AI in recruitment: an exploratory study into the factors that impact its pace of adoption.

A case study to reveal the strategic implications of these factors on AI solution providers from a contingency perspective.

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Abstract

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Over the past few years, the adoption of AI in recruitment has accelerated. However, there has been a noticeable resistance from HR managers to invest in AI tools for their department. With the aim of understanding the causes prompting this resistance, this thesis investigates the factors that impact the pace of adoption of AI in HR, with a focus on recruitment solutions. While designing an analytical framework inspired by the contingency perspective, the factors have been searched through a literature review and their effects have been tested in terms of magnitude and direction through a qualitative study. To do this, the authors performed a case study involving an external partner, an AI solution provider start-up company. A total of 16 semi-structured interviews have been conducted with different levels of stakeholders, including external partner’s employees, investors, competitors, and end-users. Finally, a strategic analysis of the AI recruitment market has been deployed. Our ambition is that the combination of the information over the factors together with the strategic analysis will empower the companies within the industry in taking better-informed strategic decisions.

Key words: AI in recruitment, adoption of AI in recruitment, factors that impact adoption, testing the factors, strategic analysis.
Popular Science Summary
Artificial intelligence is a modern technology that enables machines performing operations that used to be done by humans only, such as problem solving, fraud detection, and predicting events. For this reason, since the last half-decade companies have been adopting artificial intelligence in their departments and operations more and more. By implementing this technology, these companies are significantly saving costs, getting more efficient, and allocating the employees’ time to more specialised tasks. However, specifically in recruitment, this adoption is being unexpectedly slow. Many scholars tried to provide an explanation of the causes behind this phenomenon by presenting some factors but there is no continuity between the different perspectives they brought up. For example, a startup who sells artificial intelligence solutions for recruitment would find it hard to grasp the factors that really hamper or foster the adoption of their technology. The aim of this thesis is to provide continuity in the literature by testing all the factors that had been provided by the scholars from the perspectives of different categories of people: artificial intelligence solution providers, companies who adopted this technology, and job applicants. We discovered that in most of the cases the perception of the different categories of people are misaligned and do not fully correspond with what was suggested by the scholars. Thanks to our research, other startups can perform more precise strategic assessments and leverage the hampering and fostering factors better.
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1 Introduction
In this section of the report the background, aim and purpose, and delimitations of the research will be explained.

1.1 Background
For the last few decades, digitalization in recruitment processes has been rapidly accelerating (Baykal, 2020). Nowadays, companies need to handle huge amounts of applications and data, and conventional tools are no longer efficient (Chapman and Webster, 2006). In this sense, digitalization creates great potential for saving costs, increasing the efficiency in the hiring process, and avoiding biases in the selection of the candidates (Chapman and Webster, 2006). An important driver of this digitalization process is Artificial Intelligence (AI) (Rodríguez-Espíndola et al., 2020). Interestingly, from an industry-level perspective, although AI recruitment is gaining momentum, HR industry is still lagging behind with investments in those new technologies (Pillai and Sivathanu, 2020). To understand the causes that are slowing down the adoption of these technologies, this study investigates the market factors that impact the pace of adoption of AI specifically for recruitment. Also, specifically, recruitment is selected due to inefficient traditional recruitment processes and expanding influence on AI in recruitment and the opportunities that it brings (Wright and Atkinson, 2016)).

When it comes to existing literature, to our knowledge, the literature generally focuses only on one aspect at the time, missing a broader and inclusive discussion embracing several factors at once, to disclose the interconnections between them. Also, the results from the studies taking diverse perspectives at different levels, including those of end users, customers and AI solution providers, are not always coherent. For example, while customer companies believe that AI technologies are too biased, the AI solution providers often claim that AI is less biased than any human recruiter (Bersin and Chamorro-Premuzic, 2019; Tambe et al., 2019). From a preliminary interview with Fredrik Östgren, the CEO of our external partner Hubert AI, there is a need for understanding where perspectives diverge, and which factors contribute shaping such perspectives. In line with this direction, to support both the external partner's aims and fill the academic gaps, several bodies of literature have been investigated including those on market dynamics, strategic planning, AI recruitment market, recruitment market and recruitment processes.

1.2 Aim and purpose
There are several scientific articles assessing the potential disruptiveness of generic AI applications in business (Mohanty and Vyas, 2018; Rodríguez-Espíndola et al., 2020; Wright and Schultz, 2018). Many researchers have also discussed the positive impact that AI could have in the recruitment market in terms of productivity, efficiency and implementation of less-biased talent acquisitions (Wright and Atkinson, 2016). An example of an application of AI technology in recruitment could be the automation of the resumes’ assessments, given their high volumes of the documents to process and the amount of involved repetitive tasks. Nonetheless, considering that today AI in recruitment is not as diffused as it was expected, de facto, we can argue that AI has not kept its initial promises (Pillai and Sivathanu, 2020; Wright and Atkinson, 2016). As mentioned before, several companies are not willing to invest in AI for augmenting their recruitment processes, and AI solution providers (AISPs) are struggling to find their way through the market. In this research, the aim is to understand the causes of slow adoption of AI and provide an understanding of how a generic AISP can approach this market.
In accordance with our purpose, we defined the following research questions:

RQ1: "What are the factors that impact the pace of adoption of AI in recruitment?";
RQ2: "How do these factors impact the pace of adoption of AI in recruitment?";
RQ3: "How could a generic AI solution provider startup approach the AI recruitment market from a strategic perspective?"

Through those questions, we suggest that the presence of factors, with a certain direction and magnitude, hamper or foster the pace of adoption of AI in recruitment. In literature, some authors (e.g., Bersin and Chamorro-Premuzic, 2019; Wilfred, 2018) have outlined many factors that characterize the AI recruitment market; these include technological development (Tambe et al., 2019) and the lack of trust (Davenport, 2019). However, it is hard to get a complete overview on those factors and understand the magnitude and the direction of their effects; also, to the best of our knowledge, no research has provided the significance of each factor.

Hence, our ambition is to analyze the factors proposed in the literature (as well as possibly derive new factors during the data collection and analysis phases) and understand the magnitude and the direction of their impact on the adoption pace of AI in recruitment. In addition, as it will be discussed furtherly in the literature review, poor adoption rate and market obscurity are also interconnected from a strategic perspective (Harreld et al., 2007). It is indeed claimed that the difficulty of getting clear information regarding a market is a relevant driver of poor strategic decisions (Harreld et al., 2007). Eventually, poor strategic decisions hamper the adoption rate of a technology (Harreld et al., 2007). By answering all the research questions, we aim to provide AISPs with enough information on the AI recruitment market to make better strategic decisions.

Academically, this research will contribute to the existing literature on AI and digitalization by critically analyzing and testing all the factors that have been presented by previous studies. On the top of that, the study is open to the possibility of discovering and proposing new factors emerging during the data collection and analysis.

In the following section of this report, a literature review is presented. After the literature review part, respectively, results from primary and secondary data, discussion of the results, and conclusion are presented.

1.3 Delimitations

AI has different usage areas in human resources management and one of them is recruitment. There is an expanding influence on AI in recruitment (Wright and Atkinson, 2016) and it provides many opportunities in terms of increasing the efficiency, reducing the bias and reducing the costs (Wright and Atkinson, 2016). Also, traditional recruitment process were found ineffective. For these reasons and also to have a better focus, the scope of this study is limited with recruitment only, instead of HR management in general. In addition to limit the study with recruitment, the study is also limited having as respondents Hubert’s stakeholders only due to the nature of case study. Besides, the market overview that is provided is not a full market analysis since it is not one of the aims of this study. At last, to develop a strategic plan is not in the scope of this study. The aim with third research question is only to provide strategic analysis. In the following sections of this report, respectively, a literature review, results from primary and secondary data, discussion of the results, and conclusion will be presented.
2 Literature review

The use of AI-based technologies gained momentum faster than expected (Albert, 2019). However, the adoption of these tools in the recruitment industry is falling behind other industries (Fountaine et al., 2019). HR managers do not feel ready to invest in AI tools (Albert, 2019; Pillai and Sivathanu, 2020). To understand the causes of this phenomenon, we decided to investigate the dynamics of the AI recruitment market, more specifically the factors that impact the pace of adoption of AI in recruitment. In line with this aim, a literature review has been conducted using peer-reviewed articles, practitioners’ journals (e.g., California Management Reviews, MIT Sloan and Harvard Business Review), and white papers (i.e. reports from Deloitte Digital).

Throughout this process, we searched for several themes including recruitment, recruitment market, AI recruitment market and market dynamics, adoption of AI in recruitment, factors that affect adoption of AI in recruitment and strategic frameworks.

Throughout this process, the main search engines have been Google Scholar and Uppsala University Library, in where the following keywords has been searched: “recruitment”, “recruitment market”, “AI recruitment”, “AI recruitment market”, “AI in recruitment”, “AI adoption in recruitment”, “factors that impact AI adoption in recruitment”, and “strategic frameworks”.

Although there is a great extent of literature examining AI, the existing studies have mostly focused on examining single factors fostering (Daugherty et al., 2018) or hampering its adoption (Davenport, 2019). They have analyzed recruitment process, AI based recruitment, how to build an AI-powered organization, advantages that AI brings to recruitment, AI and management of workforce, technical challenges behind using AI in HR tasks, and some other issues regarding AI in recruitment such as ethical issues, bias and trust problems (Albert, 2019; Black and van Esch, 2020; Sawleshwarkar et al., 2018; Wilfred, 2018; Wright and Atkinson, 2016). In other words, none of the identified articles provides a full understanding of market dynamics from a wide perspective. Specifically, no article discusses all the positive and negative factors that impact the adoption of AI in recruitment. Also, to our knowledge, there is not a clear distinction in the literature between the vision of different stakeholders regarding the impact of the factors. Throughout the articles, it is hard to reach consistency and scholars do not explicitly cover all the perspectives at once. For instance, while one focuses on trust problems on AI applications (Davenport, 2019), other focus on only bias issues (Daugherty et al., 2018) or another one focus on only the evolvement of AI recruitment (Black and van Esch, 2020).

We believe it is important to fill this gap by providing a wider sense of the market dynamics. By this means, it will be easier to understand both positive and negative factors that impact the adoption of AI in recruitment as well as the opinions of different stakeholders on each factor. In line with this direction, an outline has been created for the literature review covering the reflections on recruitment, AI recruitment, the pace of AI adoption in recruitment, positive and negative factors that impact the adoption of AI in recruitment, and scholars' suggestions and strategic frameworks.

2.1 Understanding Recruitment and AI Recruitment Market

The whole process from when a company recognizes a vacant internal job position until when it hires a person to occupy it, is formed by many steps (Albert, 2019). These steps can be
categorized into two macro-categories: recruitment process and selection process. The recruitment process contains all those activities aimed to define the job offer and deliver it to potential candidates. Albert (2019) also lists the candidate CVs screening among the recruitment process activities. Differently, the selection process contains all those activities serving the purpose of judging the applicants and choosing the best profile. In this study, both processes are considered as long as AI is used. All the activities are shown in figure 1.

Historically, there have been some innovations that caused a technological and marketing discontinuity in both the recruitment and selection process (Black and van Esch, 2020). Depending on the timing of the implementation of these innovations, Black and van Esch (2020) distinguished four historical recruitment phases. Namely analog recruitment, digital recruitment 1.0, digital recruitment 2.0 and digital recruitment 3.0.

The analog recruitment phase lasted until the second half of the '90s. In those times, people were performing each step of the recruitment and selection processes manually (Black and van Esch, 2020). For example, a job applicant had to visit job-bords in person to learn about new job opportunities. Then, to apply to the desired job, the applicant was supposed to go physically to the organization where (s)he was asked to fill out all the documents manually. Due to the effort required, job applicants could only apply to a limited number of offers. Company-wise, acquiring talents was an ineffective and costly procedure (Black and van Esch, 2020). The more detailed the job offer was, the more costly it would have been to spread it; the less detailed the offer was, the smaller number of fitting job applicants it would have generated.
The recruiters in charge of the selection process had to perform all the tasks manually as well (Black and van Esch, 2020). The decision-making was then affected by two phenomena: fatigue and cognitive biases (Judge et al., 2000). The former is a cumulative result of the manual tasks and could have altered recruiters’ lucidity (Boksem and Smidts, 2015). The latter are inherently part of any human being and could have led the recruiters to choose applicants depending on, for instance, their similarity with the recruiters themselves (Judge et al., 2000). All these dynamics caused the processes into the analogic recruitment phase to deliver well-performing workers with an accuracy of only 14-30% (Huffcutt et al., 2013; Schmidt and Hunter, 1998). The actual percentage depended on whether the interviews were unstructured (14%) or structured (30%).

The innovation that caused the discontinuity between the analog phase and the digital recruitment 1.0 was the digitalization of the recruitment experience that happened in the mid '90s (Black and van Esch, 2020). Thanks to the internet, companies could spread very detailed job offers for an insignificant cost. On the other side, job applicants could access job offers directly from online job boards or companies’ websites (Black and van Esch, 2020). The application process was also facilitated as the applicants could submit all their documents digitally.

Differently, digital recruitment 2.0 was driven by the spread of both social network platforms and job boards on highly specialized websites, which started approximately 10 years later (Black and van Esch, 2020). Although network platforms like LinkedIn were designed to smooth the communication between recruiters and job applicants, others, like Facebook, were not. Nevertheless, thanks to the massive number of connections generated between people, Facebook enabled companies to directly target potential applicants with their job offers (Black and van Esch, 2020). The innovations of both digital recruitment 1.0 and 2.0 have significantly smothered the recruitment process as job offers now receive an extremely higher number of candidates (Black and van Esch, 2020). To provide some examples, Walmart received 23,000 applications for 600 positions in 2013 (Lutz, 2013); Google received 2 million applications for 14,500 positions in 2017 (Torres, 2017). However, the selection process limitations remained unaltered.

The last historical recruitment phase started in 2016, when AI technologies were introduced into the recruitment industry (Black and van Esch, 2020; Kaplan and Haenlein, 2019). Given a goal, an AI technology is any computing resource that analyses its environment to perform those actions that can maximize the possibilities of reaching the goal (Wilfred, 2018). Thanks to its human-like capabilities, such as machine learning (Alpaydin, 2016), AI can perform many cognitive activities that were once impossible for a machine. Specifically, some remarkable industry-oriented capabilities are the imitation of humans’ actions and decision making, immunity to tiredness and consistency (Wilfred, 2018). In fact, AI-empowered IT resources can perform human tasks without being affected by fatigue or biases (Wilfred, 2018). Also, when performing traditionally humans’ tasks, many computers are way more consistent than groups of humans, as the latter require coordination of different decisions, perspectives and pieces of knowledge. All this guarantees AI devices to deliver higher accuracy in their tasks than people.

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1 For an explanation of how accuracy is measured, see note in Schimdt and Hunter (1998, p.265)
In recruitment, there have also been many use cases in both the processes that characterize the hiring journey – selection and recruitment. To begin with, AI can automatize monotonous, high volume tasks such as spreading job offers, screening and evaluating resumes and scheduling interviews (Wilfred, 2018). This use is particularly valuable when the number of applicants is vast, as in the above-mentioned examples. For instance, without using any artificial intelligence it would have been extremely hard for the Google recruitment team to screen and assess 2 million resumes. Also, AI can leverage big data to find those potential candidates who did upload their resumes online and could be a great fit for the vacant job but did not apply to the position (Black and van Esch, 2020). This is an extremely interesting feature if we consider that up to 80% of the people would be interested to leave their actual job position for a good offer (Smith and Kidder, 2010). In this way, AI enhances the possibilities of hiring a well-performing person.

Other use cases revealed that AI can help to carry out those tasks concerning the selection process. These use cases in this area include psychometric game-like tests, digital interviews and candidate mining (Bersin and Chamorro-Premuzic, 2019). Generally, psychometric tests are used to map the candidate’s personality and test one’s ability together with the job requirements to assess the compatibility’s level (Sawleshwarkar et al., 2018). Companies implement psychometric assessments with game-like features to enhance the applicants’ experience thanks to immersive activities and high level of interactivity (Bersin and Chamorro-Premuzic, 2019). For example, a popular gamified psychometric test is the Balloon Analogue Risk Task, where the candidates’ propensity to take risks is evaluated through a game. The more the candidate inflates a balloon, the more credits s(he) gets. However, the more the balloon enlarges, the more chances it has to explode and leave the candidate with no credits. A criticism against this kind of tests is that they focus more on the applicants’ experience rather than the accuracy of the measurement (Bersin and Chamorro-Premuzic, 2019).

