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# VALUE AND USE OF AI IN EXTERNAL RECRUITMENT OF HIGHLY SKILLED SPECIALISTS AND SENIOR MANAGEMENT ROLES

– current use and value, and future predictions for  
AI in the recruitment process

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# VALUE AND USE OF AI IN EXTERNAL RECRUITMENT OF HIGHLY SKILLED SPECIALISTS AND SENIOR MANAGEMENT ROLES

- current use and value, and future predictions for AI in the recruitment process

This thesis evaluates the current use, value, and future improvement possibilities of Artificial Intelligence based systems and applications in the recruitment and selection process of highly skilled specialists, senior managers, directors, and executive managers. Thesis covers the recruitment process, brief history of Artificial Intelligence and explains further where Artificial Intelligence is used in the recruitment and selection process regarding the outlined key-personnel. In this thesis, the recruitment of highly skilled specialists and senior managers is not conducted exclusively via third-party headhunters or recruitment consultants. This thesis research finds that company employed recruitment professionals, and talent acquisition specialists work with such recruitment cases as well.

Thesis analyzes recruitment and selection process theory and previous studies through interviewing recruitment and selection professionals. Thesis follows abductive approach in qualitative method. The interviews were conducted in structured method and analyzed systematically firstly as complete individual interviews followed by theme-based analysis. Interview responses were used to investigate real life applications of theoretical possibilities provided by Artificial Intelligence based systems and applications during the recruitment and selection process.

The research findings show that technically and in theory, Artificial Intelligence could be further used in recruitment and selection but does not add value in practical work. The

differences relate to Artificial Intelligence based tools in communication, evaluation and analysis, and in areas that require human touch or human interpretation. The findings confirm that Artificial Intelligence based tools, systems and applications are in an important and highly valuable position for the recruiters, but the usability and value are limited to initial steps during the recruitment and selection process.

**KEYWORDS:**

artificial intelligence, recruitment and selection, talent management, talent acquisition, high skilled employees, managers, process improvement, process optimization

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# TEKOÄLYN KÄYTTÖ JA ARVO ERIKOISTUNEIDEN SPESIALISTIEN JA YLEMMÄN JOHDON ULKOISESSA REKRYTOINNISSA

- nykyinen käyttö ja arvo, sekä muutos ennuste tekoälyn käytöstä rekrytointiprosessissa

Opinnäytetyön tavoitteena on ymmärtää ja arvioida tämänhetkinen tekoälyn pohjautuvien sovellusten ja ohjelmien käyttö ja arvo, sekä kehittämismahdollisuus erikoistuneiden spesialistien ja ylemmän johdon rekrytointi ja valinta -prosessissa. Opinnäytetyö kattaa rekrytointi ja valintaprosessin pääpiirteittäin keskittyen ulkoisen haun prosessiin ja tekoälyn käytön mahdollisuuksiin. Tämän opinnäytetyön sisällössä spesialistien ja ylemmän johdon rekrytointi ei tapahdy yksinomaisesti ulkoistettujen rekrytointikonsulliten kautta, vaan huomioi myös yritysten omien rekrytointi spesialistien, sekä talent acquisition -spesialistien työn.

Tämä opinnäytetyö analysoi rekrytointi ja valinta prosessia teorian ja aikaisempien tutkimuksien pohjalta alan ammattilaisia haastatteleamalla. Opinnäyte on toteutettu abduktiivista päättelyä seuraten laadullisena tutkimuksena. Opinnäytetyöhön liittyvät haastattelut on toteutettu strukturoitua mallia käyttäen ja analysoitu yksittäisten haastateltavien kokonaisuuksina, sekä kysymyksiin pohjautuvina erillisinä teemoina. Haastatteluvastauksia on käytetty tutkimaan tekoälyn todellista käyttöä teoreettisten mahdollisuuksien pohjalta rekrytointi ja valinta työssä.

Tutkimustulokset osoittevat tekoälyn tarjoavan tekniseltä ja teoreettiselta puolelta katsottuna laajeman käyttömahdollisuuden, kuin mitä arvoa ja käyttömahdollisuuksia tekoäly konkreettisesti tarjoaa rekrytoinnin ammattilaisille. Eriävyydet kohdentuvat tekoälyn pohjautuvien työkalujen käytössä kommunikaatioon, evaluointiin ja analyysimahdollisuuksiin, sekä muihin työvaiheisiin jotka vaativat ihmisen otetta tai tulkintaa. Tutkimustulokset osoittavat tekoälyllä olevan vahvan arvon rekrytointi ja valinta

-prosessin alkuvaiheessa, todeten konkreettisten käyttömahdollisuuksien sekä arvon alenemisen työprosessin alkuvaiheiden jälkeen.

**ASIASANAT:**

teköäly, rekrytointi ja valinta, talent management, talent acquisition, erikoistunut spesialisti, ylempi johto, prosessikehitys, prosessioptimointi

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Figure 1. Talent management process. (Armstrong & Taylor, 2014, p. 268) 11

## **LIST OF ABBREVIATIONS (OR) SYMBOLS**

AI	Artificial Intelligence (Shi, 2011)
CV	Curriculum Vitae (Merriam-Webster, 2020a)
HR	Human Resource (Mochol et al., 2007)
HRM	Human Resource Management (Brewster et al., 2016)
MPC	Most Placeable Candidate (Coverdill & Finlay, 2017)
NLP	Natural Language Processing (Kodiyan, 2019)
PSA	Placement Service Agreement (Coverdill & Finlay, 2017)
R&S	Recruitment and Selection (Albert, 2019)



# 1 INTRODUCTION

I am personally interested in business design, process optimization and in improving business practices. I believe that people, more precisely having the right people make businesses thrive. That is why I started to investigate how businesses attract and recruit highly skilled specialists and senior managers. On another side I am passionate about technological advancements, data-based decision making, and the connections in between artificial intelligence (hereafter, AI) and business practices regarding Human Recourse Management.

Researchers and recruitment professionals have found AI to be useful and cost efficient for many repetitive steps in recruitment and selection (hereafter R&S) process (Albert, 2019; Gikopoulos, 2019; Fernandez, 2019). Edward T. Albert (2019, p. 218) also introduced an interesting finding "there are more companies using AI in R&S than most people think, but not as much as people think". On another side, Iloa (2019) found that there is no use of AI in headhunting executive managers. This opens a question if the use of AI applications in headhunting is truly irrelevant or non-existent? Are Iloa's findings comparable to recruiting highly skilled specialists and executive managers in general? Or have the commonly used AI applications reached a generalized position where the users do not view these systems and applications as a part of AI? This change in peoples' opinion and view is called *the AI effect* and occurs when users "discount the behavior of an AI program by arguing that it is not real intelligence" (Haenlein & Kaplan, 2019, p. 6).

During the initial research about recruiting highly skilled specialists, senior managers, and executive personnel, I found headhunters being only one way for companies to obtain top-skilled employees. Aside from third-party headhunters and other recruitment agencies and consultants, there are company employed talent management professionals, talent acquisition specialists, and market specific recruitment specialists working with nearly identical processes. (Armstrong & Taylor, 2014; Brewster et al., 2016; Tyagi, 2012) Since this thesis concentrates on the use of AI in recruitment process, it is important to specify that the recruitment is not limited to using third-party headhunters, but also includes company employed recruitment professionals.

## 1.1 Thesis objective, research questions and structure

The thesis objective is first to understand current use of AI based applications in recruiting highly skilled specialists and senior managers, including but not limited to, executive roles. Second part of the objective is to evaluate the value and future improvement possibilities of AI within a specified recruitment scope. The included positions are outlined with an annual base salary starting from EUR 85,000 which is calculated down for clarity purposes from USD 100,000 using 2019 average exchange rate of USD to EUR 0.89 (Szmigiera, 2020). Typical vacancies in this salary bracket are in senior management, directors, executive positions, and top 5% of high-skilled specialists based on experience and educational background. (Robert Half Technology, 2019; Robert Half, 2019; The Creative Group, 2019) In this thesis, the included positions are referred as 'the outlined key-personnel' and as noted previously in the introduction, the recruiters are third-party headhunters and company employed recruitment professionals alike.

## 1.2 Research questions

1. How are the outlined key-personnel recruited?
2. What is artificial intelligence and how is it used in recruiting the outlined key-personnel?
3. How the process of recruiting the outlined key-personnel could be further improved with artificial intelligence?

