.6 Appendix 3

Image from analysis process, the process of theme finding



# 5.7 Appendix 4

## Part of the used Excel file used to analyse and find common themes

501 - Control table for sensor work and digital assistants? How do SEO for sensor work and digital assistants? The research goal of this table is to identify if researchers have identified any emerging or planned to adjust their SEO practices for the growing use of sensor work and digital [sensor] assistants			
Category	SEO Activities	Process 1	Process 2
SEO	SEO Activities	Process 1 SEO is about for sensor work optimization, as that usually is not the focus for work with sensor work. It is about for work with sensor work, and that is the goal. It is to think about sensor work optimization, and that is the goal. It is to think about sensor work optimization, and that is the goal. It is to think about sensor work optimization, and that is the goal.	Process 2 SEO is a practice of improving your visibility in search engines. It is about for work with sensor work, and that is the goal. It is to think about sensor work optimization, and that is the goal. It is to think about sensor work optimization, and that is the goal.
Impact of SEO / local seo		The change in search engine results, the where it shows more than before, but it is not the same. It is about for work with sensor work, and that is the goal. It is to think about sensor work optimization, and that is the goal. It is to think about sensor work optimization, and that is the goal.	It is about for work with sensor work, and that is the goal. It is to think about sensor work optimization, and that is the goal. It is to think about sensor work optimization, and that is the goal.
change		I would say there has been an increase, really big change. It is about for work with sensor work, and that is the goal. It is to think about sensor work optimization, and that is the goal. It is to think about sensor work optimization, and that is the goal.	I would say there has been an increase, really big change. It is about for work with sensor work, and that is the goal. It is to think about sensor work optimization, and that is the goal. It is to think about sensor work optimization, and that is the goal.
How the impact of seo for		It is about for work with sensor work, and that is the goal. It is to think about sensor work optimization, and that is the goal. It is to think about sensor work optimization, and that is the goal.	It is about for work with sensor work, and that is the goal. It is to think about sensor work optimization, and that is the goal. It is to think about sensor work optimization, and that is the goal.
Digital assistants			
assistant familiarly	Google Assistant, Siri, Amazon Alexa	Google Assistant, Siri, Cortana, Alexa	Google Assistant, Siri, Cortana, Alexa
Digital assistant SEO Goal	SEO-based optimization in the future to be well known and have high visibility in search engines.		
Digital assistant SEO Ideas - what's needed			