Some specialized AI-empowered IT resources can perform digital interviews by asking a set of questions designed beforehand by the recruiters (Bersin and Chamorro-Premuzic, 2019). Even though it is possible to both employ structured and unstructured interviews with AI, it has been discovered that the computing predictive models are more accurate with structured interviews (Bersin and Chamorro-Premuzic, 2019). To assess the candidate’s score, the predictive model evaluates elements including facial expressions (Perveen et al., 2016), tone of voice, emotions (Park et al., 2015) such as anxiety and excitement, language, speed, focus, and so on” (Bersin and Chamorro-Premuzic, 2019, pp.3). Finally, the candidate’s data mining via big data analytics allows the recruiter to explore the online behavior of the applicants (Bersin and Chamorro-Premuzic, 2019; Wilfred, 2018). In this use case, the AI-empowered machine collects, assesses and aggregates unstructured information regarding the applicants to reveal their interests, personality, and other relevant information that would be otherwise difficult to grasp. For example, it is common to use these technologies to monitor the behavior of an applicant on LinkedIn and calculate a score of its authority (Bersin and Chamorro-Premuzic, 2019). All these features enable AI technology to improve both the effectiveness and the efficiency of the whole hiring journey.

Yet, it is remarkable how, despite the benefits that AI has introduced into the recruitment market, its adoption is not being as extended as initially predicted (Kaji et al., 2018). In 2018, the global human capital survey deployed by Deloitte (Kaji et al., 2018) revealed that only 38% of the companies use AI-enabled services across any step of the recruitment or selection processes. Another research claimed that the usage proportion is even less, as it discovered that only 22% of the North American firms have implemented AI applications in their HR processes.
(Tambe, 2019). By looking at an older survey conducted by HRPA\(^2\) (2017), only one year after the beginning of the digital recruitment 3.0 phase, the majority of the companies (84\%) believed that AI could provide HR with valuable use cases. However, only 32\% of the respondents agreed that their workplace was prepared to implement AI technologies. The adoption results of the more recent surveys resonate with the percentage of firms ready to implement AI in 2017.

2.2 Factors That Hamper the Pace of Adoption of AI in Recruitment

There are several factors that hamper the pace of adoption of AI in recruitment, including fear (De Stefano, 2019), lack of trust (Davenport, 2019), organizational issues (Fountaine et al., 2019), the limitations driven by the current level of development of the technology (Tambe et al., 2019), and the possibility of machines to be biased (Daugherty et al., 2018).

As for the first factor, the fear for AI is mainly driven by two reasons: the science fictional imaginary that machines will control humans (Wilfred, 2018) and the more actual debate around the fact that AI will cause many people to lose their jobs (De Stefano, 2019; Fountaine et al., 2019). Regarding the latter, Wilfred (2018) claimed that AI tools cannot completely take over humans’ place as emotions and moral values will always be missing and AI cannot make right-or-wrong decisions (Wilfred, 2018). Also according to the article where Hmoud and Laszlo (2019) discuss if AI will take over the recruiter's role, they say that in general, AI will be used to increase the quality and efficiency, and reduce the routine administrative tasks.

The second-mentioned factor negatively impacting the adoption of AI in recruitment is that people do not trust AI tools. According to a survey conducted in the U.S. with the consumers, 41.5\% of attendants do not trust any kind of AI tool (Davenport, 2018). Davenport (2018) refers that the reason underlying this lack of trust could be the overselling of AI capabilities from the vendor's side and he highlights the importance of full disclosure on how the system will be used (Davenport, 2018).

The third-mentioned factor is related to organizational issues. One issue is that human resources departments have limited budgets to invest on assessment tools (Bersin and Chamorro-Premuzic, 2019). Another issue is the dependence of AI adoption to organizational culture. Fountaine et al., (2019) emphasize that the main reason behind the slow pace of adoption of AI in recruitment is not the technology, but the organizational culture. For instance, the narrow perspective of the managers on AI requirements, traditional mindsets, rigid risk avoiding work styles and non-diverse teams create a barrier on the adoption (Fountaine et al., 2019) and it leads companies to not integrate AI in all of their core businesses, they only implement it into single business units. Also, most of the firms stay in the level of running a pilot, and do not take further steps (Fountaine et al., 2019).

The fourth-mentioned factor is represented by the technological limitations and the current level of development of AI. Algorithms need large data sets to be trained well. Small data sets limit the development and entail poor outcomes (Tambe et al., 2019).

Another challenge revolves around the “complexity of HR phenomena” (Tambe et al., 2019). It is hard to get consensus on the metrics that define a good employee. Even if we manage to measure it accurately, there is a risk that candidates might find out how the algorithm works.

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\(^2\) HRPA or Human Resource Professional Association is a professional regulatory body for HR
and change their behaviors accordingly (Tambe et al., 2019). In this case, their answers will be biased, and the algorithm will be worthless (Tambe et al., 2019).

Finally, the last-mentioned factor is the possibility of bias in the algorithms implemented by the AI-based recruitment technologies. The recent impressions of AI recruitment services are not very good in terms of bias, and these negative perceptions have been also driven by some unsuccessful well-known use cases (Daugherty et al., 2018). For example, in 2018, Amazon's recruitment algorithm based on AI was dismissed because it has been found to prefer men above women as potential candidates. This happened because the algorithm took into consideration the relationship between the performance and the wrong candidates’ attributes such as gender (Tambe et al., 2019). Also, most of the times, AI tools are trained by data sets that involve biases (Daugherty et al., 2018). Hence, we should remember that it is up to humans which attributes or outcomes to measure. If humans design biased models, then they will get biased results (Bersin and Chamorro-Premuzic, 2019).

2.3 Factors That Foster the Pace of Adoption of AI in Recruitment

According to Albert (2019), the growth of the AI industry was unexpectedly rapid. The industry was valued at $1.2tn in 2018, with a 61% of organizations implementing AI technologies in different parts of their businesses (Albert, 2019). Although AI in recruitment was not well developed yet, its adoption across the organizations was promising as well (Albert, 2019). While both digitalization and the diffusion of AI use cases across different parts of the organizations concur to drive the adoption of AI in recruitment, there are also some other positive factors to consider.

One of them is the competition in the business environment (Black and van Esch, 2020). Firms do not want to fall behind their competitors, and this may push them to quickly embrace and implement AI-based systems (Black and van Esch, 2020). Once companies integrate AI-based systems, it emerges for them the opportunity to benefit from the advantages of being a first mover (Schilling and Shankar, 2019). One advantage of being a first mover in adopting AI in recruitment would be technological leadership (Schilling and Shankar, 2019). In facts, technological leadership could empower companies on executing their recruitment process in a more efficient way (Black and van Esch, 2020). Also, being a forefront technology, companies can employ AI to promote a better brand image (Miles and McCamey, 2018).

A second factor fostering the adoption of AI is the possibility to enact the engagement management of the candidates. Most of the candidates find AI recruitment tools novel and convenient (Black and van Esch, 2020). For instance, Black and van Esch (2020) found that rather than feeling disturbed with chatbots, candidates tend to feel comfortable with them. This general positive approach that candidates have towards AI leads them to accomplish the application process with a higher likelihood (Black and van Esch, 2020).

Third, the increasing number of candidates is also a relevant driver to AI adoption. Firms receive from 20 to 200 applications for each open position and AI enables them to assess high volumes of applications with a high speed (Black and van Esch, 2020).

The final positive factor driving AI adoption is the array of advantages that AI brings to the recruitment process such as increased efficiency, better performance, reduced bias and more fair decisions (Black and van Esch, 2020; Wilfred, 2018).
Due to high volumes of job applications, traditional ways of recruitment became ineffective time-wise and, as a result, firms are often losing talented candidates (Wright and Atkinson, 2016). However, through the usage of AI, there is a possibility to increase the efficiency. A field experiment performed by Cowgill (2018) showed that algorithms can perform better than humans in recruitment. In this experiment, the algorithm selected candidates from a pool and the 14% of these candidates were more likely to receive a job offer (Tambe et al., 2019). There are several reasons underlying this higher performance. One reason is that AI helps to automate the undesired and repetitive tasks of the recruitment process (De Stefano, 2019). It enables to process large amounts of data in a very short time, reducing the associated costs. Also, as already mentioned, AI can exclude some human factors that might cause shortcomings in judgement and decisions, such as fatigue, emotions or bias (Wilfred, 2018). Although bias is a substantial drawback in recruitment and there is a continuing debate about biases in the AI recruitment industry, several authors refer that if wisely designed and implemented AI can help to overcome bias (Bersin and Chamorro-Premuzic, 2019; Black and van Esch, 2020; Daugherty et al., 2018; Tambe et al., 2019). Here, the critical point is that people who design and train the systems should guide the tools to avoid biases (Daugherty et al., 2018), for example by excluding irrelevant factors from the decision models implemented by the machine, such as sex and race (Tambe et al., 2019). In addition to reducing bias, AI also provides consistency and accuracy in results with less errors (Bersin and Chamorro-Premuzic, 2019; Black and van Esch, 2020; De Stefano, 2019; Wilfred, 2018).

2.4 Previous Recommendations

Some researchers have provided a set of recommendations that could improve the acceptance of AI in recruitment as well as its effectiveness. One argument they have is that technology providers should be more realistic and transparent about opportunities and functionalities (Davenport, 2019), as it is impossible for their products to calculate perfectly exact measurements of performances (Tambe et al., 2019).

Due to the lack of valuable historical data, the trend for data scientists is to build AI algorithms merely around the characteristics of existing good performers (Tambe et al., 2019). This is problematic because it makes it impossible for the machine to extract the variables that are actually distinctive between good and bad performers (Tambe et al., 2019). Also, since inclusion must be embedded into AI, the devices should be aware of gender roles and diversity (Daugherty et al., 2018). For example, Microsoft has formed a team whose purpose is to trigger and expose any AI bias (Daugherty et al., 2018). One way to reduce the machine biases is gathering stakeholders from different fields of expertise that cooperate to design the algorithm (Daugherty et al., 2018). This would improve the technology by not only by excluding those variables that should not contribute to a performance evaluation, such as gender, ethnicity, name or social class (Bersin and Chamorro-Premuzic, 2019) but also identifying variables that can indirectly lead to a bias. For instance, by evaluating maternity leaves equally to generic work leaves.

Other recommendations have been specifically directed towards the companies adopting the AI recruitment services. According to Fountaine et al. (2019), managers urge to understand that only acquiring the technology is not enough. They are supposed to spend similar resources also in training and acquiring or developing capabilities. On the top of that, companies cannot delegate all the interviews to the AI because the applicants would not have the possibility of evaluating the company if they do not engage in any human interaction with company’s representatives (Black and van Esch, 2020).
Companies offering AI solutions for recruitment have been vastly affected by the unexpected trajectory taken by the adoption of the technology, as acquiring customers resulted to be more troublesome than predicted (Pillai and Sivathanu, 2020; Wright and Atkinson, 2016). Given that gaining customers is typically among the primary objectives that a strategy is supposed to cover (Braun et al., 2019), difficulties in customer acquisition are usually driven by poor strategic assessments. As suggested by Harreld et al. (2007), the uncertainty and complexity of industries substantially affect managers from designing robust strategies. This explanation resonates with the case of the AI recruitment industry, whose obscurity makes it harder for AI solution providers (AISP) to delineate a path that can convincingly lead them to achieve and sustain competitive advantage, which is the fundamental definition of business strategy (Harreld et al., 2007).

2.5 Strategic Framework for Strategic Analysis

As mentioned before, one of the aims of this research is to provide AISPs with enough information on the AI recruitment industry to enhance the design of their future strategies. To achieve so, a strategic analysis of the AI recruitment market will be performed with the ambition that all the companies having similar characteristics of Hubert AI could benefit from it. However, the industry analysis will be focused on Hubert AI as some company-specific elements must be taken into consideration to conduct a strategic analysis (Braun et al., 2019). Nonetheless, we believe that the analysis we will conduct can be integrated easily with the internal information of the companies reading this research.

Since strategic analysis are needed in order to take strategic decisions (Lafley and Martin, 2013), to conduct the strategic analysis of the AI recruitment market we will follow the guidelines of a widely adopted framework for strategic decisions: “Playing to win - how strategy really works” (Lafley and Martin, 2013). According to this framework, to delineate a strategy any organization needs to take five choices, specifically: “What is our winning aspiration? Where will we play? How will we win? What capabilities must we have? What management systems are required?” (Lafley and Martin, 2013, pp. 52). The authors remark the importance of the term winning, as they argue that a company must aim to deliver the highest value to their target customers, or their business will end up being unsustainable. This would become inevitable as other organizations in the same market will try to provide their customers with a higher value.

The first choice does not only require delineating a goal, but also setting the winning conditions. Differently, the second choice involves finding a specific playing field where the organization could be distinctive from the competitors. Examples of playing fields might be different combinations of customers sets, regions, products and others (Martin, 2013). To answer the third question, an organization is supposed to design the deliverable that can actually generate the impact that will let them meet the winning conditions. When taking the fourth choice, in addition to brainstorming what set of capabilities the organization must develop to win, the managers also need to assure that these capabilities will be maintained and preserved throughout strategy deployment. The last choice is also connected to this aspect as the management systems serve the purpose of controlling that every function of the strategy works synergically with the others.

Hence, the strategic analysis becomes the mean to answer these questions. To conduct the analysis, Lafley and Martin (2013) suggest using a tool called logic workflow. The whole tool comprehends five ordered phases of analysis: industry analysis, customer value analysis, analysis of relative position, competitor analysis, and strategic choice (Leavy, 2013). However,
in accordance with the purpose of this thesis project, we will delimit the usage of the framework to the first three phases, as shown in figure 2.

The industry analysis is conducted to answer two questions: “What are the strategically distinct segments?” (Lafley and Martin 2013, p. 385) and “How structurally attractive are the segments?” (Lafley and Martin, 2013, p.385). This first part of the analysis seeks to delineate how the market is structured as well as understanding the most senseful ways of segmenting it (Lafley and Martin, 2013). Furthermore, in the same framework they also suggest to define a degree of attractiveness of each segment given the internal characteristics of the focus company (Lafley and Martin, 2013).

The second phase of the framework is customer value analysis. As per the industry analysis, this dimension is broken down into two questions: “What attributes constitute channel value?” (Lafley and Martin, 2013, p. 385) and “What attributes constitute end-user value?” (Lafley and Martin, 2013, p.385). Distinguishing channel value from end-user value is particularly important in the specific case of Hubert and similar companies as the customers differ from the end-users of their products. Understanding the attributes that constitute channel value means understanding the logics that motivate the customers to choose a specific product rather than others (Lafley and Martin, 2013). Differently, understanding end-user value requires an investigation of what the end-users feel and desire while using the product (Lafley and Martin, 2013).

Finally, the third phase of the tool is the analysis of relative position, which seeks to frame the competitive landscape of the industry by defining how the focus company can differ from competitors in terms of capabilities and costs. This phase first requires outlining what capabilities are leveraged from the competitors to meet the same customer need of the focus company (Lafley and Martin, 2013). Secondly, it requires to understand the cost structures of the competitors (Lafley and Martin, 2013). By comparing the focus’ company capabilities and costs with the information acquired on the competitors, it will be later possible to decide what strategy should be adopted among differentiation, cost leadership or niche marketing (Porter, 1996).

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**Figure 2 - Strategy logic flow (Leavy, 2013)**

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3 Methodology
This chapter explains how this study has been carried out. Respectively, analytical framework, research design, research context and approach, data collection, data analysis, research quality and at last, ethical considerations will be described.

3.1 Analytical Framework
In this paper, an analytical framework is presented and tested in the specific context of AI in the recruitment industry. Specifically, the analytical framework is built upon the contingency perspective, where contingency is considered as “an orienting strategy or meta-theory, suggesting ways in which a phenomenon ought to be conceptualized or an approach to the phenomenon ought to be explained rather than an actual theory” (Schoonhoven, 1981, p.350, as cited in Thai, 2015).

The framework starts with a research in the literature, where the factors that impact the pace of adoption of AI in recruitment are searched for. These factors could be hampering or fostering factors that impact the adoption of AI in recruitment with different magnitudes. After deriving the factors from the literature and presenting them in the literature review as a part of the study, additional factors are investigated through conducting interviews. The interviews are conducted with different types of stakeholders including Hubert employees, investors, customers, job applicants and the competitors. In this way, we could address our research questions while accounting for the different perspectives coexisting in the market. Other than deriving new factors, the interview are also used to empirically test the factors coming from the literature by asking the opinions around them to each stakeholder. Specifically, the magnitude and direction of the impact of each factor is tested by disclosing the relationship between such factor and the pace of adoption of AI. In turn, the findings made it possible to discover the contingency between pace of adoption and the factors and eventually, support the strategy with the understanding of the role played by these contingencies. Although the strategic analysis will be done for the specific case, the aim is to provide an example for any similar AI solution provider start-up company.