## 1.3 Thesis structure

This thesis follows an abductive approach with qualitative primary data. Section 2 covers current theories and reported practices regarding the R&S process, followed by explaining what AI is, and how AI systems and applications can be used in R&S in section 3. Section 4 describes the methodology and section 5 analyzes how R&S professionals use AI in their work and in which parts. Analysis uses value-based evaluation, practical realities, and current and future possibilities of AI in R&S in recruiting the outlined key-personnel. Findings are concluded in section 6.

## 2 RECRUITMENT AND SELECTION

R&S is a process from realising or creating a need for a new employee in a company, to handing the new employee to internal training team, or assigning the recruited new employee to other onboarding activities. (Dessler, 2017)

### 2.1 General process

Basic R&S process for lower entry-level vacancies is straight forward and practical process. Company must first recognise a need for new workforce and define job requirements followed by creating a job advertisement attracting potential applicants. Next the recruiters will select top candidates from the gathered applicant pool for further interviews and conduct possible background and reference checks. Last steps in this straightforward process is to offer the job to the best suited candidate and close the recruitment process by signing the employment contract and handing the new hire to internal training team or to other on-boarding activities. (Dessler, 2017) It is important to note that in some cases, entry level vacancies can be filled directly from previously gathered applicant pool saving time and reducing costs. This applies both employed recruiters and contracted headhunters. (Armstrong & Taylor, 2014; Coverdill & Finlay, 2017)

### 2.2 Recruitment methods

Recruitment can be divided into internal recruitment and external recruitment. Internal recruitment means when a position is filled from inside the company. Internal recruitment is often connected with promotions but happens also when employees move in between departments, and job rotation (Armstrong & Taylor, 2014; Hutchinson, 1999). External recruitment happens when a company hires talent from outside the company. This can be accomplished via job advertising on company website or third-party platforms such as newspapers, social media, and other job-advertisement websites. External recruitment can also be outsourced to recruitment consultants and agencies. (Brewster et al., 2016)

Job advertisement is used when a company is looking for candidates via posts in company site, online medias, and other publications. This is popular amongst lower and mid-level vacancies. Direct recruitment is a part of external recruitment process where the vacancy is not listed publicly. Direct recruitment is often planned and actioned through informal method as a recruitment strategy. Informal method means a situation where people apply directly to companies, or current employees refer friends and family for positions that are not currently listed in public job market. Informal method is common in business sector as it is cheap in terms of immediate recruiting costs. Employees would not refer unqualified friend in fear of losing face. It is important to note, that due to its discriminatory risks informal recruitment method is often not accepted in the public sector. Formal methods, where the open position is listed publicly, are notably more expensive than informal methods. Outsourcing to recruitment agencies and consultants, cross-national vacancy advertising, online recruitment, and graduate programmes are formal and expensive recruitment methods. (Armstrong & Taylor, 2014; Brewster et al., 2016; Dessler, 2017)

## 2.3 External recruitment

### 2.3.1 Direct recruitment

Direct recruitment is common with skill specific specialist roles and executive management positions know as C-Suite or C-Level position. C-Level candidates are often hired through third-party recruitment consultants, commonly known as headhunters. (Armstrong & Taylor, 2014; Brewster et al., 2016; Coverdill & Finlay, 2017) Merriam-Webster (2020b) online dictionary defines the verb 'headhunt' clearly and well-put as "to recruit (personnel and especially executives) for top-level jobs".

Educational institutions are an important source of candidates in direct recruitment. Many companies and headhunters maintain good relationships with educational institutions to hire top graduates form master's and PhD programmes. (Brewster et al., 2016)

Headhunters work as third-party recruiters and are often considered the main recruiters in executive search and in recruiting highly skilled specialists. This is not the whole truth as company employed recruiters also do the same work and are positioned within the company as field specific specialised recruiters and talent management, or talent

acquisition specialists. (Armstrong & Taylor, 2014; Coverdill & Finlay, 2017; Tyagi, 2012) Finding and successfully recruiting a person for senior level vacancies is costly in terms of time, effort, and possible third-party recruiters' contract deals. The recruitment process itself differs from filling lower level vacancies in recruitment speed and in terms of company investment. (Armstrong & Taylor, 2014; Coverdill & Finlay, 2017) The company investment is not limited to recruitment costs. Investment can be also viewed in terms of employee expenses, as top level positions have substantially higher average salaries than entry level (Robert Half Technology, 2019; Robert Half, 2019; The Creative Group, 2019), and what benefits the new recruit would bring to the company (Hill, 2017).

### 2.3.2 Talent management and talent acquisition

Talent management is part of larger view of strategic human recourse management. Talent management process focuses on ensuring a business or an organisation has all the needed talent to achieve operational and business-related goals. (Armstrong & Taylor, 2014)

Though the first priority and a larger part of talent management is maintaining and developing internal talent, one part of the talent management process is to resource external talent supply and "Attracting and recruiting key staff to the organization". (Armstrong & Taylor, 2014, p. 270) Talent acquisition concentrates on "identifying, attracting, engaging and retaining highly qualified and talented individuals" (Tyagi, 2012, p 302)

As this thesis concentrates on recruiting highly skilled specialists, directors, higher- and executive managers it is important to note that though headhunters are considered main professionals to perform executive searches and recruit highly skilled specialists, this practical job is also performed from within a company via talent management and talent acquisition specialists. (Armstrong & Taylor, 2014; Coverdill & Finlay, 2017; Tyagi, 2012) MacDonald (1986) simplified headhunting as recruiting key-personnel, which is also a specific part of talent management process viewed as "implementation of policies for attracting high-quality people" and positioned in the talent management process as "Resourcing – external supply". (Armstrong & Taylor, 2014, p. 267, 268). The Figure 1 shows a talent management process chart concentrating how to gather a candidate pool matching specific talent needs recognized during talent planning activities. Resourcing candidates is divided into internal and external talent supply. Internal recruitment

concentrates on identifying, developing, and managing internal talent, where external resourcing is sourcing and recruiting talent from outside the company.

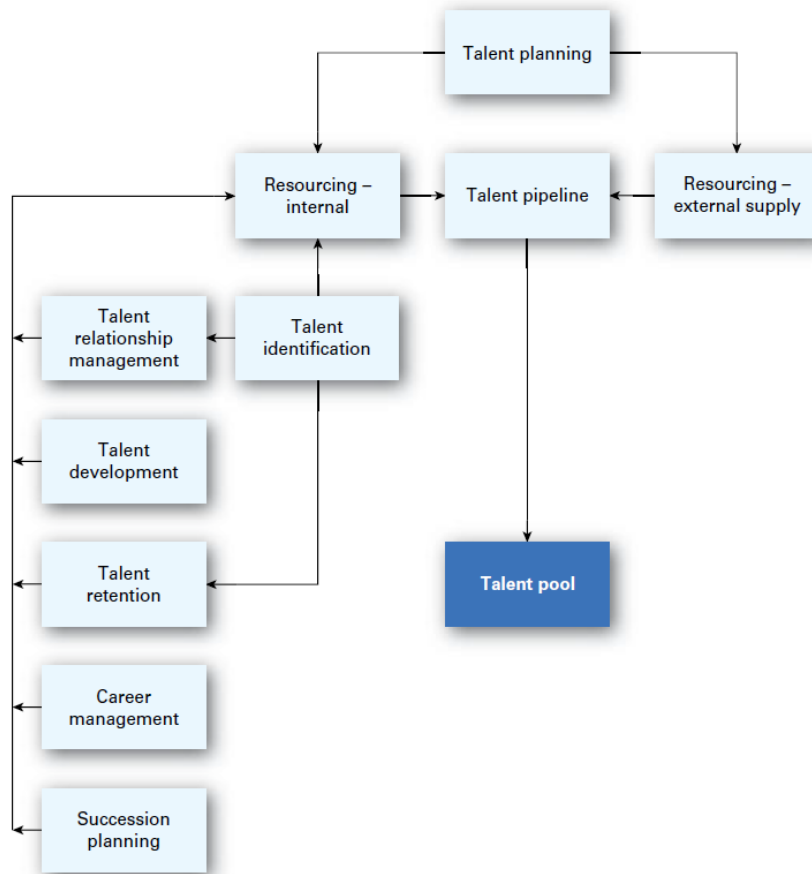


Figure 1. Talent management process. (Armstrong & Taylor, 2014, p. 268)