3.2 Research Design
Case study was deemed as an appropriate research design for this thesis. Although the definition of case study varies among different researchers (Bell et al., 2018), there is a common understanding that what makes case study different than other designs is “the detailed and intensive analysis of a single case” (Bell et al., 2018, p.589). This case can be a particular organization, location, event or a person; and case studies, most of the time, are linked with qualitative studies (Bell et al., 2018). Stake (1995) also notes that it is important to select the cases in order to maximize the learning from them (Bell et al., 2018). Case studies also allow us to study a phenomenon together with its context (Robert K. Yin, 1989), and it could be a useful choice when it comes to studies that are more explorative in nature, like this study. Due to the defined characteristics, this thesis is presented as a case study where the research revolves around one particular organization, the external partner, Hubert.

3.3 Case Description
Hubert is a Stockholm-based start-up company that provides AI solutions for the recruitment industry (“Hubert: Overview | LinkedIn,” n.d.). The company was founded in 2016, and they provide AI solutions including resume and cover letter parsing, personality and logic tests,
ranking candidates, and conversational chat interviews through AI driven chatbots. The cooperation with Hubert made it possible to have an in-depth analysis through easier access to possible interviewees. The analysis is done in line with the aim of the study and by matching the characteristics of the case study. Interviews are conducted with 5 types of stakeholders including Hubert employees, investors, customers, competitors, and job applicants. Factors that impact the pace of adoption of AI in recruitment have been investigated through a preliminary literature review, producing insights that have been enriched with the subsequent empirical analysis that have been performed through interviews aimed at testing each factor, detecting magnitude and direction. While magnitude means, how significant is the factor to each respondent category; direction means, to which way the factor impacts the pace of adoption of AI in recruitment across different categories of respondents.

Eventually, a strategic analysis is provided to empower AI solution provider start-up companies like Hubert to leverage the market dynamics more precisely. Although a case study does not have to be linked with providing a generalization from findings through one case (Bell et al., 2018), it is possible to make generalization through one case to another similar case, which is called “case-to-case transfer” (Mitchell, 1983). In other words, the similarities between the AI solution provider companies, made it possible to make a generalization through this case study. At last, it is worth keeping in mind that the aim of this study is not to get statistically generalizable results due to the limited number of sources and respondents, the aim is just to provide some general indications on which factors matter and for whom.

3.4 Research Context and Approach

The adapted research approach for this study is deductive study approach. Deductive studies have 6 steps, respectively, starting with theory, a hypothesis deduction, data collection, findings, hypothesis confirmation or rejection and revision of the theory (Bell et al., 2018). Although in practice, it doesn't have to be a linear process, it appears with 6 linear steps (Bell et al., 2018). As the first step, this study started with a literature review where the factors that impact the pace of adoption of AI in recruitment have been investigated. After conducting the literature review, they have been classified as hampering and fostering factors. However, while conducting the literature review, it was hard to reach a consistency on information as the scholars have discussed the above-mentioned factors from the perspective of one category of stakeholder per time. Also, it was not always consistent in terms of the magnitude and direction of each factor. Hence, it is hard to understand if the different stakeholders agree on the impact and relevance of each factor. For instance, to which way and what extent each factor impacts the adoption. Therefore, 16 interviews are conducted to understand how these factors impact the pace of adoption in magnitude and direction wise, also to investigate emerging factors. The findings from the interviews have been discussed in the discussion section and used to provide an understanding of the factors and the way how they impact the pace of adoption, and also to answer the first two research questions. Eventually, through testing the factors, and providing an understanding, a strategic analysis via strategic framework “Playing to win - how strategy really works” is performed, and the third research question has been answered: "How could a generic AI solution provider startup approach the AI recruitment market from a strategic perspective?".

3.5 Data Collection Methods

Due to the nature of the study, in this section we will discuss the primary and secondary data collection methods separately.
3.5.1 Primary data

The primary data has been collected via interviews that were organized in two parts: the first part entailed semi-structured questions, the second involved structured ones. For the first part, we decided to follow a semi-structured scheme as we were equally interested in both asking about specific topics and letting new themes emerge. Questions were organized around the following discussion areas: channel value, end-user value, difference between Hubert’s capabilities and costs versus the competitors’, and perspectives on each of the factors listed in the literature review. On top of that, we let new factors emerge from the interviews via open and follow-up questions. The second part of the interview was structured because we wanted to collect respondents’ opinions regarding all the factors that have been gathered from the literature. Asking them the same questions in the same order made their answers comparable (Bell et al., 2018). Furthermore, we asked each interviewee to reflect on each factor and provide an interpretation of the factor’s impact on the pace of adoption of AI in recruitment through a Likert scale. Although it was not a quantitative study, Likert scale helped interviewees to easily grasp the context of the questions through visualization. To do so, a 9-values Likert scale has been used, to give equal weights in both hampering and fostering sides. In addition to reflect qualitatively on each factor, the interviewees were also supposed to answer using the 9-values Likert scale having as the lowest value “This factor hampers the adoption to a high extent” and as the highest value “This factor fosters the adoption to a high extent”. The middle value could be used to express that the factor was neutral or insignificant. We believe that the Likert scale has facilitated the interviewees in reflecting and comparing the magnitudes and direction of the different factors.

The population of our study is composed by all Hubert AI’s stakeholders, namely Hubert’s employees, investors, customers, end-users and competitors (see Table 1 for a list of respondents). We have hereby conducted an a priori stratified interview sample (Bell et al., 2018). By interviewing these categories of stakeholders’, we both conducted an intensive study of the company, as required by the case study design, and gathered relevant information that enabled us to answer the research questions. Due to the different roles played by all the categories of stakeholders, we had to develop a different interview structure for each respondents’ category/type. Specifically, the employees’ structure contained questions regarding the factors, Hubert’s capabilities and costs, channel value and end-user value. In accordance with our purpose to understand the factor’s magnitude and direction, we also asked to each respondent how (s)he perceives the impact of each factor. On the top of that, for strategic purposes, we were interested in comparing the stakeholders’ vision of channel and end-user value, and discuss their alignment.

Differently, the investors’ structure was heavily focused on factors, since the other type of information such as channel value or end user value was less relevant to them, and they can provide broader perspective on factors as industry experts.

When we interviewed the customers, we asked questions covering the following themes: factors, channel value, end-user value and Hubert’s capabilities. Similarly, the competitors structure covered the same areas, but there we asked for the competitors’ capabilities rather than Hubert’s.

Finally, the interviews with end-users were concentrated on the perceived factors and end-user value. As visible in the appendix A, where all the interview structures are shown, each interview is divided into two parts, one having more open questions and one having a list of all the factors collected in the literature review. Unfortunately, it resulted to be impossible to
utilize the same sampling approach for each category because of their major structural differences. For instance, Hubert’s employees were very easy to reach by using convenience sampling so we kept interviewing them until we reached data saturation. The company investors were only two and we interviewed them all. The customers we contacted were 4 in total, and we have invited them to the interview via email, however only 3 accepted. Similarly, we have invited all direct, indirect and potential competitors (the list is shown in the secondary data results) via email but only 4 accepted to be part of the study. Finally, due to privacy reasons it has been impossible to get a list of Hubert’s end users and we did not manage to reach any. Nonetheless, we decided to interview direct competitors’ end-users, instead. This choice was taken by considering that this category of people would have experienced a very similar service compared with Hubert’s and therefore provide the research with similar value. To sample end-users it has been chosen to adopt a convenience snowball sampling methodology (Bell et al., 2018) which enabled us to interview 3 people. We started the snowball sampling by interviewing job applicants in our LinkedIn network who had experienced at least one of any of the direct competitor’s services.

In total, 16 interviews were conducted; each interview lasted between 30 min to 1 hour and was conducted via Zoom. Interviews involved 5 categories of respondents, including Hubert employees, investors, competitors, customers and job applicants. The background of each respondent from all categories of respondents is presented in Table 1. However, the identity of respondents is kept anonymous due to ethical considerations.

<table>
<thead>
<tr>
<th>Category of Respondent</th>
<th>Respondents</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees</td>
<td>Employee 1</td>
<td>Employee 1 is an industry expert and she/he has a managerial role at Hubert, and she/he is involved in all decision processes.</td>
</tr>
<tr>
<td></td>
<td>Employee 2</td>
<td>Employee 2 is an industry expert and her/his role in the company is to lead the sales processes.</td>
</tr>
<tr>
<td></td>
<td>Employee 3</td>
<td>Employee 3 is an industry expert and her/his role in the company is to manage the relationship with customers and manage the marketing processes.</td>
</tr>
<tr>
<td></td>
<td>Employee 4</td>
<td>Employee 4 is an industry expert and her/his responsibility is to lead the technological developments and decisions at Hubert.</td>
</tr>
<tr>
<td>Investors</td>
<td>Investor 1</td>
<td>Investor 1 is an industry expert where she/he has a big role in the decisions Hubert takes.</td>
</tr>
<tr>
<td></td>
<td>Investor 2</td>
<td>Investor 2 is an industry expert where she/he has a big role in the decisions Hubert takes.</td>
</tr>
<tr>
<td>Competitors</td>
<td>Competitor 1</td>
<td>Competitor 1 is a senior data scientist, who works in one of the potential competitor companies in Europe. She/he is working on a module to provide the matching between candidates and jobs.</td>
</tr>
<tr>
<td>Competitor 2</td>
<td>Competitor 2 is a senior software developer, who works in one of the potential competitor companies in Europe. She/he is working on tooling to support different members in the team.</td>
<td></td>
</tr>
<tr>
<td>Competitor 3</td>
<td>Competitor 3 is the founder and CEO of one of the potential competitor companies in Scandinavia. She/he is an industry expert.</td>
<td></td>
</tr>
<tr>
<td>Competitor 4</td>
<td>Competitor 4 is the Co-founder and CEO of one of the potential competitor companies in APAC. She/he is an industry expert.</td>
<td></td>
</tr>
<tr>
<td>Customer 1</td>
<td>Customer 1 is an operations specialist and her/his role is to innovate and develop the way the company work, recruit and attract candidates.</td>
<td></td>
</tr>
<tr>
<td>Customer 2</td>
<td>Customer 2 is an operations controller and her/his role is to lead projects, create new processes, update processes and increase the efficiency of HR processes at his/her company.</td>
<td></td>
</tr>
<tr>
<td>Customer 3</td>
<td>Customer 3 is a lead recruiter and her/his role is to take the strategic decisions in the recruitment process in the company where she/he works.</td>
<td></td>
</tr>
<tr>
<td>Job Applicant 1</td>
<td>Job applicant 1 has a major in business and she/he has 0-2 year experience and limited knowledge of AI tools in recruitment. She/he had experienced several recruitment processes with AI tools, where one of the direct competitor's tools has been used.</td>
<td></td>
</tr>
<tr>
<td>Job Applicant 2</td>
<td>Job applicant 2 is an engineering master student with no job experience and with understanding of AI tools in recruitment. She/he had experienced a recruitment process with AI tools, where one of the direct competitor's tools has been used.</td>
<td></td>
</tr>
<tr>
<td>Job Applicant 3</td>
<td>Job applicant 3 is an engineer with 0-2 years of experience in IT consultancy and has some understanding of AI tools in recruitment. She/he had experienced a recruitment process with AI tools, where one of the direct competitor’s tools has been used.</td>
<td></td>
</tr>
</tbody>
</table>

Table 1 – List of respondents

3.5.2 Secondary data

The secondary data collection has been structured in two sections depending on the purpose of the data. Specifically, market overview and competitor analysis.

Secondary Data for Market Overview

The market overview aims to support each research question by enriching the understanding of the market and to help to identify potential business opportunities, target customers and the market segments for the strategic analysis part (Laflay et al., 2012). In line with this aim, several keywords have been searched on Google including: “AI recruitment market analysis”, “AI recruitment market segments”, “AI recruitment market drivers”, “AI recruitment market”.
“AI recruitment market size”. As a conclusion of the search, the main source that has been selected is the reports of the market research provider companies. However, it is not possible to reach more information than a preview of these reports since a large part of these reports are not publicly available. Therefore, only the parts that have been published are used and the rest are neglected due to limited data. Still, limited data have caused several challenges. First, it was not possible to define the market size of the AI recruitment market thoroughly, due to many inconsistencies and lack of definitions in published reports. Second, in the market segmentation parts of the reports, it was not mentioned what is meant by “other segments”. Third, several companies were providing different segmentations. Besides these limitations, the approach that is taken in this part of the report was to take the most commonly used segmentation and common similar market size numbers. In line with this direction, the following market research providers’ reports have been taken as a basis: (Absolute market insights, 2020; “Artificial Intelligence in Recruitment Market Research Report,” n.d.; “Global AI Recruitment Market,” n.d.) and information from these reports has been used.

Secondary Data for Competitor Analysis

The strategic analysis framework adopted in this thesis project to answer the third research question requires an analysis of relative position (Lafley and Martin, 2013). Specifically, it structures two areas of analysis, namely capabilities and costs. The purpose is to provide the focus companies (Hubert and the like) with enough information to develop a strategy.

This project’s competitor analysis’ data collection is composed of two stages: listing the competitors and collecting valuable information regarding them. Both primary and secondary data sources have been leveraged to conduct the competitor analysis. The primary data for the first stage was collected through an asynchronous (Bell et al., 2018) interview with one of the co-founders of the external partner, who provided us with a list of competitors. Additionally, secondary sources have been used to find other competitors that were not mentioned by the co-founder as well as relevant information on the competitors.

Specifically, other competitors have been found by searching on conventional media, such as Google and LinkedIn, those companies fulfilling the same (or similar) customer needs, as compared with Hubert. The customer needs are the drivers that motivate a customer to pay for a product or service (Osterwalder et al., 2014). However, considering that most of the competitors are offering cloud-based SaaS (Software as a Service) solutions, it is hard to reach data saturation and list all the existing competitors. A cloud-based SaaS is a method that enables a company to deliver its products to any customer having an internet connection (Limbășan and Rusu, 2011). Their primary characteristic is that they have very low geographical limitations, which means that competitors from any part of the world could represent a potential threat. For this reason, we decided to limit the competitor analysis to those companies that are not difficult to be found via conventional media. Our assumption is that if a competitor cannot be easily reached by Hubert’s customers, this competitor does not represent a significant threat, and it is therefore tolerable not to include it in the list.

Similarly, for the second phase of the competitor analysis’ data collection, the quantity and variety of relevant data we could find for each company were virtually unlimited. Hence, we first defined the types of information regarding the competitor to be searched. To begin with, we decided to follow the guidelines of a widely adopted framework in literature (e.g., Madhavan et al., 2004; Upson et al., 2012; Yu et al., 2015), the one produced by Bergen and Peteraf (2002). In the framework, the scholars suggested to collect data regarding the competitors’ relative market commonality and resource similarity and compare them with the
focal company. Thanks to these two dimensions, it is possible to distinguish between direct competitors, indirect competitors and potential competitors (Bergen and Peteraf, 2002). In this research, we adopted the same definitions these scholars have provided in their paper. Specifically, they defined market commonality as: "the degree to which a given competitor overlaps with the focal firm in terms of customer needs served" (Bergen and Peteraf, 2002, p. 160), and resource similarity as "the extent to which a given competitor possesses strategic endowments comparable in terms of type to those of the focal firm" (Bergen and Peteraf, 2002, p. 161).

Moreover, to understand what other information could have been valuable to analyze, we have interviewed Hubert’s CEO as an industry expert. He proposed to complement the research with information regarding the competitors' communication and funding. These types of data are beneficial for the strategic analysis as they provide information on the channel value (which was also a dimension to be analyzed, according to Lafley and Martin (2013)) and on each competitor’s extent of threat, according to the CEO. Additionally, he suggested measuring the cost structures in terms of number of employees, as he stated that salaries are the major cost drivers within the industry.

A desktop analysis was then performed to find all this information. The main sources has been: companies reports, LinkedIn pages of the companies and specialized websites (among others, “Crunchbase,” n.d. and “Growjo - The Fastest Growing Companies in 2021,” n.d.). To measure market commonality, the AI recruitment market was segmented by application, having as segments the ones shown in the table 2.