### 2.3.3 Headhunting

Recruitment consultants specializing in executive search are commonly known as headhunters. Their expertise is in sourcing and recruiting top candidates from passive jobseeker market. One key aspect is that headhunters are in selling business. They sell their expertise in finding and contracting a new employee with a business client. Headhunters often look for the most placeable candidates (hereafter MPC), whom they offer to the business clients. (Coverdill & Finlay, 2017)

Evaluating the need for third-party headhunters is often defined through the open position's salary guide. Brewster et al. (2016, p. 193) defined executive search with base salary of USD 100,000 which is used as a baseline for this thesis. The open position's annual salary is used not only to determine the possible need for a third-party headhunter, but also for the recruitment fee. Third-party headhunters commonly charge a calculated fee from the contracted employee's the first-year annual salary. Fee can start from 10% and generally go up to 30%, though the most common percentage is around 20-25%. (Armstrong & Taylor, 2014; Coverdill & Finlay, 2017) Few headhunters work with flat rates, and some require an upfront contract fee for themselves, which is called "an "engagement fee"" (Coverdill & Finlay, 2017, p. 57) PSA, "placement service agreement" refers to a document produced by the client securing their current talent within the company as well as defining fees and conditions for the third-party headhunter (Coverdill & Finlay, 2017, p. 58).

The difference between a company employed recruiter and a headhunter is in the work process and contracted salary. Headhunter's work process and tasks can be simplified as "finding clients, getting job orders, recruiting candidates, and matchmaking" (Coverdill & Finlay, 2017, p. 135). Where headhunters work with work orders from clients, company employed recruiters and talent acquisition specialists start directly from realizing and outlining employment needs continuing similarly with headhunters from reviewing job requirements to sourcing, attracting candidates, and interviewing. (Coverdill & Finlay, 2017; Armstrong & Taylor, 2014; Brewster et al., 2016).

Many professionals with extensive track record and steady employment status are not experienced in interviews. Prepping candidates is an important task for third-party headhunters as they do not only sell client companies to the candidates, but also the candidates to client companies. This is often called as "a double sale". (Coverdill & Finlay, 2017, p. 2) When headhunter finds a suitable candidate from passive jobseeker market, headhunters can help and prepare the candidate to excel in interviews. Prepping should not be too extensive in order to maintain authenticity and avoiding a situation where candidate receives a job offer based on prepping, not merit, knowledge, or experience. Over prepping candidates creates a risk where skills do not match the actual work requirements. (Coverdill & Finlay, 2017)

#### 2.3.4 Evaluating job requirements

All headhunters face communication issues mainly relating to timely replies and incorrect or insufficient details about job requirements and experience. (Coverdill & Finlay, 2017) Couple of unfortunate and common current issues with communication are firstly an increasing difficulty to gain and maintain good communication channels with the actual hiring manager. Secondly, a client company might provide a generic job description, which does not give the third-party headhunters much to work with. Since headhunters work with specific senior positions, there are always cultural, hard- and soft-skill specific requirements, and expectations from the hiring manager which does not always get communicated clearly when a job description comes through HR. Clarity is vital for successful recruitment. Unclear job descriptions can be a reason for a vacancy to stay longer period unfilled in the open market. Other reasons are mismatched expectations with salary guide, and skill and credential requirements are not found from the open jobseeker market. (Coverdill & Finlay, 2017) Clarifying and re-evaluating job-requirements is also important in successful long-term hiring. Aside from unsuccessful recruitment, unclear and mismatched job description could lead to point where the recruited employee leaves the company shortly due to incorrect work expectations. Clarifying job definition is therefore a crucial part in recruitment process. A good vacancy ad includes summarized company culture and values, skill- and educational requirements, and day-to-day work expectations.

As talent management, talent acquisition, and recruitment specialists are company employees, they do not face similar difficulties with communication as headhunters. Evaluating talent needs is the first starting point within the company in collaboration with HR department, hiring manager, and other relevant stake holders. (Armstrong & Taylor, 2014; Brewster et al., 2016)

#### 2.3.5 Cross-national talent hunt

In the modern world and globalism, companies are not looking only to gain local talent, but they also search talents cross-nationally. The key details from global talent hunt are about gathering local intelligence and knowledge relating to international companies' target audience, operating market, and talent pool statistics relating to salary, recruitment competition, and jobseeker's activity. As headhunters and recruiters rarely come across



suitable candidates for the outlined position in the open jobseeker market, they look for the currently employed to move from a company to another. These are often referred as passive candidates or passive jobseekers. (Brewster et al., 2016; Coverdill and Finlay, 2017) Viewing cross-national talent hunt as a case of relocation, the knowledge about cross-national differences and expectations are crucial for successful hiring and employee's long-term employment. Which is an important part of headhunting. For a headhunter to thrive in their business, they must "identify, vet, entice, and submit a candidate who interviews well, stays enthusiastic, and then receives, accepts, and honors a job offer from the client company" (Coverdill and Finlay, 2017 p. 67).

## 3 BRIEF HISTORY OF ARTIFICIAL INTELLIGENCE

General issue with defining AI is not about explaining technological part, but how to define intelligence. In this context of AI, it is beneficial to view the base of intelligent activity as an understanding of “the process of adaptation, perception, embodiment, and interaction”. (Luger, 2009, p. ix)

Russell, Norvig, and Davis (2010) explained AI as a system that can think and act in rational and humanly manner. AI has also been defined as “the science and engineering of imitating, extending and augmenting human intelligence through artificial means and techniques to make intelligent machines” (Shi, 2011). AI can be simply explained as thinking machines (Salminen, 2019). Breaking down towards current useable applications in business sector, AI is often viewed as automation, analytics software, machine learning, and deep learning (TalentAdore, 2019). For this thesis, it is important to understand that AI is running in the background as automation and analytics with pre-screening software, key-word searches, and extensive searches in local databases, and other online portals. Since machine learning and deep learning are about improving the AI within itself using big data (Salminen, 2019; Faggella, 2020), these parts of AI are not common in recruitment processes, but can be found in other areas, such as predicting future employment needs, training and development planning, and large scale evaluation and analyzation of end-to-end R&S processes (Albert, 2019; Jantan et al., 2010; Mazor et al., 2019; Sivathanu & Pillai, 2018).

### 3.1 1950 (First decade)

Although the idea of AI is older, AI was first introduced as an academic discipline during the 1950s taking three major steps towards current AI applications and technological advances making use of AI possible. The early first-generation computers before 1950's could only execute commands, so it was not possible to store command chains for complex software. Therefore, one major change was the creation of second-generation computers with memory storage opening a path towards modern AI applications. (Anyoha, 2017; Salminen, 2019)

Research paper “Computing Machinery and Intelligence” published in 1950 by Alan Turing describes “how to create intelligent machines and in particular how to test their

intelligence” (Haenlein & Kaplan, 2019, p. 7). The Turing Test can still be used to underline, identify, and evaluate the intelligence of AI systems and applications. (Haenlein & Kaplan, 2019)

The famous 1956 Dartmouth Colleague Summer Research Project in the 1956 introduced and stabilized the term “artificial intelligence” being the second milestone during the 1950’s. The project was a joint research by scientist not only from computer science and information technology, but also from fields of mathematics and psychology. (Shi, 2011)

During the 1950’s the focus with AI was largely on game playing (Dickson & Nusair, 2010) with a major step in AI’s ability to learn. During the decade AI improved also in calculation and mathematics. Third of the major breakthroughs was in 1958 with the creation of Lisp programming language, which is still used with AI applications, research, and programming. (Shi, 2011; Salminen, 2019)

### 3.2 1960 -1990 (Roller coaster)

From 1960’s to 1990’s AI research experienced a time of a roller coaster. AI research received large funding globally and thought there were some great success, the interest in AI applications and research faced difficulties apart from popularization of deep learning during the 1980s by John Hopfield and David Rumelhart. Deep learning allows computers to learn by processing experience and additional information without timely user commands. (Anyoha, 2017). During the decades, even though AI research received substantial funding and great predictions, the early AI projects were not successful within predicted timelines. This started a roller coaster of new research projects, funding, and cuts on an international scale. (Haenlein & Kaplan, 2019)

### 3.3 1990’s and 21st century (Modern time)

During the late 1990’s AI gained new interest amongst companies and governments largely due to the advances in computer technology. (Salminen, 2019) Further advancement in technology was an important step for AI which relies on the amount of data storing and processing capacity. (Anyoha, 2017) One big milestone for AI was in the 1997, when IBM’s Deep Blue chess playing computer program won Gary Kasparov

who held the title of “world chess champion and grandmaster” at that time. (Anyoha, 2017).

We now live in the world of machine learning and big data. Large social media networks, such as Facebook, LinkedIn, Spotify and Netflix use machine learning algorithms providing users recommendations and advertisement based on their user behavior and connections with other users with similar interests. (Wei, 2017).

The most important modern AI systems and applications in recruiting the outlined key-personnel are Search engine AI, automation, text mining, and Natural Language Processing (hereafter NLP). Additionally, an important future possibility is AI powered video interviews including psychological analysis.

### 3.3.1 Search engine AI and Automation

Search engine is a key word-based search function that lists results based on criteria accuracy. A search engine that uses AI, learns from users' searches providing more useable results. AI based search engines can highlight misspelled words, improve search parameters with recommendations based on similar searches, and different searches that has previously provided users with similar results. (Florez, 2019)

Automation, as in computer-based decision-making systems increase decision time and reduce recruiter's manual work. (Lawler & Elliot, 1996; Upadhyay & Khandelwal, 2018)

### 3.3.2 Text mining and NLP

Text mining is a part of larger data mining concept. Text mining applications analyzes data for example in bags or strings of words. In R&S processes, most beneficial way is semantical analysis which allows text data representation in levels of name entities i.e. candidate and company names, locations, and how information relates together. In simple view, text data can be used to search information from job-applications and extracting candidate information from applications to company databases. NLP is a large part of AI inside Chatbot's coding allowing the bot to better understand questions and replies. (Cohen, 2019; Jiang, 2012; Sivathanu & Pillai, 2018; Upadhyay & Khandelwal, 2018)

### 3.3.3 AI powered video interviews

AI powered video interviews are not commonly used though the applications are available. In video interviews, the AI uses extensive selection and combination of different AI branches including speech recognition, facial recognition, and NLP. The AI pays attention to such details as word choices, tone of voice, and facial expressions evaluating job-specific attributes and skills. (Metz & CNN Business, 2020; Parker, 2019; Zetlin, 2018)

### 3.4 AI in external recruitment

AI is used in HR to make work easier, save time and reduce costs as its' main purpose (Dickson & Nusair, 2010). AI applications are used to cover repetitive tasks from payroll to recruitment processes and further. HR departments have been racing in wide array of different technological advances such as cloud systems, big data analytical software, and robotic process automation. (Fernandez, 2019; Upadhyay & Khandelwal, 2018) Common AI applications in R&S include analytic and screening software reducing manual work from recruiters (Albert, 2019; TalentAdore, 2019). Using AI in recruitment has a large impact in eliminating biases which has been increasingly important for businesses nowadays. Unfortunately, even by utilizing all powers of AI, it is still "practically impossible to eliminate every bias when the recruitment process is managed by people". (Gikopoulos, 2019, p. 58) Though AI can be used to cover nearly complete R&S process, it is important to note and understand that machine cannot fully replace human. Especially when the subject is about people, like in recruitment. There is an old Finnish saying, *fire is a good farmhand, but a bad master*, and the same applies to AI. As a tool AI gives great help, but does not replace the need for human touch, "Technology is not a cure-all for every problem we face." (Cohen, 2019, p. 65).

#### 3.4.1 AI powered process tasks

Traditionally job applicants mailed, emailed, or faxed their resumes as a response to a job advertisement in newspapers for example. This is very costly for recruiters as it takes time to read and understand what the applicants are saying in their resumes. (Dickson & Nusair, 2010) Nowadays screening resumes and cover letters are largely automated

using AI based screening software. Automated screening software can save time and energy providing recruiters with a candidate score board. Key-points using screening software are freeing time and reducing human bias regarding applicants. (Brewster et al., 2016; Cohen, 2019; Sivathanu & Pillai, 2018; Upadhyay & Khandelwal, 2018)

The possibilities with AI in screening applicant information is not limited to reduce bias. AI can be programmed to search for specified indicators such as cultural and demographic information to increase diversity in a workplace by adjusting AI specifications. (Cohen, 2019) AI systems, such as SCREENER, provides the recruiters with a list of resumes and applications with numeric data showing how many matches are found from each resume. Key-word matches are collected through clustered themes, which is part of semantic processing in text mining AI. This can be further used to shortlist top applicants from the given requirements. (Sen et al., 2012)

Initial interviews can be moved from phone interviews to chatbots and video interviews (Sivathanu & Pillai, 2018). Cohen (2019) introduced TalkyJobs which concentrates only on qualification and flagging promising applicants for next stage in the recruitment process. The chatbot does not to ask candidate about their ethnicity, age, gender or any other unrelated information regarding the job requirements. (Cohen, 2019) Using technology as a part of interviewing process gives more freedom for applicants and recruiters to effectively manage their calendars and workload (Sivathanu & Pillai, 2018). A recruiter can for example ask a candidate to record a video answering pre-assigned interview questions within a specific period. This frees both the candidate and the recruiter from time and location specific initial interviews.

### 3.4.2 Communication

NLP and AI powered AI assistant software such as Chatbots are used to communicate with applicants. AI assistants can be programmed to answer candidates' queries regarding a company and their current vacancies and engage with candidates during the hiring process after candidate has submitted their application. (Heathfield, 2020; Upadhyay & Khandelwal, 2018)

Researchers, journalists, and professionals have found that informing candidates regarding refusals has more positive effect and improvement on company image compared to situation where applicants do not receive any updates regarding their

application. Building and upkeeping employer image is an important part of within HR, including R&S professionals. Updating candidates during the initial steps of R&S process can be covered with automatic email replies and period specific updates. (Upadhyay & Khandelwal, 2018)

Extracting information from written documents, such as Curriculum Vitae (hereafter CV) or cover letters is called text mining. (Jiang, 2012) Text mining is also known as text analytics and it "refers to the discovery of knowledge that can be found in text archives" (Hu & Liu, 2012, p. 387) Text mining can be used in variety of ways. Extracting a candidate's name, location and occupancy details from the application is called Name Entity Recognition, NER. (Jiang, 2012) Text mining AI can be used to automatically update candidate databases and further to fill applicant's personal information to an email template for informing candidate regarding recruitment process updates in simple but still personalized manner. (Jiang, 2012; Upadhyay & Khandelwal, 2018)

### 3.4.3 Internet, LinkedIn, and other Social Media

Online recruitment is nowadays a big part of companies' recruitment practices. LinkedIn, third-party job portals, and search engines provide an extensive base to promote open positions and source candidates. (Coverdill & Finlay, 2017)

Online recruitment and social media services are commonly used for marketing and sourcing purposes, another part is about direct recruitment. Company websites and third-party job portals provide potential candidates a way to send their CVs to companies. This occurs even during periods when the companies do not have an open position. Combining multiple recruitment steps to a collected electronic process has "reshaped the job-finding process" and is commonly referred to as electronic recruitment or e-recruitment. (Brewster et al., 2016, p 194; Mochol, Jentzsch & Wache, 2007) Collecting and sorting the submitted applications follow automated processing, which uses a combination of AI automation and text mining (Jiang, 2012; Upadhyay & Khandelwal, 2018).