<table>
<thead>
<tr>
<th>Application</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job campaign</td>
<td>The company takes care of the job campaign.</td>
</tr>
<tr>
<td>Candidate communication and assistance</td>
<td>The company takes care of supporting the candidate during the application process.</td>
</tr>
<tr>
<td>Candidate screening and matching</td>
<td>The company takes care of evaluating the job applicants and outlines the best fits to the customer.</td>
</tr>
<tr>
<td>Interview scheduling</td>
<td>The company takes care of scheduling the interviews between the recruiter and the job applicant.</td>
</tr>
<tr>
<td>Candidate sourcing</td>
<td>The company takes care of providing a pool of talents to the customers</td>
</tr>
<tr>
<td>Visitors conversion</td>
<td>The company offers the service of converting the customer’s website visitors into job applicants.</td>
</tr>
<tr>
<td>Preliminary interview</td>
<td>The company performs a preliminary interview asking the candidate basic questions, e.g. “Do you have a driving licence?”</td>
</tr>
</tbody>
</table>
The company performs a more advanced interview providing the candidates with the chance of expressing themselves.

Table 2 – Segmentation by application description

The segmentation we have chosen comprehends “visitor conversion”, which is not a traditional part of the market taxonomy as it will be furtherly explained in the results. However, we decided to include this segment because visitor conversion was a recurrent offer in the websites and reports of the considered companies, so we assumed it is worthy to include it in the analysis.

To define the competitor’s resource similarity, we researched on whether their services are based on AI or not, as AI is Hubert's most significant capability. Both market commonality and resource similarity information were collected from the competitors’ websites and reports. For consistency reasons, for each company all applications and AI usage were assumed as not served if not explicitly stated on their website or report. Regarding the communication, as the purpose is to discover the competitor’s perspective of the channel’s value, we analyzed their unique selling propositions (USP), in consideration of the underlying principle that companies usually stress the aspect of the value proposition that has most relevance in the channel (Miller and Henthorne, 2007). Since the channel is the internet, this information has been collected also by visiting the competitors’ websites. Afterwards, informational pieces were organized into different categories depending on the emerging themes.

We believe that analyzing the themes’ distribution provides an understanding of the competitors’ perspective of the channel value. The competitor’s findings were collected from the following sources: Crunchbase (“Crunchbase,” n.d.), Owler (“Owler,” n.d.), Statista (“Statista - The Statistics Portal,” n.d.), and Angel (“AngelList Talent | Remote Job and Startup Job Search,” n.d.). Finally, while the competitors’ capabilities can be directly measured through the Bergen and Peteraf (2002) framework, to provide an idea of their costs, we collected each competitor’s number of employees by analyzing the following secondary sources: LinkedIn (“LinkedIn,” n.d.), Owler (“Owler,” n.d.), Apollo.io (“Apollo | Account Based Sales, Sales Automation Software,” n.d.), Craft (“Craft - Holistic Company Profiles - Office Locations, Competitors, Revenue, Financials, Employees, Key People, Subsidiaries | Craft.co,” n.d.), Growjo (Growjo - The Fastest Growing Companies in 2021,” n.d.) and Statista (Statista - The Statistics Portal,” n.d.).

3.6 Data Analysis Methods

Before analyzing the primary data, we first transcribed all the interviews using an AI-based SaaS named Otter (“Otter Voice Meeting Notes,” n.d.) and transferred the results of the quantitative interview in a spreadsheet. Both parts of the interviews lasted, on average, 30 minutes each. Because of the above-mentioned differences between the first and the second part of the interview, we have decided to analyze them in different ways.

Regarding the first part of the interview, which contained category-specific open questions, we conducted a two-levels thematic analysis (Alhojailan, 2012). As a first level, we conducted a deductive thematic analysis looking for some themes we had decided while preparing the interviews, which are: channel value, end-user value, the
difference between Hubert’s capabilities and costs versus the competitors’, hampering factors, and fostering factors. As the second level of analysis, we looked for the following phenomena: emerging recurrent themes among the interviews, differences between categories of interviewees, and missing data. The emerging themes could be recurrent within the same category of interviewees as well as between different categories. Looking for the differences between the categories lets us understand if the perception of the factors is aligned among the stakeholders. Finally, if some categories of stakeholders omit to mention one or more themes, it would still be revelatory of something that is impacting the pace of adoption of AI in recruitment (Bell et al., 2018).

Before performing a thematic analysis, it is common practice first to read the interview transcripts several times and code text passages that share a common idea (Bell et al., 2018). In this sense, this study did not differ from the common practice and we did both read and code the transcripts. In the first level of analysis, we coded the interviews following the above-mentioned themes. Differently, in the second level, we first coded with the purpose of finding emerging themes applying the procedures defined earlier. Secondly, we coded with the purpose of finding all the passages within all the interviews providing information on the emerging themes. More specific information regarding coding and themes are shown in table 3. Eventually, three themes emerged from the second level of analysis, including the pace of adoption, adopters’ profile, recruiter's role in the adoption process.

<table>
<thead>
<tr>
<th>Level of Analysis</th>
<th>Theme</th>
<th>Codes (Passages of the text containing information regarding…)</th>
</tr>
</thead>
<tbody>
<tr>
<td>First level</td>
<td>Channel Value</td>
<td>The attributes that companies value the most (or the least) in regards to adopting AI technologies for recruitment.</td>
</tr>
<tr>
<td></td>
<td>End-user Value</td>
<td>The attributes that job applicants value the most (or the least) during their recruitment experiences.</td>
</tr>
<tr>
<td></td>
<td>Difference between Hubert’s capabilities and costs and the competitor’s.</td>
<td>Hubert’s business model and the competitors’.</td>
</tr>
<tr>
<td></td>
<td>Hampering Factors</td>
<td>All the factors that slow down the adoption of AI in recruitment.</td>
</tr>
<tr>
<td></td>
<td>Fostering Factors</td>
<td>All the factors that facilitate the adoption of AI in recruitment.</td>
</tr>
<tr>
<td>Second level</td>
<td>Pace of adoption</td>
<td>The perception of the actual pace of adoption of AI in recruitment.</td>
</tr>
<tr>
<td></td>
<td>Adopter’s profile</td>
<td>The attributes of the companies that are now adopting AI-based services for recruitment.</td>
</tr>
</tbody>
</table>
Recruiter’s role in the adoption process
The recruiter’s behavior and its impact on the adoption process.

Table 3 – Themes and codes

Regarding the second part of the interview, we have conducted two operations. First, we have collected the reflections of each interview over each factor. In this way, we could see all the perspectives as we desired. Secondly, we have transferred the results of the Likert scale questions into a spreadsheet. Considering that our study is qualitative and not quantitative in nature, we have not conducted any statistical calculation over the data. Nonetheless, we have calculated the average value by category for each factor. In this way, it became easier to visualize alignments and misalignments between different types of respondents, as well as understanding the magnitude and direction of each factor.

3.7 Research Quality

The rigor of the research drives the value of a study (Cypress, 2017). Historically, validity and reliability have been the first widely-adopted dimensions to evaluate researches rigor (Payton, 1979). However, nowadays, these dimensions are considered more relevant in quantitative studies. Agar (1986) claims that validity and reliability just do not fit a qualitative study's purposes as they focus on the possibility of inferring the findings. In facts, qualitative studies seek to generate hypotheses instead of testing them, making external validity insignificant (Sandelowski, 1986). Guba (1981) has proposed an alternative model to evaluate a qualitative study's trustworthiness by proposing four new dimensions: credibility, transferability, dependability, and confirmability.

The different existing interpretations of reality drive the credibility of qualitative research (Bell et al., 2018; Guba, 1981). In this study, by interviewing stakeholders of different categories on the same topics, we grant the inclusion of the different interpretations of the magnitude and direction of the factors impacting AI in recruitment. Transferability refers to the possibility of transferring the findings of our study externally from the case of our partner (Bell et al., 2018; Guba, 1981). As Hubert is a typical AI solution provider, its stakeholders' perspectives are likely very similar to the industry trend. However, two phenomena can occur. One is that some factors result to be more significant within Hubert AI than in the industry generically. Second, some other factors result in less significance within Hubert AI than in the industry generically. However, considering that the aim of this study is not to transfer the findings to the whole industry, rather we aim to a case-to-case transferability (Bell et al., 2018), we believe that the other similar companies would face these factors with a similar significance of Hubert. Dependability refers to the possibility of repeating the research and getting consistent results (Bell et al., 2018; Guba, 1981). Although this research design can be replicated and adapted to other AI solution providers easily, it is impossible to say beforehand whether the results will be consistent. Finally, confirmability stresses the importance for the researchers to take their values away from the study (Bell et al., 2018; Guba, 1981). In this way, our personal biases will not compromise the participant histories. However, a systematic error would be inevitably integrated into the study due to the research design and sampling method being structured around Hubert AI’s stakeholders.
3.8 Ethical Considerations

According to Diener and Crandall (1978), the ethical issues in a business research can be divided into four main topics including risk of harming participants, lack of informed consent, invasion of privacy, and deception (Diener and Crandall, 1978; as cited in Bell et al., 2018). In this research it is aimed to avoid all these issues, especially in the data collection part. The participants were informed about the aim of the research before the interviews, and it is avoided to represent the study different than it is. Their permission was asked to record the interviews, and the recordings are kept confidential. Although the details of the study were not explained in detail at the beginning to avoid leading interviewees’ answers, at the end of each interview, all details were explained.

In the following days, a second permission was asked to use the data that is derived from the interviews. Also, no sensitive information was disclosed, since the privacy of both the participants and the involved companies are protected. Questions that require sensitive information and any question that will cause companies to lose their competitive advantage has been avoided. Eventually, all the participants were informed well without any deception, and their privacy was protected with avoiding harming them.
4 Results
In this section, main findings will be presented in two parts. While the results from secondary
data sources will include a market overview and competitor analysis, results from primary data
sources will consist of main findings from the interviews.

4.1 Results from Secondary Data
Results from secondary data sources involve two parts: a market overview and competitor
analysis.

4.1.1 AI Recruitment Market Overview
In this section of the report, a market overview including the analysis of the market size, market
segmentation and largest market shareholders for each segment will be presented. The aim of
the section is to provide insights to address the research questions by enriching the
understanding of the market, helping us to identify the potential business opportunities and
target customers for the strategic analysis.

According to several market research providers (“AI Recruitment Market By Offerings,
Application, End User and Regions | Absolute Markets Insights,” 2020; “Artificial Intelligence
recruitment market is segmented either by offering, application, end-users and geography.
Respectively, “offering segment” involves service and solution; “application segment”
involves job campaigning, candidate communication and assistance (chatbot), candidate
screening and rediscovery, process automation and others; “end-users segment” involves
recruitment firms, enterprises in terms of business, financial services and insurance,
government, healthcare, hospitality, manufacturing, retail & e-commerce and others. At last,
the “geography segment” involves North America, South America, Europe, APAC, and RoW
(Middle East and Africa). Although different sources provide similar market segmentations,
the provided market size and annual compound growth rate vary over the slightly different
forecast periods. While, according to IndustryArc, market size of the AI in recruitment was
$580 million in 2019 with a 6.76% estimated growth at compound annual growth rate (CAGR)
between 2020 and 2025 (“Artificial Intelligence in Recruitment Market Research Report,”
n.d.), MaximizeMarketResearch notes that expected CAGR between 2020 and 2027 is 7.8%
(“Global AI Recruitment Market,” n.d.). Another source, AbsoluteMarketInsights states, "In
terms of revenue, the global AI recruitment market was estimated to be US 200.15 Mn in 2018
and will grow with a CAGR of 7.6% to US$ 388.09 Mn in 2027.” (“AI Recruitment Market
By Offerings, Application, End User and Regions | Absolute Markets Insights,” 2020).

The largest market share holders in each segment are respectively, services when segmented
by offering (Absolute market insights, 2020), process automation when segmented by
application (Absolute market insights, 2020), enterprises when segmented by end-users
(“Artificial Intelligence in Recruitment Market Research Report,” n.d.) and North America
when segmented by geography (Absolute market insights, 2020; “Artificial Intelligence in
Recruitment Market Research Report,” n.d.). Enterprises that include business, financial
services and insurance have the largest share due to the frequent changes of the financial
industry dynamics, regulations and policies which bring difficulties in employee management
(“Artificial Intelligence in Recruitment Market Research Report,” n.d.). Furthermore, North
America was dominating the market with 42.25% in 2018, while Europe followed with 30.85%
(Absolute market insights, 2020). According to IndustryArc, market share of North America
reached the 43.7% in 2019, mainly due to the rising number of technology companies in the
region and improvements in job applicants sourcing and screening processes ("Artificial Intelligence in Recruitment Market Research Report," n.d.). All aside, the fastest growth is expected from APAC in the future based on the increasing industrialization and recruitment activities ("Global AI Recruitment Market," n.d.).

### 4.1.2 Competitor Analysis


These companies have been distinguished between direct, potential and indirect competitors, depending on their relative market commonality and resource similarity compared with Hubert as defined in the method’s section. To understand the competitors’ degree of market commonality we first needed to define Hubert’s applications. Those applications are candidate communication and assistance, resume screening and matching, preliminary interview and conversational interview. According to the framework proposed by (Bergen and Peteraf, 2002), direct competitors are those companies presenting high levels of both relative market commonality and resource similarity. For the specific case of Hubert, we distinguish between high market commonality and low market commonality based on whether the competitor serves conversational interviewing, as this one is the application that differentiates Hubert. Moreover, we distinguish high levels of resource similarity from low levels of resource similarity based on whether the competitor possesses AI technologies among its capabilities. Based on our research, the direct competitors include the following companies: Hirevue, Tengai and Mya Systems. Differently, potential competitors present low levels of market commonality but high levels of resource similarity. The resulting potential competitors include Avrio AI, Ideal, Impress AI, Xor AI, Wade and Wendy, Param AI, Smart Recruiters, Hiretual, and Whaii. Finally, Indirect competitors are defined as those companies having high levels of market commonalities and low levels of resource similarity. Based on the previous assumptions, Hubert’s indirect competitors are MichaelPage, Incluso and Adecco group. All the remaining companies from the initial list will not be considered anymore for the further analysis, as they do not fit into any category and therefore will not be considered as competitors. Starting with the communication strategy, five main themes have emerged from the competitors’ websites: fairness, efficiency, top talent acquisition, business model unicity and job applicant centrity.

Fairness emerged from USPs stressing the “lack of biases” of their services or products. Competitors mentioning faster or better solutions have been labeled as efficient. The top talent
acquisition theme was driven by those companies promising to ensure the identification through their solutions of the best candidates. Some USPs focused on the innovativeness of their business model, outlining the business model unicity theme. Finally, “job applicant centricity” emerged from the competitors stressing the value that they are providing to job applicants in terms of more smoother and more effective processes.

In figure 3 the distribution of the communication themes among the different types of competitors is shown. Each competitor’s communication could cover one or more themes. As the number of companies is not equally distributed among the three different competitors’ categories, as it has been decided to plot the average communication theme per category of competitor rather than the sum. The results show that both direct and potential competitors put much emphasis on the efficiency of their services and products. They both possess AI capabilities which can explain this communication strategy. Indirect competitor’s profile differs significantly from the others as it does not have any peak. Also, it presents the highest emphasis on the value for the job applicants and top talent acquisition.

![Figure 3 - Average communication strategy by type of competitor](image)

Regarding the funding, it resulted more significant to categorize this by resource similarity rather than competitor type, as no substantial differences emerged from potential and direct competitors. From the companies we have examined, the ones having low resource similarity compared with Hubert possess enormously larger funding on average, as shown in the table 3.

<table>
<thead>
<tr>
<th>AI</th>
<th>Average economic resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>4,129,566,667</td>
</tr>
<tr>
<td>Yes</td>
<td>30,378,800</td>
</tr>
</tbody>
</table>

*Table 3 – Average economic resources by resource similarity*
Although our sample is not representative of the whole population of AI recruiters, this comparison shows the differences between the most notorious AI-based recruitment companies and the most notorious conventional recruitment companies.

The employed strategic framework by Lafley and Martin (2013) focuses on two areas of competitor analysis, capabilities and costs, in order to empower companies similar to Hubert in leveraging their capabilities and cost structures.

The competitor’s capabilities are shown in figure 4 in the form of market applications. Coherently with the definition of direct, indirect and potential competitors, the former two categories present visible similarities in terms of customers’ needs, while the potential competitor’s profile is substantially different. Both direct and indirect competitors offer interviews and screening services to their customers. However, their profile differs when it comes to visitor conversion, job campaigning and communication with candidates. Direct competitors are the only ones (between these two categories) providing customers with visitor conversion services but do not compete in terms of the remaining categories. Regarding potential competitors, they mainly have candidate screening services in common with each other; while, except for visitor conversion that presents a very low value, the other applications are more equally distributed within the category.