#### 3.4.4 Cultural matching

Cultural matching is about knowing your business and applicant clients. Firstly, to know and understand their professional background and experiences, and secondly to get familiar with their hobbies, personal interests and possible peculiarities. Cultural matching aims to connect business clients and applicants with positive cultural similarity, or professionally and personally complimenting skills and traits. Cultural matching plays a key role in employee selection and can be manipulated to some extent. As previously noted in sub-chapter 2.3.3, knowing the risks of over prepping candidates, and manipulating candidates' view and knowledge regarding cultural matching can also lead to negative employee-employer relationship resulting contract termination and reduced use of the headhunter's services. (Coverdill & Finlay, 2017)

Technology gives a directed location and outlines professional picture but does not bear credible indicators if the listed viable candidates are a good fit for a client company's corporate culture. (Coverdill & Finlay, 2017) "Technology identifies. Human beings recruit." (Savage, 2015). Thought it is possible to use a combination of text mining, natural language processing, and machine learning aiming to create outlined personality traits, due to its discriminatory and ethical issues with candidates' background and personal details, this is not recommended. (Dastin, 2018; Kodiyan, 2019)

#### 3.4.5 Online marketplaces

Online marketplaces such as Bossjob, Hiring Hub, and BountyJobs provide a connection platform between companies and third-party headhunters. The marketplaces are usually based in cloud and provide a user-friendly interface with mobile devices and computers alike. A common feature with these marketplaces is easy linking with applicant tracking systems (Coverdill & Finlay, 2017). On the side of connecting businesses and third-party headhunters, marketplaces gather data about recruitment process adding value to their product by providing users with "valuable performance and financial insight and oversight". (Coverdill & Finlay, 2017, p. 40) Data-analytics is based on AI and therefore these marketplaces are providing third-party headhunters with a link to useable AI systems and software.



Use and opinion of marketplaces is strongly divided. Some third-party headhunters and recruitment consultant firms find that online marketplaces provide them with variety of talents, good clients, and many opportunities. (Coverdill & Finlay, 2017) Other side finds online marketplaces at least questionable and unprofessional where connections benefit the client company to some extent. But unfortunately, marketplaces connect large companies with less experienced headhunters who are accepting to work with undervalued and relatively bad contract terms (Herman, 2015).

Based on technological advancements and AI theory, R&S selection process can theoretically be improved in many ways. Main areas are concentrating in automation, NLP, text analytics, and Search Engine AI. Databases can be updated and maintained during and after the recruitment process utilizing NER and automation ensuring all candidate information and notes are up to date. Automation can further be utilized with general communication and updates regarding the recruitment process. Simultaneously, the well-maintained databases and screening software allow recruiters to sort and look up applications effectively. AI provides additional help highlighting and shortlisting applications with most matches from previously defined requirements. Taking full advantage of online portals and social media channels is also important for recruiters. Firstly, recruiters can use AI based extensive searches to source candidates. And secondly, recruiters can use social media and other online portals in marketing open vacancies. When recruiters are posting job-ads to online medias such as online marketplaces and LinkedIn, AI based systems are running in the background as analytics software and automation.

Though AI could technically be used further, i.e. using text mining to find deeper ques and knowledge about the applicant based on their word choices, this is considered unethical. AI assistants and AI based video interviews also have limited usability in recruiting the outlined key-personnel. Reasons for limited usage is the AI's limited capacity, accuracy, and privacy issues (Metz & CNN Business, 2020; Parker, 2019; Zetlin, 2018).

## 4 METHODOLOGY

This thesis follows an abductive approach with qualitative primary data. Firstly, thesis covers the needed theoretical knowledge regarding R&S practices, followed by introduction to AI and how AI can be used in R&S. Primary data is collected through structured interviews and used to further explore the possibilities of AI applications in R&S in recruiting for higher level vacancies.

The main reason for not following a deductive approach is the thesis objective of gathering additional knowledge, specification of current processes, and possibility for further improvement. Though the inspiration for this thesis rose from questions with true or false answers, it is not the case with thesis objective or research questions and therefore it is not possible to follow deductive approach. (Saunders, Lewis & Thornhill, 2019)

Gathering theoretical framework began with covering general knowledge of recruitment process. Second step was to expand knowledge of AI based processes in R&S. This was mainly gathered from journal articles and previous research studies. Third step in the knowledge gathering chain was to further investigate AI theory and what type of AI systems and applications can be further used in R&S of the outlined key-personnel. In order to gain adequate depth in the theoretical part of this thesis the research steps were repeated whenever required. Reason for repetition was to deepen the new knowledge risen from connections with AI and R&S process steps and individual tasks.

As there are four new interviews complementing the previous studies, analyzing interview responses was done systematically in two steps. First step was to get familiar with each respondent's answers. Second part was to analyze all respondents' answers to specific topics and themes creating a coherent response summary that can be reflected, evaluated, and analyze in comparison to theoretical findings. Final part was to collect indirect answers from different questions towards larger themes. For example, combining information and data security in AI towards a larger theme of information and data security requirements. Mostly the comparison was processed through analyzing questions one by one.

## 4.1 Interviews

The interviews were conducted using structured method with open and closed questions. Choice of structured interview was based on the objective of understanding and evaluating use of AI in R&S process regarding recruiting the outlined key-personnel. Gathering data through surveys would not provide enough depth for process evaluation and improvement analysis, and unstructured interviews would not provide enough reliability. In order to avoid unnecessarily large amounts of data combining in-depth interviews and surveys, using well planned structured interviews provide both depth and reliability.

Three of the respondents answered the question via email (self-completed) and one of the respondents agreed to a video interview (researcher completed). Interview questions were designed to follow themes, such as AI, Sourcing, and Communication. All questions were purposely designed to avoid confidentiality breaches while answering the questions. Email interviews were conducted in English and the video interview in Finnish. Further discussion about limitations regarding interview quantity and quality are presented in chapter 4.2.

As the original interview questions were written in English, Finnish language video interview was openly translated referring the original questions when needed to avoid misunderstanding and maintaining reliability. Video interview followed nearly identical order maintaining possibility for ready written follow-up questions. It is also important to allow adjustments towards question order based on the respondent's answers' relation towards interview themes and subjects.

### 4.1.1 Pre-assessment of interviewees

All possible interviewees were pre-assessed with specific requirements. Firstly, interviewees must have had relevant work experience in recruitment and secondly, they must have had direct part in recruiting highly skilled specialists, senior managers, or executive personnel with minimum yearly starting salary at EUR 85,000.

As written in section 2, recruiting the outlined key-personnel is not limited to third-party headhunters, the interviewees were gathered from variety of positions and backgrounds if they fit within the two specific requirements.

#### 4.1.2 Searching for interviewees

The interviewees were sourced similarly as in recruiting candidates for a vacancy. This includes using online search engines to find recruitment agencies and consultants to gain direct access to the recruitment specialists and executive search professionals. Social media was used in marketing the research idea by posting summary of research objective and interview questions with invitation to get in touch if interested and sharing the post extending reach area. Social media was also used to contact individual recruitment professionals directly, both previously known and unknown contacts.

Using search engines to contact recruitment agencies and consultation firms resulted in zero interviews from three different companies. The companies were contacted via calling and emailing.

Directly contacting previously unknown recruitment professionals via social media channels resulted in zero interviews from three different queries.

Directly contacting recruitment professionals from previously known work-related contacts resulted in two interviews from two queries and two personally known contacts resulted in one interview. The second personally know contact declined interview since their organization's hiring decisions are made through board members' vote, and they do not use any AI based systems or applications in recruitment.

Posting a summary in social media channel gained four contacts resulting one successful interview. Two contacts did not match with pre-requirements for an interview and one contact advised the interview questions were too different from the person's work tasks.

#### 4.1.3 Interviewees' background and general information

In order to maintain a request not to enclose personal information about respondents' that could be connected to them, the thesis is written with brief anonymous introduction of each respondent with assigned letter to separate them from each other.

Respondent A has five to ten years of experience in recruitment and is currently working as a HR Business Partner in an international company.

Respondent B has five to ten years of experience in recruitment including third-party and company employed positions. The respondent currently working as a talent acquisition specialist in an international company.

Respondent C has three to five years of experience in recruitment and is currently working as team-leader / manager for a team of recruitment coordinators in an international company.

Respondent D has more than ten years of experience in recruitment, including running a recruitment agency with multiple locations, and working as a successful coach. The respondent is currently an entrepreneur working as a business and mental coach.

Interviews with respondents A, B, and C were conducted via email and respondent D agreed to face-to-face video interview. All interview respondents provided enough depth in their answers for good quality analysis. Respondent A provided a mixture of bullet point and open answers and respondents B and C did not use any bullet point answers thought the respondents also answered via email. The interview questions were designed with additional directed follow-up questions in specific themes. This allowed gathering of proper and reliable data not only via video interview, but also through self-completed email interviews.