![Figure 4 – Average customer needs served by type of competitors](image)

Differently, as explained in the methods, due to the lack of available data, the competitor’s costs have been measured in terms of number of employees. As shown in table 4, indirect competitors have on average a vastly larger number of employees coherently with the results of the funding. On the other hand, it is interesting to notice that, among the companies in our sample, direct competitors possess on average the double number of employees compared with potential competitors. In other words, it seems that direct competitors face higher costs than potential competitors.
### Type of Competitor

<table>
<thead>
<tr>
<th>Type of Competitor</th>
<th>Average number of employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct</td>
<td>148</td>
</tr>
<tr>
<td>Indirect</td>
<td>13,843</td>
</tr>
<tr>
<td>Potential</td>
<td>71</td>
</tr>
</tbody>
</table>

*Table 4 – Average number of employees by type of competitor*

### 4.2 Results from Primary Data

Although already mentioned in the methodology section, it is worth to remind that every interview consists of two parts. While the first part is a semi-structured interview where open-ended questions have been asked to investigate the factors that impact the pace of adoption and collect the necessary data for strategic assessment, the second part is a structured interview where the factors from literature review have been tested. In the following parts of this results section, empirical findings from the interviews will be presented in separate two parts.

#### 4.2.1 Results from Part 1 (open-ended questions)

The analytical framework that is designed for this study starts with investigating the factors that impact the pace of adoption of AI in recruitment. In this part of the primary data results, the first part of the interviews will be presented where the aim was to derive these factors that impact the adoption, both directly and indirectly, which answers the first research question of “What are the factors that impact the adoption of AI in recruitment?”. Also, to gather data for the third research question which is "How could a generic AI solution provider startup approach the AI recruitment market from a strategic perspective?".

For this part of the study, 16 semi-structured interviews are conducted with different question structures for each category of respondents. Only relevant open-ended questions have been asked to each category, without leading the respondents and with trying to gather relevant data to answer each research question at the end of the study. Questions such as “How do you perceive the pace of adoption of AI in recruitment?”, “What do you think are the factors that impact adoption of AI negatively?” or “What do you think are the factors that impact adoption of AI positively?” have been asked. However, questions such as “How was your experience with the AI tools within your past job applications?” has only been asked to relevant levels of respondent, for instance the job applicants.

As it has been described in the data analysis part, after transcribing each interview, they have been analyzed through thematic analysis. Due to the nature of some questions, several themes emerged naturally during the data analysis part. However, there have also been other emerging themes. Eventually, 8 themes emerged including pace of adoption, fostering factors, hampering factors, adopters’ profile, Hubert’s capabilities and costs, recruiter’s role in adoption process, channel value, end-user’s value. In the following part, all results have been presented, respectively, by themes and under each theme, responses of each category of respondents.

#### Pace of Adoption

One of the aims of this study is to investigate the factors that impact the adoption of AI in recruitment. Hence, “How do you perceive the pace of adoption of AI in recruitment?” question has been asked to all types of stakeholders to get an understanding of their perception on the adoption rate. Due to the nature of the question, “pace of adoption” theme has emerged from the interviews in which all types of stakeholders expressed their opinions. All categories of
respondents, except the job applicants, mentioned that there is an interest in AI in recruitment. However, different respondents provided different opinions on the pace of adoption. Some have said it is faster than expected others have argued the opposite.

Employees
Both Employee 1 and 2 mentioned that the pace of adoption of AI recruitment solutions is just like what they expected, as we are now in the early adopter phase.

“Digital transformation in the HR industry has been slow. So I didn't expect it to be very adopted to AI technologies. So I would say it's pretty much what I expected.” (Employee 1)

“I think it is what I expected. I was afraid that it was slower… We almost passed the evangelists, really hard fighters for new technology. I think we are in the early adopter phase, basically, but we are not in the mainstream market yet. So we haven't crossed the threshold...” (Employee 2)

Employee 4 acknowledged the interest but she/he also reflected on the difficulties in transforming this interest into real business opportunities:

“I think many are very eager to start with a pilot and try it out and see how it is. However, I mean, we had a problem with actually converting them to real customers.” (Employee 4)

Differently, Employee 3 claimed that the pace was slower than she/he had expected.

“I think faster than expected. To be honest, there's still, at least in my mind, a lot of question marks regarding bias in recruitment and so on. So I think the adoption is actually faster than I anticipated.” (Employee 3)

Investors
Similar to Employees 1 and 2, Investor 1 also mentioned that currently the industry is in the early adoption phase, and, like Employee 4, he/she added there is an emerging/increasing interest in relation to the new technologies

“There is definitely an interest… adopting a new technology, it's just a matter of timing, when we reached a tipping point, because right now we are in the face of early adopters.” (Investor 1)

Differently, Investor 2 argued that large scale firms are slowing down the rate of adoption.

“My expectations, as always, when selling to large scale firms is that this is hellishly slow. It always is, it takes forever.” (Investor 2)

Competitors
All competitors emphasized that there is an interest in general and it is at a normal pace. Only Competitor 2 referred that things could have moved faster.

“There is a lot of interest for the application of AI in so many parts of recruiting, not just maybe screening, but also, you know, bias, diversity and inclusion, and what can be done on the candidate side.” (Competitor 1)
“Yeah, it's basically underestimated, there is interest in general, it's advancing at a good pace. Ideally, maybe it's just in my head, I would imagine things going faster.” (Competitor 2)

Customers
Due to time constraints and prioritization of the questions, we only asked Customer 3 about his/her perception on the pace of adoption of AI in recruitment and Customer 3 stressed that it is slower than she/he is expected.

“I think more and more companies are using AI. Maybe not as fast, I would have thought it would go.” (Customer 3)

Job Applicants
While 2 job applicants out of 3 told that the adoption pace is normal, Job Applicant 2 told that it is slow.

“I'm not sure. I think there is still a lot to be developed in terms of AI, that maybe has the right rate of adoption for the recruitment process.” (Job Applicant 1)

“I think it's like, quite normal.” (Job Applicant 3)

“AI is a new technology and I think the pace is kind of slow.” (Job Applicant 2)

Fostering factors
A very important theme extrapolated from the primary data analysis is the one about “Fostering factors”. The interview components part of this theme emerged when the interviewees did express their perspective on what are the factors that impact the adoption of AI tools in recruitment. Also, the level of importance of this theme is driven by the direct correlation with the first research question, namely: “What are the factors that impact the pace of adoption of AI in recruitment?”. In the interview structure we had designed some questions having the specific aim of triggering this theme, such as “What do you think are the factors that impact the adoption of AI in recruitment positively?” that we asked all employees, investors, competitors and customers. Moreover, elements of this theme also emerged indirectly from other open questions having different focus. For example, during the interview with Competitor 2 a fostering factor emerged when we asked its opinion on the job applicant perception of being judged by a machine:

“Yeah, I think this answer, largely, is largely different, depending on the background of the candidate. Coming from a foreign background, for me, it's a necessity, I don't have the privilege to think about the negative impacts for it, because I have a bigger problem that it solves, which is the bias”. (Competitor 2)

The resulting fostering factors will be presented per category of respondent.

Employees
The fostering factors presented by Hubert AI employees are: efficiency, digitalization, recruiters biases, job applicant perception and the current level of development of the technology. Efficiency is a topic everyone covered by saying that AI saves time to the recruiter by automatizing all the monotonous tasks. On top of that, two employees stressed the importance of this factor by saying that it’s the most important one:
“There's a lot more people applying for jobs. So specifically for the recruitment sector, there's a lot of motion right now. And a lot of processes that cannot be handled the way that were handled before, if you don't want to reduce quality, or if you want to keep the quality high, I think that's probably the biggest factor.” (Employee 2)

“Automation in general, it's the number one factor” (Employee 1).

Nonetheless, Employee 4 delimits the influence of this factor to the managers, as the respondent claims that they value efficiency more than the actual recruiters.

“The manager is more positive about using Hubert than the actual recruiters.” (Employee 4)

Only two employees mentioned the importance of digitalisation by saying that it indirectly pushes the adoption positively. In addition, Employee 1 says that we are still at the initial stage of digitalisation for recruitment.

“There's like an introductory stage, I think we're in it right now, where the recruiters are getting more used to all the digital tools they can use. But I think in maybe two years, no one will recruit without them, in some sense. (Employee 1)

Three employees out of 4 considered bias as a positive factor impacting the adoption of AI in recruitment. They all believe that recruiters are in any case more biased than machines even if they claim that AI cannot remove all the biases from recruitment. In this sense, it is of particular interest what was said by Employee 4 and 3.

“Hubert doesn't take into account if it's a great guy, or girl, or it doesn't even know the age of any of the candidates and stuff like that. So some of the bias gets reduced. I'm not saying all but some.”. (Employee 4)

“And also the bias advantage, especially in larger companies, is seen as a big advantage using AI because you can reduce the human interaction early on in the recruiting process, which makes the bias be shifted to a later stage of the recruitment process.” (Employee 3)

According to two Hubert AI employees, the job applicant perception on AI tools is a factor fostering the adoption of AI in recruitment. For one, it is only a matter of giving everyone equal opportunities to express themselves while for the other employee it is also about receiving instant feedback.

“What we've seen is that lots of candidates appreciate getting instant feedback. That they get to speak for themselves, even though they know it's a, I mean, in the case of Hubert, even though they know they're talking to a computer, they do realize that someone will read the conversation. So they can express themselves in a way that the resume or the cover letter could not express” (Employee 4).

The last factor the employees outlined is the current level of development of the technology. Specifically, it was only mentioned by employee 2 who stressed that machine learning algorithms are being used in many different sectors effectively.

“(In general a factor is) the maturity of technology, specifically, in this case, in our case, chatbots, or the machine learning algorithms, they are being proven to work in other fields and other industries”.
Investors
The fostering elements outlined by the investors orbit around three factors: the frustration caused by conventional recruitment to all the involved actors, the efficiency of the AI tools and the recruiters biases. The frustration of conventional recruitment is considered as a factor impacting the adoption of AI in recruitment positively because it’s considered a stimulus to change things.

“Everyone hates recruitment, the recruiters, the applicants, everyone hates it. And it's an extremely tedious process that takes six to nine months. And as an applicant, you're kind of hanging in midair all the time you have no idea and typically they don't even return your calls or your emails or whatever. And at the firms at the companies they also hate it because they know that they are mistreating applicants. They know that they are short of time. They hate reading yet another CV because they have already sifted through 158,000 in the last kind of six months, and they just hate it.” (Investor 2)

On the other hand, both investors mentioned the importance of efficiency as a factor fostering the adoption of AI in recruitment.

“(AI) saves a lot of time and money for the, for the, for our clients, of screening CVs. And it also improves the quality of the screening of CVs, it reduces the bias in screening of CVs, because we conduct structured interviews” (Investor 1).

“If you believe that you have a process, you look at the process, you understand that it's kind of extremely bad as it is very inefficient, very costly, takes forever, everyone is [obscenity] off. Then I guess you might be doing something good. If you can remove at least 70% of the hassles in that process, then you probably have something that should be a sellable service. And in this case, that is the case.” (Investor 2)

Finally, they also mentioned the impact of AI in reducing bias in the recruitment processes. One claims that it is a solution for the need of increasing diversity and inclusion in the workplace.

“I think most robots are actually more bias free than humans are. [...] And if we compare the things we're doing (at Hubert), with what humans are doing when they're picking and choosing CVs, I can guarantee that we have a much better process.[...] And it also improves the quality of the screening of CVs, it reduces the bias in screening of CVs, because Hubert conducts structured interviews.” (Investor 1)

Competitors
The other AI solution providers for recruitment, that are formally labelled competitors in this thesis, also consider the technology efficiency and the recruiter biases as two fostering factors. In addition, they also mentioned the impact of the increasing number of candidates per job offer as well as the impact driven by the costs of failed hires. They all agree that customers can see the AI potential in terms of bias, diversity and inclusion. Competitor three provides a good explanation on how the recruiters biases are linked to failed hires.

“Well, I would say, if done correctly, one of the big problems with the current way of recruiting where a human basically is sitting and evaluating a lot of applications that have come in is, is flawed in some ways, right? Because either you receive very few applications, and when you're reading them, you have your own biases, or your own kind of ideal idea about what the candidate should look like. And that has too much emphasis on the one that you've decided to interview and that person might not be the right one.
And so there are a lot of failed hires out there, you know, where things don't work out. And you have to hire another person, you know, maybe three months or six months down the line.” (Competitor 3)

The increasing number of candidates per job offer is another factor that all the competitors mentioned. Competitor 3 reports that when a job application receives too many candidates (hundreds or more) the recruiters do not manage to read even half of them.

“Which is of course a problem, because if a company has spent a lot of money on employees and also in making sure that they attract a lot of candidates, and if they don't read half of them, you know, the best ones could still be in the pile of candidates. So (they should) be able to go through all of the applications and make sure that they actually evaluate every one of them.” (Competitor 3)

“So, let's think about the screening process where you get hundreds of candidates. And if you have a system, which automatically can shortlist these, and you can maybe focus only on the top 10% these will be a huge advantage for them” (Competitor 2)

The increasing number of candidates also have an impact when it comes to searching for a good candidate profile when looking at all the candidates that had shown interest in the company in the past.

“Another one is the access to huge amounts of data that they would take a lifetime to explore manually. So this is the case of sourcing. Imagine you have one, not not 100 but 1000s of people who applied before at your company, and then you should check if there is some person that could fit a role. And this will take forever, unless you are a very experienced person, even that, it's very hard to search manually in this pool. [...] So these are the two aspects where I think the AI model shines. So automation of repetitive tasks and exploration over big data.” (Competitor 1)

Customers
As per every other category, customers considered the recruiters bias a factor fostering the adoption of AI in recruitment. In addition to it, they also mention AI efficiency and effectiveness when it comes to recruitment. Also, for one customer the compatibility between their candidate's behaviour and Hubert’s product was a main driver of their adoption. Customer 3 provided an explanation on the importance of understanding their own biases when they decided to adopt Hubert’s technology:

“Yes, I think for me, in deciding to try different AI tools in the recruitment, there's been, of course, always a problem of biases in the recruitment. So it's been a problem like with age discrimination, and also heritage, where you're from, and because most of our recruitments are, like 100% Swedish people. So that has been a reason to try different things.” (Customer 3)

All of them also mentioned the efficiency of recruitment when using AI tools, even though they took different perspectives. Customer 1 claimed that using AI was both time and cost saving, Customer 2 said that implementing AI relieved them from the large number of applications that they could not handle anymore while Customer 3 mentioned that sparing time was a significant gain of their adoption.

“We have a very, very many candidates who are looking for jobs. And we've felt that we cannot take care of everyone in a good way. We had too many applications.[...] (AI
enabled us to) streamline the recruitment process, to make it so that the recruiters can focus on more qualitative work, such as real interviews and stuff like that.” (Customer 2)

Effectiveness was mentioned by Customer 1 and 3. While Customer 1 claimed that AI is fairly good at assessing candidates compared to humans, Customer 3 considered AI even better as it avoids them to have failing hires.

“And I think we spare a lot of time. That is the main factor, but also, we avoid wrong recruitments” (Customer 3).

Hampering Factors
A second important theme that is extrapolated from the primary data analysis is the “hampering factors”. Similar to fostering factors, this theme also provides a direct answer to the first research question of “What are the factors that impact the pace of adoption of AI in recruitment?” and the theme emerged in a similar way. First, specific questions that are asked during the semi-structured interviews, such as “What do you think are the factors that impact the adoption of AI in recruitment negatively?” entailed to the rise of the theme. Second, the emergence of the theme is also supported by the repetition of hampering factors in answers to different questions that are asked to different stakeholders including employees, investors, competitors and customers. For instance, it has been asked by competitors “What kind of attributes, considering all the departments involved in the decision making process, are important for the customers, when adopting AI for recruitment?” and Competitor 3 replied:

“Cost is the prohibiting factor because HR is cost centered and most of their money is allocated to two things. The primary one is their employees in the HR department, so the people doing the recruitment, and then they have a small budget for having, you know, an HR platform”. (Competitor 3)

Similar to the reply of Competitor 3, other emerging hampering factors will be presented per category of respondent.