## 4.2 Limitations

Email respondents may have written their answers with help of other people, and therefore it is important to include one-to-one interview to the research. Since all respondents agreed to the interview after confirming they have relevant knowledge and professional experience regarding interview questions and subject, there are no suitability or confidence related liabilities in the actual interview answers. Interview questions were designed to follow theoretical findings from this thesis. Open questions were directed to gather further knowledge from the interviewees. (Saunders, Lewis & Thornhill, 2019)

Original goal for interview responses was minimum of five. The initial analysis of the first four successful interviews provided deep and credible answers which can be used to analyze theoretical findings from sections 2 and 3. The initial review did not provide any findings opposing interviewees' responses against each other, or against the findings from academic literature and previous studies. As there was a clear direction from four

interviews aligning with previous studies and theoretical findings, gathering additional interviews would not be beneficial within the limitations of a bachelor's thesis work.

#### 4.3 Collection summary of interview questions

Full question set is found in *Appendix 1. Interview questions.*

Could you briefly introduce yourself and your background with recruitment related work? What is the next thing you do after having the vacancy details? Could you describe your work process briefly?

Do you find it important to have an open communication with the third-party and a hiring manager? Or is it enough to keep communication only through company HR?

What benefits do you see in collecting professional database on clients (company / third-party recruiter) and candidates? Does collecting professional database increase probability for successful recruitment? What are the main points?

How do you see data-security and confidentiality agreements affecting the use of AI applications?

Are there any specific points outlining negative or positive aspects with AI in your work?

Do you use extensive search functions in LinkedIn to connect with and source candidates? Do you consider extensive search functions as AI based, yes/no? Please explain briefly why?

Do you use any other AI based systems or applications in sourcing? Please elaborate briefly which ones and how is AI connected?

Are you using text analytics in your work? Do you use text analytics to cross reference information? Please explain briefly which other areas do you would use text analytics and how? Do you see value in text analytics? Do you think text analytics has increasing future potential?

Do you use any AI powered video interviews to evaluate candidates? What is your view on AI based video interviews regarding added value? Would AI based video

interviews help your work, or rather complicate and delay hiring process? Do you have any other comments regarding AI based interviews?

Which online marketplaces do you use and why / why not? *Follow-up questions:* Do you benefit from online marketplaces analytics? Would you say there are some statistics provided by the online marketplaces that are more valuable than others? Which ones are most valuable? In your experience or professional opinion, does online marketplaces provide benefits for headhunters, client companies, or both? Do you find that online marketplaces are diminishing communication in between headhunter and client company?

Would you use any AI based communication systems with clients and/ or candidates when working on direct recruitment cases, and in headhunting?

What is your view about the future of AI, AI based systems and applications in headhunting?

How do you see the future of traditional headhunting? Do you see that AI could create a real change in headhunting work?

What kind of change or improvement would you find helpful?

Do you have any other thoughts or experience with AI in headhunting you find important and could share with me for my thesis study?

## 5 ANALYZING INTERVIEW RESPONSES

In order to evaluate real life use and possibilities for artificial intelligence in recruiting the outlined key-personnel, this thesis reflects the theoretical research with four interviews. Interviews were done with current recruiters and professionals with extensive background in recruitment and experience within the research area. All interviewees were given nearly identical questions, varying only few word choices and question order depending on whether interviews were conducted via email or video-calling. Question order was adapted during video-call moving marketplace questions to the end of the interview. The question order change did not affect response outcome as marketplace questions are a complete individual theme.

### 5.1 Recruitment process

When asked about *the recruitment process regarding the outlined key-personnel* in this thesis, all respondents had similar replies. Reason for asking about the process was to find out if there are any process steps that do not include AI yet, but could be useful to improve the process and separate tasks. The following process is based on recruitment process theory reviewed in section 2, additional previous studies (Pöri, 2018; Rintanen, 2019; Jalonen, 2020) and combining interview responses regarding recruitment professionals' actual work-related process tasks.

1. Evaluate employment need and re-adjust work requirements clearly specifying which skills are priority, which secondary, and which can be learned during the work. (Armstrong & Taylor, 2014; Jalonen, 2020; Pöri, 2018; Rintanen, 2019; Respondent C)
2. Create a recruitment plan together with key stakeholders. Plan should include marketing aspects regarding company brand, image, and market position. (Jalonen, 2020; Respondents A and C)
3. Start the recruitment process by seeing if there are suitable candidates from previous applicants in the company and, or, third-party databases including but not limited to job-portal services and possible outsourced recruitment companies. (Armstrong & Taylor, 2014; Respondents A, B, C and D)



4. Start advertising the open position in all planned medias. (Armstrong & Taylor, 2014; Jalonen, 2020; Respondents A and C)
5. Source candidates from all planned job portals, media channels, and any other way. (Armstrong & Taylor, 2014; Respondents A and D) Creativity is advised when sourcing for candidates (Respondent A). All applicants must be asked if they allow their application details to be stored for a specific period regarding interest in possible future positions (Respondent C).
6. Begin screening and start contacting candidates for initial interviews over the phone. (Jalonen, 2020; Rintanen, 2019; Pöri, 2018; Respondent C)
7. Invite top candidates for first face-to-face interviews and inform remaining candidates about recruitment outcome in personalized and professional manner. (Armstrong & Taylor, 2014; Pöri, 2018; Respondent C)
8. Invite the top candidates for possible psychological and aptitude tests (Armstrong & Taylor, 2014; Rintanen, 2019; Respondent C) , inform remaining candidates about recruitment outcome in personalized and professional manner providing additional feedback. (Respondent C)
9. Invite top candidates for a second face-to-face interview with the hiring manager, and other company representatives, inform remaining candidates about recruitment outcome in personalized and professional manner providing additional feedback. (Respondent C)
10. Provide possible consultation in analyzing and evaluating the final candidates (Respondent C). Once hiring manager has made the choice who to hire, inform remaining candidates about recruitment outcome in personalized and professional manner providing additional feedback. (Jalonen, 2020; Respondent C)

## 5.2 Databases

Respondents were asked about *using databases* in terms of *general usage*, *AI powered usage*, and *information and data security*. All four respondents agreed on the importance of applicant databases and noted similar benefits. Databases are used throughout the recruitment process to *update and maintain* the applications. Databases are also used after the recruitment process in a situation where an applicant gives consent to the recruitment professionals save the applicant' *details* for *further use* during a specific period. This recruitment process to start form viewing previous applicants' information

from the database to see if they already have a suited candidate for a new role. The database searches are done with specific criteria utilizing AI powered search functions. Therefore, first finding is that even when working with a small applicant pool of the outlined key-personnel, *AI is used in the recruitment process*.

Three respondents, B, C and D, noted the importance of information and data security about recruitment in general. Their responses outlined the overall importance of information and data security, including confidentiality. The respondents' view on security was not only connected to using AI, but for the confidentiality requirements of the job itself, and information and data security law which applies to all applicant information regardless how the information is stored.

### 5.3 Internet, LinkedIn, and other Social Media

The interviewees were asked if they *use LinkedIn extensive search function to source candidates*, and *whether they consider extensive searches as AI*. Respondent D had not worked extensively in sourcing and could not comment. The remaining three agreed unanimously yes, and yes. This thesis research was partially inspired by a thought where AI might have reached a generalized position and users do not view AI based systems and applications as AI. Here it is clear this is not the case, since such common task as LinkedIn extensive search in sourcing is still viewed as AI by recruitment professionals.

Interviewees were also asked if they *use other social media, online sites in sourcing and throughout the recruitment process* and *where and how AI is used*. Respondents A and C advised they use large variety of different platforms with extensive search functions to source candidates, and all four advised importance to post job advertisement in social media and all possible and relative channels to increase successful hiring. Publishing job advertisement was found to have a strong connection to brand management and brand communication. This is in line with theoretical findings connecting brand marketing to sourcing and vacancy-marketing. Recruiters use online medias attracting candidates and connecting with passive applicants as noted in sub-chapter 3.4.3. This is a second indicator of value and use of AI in recruiting key-personnel. None of the respondents said they would directly call to companies sourcing candidates and promoting the open position, which has been the traditional way of headhunting before internet. Therefore, *the value of AI in advertising open positions and connecting with applicants* is found *valuable*, especially when recruiting key-personnel.

#### 5.4 Text analytics

Interviewees were asked if they *use text analytics, in screening phase* and if they *see value of text analytics during the process*. Respondents A and D answered they do not use text analytics in prescreening CVs or cover letters in recruiting key-personnel but advised they see the potential and value of text analytics. Respondents B and C advised text analytics is used in screening CVs and cover letters but not in highly sophisticated ways. Respondent B gave an example where a position requires fluent writing in a specific language, they could use text analytics to get a feeling of the applicant's writing skills. The respondent C noted there is an unfortunate possibility to miss candidates with strong potential if recruiters are using AI heavily. If the applications do not match with the AI's requirements, the recruiter might never see this application. The respondent noted the marginal relevance with recruiting the outlined key-personnel. Nonetheless, the notion still highlights the importance of human touch during the screening phase with senior level positions.

Respondent C discussed that even though it is possible to evaluate and analyze applicants' cover letters to indicate *cultural background* and *ethnicity, gender, age*, and other *factors*, it is unlawful and unethical to do so. None of the respondents would use text analytics software to evaluate applicants' fit in terms of work-culture, -mindset or personal and professional potential. Considering these findings, the fact that text analytics *AI technically can be used to screen* applicants and start the *evaluation* process with *automation*, it is *not common when recruiting key-personnel*. Even in a situation where the ethical issues would be corrected from within the AI itself, recruiting key-personnel is about human touch and fine details, therefore AI does not provide additional value.

#### 5.5 Interviewing process during R&S

The respondents were asked about AI based interviews from two different views. Firstly, *the general use of AI during the interview process*, and more specifically, *AI based video interviews*. From process point of view, all respondents expressed the importance of human touch and personalization. Human touch was highlighted extremely important especially when recruiting senior management, lead, and executive positions. The respondent C advised that AI based interview and test steps could be partially processed

with AI when recruiting for a highly skilled specialist that do not work in a team. The respondent gave an example for a coder position, or similar, where job requirements are largely about hard-skills and do not require human interpreted psychological and aptitude tests. The respondent specified that even though the manual text-based test could be done with AI powered software, there is still a strong need of human interpretation in evaluating test results and for the interview part of the psychological and aptitude tests. These findings are in line with niche conditions in recruiting the outlined key-personnel.

Regarding *AI based video interviews*, all respondents advised only small or partial use for the specified recruitment situation. Three respondents, A, B and D, said they know AI video interviews are used in one or two department areas, and the respondent C advised they have not used AI based video interviews but noted “Why not?” when asked about future use and value. This respondent also noted regarding senior management roles, that applicants often have their personal professional websites with larger resumes, achievements, and recorded introduction videos of themselves. The *practical usability and value of AI powered video interviews* in this situation *is minimal* since the information is either readily available for viewing or included to interviewing rounds where the recruiters concentrate employer-employee fit including personality and human attributes. Currently, these human aspects cannot be included into the AI based evaluation when recruiting key-personnel. Even the use of structured interviews would not work due to the lack of personal touch and human evaluation of the complete interview situation itself. As there are *no current improvement possibilities* from theory, that would be applicable to real life situation, it is important to note a future possibility for more sophisticated AI based video interviews. Which *requires scientific and technological leaps* forward, towards General AI.

Interviewees did not comment anything on possibility to extract information from other websites or online media channels for AI analysis. Following the response regarding information and data security on databanks and AI, extracting candidate information from external sources without all parties’ consent for AI analysis would breach the law. For example, using LinkedIn Recruiter account, the Recruiter user receives additional information provided by LinkedIn. But extracting and saving candidate information without consent, i.e. to run a separate AI analysis, is illegal. The illegal aspect in this situation is common knowledge and does not require further in-depth evaluation.

## 5.6 Communication

Interviewees were asked if they *use any AI based software to communicate with their candidates and, or, business clients*. None of the four respondents noted possibility for chatbots during the recruitment process. All respondents agreed on importance of personalization and human touch in communication when recruiting the outlined key-personnel. Two respondents, C and D, noted AI can be used with email communication with caution. The respondent D advised they would trust human eye over automation, and the respondent C said they do use AI based email communication tool but noted the response should always be carefully read through and never to send a plain template. The respondent highlighted the importance to a scenario where the candidate might not be hired the position currently at hand but could be an MPC for another job in the future. Therefore, it is important to maintain good professional and positive communication with the candidates at all times. Respondent A advised similarly regarding the journey interviewing the candidates.

AI will bring more effective and timely communication, but when recruiting the outlined key-personnel, it is important to differ from competition with positive candidate experience which comes from professional and personal communication. *Communication with key-personnel*, in this context as candidates, and other stakeholders is always personal towards an individual or a business and should always be *carried out in professional and personal manner, not through AI automation or AI-assistants* such as Chatbots.

## 5.7 Online marketplaces

*None of the respondents had used online marketplaces* to connect headhunters with companies, or companies to connect with headhunters. *One respondent* specified that they *know what these are* but has not personally used any. This one respondent speculated these might be a growing thing especially with globalization. Growing globalization would bring more users, both third-party recruiters and company accounts. Considering the fact that the marketplaces are available for anyone it brings more competition and there is a possibility for decreasing recruitment quality as noted in chapter 3.4.5 regarding power play in contract terms. Another notion that stands against the usability of marketplaces, is possibility for decreasing use for third-party headhunters.

Respondent A noted their limited use of third-party headhunters in an international company and future prediction for decreased need for third-party recruiters, both being indicators towards lesser use for marketplaces in global view.

#### 5.8 General AI questions, future hopes and predictions

Interviewees were asked about *future predictions with AI in recruiting key-personnel* and secondly *specifically regarding third-party recruiters' and headhunter's point of view*. Responses were not fully identical but outlined similarities. Respondents agreed on the increasing use of AI in sourcing and importance of well-maintained candidate databases. These are both important pillars in terms of recruitment process and regarding usability and value of AI in theory and real-life application.

Respondents B and C noted the growing international labor market where AI provides a boost to attract global talents. The view was shared towards sourcing and interviewing both. Respondent C advised an *improvement-hope with AI* towards automatic *real-time translating* services with video-calling software. This would allow the interviewer and interviewee to talk and get responses in their own native languages. Because AI systems and applications need large amounts of data to maintain value and be useable, the focus in internationality and global market is in line with feasible AI improvement possibilities once technology, and science introduce such developments for professional use.

Two respondents, A and B, brought up *initial introductions* and *screening interviews* could be moved to AI in a limited context. Though, the respondent B noted this improvement would perhaps be more about *digitalization*. Digitalization happens here in a situation where applicant uploads the information directly to a database for the recruiter. The scenario is not viewed as AI-powered since the screening and initial assessment would be fully processed by the recruiter.

It is important to note that using AI in screening the outlined key-personnel's' applications is not recommend due to the risks with losing human touch in understanding emotional and cultural ques and notions. This is underlined by previous studies included to findings in chapter 3.4 and found in all respondents' answers regarding the subject.

The mixed responses were about future prediction regarding AI based communication. Though the respondents do agree that the use of AI will increase, respondent A said it would simultaneously decrease need for recruiters and headhunters alike. The

respondent felt headhunters would have to invest more in personalization to avoid being replaced with AI. The respondent C, who shared the highlighted value regarding personalization, advised that the human touch is such an important aspect that it cannot be replaced with AI. The respondent advised current AI cannot feel or innovate, and these tasks must and will stay in human hands. Respondent B discussed a possible further increase in remote work where social skill set decreases in value. In this situation, the use of AI would also change. The respondent rhetorically questioned if it would be a positive or a negative change.

Since the personal touch in communication is noted as important in recruiting outlined key-personnel, the findings align similarly together with theory. It is possible to use AI in communication but is not recommended outside initial confirmations. These would include i.e. automatic emails informing applicants regarding process steps before initial screening interviews. The respondent A, who previously noted they do not use AI in communication with applicants, that in the future the detail of personalization would be tackled with AI. Where respondent C advised AI is already partially in use with email updates. Communication is a sensitive matter when recruiting the outlined key-personnel. As there are similar views from respondents, previous research and theory, confirming it is possible to move some parts of communication to AI, it should only be in partial use. An acceptable example would be pre-filled email templates automatically adding candidate name, position details, and additional company information, but with personalized response and possible feedback regarding the application status and next steps in the recruitment process.