Employees
The hampering factors presented by Hubert AI employees are lack of understanding of the financial benefits by HR departments, bad reputation due to failed examples, and human resistance due to several reasons including recruiters’ resistance to a new technology, lack of human interaction, recruiter’s emotions, their resistance to change, recruiters’ perception on seeing AI tools as a threat, and skepticism towards AI. While all employees emphasized human resistance as a factor in different ways, 2 out of 4 claimed that lack of understanding of financial benefits is an obstacle. For example, Employee 4 stressed this obstacle as:

“HR people have difficulty of understanding the economics around it... I think they have a problem of seeing the value from the beginning.” (Employee 4)

A second factor that is both mentioned by Employee 1 and 3, is the bad reputation due to some failed examples in the industry. Additionally, Employee 3 also highlighted this factor as the biggest factor:

“Mainly the bias question that has gotten a lot of media attention in the past years. And I think that's the largest factor impacting in a negative way. Because there are a couple of very notorious cases where recruiting has failed miserably and they've gotten a lot of attention because as most new technologies do, there is always an opposition trying to
point out the weakness of new technology and trying to influence the decision makers in
disadvantage towards the new technology. So yeah, a lot of media attention has caused
the AI recruitment to get some sort of bad reputation when it comes to limiting bias.”
(Employee 3)

While Employee 3 also stressed the “resistance to a new technology” with this quote, she/he
also added “the lack of human interaction” as a negative factor:

“...The experience will never be as personal as you would get with a real human recruiter.
But I think the introduction of AI in recruiting is a bit of a paradox because, of course, it
takes away some of the personal touch. On the other hand, maybe in a normal recruiting
process, maybe 5% make it to the interview and it processes everyone with just the
interview stage. So it's more personal on a larger scale but less personal when it comes
to individual candidates, if you know what I mean.”  (Employee 3)

Similar to Employee 3, Employee 2 also noted “the lack of human interaction” and “resistance
to a new technology” but she/he also added the “emotions attached to it” and interpreted them
as the “human resistance to change” and then emphasized the importance of the human factor:

“...Usually it's the human resistance to change. That's the same as in any recruitment. It's
more, you can feel it more because the process itself of selecting other humans to join a
company is so human driven. You know, there's so much emotion attached to it. It's not
like an impulsive buy or something you know, that you do. When you walk by a store or
something, there's actually a lot of human interaction needed for someone to join a
company. And that's why there's a lot of resistance to new technology, even if it clearly
helps the person recruiting or the recruiter.”  (Employee 2)

“Human factor is the biggest factor here that resists change.”  (Employee 2)

Besides these factors, only Employee 4 mentioned that recruiters might see it as a threat:

“I think there's also a threat. They may mostly see Hubert as a threat rather than giving
value, I mean, threat for their recruiters. (Employee 4)

At last, only Employee 1 addressed “skepticism towards AI” as another negative factor and as
the most significant factor.

“I also think there's a general skepticism towards AI, especially when it comes to making
decisions, when AI makes decisions. And when AI makes decisions, in algorithms that
affect humans and their ability to get jobs, then it becomes a really difficult situation,
should we rely on humans making those decisions? Or should we rely on AI to make
those decisions. And there is, of course, a number of risks of transferring that decision to
a robot doing it. And, that's alright, we should be very skeptical about it. Because things
can go really wrong. There are some good examples of when things have gone very
wrong, basically, using AI in recruitment. So that is one thing, people are basically afraid
of using AI for picking and choosing the people that they want to hire. That's probably
the number one obstacle.”  (Employee 1)

Investors
The hampering factors that emerged from the interviews with investors are similar to the ones
with Hubert employees: “lack of understanding of the financial benefits and “human resistance
to change”. Similar to Employee 1 and 4, Investor 1 also mentioned that “lack of understanding
of the financial benefits by HR departments” is a negative factor.
“Second obstacle, if you want to make a change in a company, the only language that is common across an organization is the financial language. So far, my judgment is that the people organizations don't speak that language, as fluently as most other departments do. Which makes it hard for them to motivate. Why should we invest in AI technology, it's very expensive. Because if you want to do an investment, there has to be a return on that. And so we're trying to help the HR departments to do that and help them to motivate why taking this decision will financially benefit the company.” (Investor 1)

Finally, Investor 2, stressed the human resistance as a hampering factor in adoption of AI in recruitment:

“Yeah. I mean, it doesn't matter who you talk to, what vertical, they will all tell you that you know, our industry is so conservative, everything takes forever to ship. That's the same for every single vertical. All verticals tend to be extremely conservative. And the reason for that is there are humans and humans, we tend to be conservative, and we don't change.” (Investor 2)

Competitors
The hampering factors that derived from the interviews with competitors are trust issues towards AI in recruitment, risk of injecting bias, failed cases, need of education, misconceptions on AI, lack of transparency and HR departments’ budgets. Similar to Employee 4, all competitors reflected on the “skepticism/trust issues towards AI”. Competitor 1 continued her/his words with adding the “risk of injecting bias in the model” as a hampering factor in the adoption of AI in recruitment and she/he drew the attention to sub-bias issues:

“But this also comes with the kind of fear I have to say, or uncertainty. Because many customers of ours are still wondering whether they can trust our model, to which extent they can trust it and if we are injecting any kind of bias, so this kind of behaviour, I would say.” (Competitor 1)

“Yes, I think currently, there is quite some risk of injecting a bias and I think this has to be used very carefully. So I'm not just talking about bias in terms of the usual things that we always talk about, so gender or ethnicity, but I also think of more technical bias or other more sub-bias which go beyond the usual aspects, I think, or maybe.” (Competitor 1)

Different than Competitor 1 but similar to Employee 4, Competitor 3 and 4 add the failed cases as a hampering factor:

“I think a lot of the potential of AI within HR is not going to happen until AI has proven itself because right now, there's still a lot of failed cases of using AI, where, I guess the most known ones are from the US where companies like Amazon have tried to hire using AI and it has gone wrong, you know, they tried to make it self learning.” (Competitor 3)

“...And, based on that, they decided that the ideal candidate was a white male, aged 33 to 43. And living in these zip codes, and it's just started hiring those types of candidates. And, of course, that's both illegal in the US, and it has a lot of potential negative effects in terms of, you know, diversity...” (Competitor 3)

“Yeah, I think fear is a highly negative factor, especially, you know, there's some articles that end up coming in the market that really stick in customers’ minds and prospective customers minds. So there's a lot of lack of awareness when it comes to AI. [...] And in these netflix documentaries, one of them is called coded bias, for example, then there was this article about Amazon having bias built into the resume and I think it would have been
so widely publicised that people just associate AI and recruitment with bias. “

(Competitor 4)

In addition to failed cases, Competitor 3 also stressed 4 additional hampering factors different from other competitors: need of education, misconceptions on AI, lack of transparency and HR departments’ budgets. She/he referred that HR people needs to develop themselves, then added the definition of good might change and stressed on both misconceptions on the definition of AI and lack of transparency:

“They need to educate themselves more on technology so that they are able to see what's good, and what's bad.” (Competitor 3)

“They don't know what the percentage is but I would say, 60% of the people that we're talking to have the right mindset around this and want to make sure that the tech is good. And good can be many things. It can be that, you know, how is the algorithm working? You know, is it? Is it transparent? And do you know how it's working? Or is it just a black box that you have no insight into? And, and you and you don't know how it arrived at a certain conclusion? And or how do you know, what kind of insights do you want?” (Competitor 3)

“There's a lot of misconceptions around what is AI and what is not AI.” (Competitor 3)

At last, she/he added the HR departments’ budget as another hampering factor:

“It needs some convincing, and it needs some, some allocation of, of extra budgets, which is, is sometimes difficult, because in many companies, HR is still perceived as a cost centre, and not a place where you invest a lot of money.” (Competitor 3)

Similarly, Competitor 4 also mentioned the monetary costs of implementing AI at this stage of technology development.

“The other factors, sometimes our AI technology again, right now, it's still young, it's still sort of expensive when done right. Because there are many ways to do it wrong, right? Like that, as you imagine technology, it's I I personally don't believe that It's, it's a great way to match people to jobs based on keywords, there are some ways to do it correctly, but most don't do that. So doing it right takes effort, it's not very cheap as of today. AI itself requires kind of continuous improvement. So ends up being a little more expensive.” (Competitor 4)

Customers
As per every other category, customers also considered “skepticism/trust issues towards AI” as a hampering factor in the adoption of AI in recruitment. Customer 3 noticed:

“Yeah, I think it's a big step to trust in AI. I think, maybe, it's easy to think that we, human, always know the best.” (Customer 3)

Similar to Employee 2 and 3, both Customer 1 and 2 added the need of human interaction as a negative factor:

“Maybe it's not as personal as when you make a telephone call.” (Customer 2)

“And when I read the interviews with the candidates, I can see that sometimes they ask bot, questions which the bot cannot answer.” (Customer 2)
“When it comes to negative impact, then, of course, what I just said, affects the implementation of AI in organisations. There are still a lot of people out there that don't want to be interviewed by a chatbot or AI interview. You are in some sort of virtual environment, and they still want to feel some sort of human touch when it comes to being interviewed or being evaluated and being assessed. And that's also, that's mainly from the candidate perspective, from a client perspective, that is also a factor. And they usually want to understand, like, what is their recruiters sort of gut feeling when it comes to the candidate. And that's not something that you can get using AI.” (Customer 1)

At last, Customer 1 touched upon the two similar factors with Competitor 3, which are: “need of education” and the “misconceptions on the definition of AI”. However, Customer 1 also clearly highlighted the “performance of AI on assessing” as another negative factor.

“Something I quite a lot tackle when I'm meeting with new suppliers and stuff like that is the concept of AI. How do you define AI?” (Customer 1)

“And from my point of view, something that we never want to have, but still, it's a factor that affects the outcome of AI using AI in our organisation. And what we also have seen is that it requires a lot of competence from the recruiters to understand and to accept AI. So it's a lot of training connected to using AI, for the recruiters to accept the solution as well. And otherwise, of course, there's always still the data quality factor or sort of...How should I explain this... when it comes to using AI, you have to be super clear and super, have a very clear picture of what you are going to assess. Because that's the only thing that will be assessed. And when using human recruiters, we can always, you know, gather information in different ways we can identify silent, like cues and follow up on that and do things that AI is not still adaptable to do, which can lead to very wrongful results. And it's also hard to sort of adapt to different answers still in AI. And so that's, of course, a big risk as well. So we have to be even better than we are today to perform like requirement profiles where our clients really understand what is the source, what do we really want to assess. And, and then, of course, the factor that I said that AI still has trouble assessing, like free text answers, it's very hard for them to actually do a correct assessment of answers that aren't standardised answers.” (Customer 1)

**Channel value**

The channel value theme is focused on outlining what attributes the customers do value the most. Coherently, the elements of the interview part of this theme are the ones providing knowledge in this sense. As per other themes, we have directly asked some categories of respondents their vision of channel value, however it happened that they discussed similar elements when we asked other questions. Interviewees from all categories of respondents have provided information regarding this theme.

**Employees**

The most common answer among Hubert AI’s employees when asked what are the attributes that the customers value the most is “It depends”. According to them, depending on the nature of the company they either value efficiency the most or diversity. Furthermore, they also mentioned that improving the candidate experience is part of channel value.

“I think it also depends, depending who the customer is, and what country we're talking about, if it's like the UK, or the US for warehouse workers, then I'd say it's a time saver. If it's, if the customer would be like Spotify, then I would say it's less bias.” (Employee 4)
“(It) really depends on the company. But the benefits are, as I said, lower, shorter time to fill, save time and money, reduce bias, and in some cases improve the candidate experience.” (Employee 3)

“I think that is highly dependent on the type of customer, and what type of company you are, and what kind of values you have. To be honest, I think everybody would say, on open question, that the most important thing is diversity and inclusion. And we have to establish or improve our processes, when it comes to diversity and inclusion. Do I really think it's the most important thing for, for the, for the actual recruiters? No, I don't. I think it's a time saving thing. For the recruitment. For the managers that are responsible for recruitment, it's saving time.” (Employee 1)

Investors

For the investors, channel value is driven more by the innovativeness of the solution rather than its benefits. For them, at this stage of diffusion of the technology it’s way more likely that a company adopts AI to improve their reputation as innovators. They claim that the benefits cannot be perceived yet because of the human will of not changing. Nonetheless, Investor 1 also mentioned that different companies value different attributes when it comes to adopting AI for recruitment.

“There are typically seven to eight to nine percent of individuals that tend to be keen on trying out new stuff. They are technologically interested. They have a reputation among their peers that they are quick and fast and very savvy etc. And in order to keep that branding alive, they tend to jump on new stuff pretty quickly. So there is quick uptake among certain individuals, but it's almost hopeless to try to understand what firms they are working for. Because you could have a very old person working for a specific firm in, I don't know in, in creating baby tawlers trolleys. And there is no way that you on paper can think that that guy would be very, very fast on picking up a, an automated solution such as Uber, but but he might be, and at the same time, you could talk to a very young HR director at one of the fancy and well reputed technology companies such as Spotify, and he or she will turn out to be extremely conservative and just say: ‘No, no, no, we're not going to do that’.” (Investor 2)

“[...] and it delays the adoption towards AI, for sure, because it's, in general, people like what they're doing, and are reluctant to change. (Investor 1)”

“They could be lazy, they are happy to work nine to five nothing should change they could be it could be that they understand that if they move Hubert in to the solution they have to three people are made redundant and they don't like them” (Investor 2)

Similarly to the employees, when interviewing the investors one of them claimed that some companies prioritize diversity while others efficiency. In this case, Investor 1 referred to tech companies specifically.

“I think it differs depending on who you're talking to, that is involved in this kind of decision. But also the type of company you are, it's kind of obvious maybe to say that, tech companies in general, highly value the diversity and inclusion part. Maybe because they don't have the same problem of facing the, the, the high volumes of candidates for their type of roles that they have open positions for. But for companies that have a high volume, the time saving part is probably more important than diversity and inclusion.” (Investor 1)
Competitors
The competitors resulted to be less keen on mentioning channel value compared to other categories. However, Competitor 3 mentioned some unique elements such as security, privacy and transparency.

“While the security for one is important and privacy (as well). Those are sort of givens, you know, if there's sort of implied that you have to live up to that, and if you don't, forget about it.” (Competitor 3)

“And, and so I would say that... I don't know what the percentage is but I would say, 60% of the people that we're talking to have the right mindset around this and want to make sure that the tech is good. And good can be many things. It can be that, you know, how is the algorithm working? Is it transparent? And do you know how it's working? Or is it just a black box that you have no insight into? And, and you and you don't know how it arrived at a certain conclusion? And or how do you know, what kind of insights do you want?” (Competitor 3)

Differently, according to Competitor 4 channel value is driven by the improvement of conventional recruitment operational inefficiencies.

“(The customers) they're not happy with the standardisation of factors that different people who are hiring for the company for the same role are using different recruiters in the same office, maybe using different criteria to shortlist candidates for the same role. So that the lack of standardisation is key.” (Competitor 4)

“To a large extent that recruiters themselves are asked to hire for so many different kinds of roles, that it's hard for them to know what questions to ask what is it that they're looking for, because we've seen recruiters were hiring for sales roles as well as data science roles. And then, you know, in the same breath, they'll say that they're hiring for an operations manager. So they, you cannot expect recruiters to stay up to date in the skills in how the skills are changing in these all these different areas. How to evaluate candidates effectively, and all of these areas, so they end up taking shortcuts, right?” (Competitor 4)

Customers
In this research we analysed channel value by analysing the attributes that the customers value the most in the market. Hence, we will now quote their direct response to the matter. As predicted by the other categories, they have mentioned efficiency, diversity and better sourcing of candidates. Regarding efficiency, two customers out of 3 needed a more efficient system to screen all resumes, while one also mentioned the importance of the implementation.

“And at the moment, we have different challenges in this different business areas. So for example, when it comes to like Customer Service Administration, and trainee programmes, for example, then the biggest bottleneck and where we have spent a lot of time is related to CV screening and screening interviews.” (Customer 1)

“ I was looking for something that could, how do you say, that the recruiters didn't have to do much if you just go with the flow, so to say, so, I didn't want to add another job task for the recruiters. It would be implemented together. And one big thing was that they (Hubert) came up with an integration with details, we work with them, then we can make, it's very automatically the whole process. So that was a big thing for us.” (Customer 2)

As already reported in the fostering factors, only one customer mentioned the role of diversity and bias in their decision process.
“Yes, I think for me, in deciding to try different AI tools in the recruitment, there's been, of course, always a problem of biases in the recruitment. So it's been a problem like with age discrimination, and also heritage, where you're from, and because most of our recruitments are, like 100% Swedish people. So that has been a reason to try different things.” (Customer 3)

Differently, Customer 1 was the only one mentioning the value of sourcing candidates.

“In tech and IT, that (screening candidates) is usually not the problem, then the problem is more related to search in sourcing, and identify candidates that way. [...] The biggest usage of AI I see in our organisation is least related to search and sourcing and CV screening and screening interviews” (Customer 1)

Job applicants

Finally, also job applicants have their own opinion on why companies adopt AI technologies. In addition to bias and efficiency, they also believe that using AI technologies enable companies to find the best candidates.