## 6 CONCLUSION

Recruitment and selection of the outlined key-personnel is time consuming and requires detailed actioning and processing of each task and step. The process should always start from outlining and specifying skill- and competence requirements, which are evaluated realistically in terms of company needs. A proper and realistic job requirement list is essential as it is the base for the whole R&S process.

Before recruiters can start screening applications and conducting initial interviews, they must have an applicant pool. Having the right applicants in the pool requires vacancy marketing in varying medias including details regarding the open position and a section about the company. Brand marketing is essential in terms of recruiting the outlined key-personnel, since the top-applicants are often passive jobseekers, and recruiters must attract these people enough to switch companies and sometimes relocating between cities, countries, and even continents.

Organizing and conducting proper and professional interviews in person cannot be highlighted enough. The included vacancies in this thesis are for highly skilled specialists, senior managers, directors, or executive managers and therefore interviewing requires human touch. The interviews are evaluated in terms of skills, personality, behaviour, and other competencies outlined in the job-requirements. As the requirements in such high positions are often people and human related, the evaluation should also be carried out by people. Human interpretation and evaluation are similarly needed to psychological and aptitude tests as for interviews.

All communication should always be personalised towards the individual applicant outside initial general confirmation emails during the application process. It is important to note these general updates are about receiving the application and other details which are communicated before interviewing the applicants. Once the recruiter begins initial screening interviews over the phone, the correspondence with the applicant should always be personalised in professional manner.

Final concluding process detail with recruiting the outlined-key personnel is about decision making. The recruiters do not give direct quote who the company or hiring manager should hire. The recruiters are expected to consult in candidate evaluation, and they could give recommendations based on applicants' fit towards the job-requirements.



These consultations and recommendations should always be communicated in advisory manner and not as a direct or absolute decision preference.

Based on the recruitment theory, previous researches and analyzing interview responses, AI is in important and valued position when recruiting highly skilled specialists, senior managers, directors, and executive managers.

The current use of AI starts directly from maintaining a database with candidates' applications. The applications are stored in a database that is used to filter and prescreen candidates. The view has been that importance of these databases is minimal when working with a small candidate pool which is partially correct. The applications regarding positions with small applicant pools are often screened manually, but still stored in a database and brought up using key-word searches which is a form of AI. The part of the process is very brief, but without using AI based search function, it would take a long time to browse through individual files, or paper applications. Therefore, the value of AI is strong during this step.

AI is also strongly positioned with internet and social media. One part is job advertisement which can be done via free posts, and paid ads. Regardless of which, there is an AI based algorithm automatically positioning the post or an ad to a page or a social media site's users' feed. Another side is with sourcing candidates. Candidates are sourced from various social media sites and other online job portals. The sourcing is performed using extensive clustered key-word searches which utilizes search engine AI.

When recruiting the outlined key-personnel, the value of AI drops immediately once the applications are screened. Even though it is possible, and used in some situations, AI based interviews are not recommended even for initial interviewing. This is mainly done over the phone, though it is possible to do via Chatbots and Video Interviews. Moving to face-to-face interviews evaluating cultural matching and further, the use and value of AI diminishes immediately. The research and interviews highlight the importance of human touch for all steps from first face-to-face interview to hiring decision. While it is possible to use AI in psychological tests, evaluating cultural matching, and considering applicants' details towards a company's diversity status, these are considered unethical and, in some context, unlawful.

Though it is possible to use AI when communicating with applicants to organize interviews and regarding hiring process updates, communication is a very sensitive and important matter that must include a personal touch. The need for personal touch relates

to a company's, headhunter's, and individual professional's brand, image, credibility, and possible future collaboration in similar or different situation and should not therefore be automated. The risk of negative image from using plain automatic email correspondence is too high regarding all sides of recruitment process and personnel.

In conclusion, AI is in an important position during the initial stages of recruitment process. AI has small added value and future improvement potential regarding first stage interviews and communication with applicants during the hiring process. The overall findings indicate that the current use, value, and position of AI based systems and applications in the R&S process of highly skilled specialists, senior managers, directors, and executive managers is already as finetuned and applied as it can be. Without any leaps towards General AI, real-time voice-over translation software, or other technological advancements, this subject does not have further research needs.

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## Appendix 1. Interview questions

Thank you for your time answering these interview questions. Please let yourself answer freely to all the questions bellow. For example, if you find that some questions do not have any real-life relation to your work, please answer so.

Mahdollinen puhelinhaastattelu, sekä kirjalliset vastaukset sopii myös suomeksi.

## Interview questions

All questions are related to a situation where you are working to fill a vacancy with specific criteria.

- Annual first year salary exceeds 85k EUR
- Vacancy is for highly skilled specialists, executive position or other higher management position.

Brief vocabulary and phrase explanation for interview clarity:

AI	Artificial Intelligence
AI powered video interviews	Video interviews which the candidate does on their own computer, interview will be recorded and sent to recruiters. Current most advanced AI video interviews pay attention i.e. to word choices, tone of voice, and facial expressions providing recruiters with psychological analysis of the interview.
Entry level vacancy	Does not require a master's degree, PhD, or extensive work history
Headhunting	Form of direct recruitment, usually a third-party service

Highly skilled specialist	Highly educated and often also experienced in a specific area
Hiring manager	I.e. department manager with extensive knowledge about the department's or team's need but does not work directly with recruitment process
Online marketplace	Service connecting third-party recruiters and headhunters to companies

**Could you briefly introduce yourself and your background with recruitment related work?**

### **General questions**

*I would like to start the interview from specific step, where employment need, job description, and skill requirements are finalised. If you imagine being a headhunter, the starting point is when you receive information on paper: "This is the candidate we need and want to hire."*

What is the next thing you do after having the vacancy details? Could you describe your work process briefly?

*When working as third-party headhunters and recruitment consultants*

Do you find it important to have an open communication with the third-party and a hiring manager?

Or is it enough to keep communication only through company HR?

What benefits do you see in collecting professional database on clients (company / third-party recruiter) and candidates?

Does collecting professional database increase probability for successful recruitment?  
What are the main points?



### **General AI questions**

How do you see data-security and confidentiality agreements affecting the use of AI applications?

Are there any specific points outlining negative or positive aspects with AI in your work?

### **Sourcing**

Do you use extensive search functions in LinkedIn to connect with and source candidates?

Do you consider extensive search functions as AI based, yes/no? Please explain briefly why?

Do you use any other AI based systems or applications in sourcing? Please elaborate briefly which ones and how is AI connected?

### **Screening**

Are you using text analytics in your work? I.e. analysing and evaluating individual job posts, cover letters, resumes, etc. *Please remember that the interview is not related to entry level positions with a vast candidate pool, but starting from highly skilled specialists, moving up towards executive roles.*

Do you use text analytics to cross reference information? I.e. to evaluate cultural matching, increase diversity, decrease biases, skill compatibility checks, etc.

Please explain briefly which other areas do you would use text analytics and how?

Do you see value in text analytics? Do you think text analytics has increasing future potential?

### **Interviewing**

Do you use any AI powered video interviews to evaluate candidates?

What is your view on AI based video interviews regarding added value?

Would AI based video interviews help your work, or rather complicate and delay hiring process?

Do you have any other comments regarding AI based interviews?

### **Online marketplaces**

Which online marketplaces do you use and why / why not? *If you have not used online marketplace platforms, please skip the follow-up questions.*

Follow-up question: Do you benefit form online marketplaces analytics?

Follow-up question: Would you say there are some statistics provided by the online marketplaces that are more valuable than others? Which ones are most valuable? Why?

Follow-up question: In your experience or professional opinion, does online marketplaces provide benefits for headhunters, client companies, or both? How, why?

Follow-up question: Do you find that online marketplaces are diminishing communication in between headhunter and client company? (i.e. losing personal touch)

**Miscellaneous closing questions**

Would you use any AI based communication systems with clients and/ or candidates when working on direct recruitment cases, and in headhunting? Why, why not?

What is your view about the future of AI, AI based systems and applications in headhunting?

How do you see the future of traditional headhunting? (direct contacts, emailing, cold calling, importance of long-term client relationship)

Do you see that AI could create a real change in headhunting work?

What kind of change or improvement would you find helpful?

**Final question**

Do you have any other thoughts or experience with AI in headhunting you find important and could share with me for my thesis study?