“I think, what I read through, before I prepared interviews, like in Sweden, it is for bias. And the second reason is that like, they don't use it for all the positions, they use it for some position where they get huge number of applicants, for example, in my case, the trainee position, they got application from all over the Europe, so they have to filter those if they hire, if HR sits and takes the interview, it's gonna take years to recruit for that role. I think one is the bias. And another one is to filter people. So that like, AI can conduct as many interviews as one, but a human can conduct only one interview at a time. So I think those are the only two reasons.” (Job applicant 2)

“This (using AI technologies) is definitely something positive, rather than like, you know, having those classic questions, actually. So what I feel (is that) these companies (are) really making investments in new companies, this is how I perceive because you're paying much more money, and you're just trying to find the best candidate for this job role.” (Job applicant 3)

Adopter’s Profile

One theme that emerged from the data analysis is the “adopters profile”. Different interviewees have indeed tried to draw a description of who are the adopters at this stage of diffusion. An element of this theme was already presented as part of the channel value theme, however, it will now be discussed as a whole theme because of its recurrence and relevance.

Employees

According to Hubert’s employees, we are still at an initial stage of technology diffusion and the people who are investing in AI technologies for recruitment are those who are more curious than others.

“I think we are almost past the evangelists, really hard fighters for new technology. I think we are in the early adopter phase, basically. But we are not in the mainstream market yet. So we haven't crossed the threshold or the beachhead market into the left or whatever it's called the gap in between early adopters and the big market.” (Employee 2)

“I think people that are genuinely interested, especially these early adopters, and evangelists, they have an eye out and other industries, or at least have an ear for innovation, when you come and pitch Hubert to them, they have this, you know, this
general feeling of curiosity that they can can basically extrapolate into their working environment. And I think that trend, once you have found a few big voices, industry leaders, then that will accelerate the adoption positively.” (Employee 2)

Investors
Both the investors believe that AI is still at the early adopters phase of development. However, investor 2 has a clear picture of who the adopters are. If the decision makers are the owners of the companies, then it is easy to convince them because they are sensitive to cost savings. Otherwise, other decision makers are not equally interested in saving money, therefore only the 8% of the most innovative people would accept implementing such a technology in recruitment.

“So if you find a potential customer that is still owned by a couple of individuals, then you typically can get fast traction with them, because their company is their wallet. So if we can show them that you will save a [obscenity] of time you will save a lot of money. And then you probably do not have to say more than that, they are on then they raise their hands and say, yeah, let's try it. And see. But for most companies, you have a an officer, a hired hand, that sits there, it's not his or her money, and they don't really care. Among those companies, it's extremely important to find those seven 8% or or innovators and fast movers, so to speak. [...] So the trick is to find these, these seven 8% of all people that tend to be pretty quick on the uptake of new stuff. And then they their term become become ambassadors for whatever change we're talking about, over the course of three to five years, they will kind of spread they will be the opinion leaders.” (Investor 2)

Competitors
Two competitors expressed their view on what kind of companies are now adopting the technology. According to Competitor 1, there are three kind of companies that are adopting now, the ones that just desire to innovate and try new things, the ones who adopt AI for marketing reasons and the ones who actually have a problem that could be solved by AI.

“So, I think they are, in my head, it's three types of companies, companies that genuinely want to improve. They want to explore new possibilities. They just, it's a new thing for them, and they just want to see if it can help to find new candidates, better candidates, then their manual process. Some of them would, it is like a benefit. So it could be either like a PR benefit that it's just good marketing for them that they're using AI, they're trying not to, like not to be biassed, and so on. And following trends, it could also be like to decrease the costs of the manual labour that they usually do in their recruiting, like the manual, or traditional recruiting they currently have. And also, there's another type that they know they have a problem, they can somehow, or someway, they identify that there is actually some bias, and they want to fix it.” (Competitor 1)

Competitor 4 claimed that the ones who are adopting now AI technologies for recruitment are the ones who cannot handle all the candidates they are receiving together with the ones who want to dedicate recruiters’ time in more specialised tasks.

“Some of the companies that we end up having really good conversations with really useful conversations with, they're struggling to manage the volume of candidates and giving a good experience to those candidates. “ (Competitor 4)

“In high labour cost countries, if you are paying your recruiter to read resumes, and ask the same questions to candidates over the phone, that's not a good use of their time” (Competitor 4)
Customers
Customer 3 expressed what motivated her to adopt AI technologies. She first mentioned that they were looking for innovations that could improve the efficiency of their processes. Differently, later on in the interview she mentioned that they had also realised of having a bias problem in their recruitments that they wanted to solve. Customer 2 also decided to adopt AI to solve a problem as they realised they could not handle the increasing number of job applicant anymore.

“So I make new processes, and I update the processes that we have, and try new things that may make the process more effective and spare some time for our recruiters. [...] I think for me, in deciding to try different AI tools in the recruitment, there's been, of course, always a problem of biases in the recruitment. So it's been a problem like with age discrimination, and also heritage, where you're from, and because most of our recruitments are, like 100% Swedish people. So that has been a reason to try different things” (Customer 3)

“We have a very, very many candidates who are looking for jobs. And we've felt that we cannot take care of everyone in a good way. We had too many applications. So we searched for a tool that would make that we could see more candidates and get more information about more candidates to streamline the process and get to know more candidates better than just a (job) application.” (Customer 2)

Hubert’s Capabilities and Costs
During the interviews it has been asked to employees, investors and Hubert’s customers to reflect on Hubert’s capabilities and costs and the repetitions entailed the emergence of a new theme. However, competitors and job applicants responses were not relevant with Hubert’s capabilities or costs. Therefore, only three categories of respondents’ opinions will be presented under this theme.

Employees
All employees touched upon the capabilities of Hubert on providing solutions for several aspects including increasing the diversity, handling the huge volumes of applications, and reducing the bias.

“We introduce that into a market where there is a need but no solution… It increases diversity, works with inclusion, fills roles faster, but still handles huge volumes of applicants…. that's where I think Hubert comes in and has a huge impact in terms of solving these issues for them.” (Employee 2)

“Hubert doesn't take into account if it's a great guy, or girl, or she/he doesn't even know the age of any of the candidates and stuff like that.” (Employee 4)

Also all employees claimed that Hubert is good at conducting interviews via chatbot compared to other competitors.

“We are the best at having this as a conversation… Most of the chatbots out there, that are used for recruitment, are structured as frequently asked question robots… So you actually have a conversation and open conversation, not just a survey that you run through.” (Employee 1)

Additionally, Employee 2 also claimed that Hubert is aiming to be best at candidate screening process:
“Huberts seeks to be the best at screening candidates.” (Employee 2)

In terms of cost structure, Employee 2 addressed the staff and office space as the only costs of Hubert.

“Typically, in any technology company, it's the personnel, the staff that costs most. Maybe after that you have the office space.” (Employee 2)

Investors
Similar to Employee 2, Investor 2 also referred to the candidate screening process.

“So right now, the purpose of Hubert is to help screening candidates that are applying for work.” (Investor 2)

Investor 1 mainly focused on the solutions that Hubert provides:

“What we offer, high volume talent by acquisition teams is automation of the screening process through a chatbot, which is based on a conversation between the candidate and the chatbot... We automatically rank or rate all the candidates how well they perform in this interview, which saves a lot of time and money for our clients... It also improves the quality of the screening of CVs, it reduces the bias in screening of CVs, because we conduct structured interviews.” (Investor 1)

Differently from the employees, she/he also added:

“And we ask them the same questions. So it's a more fair way of recruiting compared to just looking at CVs and then invite them to interviews.” (Investor 1)

At last, Investor 1 referred that the cost structure is not different than similar companies:

“Same cost structure as any startup company.” (Investor 1)

Customers
Customers noted different points than both employees and investors. Customer 2 addressed the communication between them and Hubert employees, and touched upon to be able to test the product and the interview structure:

“...pilots, basically where we tested the bot, and then came with our feedback to make the bot better. So I think basically, it was the relationship with Employee X, that made us choose Hubert.” (Customer 2)

“And also, the bot asks questions that we usually ask in the interview, where we discuss salary, and things like that.” (Customer 2)

On the other hand, Customer 3 mainly emphasized the sales proposition of Hubert:

“They sell it well, I suppose but when we looked at others, like tests and IQ tests and stuff like that, it didn't feel right for us. So we choose, Hubert.” (Customer 3)

“And one big thing was that they came up with an integration with details, we worked with them, it automated the whole process. So that was a big thing for us.” (Customer 3)

Recruiters’ Role in Adoption Process
This theme emerged from the repetitions in the interviews. It emerged mainly from the interviews with customers where they criticize themselves and express what could be lacking in their understanding of AI in recruitment and what kind of actions they can take to improve
themselves, or what could be their role in the adoption process as recruiters. Similarly, some of the other category of respondents touched upon this theme.

Employees
As it has been mentioned in the “hampering factors” theme, 2 Employees out 4, claimed that there is a lack of understanding of the financial benefits by HR people.

“HR people have difficulty of understanding the economics around it... I think they have a problem of seeing the value from the beginning.” (Employee 4)

Investors
As it has been mentioned before, Investor 1 also touched upon the lack of understanding of the financial benefits:

“Second obstacle, if you want to make a change in a company, the only language that is common across an organization is the financial language. So far, my judgment is that the people organizations don't speak that language, as fluent as most other departments do.” (Investor 1)

Customers
Both Customer 1 and Customer 3 mentioned that there could be some lacking in the understanding of AI in recruitment. Customer 3 also self criticized herself/himself with referring that she/he as a recruiter could spend more time to understand how things work:

“I think, I should have spent more time to really get the recruiters understand how that works, then I think they would have been trusting faster than maybe better. I also think that it would have taken some time either way, because something new, it's something that nobody in our company has never worked with.” (Customer 3)

Customer 3 also touched upon to the communication between Hubert and their company with referring how much information that she/has provided to Hubert:

“I thought I gave enough information, but maybe not. I think that could be a one thing.” (Customer 3)

On the other hand Customer 1 addressed several points, starting with her/his disagreement with other recruiters’ perspective on assessment of the performance:

“And so it's basically all about what kind of data you want, because the recruitment industry goes more and more to standardise concepts of performance. And once we have been able to quantify our performance, then we will be able to use AI to a much higher extent. But today, a lot of our clients and a lot of recruiters around the world are still under the impression that performance is something more qualified that only can be extracted by some sort of like free text answers. Whether recruiter is some sort of expert in assessing all of this and I disagree with that. So from my point of view, I see AI as a very positive impact and possible future when it comes into the recruitment industry.” (Customer 1)

Then she/he continued with adding recruiters should have a better understanding of performance theory:

“But from my point of view, it's very important that if we are going to use more here at academic work, our recruiters have a better understanding of performance theory. But
what is actually predicting our performance in a future workplace? And because nowadays, we have the possibility for our recruiters to ask their own assessment questions to make up our own questions related to the client's specific, like requirements, which, in many ways aren't always connected to performance. It could be, for example, if they are interested in shopping in their free time, or how many contacts that you have on LinkedIn. And we can know from science and when we look at, like meta analytic reviews and stuff like that, but that has nothing to do with future performance.” (Customer 1)

Besides the performance, Customer 1 emphasized the requirement of trainings and knowledge sharing within the organisation:

“And we need our recruiters to understand this, too, and accept that, for them to accept that questions are standardised, they can't be creative, maybe as they used to. And they also have to understand, so they can trust the result that an AI put in front of them. So we exclude the gut feeling. And if that's going to happen, we need extensive training and knowledge sharing in the organisation. And because without that, I think it will be very hard for the recruiters to accept the result. And then they will do their own sort of ways of presenting candidates, there isn't 100% matching, or they exclude evaluation from AI altogether. So that's, that's what I primarily meant.” (Customer 1)

At last Customer 1 draw the attention to the requirement of trainings one more time and added the requirement of being clear what recruiter wants, as it has been mentioned in the hampering factors before:

“And from my point of view, something that we never want to have, but still, it's a factor that affects the outcome of AI using AI in our organisation. And what we also have seen is that it requires a lot of competence from the recruiters to understand and to accept AI. So it's a lot of training connected to using AI too, for the recruiters to accept the solution as well. And otherwise, of course, there's always still the data quality factor or sort of...How should I explain this... when it comes to using AI, you have to be super clear and super, and have a very clear picture of what you are going to assess. Because that's the only thing that will be assessed. And when using human recruiters, we can always, you know, gather information in different ways we can identify silent, like cues and follow up on that and do things that AI is not still adaptable to, which can lead to very wrongful results. And it's also hard to sort of adapt to different answers still in AI. And so that's, of course, a big risk as well. So we have to be even better than we are today to perform like requirement profiles where our clients really understand what is the source, what do we really want to assess. And, and then, of course, the factor that I said that AI still has trouble assessing, like free text answers, it's very hard for them to actually do a correct assessment of answers that aren't standardised answers.” (Customer 1)

Job Applicants
At last, job applicant 1 referred that recruiters might add more content or a guideline to guide how AI tools work in the recruitment process:

“Maybe having more content… more educational content” (Job applicant 1)

“I feel like the first time I was completely unaware of how it was working… So yeah, maybe more user stories… how they use… some template answers” (Job applicant 1)

End-users value
The end-users value has occurred frequently among the interviews with all the categories of stakeholders. Similarly to other themes, although we have asked the interviewees’ perception
of end-user value in each interview, the theme emerged naturally from other questions as well. On the other hand, this theme will have a slightly different structure compared with the others. Initially, it will be reported what Hubert’s employees, investors, customers and competitors mentioned about end-users value as per the other themes. Differently, when it will come to reporting the end-users point of view the theme will be break-down into sub-themes due to the significantly larger amount of data, compared with the other categories. The sub-themes will be: experience with AI tools, possible recommendations, conventional recruitment, perception of companies using AI tools, and engagement.

Employees
Hubert’s employees do not have a shared vision of end-users as they mostly mentioned different attributes when interviewed. The only attribute that was reported by more than one employee is the enhanced possibility that AI provides the candidates of being heard better at the cost of reducing the human interactions. In addition, one employee claimed that job applicants value receiving instant feedbacks. Another one mentioned that AI enables candidates to be assessed where and when they prefer. Finally, one employee mentioned that end-users might get tired of using AI tools in a long term scenario.

“I think the most valuable thing is that they can actually be heard that every candidate has the opportunity to express their thinking and feelings in terms of why they think they should get the job.” (Employee 2)

“Well, I think the fact that you can choose to complete your interview in in any setting that you like and on any given time. And also, I think it's presents them with a new opportunity of standing out and presenting themselves in a unique way. And also, I think it's make makes the candidates feel like they are they're being being heard on a more personal level than just sending in your resume.[...]. The experience will never be as personal as you would get with with a real human recruiter. But I think the introduction of AI in recruiting it's a bit of a paradox because, of course, it takes away some of the, the personal touch that on the other hand, maybe in a normal recruiting process, maybe 5% make it to the interview and it processes everyone with just the interview stage. So it's like you It's more personal on a larger scale but less personal when it comes to individual candidates” (Employee 3)

“What we've seen is that lots of candidates appreciate getting instant feedback, that you get to speak for yourself, even though they know it's a, I mean, in the case of Hubert, even though they know it's, they're talking to, to a computer, they do realize that someone will read this. So they can express themselves in a way that the CV or the cover letter, the cover letter or the CV could could not express. So I am getting an instant feedback and not just posting your CV into a into a webpage. And then maybe month, one month later, you get an email saying you didn't get a job.” (Employee 4)

Finally, as previously anticipated, employee 4 provided the research with some reflections on the long term end-user value.

“(Talking about Hubert as a platform) I think it's, it's still new, and cool, and hip, and whatever. But in a year, or something like that, from now, we'll we will have candidates that are tired of doing interviews with us.” (Employee 4)

Investors
The investors did not talk about end-users value deeply during their interviews. They only mention that today conventional recruitment processes are painful for them as they are very long and companies use to mistreat the candidates.
“The traditional job applying process or job seeking process is very time consuming. And we want to make that easy because and provide any candidate with some kind of a passport of the knowledge and skills that they can file into and match up with different companies. That means these kind of experiences.” (Investor 1)

“(Talking about conventional recruitment) [...] at the at the firms at the companies they also hate it because they know that they are mistreating applicants.” (Investor 2)

Competitors
Hubert’s competitors also had very different visions on the impact that AI could have on end-users. According to Competitor 3, AI tools can help job applicants in understanding if they can be a fit for a company.

“(Talking about its company) we answer the question why a certain candidate is the right one for a company, but also help the candidate understand why the company might be a good place for them to actually work.” (Competitor 3)

Differently, competitor 1 reflected on the procedures that AI uses to assess candidates, that end-user might find inconvenient.

“There is always the fear of being judged by a machine. [...] But eventually, this is done anyway I think, even without AI, so there are so many recruiting software, cleaning software, which just do keyword matching from a CV, and they would discard candidates who don't pass certain specific checks. So I think that's not a problem of AI. It's, it's more in general problem of automatic ways of screening people. So I think in this case, actually, AI and machine learning would have because these models would be way better than just doing keyword matching. So I think the problem is being judged on something which is not present in the CV.” (Competitor 1)

Competitor 2 reflected on the positive impact that AI brings in terms of solving bias-driven issues.

“Coming from a foreign background, for me, it's a necessity, not like, I don't have the privilege to think about the negative impacts for it, because I have a bigger problem that it solves, which is the bias. (Competitor 2)

Furthermore, Competitor 2 also mentioned the relevance of data security.

“For most people, the bias will not be that big of a problem if they're not in a situation to be the subject of a bias. One concern also, nowadays, I would say, would be the data privacy. Like awareness of, like data privacy, big companies collecting your data, and so on. I believe many, many people now or more in the future, would be concerned about how their data is being processed, do I really want to give all my information to a machine? Like, it's one step towards Big Brother watching us all, and so on.” (Competitor 2)

Customers
The customers discussed end-user value in terms of engagement and equal opportunities of being interviewed. Customer 1 discussed engagement by reporting that the candidates miss having a human touch when interviewed by machines. Differently, Customer 2 claimed that the job applicants find AI tools fun and engaging. On top of that, in Customer 2’s company most applicants are millennials and they appreciate chat interviews more, according to the same customer. Customer 3 also mentioned candidate engagement reporting that the experience might result affected by the candidates’ lack of understanding of the complete process.
“There are still a lot of people out there that don’t want to be interviewed by a chatbot or AI interview. You are in some sort of virtual environment, and they still want to feel some sort of human touch when it comes to being interviewed or being evaluated and being assessed.” (Customer 1)

“Basically, it's a fun way of recruiting for the candidates. Our candidates are often really young. [...]The millennials are, they often want to contact customer service, via chat, via that channels. So we thought that they will like this way of recruiting to because they like that way in when contacting customer service.” (Customer 2)

“I think the most applicants find it Oh, interesting, fun and new technology, and feeling that someone is seeing them and they can talk for themselves, but will also notice that and maybe that because the all of them don't have the whole picture. But some candidates have said that they think they only will be interviewed by hubert and thats the only interview, they think that they don't will meet with one of the recruiters.” (Customer 3)

End-user value was discussed in terms of providing the applicants with better opportunities by customer 3 only.

“I think the most applicants find it Oh, interesting, fun and new technology, and feeling that someone is seeing them and they can talk for themselves, but will also notice that and maybe that because the all of them don't have the whole picture. But some candidates have said that they think they only will be interviewed by hubert and thats the only interview, they think that they don't will meet with one of the recruiters.” (Customer 3)

Job applicants
As mentioned above, the job applicant view of end-user value will now be broken down in five sub-themes: experience with AI tools, possible recommendations, conventional recruitment, perception of companies using AI tools, and engagement. Elements part of the first sub-theme occurred when the interviewees told about their experiences with Hubert’s direct competitors softwares. In possible recommendations are collected all the suggestions in terms of future usage of AI technologies in recruitment. In conventional recruitment are gathered all the elements comparing AI-based recruitment and conventional recruitment. The following sub-theme refers to the feeling the end-users have towards the companies that decide to adopt AI in recruitment processes. Finally, engagement is strictly related to the engagement of the candidates in the AI-based recruitment processes.

Experience with AI tools
The three job applicants interviewed in this thesis project had completely different experiences. Job applicant 1 had a very bad experience with AI tools while Job applicant 3 was very enthusiastic about them. Differently, Job applicant 2 had experienced different feelings.

“I had a bad experience with [Direct competitor]. So I remember that once I saw it, and I said cannot go not go for it. So I didn't continue the interview process because of that. And then the second time there is like most recently, [...] it went well, but let's say it's, when I see every time I see an [Direct competitor], I have a bad perception of it.” (Job applicant 1)

“The first time was a really bad experience, because I didn't know how it worked. [...] I was like, I didn't know like, if I was saying the right things and then you know, when your your brain blacks out, and so I was not able to continue. And I think that these things also happen during like in person interviews, but I feel like that when you don't have like that human connection, that person in front of you. It's really hard to talk like in front of a camera and then see yourself. So this is something that I that I didn't like. Of course
like the first time that I use, I really was really bad extremely didn't pass for the first step. Then I applied for another in company training, and I knew that that was the process so I was more ready to do it. So I knew how to be prepared a bit more I was trying to think like what could have been like the, the answer. So I tried to build up my answer is before clicking start and start recording. But still, I can tell you that I don't give my best during [Direct competitor] interviews, I'm much more confident that I think I'm able to connect with the recruiter and much more when a like in front of someone else.” (Job applicant 1)

“Because I like talking with people, I like to create a connection with the person that I talked to. So whenever I'm doing an interview, I don't feel like I am the one being questioned. But I like to have more like a meaningful conversation kind of style, you know, and it's something that I cannot live with a machine? Because I think when when you're in a recruitment process, yes, you're trying to understand if you're a fit for them, but at the same time you get, you have to understand if you can be a fit for that company. And also speaking to someone that is working there, it's really important for someone that is applying for a job, I think.” (Job applicant 1)

In contrast with Job applicant 1, Job applicant 3 had a much better experience with AI tools.

“(Recruitment with AI tools is) Well, definitely better than normal recruitment process to be honest, because you know, these processes based on AI, you can feel that they are much more tailored. So they really would like to assess your capabilities actually so they are listening to you.” (Job applicant 3)

As already mentioned, job applicant 2 had mixed feelings when experiencing AI tools in the recruitment processes.

“To be honest, first, it was like, bit uncomfortable. Because when I received the link saying that, okay, you have to go through an interview. First of all, I did not knew what was AI interview. Then I searched on Google, then it said, Okay, I have to talk to a camera, and it analyses my facial expression or something like that it analyses my speech, so and so, it was uncomfortable, because like, it did not have a human factor. And I don't have a habit of talking to a camera or talking to an empty screen.” (Job applicant 2)

“The other thing is that like, you know, after the interview, I get, like, kind of a feedback, say, saying that, okay, I've completed the interview and like, it gives me a score. So that is good. Because I get immediate score. In the face to face interview, we I usually don't get the score. And it used to tell me my, like, face location, is it proper? Is it bad? Is it good? Should I adjust my camera? So that was another good thing? Because like, when I go to an interview with HR personnel, they won't they won't be comfortable, like saying that, okay, move your camera down. Such have that light on because it's like, it's not formals. But the software told me Okay, there is lack of light. And so and so that was another thing I liked. Yeah.” (Job applicant 2)

Possible recommendations
It has been asked to all job applicants if they wished their AI-based interview to be different somehow. Two job applicants out of three provided some suggestions while Job Applicant 3 did not want to change anything in the process.

“ But maybe reinforcing this concept of like, having someone else talking to you, so I don't know how that could be possible as far as having like a video recorded for the recruiter. [...] maybe having more content for recruiters more educational content on how to build a more human human aspect with the with the AI tool. So maybe it's not the AI
too bad per se. But it's how the recruiter use it that is not able to connect with the with the one with the people that they're doing the interview.” (Job applicant 1)

“Like only suggestion is that try to add more human factor to the interview, but I don't know how they're gonna do that.” (Job applicant 2)

“This is something that I really need to think about it. I mean, this is not an this is not an easy, easy thing to find an answer, you know. But you know, it's good, you know? So I wouldn't change anything, actually.” (Job applicant 3)

Conventional recruitment
During the interviews with job applicant 1 and 3, they both mentioned conventional recruitment while talking. Job applicant 1 reported what did not work in the conventional interviews she had. Differently, job applicant 3 discussed how the different ways of recruitment provide the candidates with different values depending on the job position.

“Something that I don't like it's when they ask me very, very general questions, or when I see that the recruiter is not even like look at my CV and it's doing like the same screening process for everyone. So it's not like customising the questions for, for my experience and my job offer, which is usually something that really happens in the first steps. And, and I feel like I cannot really understand like how I was the company life, they've just follow it, you're following a script that is not like, giving myself a lot of information as well” (Job applicant 1)

“If you'd like to assess my it audit capabilities and my leading capabilities in it audit field, I would definitely prefer having a Skype or zoom meeting with the directors or managers actually. So because you are not assessing how intelligent I am from that moment, because I have already you know, who I am and what I'm capable of. [...] By having those face to face meetings, I think they will be able to understand who I am better. For me, those kinds of AI solutions or digital recruitment solutions are more likely for you know, like entry level positions” (Job applicant 3)

Perception of companies using AI tools
In this sub-theme it will be reported what the candidates feel about companies using AI tools in their recruitment processes. Although job applicant 1 has a bad perception of them, she agrees with the other two that to some extent these systems are valuable.

“It went well, but let's say it's, when I see every time I see an [Direct competitor product]. [...] I have a bad perception of it. I remember that another time I saw [direct competitor product], but I didn't continue with it.” (Job applicant 1)

“I think because now there are tonnes of applicants for any job offer. So it's not feasible anymore to have like just a few recruiters that go for it. Also think recruiters I, like I remember like talking to one of them in a more like friendly chat that they say that when you have like, when you see a lot of CVs in one day, then your, your perception is not objective anymore. [...]So in that sense, I think it's there are some useful uses of AI, maybe like in the CV screening is something that I think it's it's really, it's more useful, because there you're just like reading the, you know, the keywords, whatever is in the in the CV. So that's on the resume sense that's useful. But um, yeah, I would say to faster up the application process to have a more objective view” (Job applicant 1)

“I got this interview from h&m and the reason was like, removing bias. I really like that because I heard many people from my continent, just because of their names, they did not go out further in the interview, just looking at their face, they were like, okay, they conducted the interview, and even there, they knew that the HR wasn't satisfied. So I
think, like, I think it's a really good idea to remove the bias from the interview. And I look at these companies very positively.” (Job applicant 2)

“So at the end of today, they are just trying to do that in order to understand who I am better than I think they are. [...] This is definitely something positive, rather than like, you know, having those classic questions, actually. So because what I feel these companies really making investment on new companies, this is how I perceive because you're paying much more money, and you're just trying to find the best candidate for this job role. “ (Job applicant 3)

Engagement

Finally, the end-user value last subtheme is engagement. Here we have collected all the quotes from the job applicants where they mentioned their engagement with AI tools. In the case of job applicant 1, it overlaps what already reported in the “Experience with AI tools” subtheme.

“But I like to have more like a meaningful conversation kind of style, you know, and it's something that I cannot live with a machine? Because I think when when you're in a recruitment process, yes, you're trying to understand if you're a fit for them, but at the same time you get, you have to understand if you can be a fit for that company. And also speaking to someone that is working there, it's really important for for someone that is applying for a job, I think. ” (Job applicant 1)

“When it comes to AI recruitment, the engagement was very poor, like it just asking questions, and I have to answer it and record myself. But when it comes to personal interviews, when they ask question, when and I give my answers, then they, they ask more question on the same field, and I have to reformulate my answers, the engagement is really good, because I've been part of formal interviews and also casual interviews” (Job applicant 2)

“So I don't remember, like the step by step exactly what was happening in the [Direct competitor software], and based on AI solutions, but the thing is, it was too funny for me. And it was challenging, because those were not normal questions that you can be faced during your normal day, you know, they are approved, like, depending on the depending on the job role, business role you're applying, there will be some difficulties, some challenging, challenging points that you will be facing, when you are working in that position, actually, and they're just trying to understand how it's like, like your approach, and like your, your thinking way, and all kinds of things. I mean, you know, really first two points, if I will say, I wouldn't say any negative regarding to those things.” (Job applicant 3)

4.2.2 Results from Part 2 (Testing the Factors That Impact the Adoption of AI in recruitment)

The next part of the analytical framework that was designed for this study requires testing each factor that was derived from the literature review. In facts, based on the literature review, several factors that impact the adoption of AI in recruitment are defined. There are 15 factors in total and the definition of each factor is presented in appendix B. In the second part of the interviews, a structured interview is conducted and each factor is tested by magnitude and direction wise with underlying the relationship between each factor and pace of adoption of AI in recruitment as hampering and fostering factors. It has been asked from interviewees to put each factor on a Likert scale from 1 to 9 while 1 is it hampers the adoption to high extent, 5 means it doesn't hamper or foster, it is more likely neutral and doesn’t impact the adoption significantly and 9 is it fosters the adoption to high extent. Although the average of the responses are calculated for each category of respondents and considered during the data
analysis process the numbers are just used to have an overview, as shown in table 5. The main goal during the testing process was to ask interviewees’ opinions on each factor, through asking “To what extent and in which way do you think this factor impacts the adoption of AI in recruitment?”. Also, different from the first part, the responses from all categories of respondents considered together, instead of going through each level separately. In the following section, 15 factors that are derived from the literature and the opinions of interviewees on these factors will be presented.

Table 5 – Factors’ average magnitude and direction by category of respondents

Fear of Losing Jobs

The first factor that is tested is, the possibility of AI might cause people to lose their jobs in recruitment. All categories of respondents said it is a hampering factor with a 3.38 on total average. However, some mentioned although it seems like it hampers now, it is only a matter of time:

“I think it's hampering right now… but it's a matter of time… but I don't think it will be important in like, just six months.” (Employee 4)

“They are threatened, but in practice, I don't think in the near future, in the next 10-20 years, we will have fully autonomous recruitment softwares. But there will always be an HR role. Yeah, it might be reduced a bit, but we will still have a person making the final decisions and monitoring the process. So in practice, I don't think it will affect the recruiters that much once they understand it. So it slows down but not so much. It's more of resistance, resistance at the beginning.” (Competitor 2)

While investors stressed that it hampers to a high extent with 2 in average.
“It might affect some people's work, that they will lose their jobs. It, for sure, delays the adoption because it requires companies to make tough decisions and that usually takes time.” (Investor 1)

However, Investor 2 mentioned that, this is just an excuse:

“People are actually using that as an excuse not to invest in changing processes, it's still much easier for them to just leave things as they are.” (Investor 2)

**Level of Trust Towards AI in Recruitment**

Second factor is the current general level of trust towards AI in recruitment. Most of the categories addressed that it is hampering the adoption with 3.47 on average. Employees said it is hampering to a higher extent.

“They fully rely that AI should be perfect… so in that sense, when things go wrong, and especially in this field, where we work with decisions that affect humans when it's not perfect. I think this is an important issue for delaying the adoption of AI… I think it's very important.” (Employee 1)

Also some added trust depends on certain type of people:

“Trust could be good among a certain group of customers or people, but could be very bad with others. But I think it's important… I think it's much of a personality thing… They don't like change.” (Employee 4)

“Maybe the older generation makes it a bit slower.” (Customer 2)

On the other hand, competitors and end-users were closer to refer to it as a neutral factor:

“It doesn't matter... Because you know, AI just looks at a person as it is, unless and until the person who created AI is biassed. So I think trustworthiness will be the same as the person handling the interview in real life.” (Job Applicant 2)

“Well, if you've done your research good in terms of the technologies you're using, and how you train your model, and the data and all of that, that goes into the training of the models, and that you have a good way of explaining so that customers understand what's going on, then it doesn't hamper the adoption of AI at all. It might even reinforce it. But if you are not good at this, it will hamper it to a higher extent.” (Competitor 3)

On the contrary, one competitor mentioned that it can foster the adoption:

“In general, people have their worries about AI. But in recruitment, there's a clear problem that is being solved, which is bias. Companies are trying to solve it and I don't see a better alternative. So I think, since there aren't any better alternatives, it fosters.” (Competitor 2)

**HR Departments' Budget**

Third factor, the average budget of HR departments, has been seen as a fostering factor on an average score with 6.62. Especially, investors and employees considered the budget as a fostering factor to a high extent.

“Is it a problem for us with the budgets? Have been in some cases. But I don't think it's in the long run… The manager of a company would not hesitate to give extra money for
a service like Hubert but if we can prove that they will save some money in the long run.”
(Employee 4)

Customers, also considered it as a fostering factor:
“I would say it fosters to a high extent because I believe that HR departments get a higher budget, nowadays.” (Customer 2)

However, End-users and Competitors stayed closer to neutral on average:

“I think it depends on the region, which country we're talking about and their company size… for small companies it wouldn't really be a problem.” (Job Applicant 1)

Although competitors stayed closer to neutral on average, there were opposite opinions among competitors. While Competitor 3 mentioned that it hampers, Competitor 4 referred it fosters.

“It hampers to a high extent… This is one of the most crucial parts of the adoption.”
(Competitor 3)

“It fosters because more and more are starting to have budgets to spend on more productive technology.”
(Competitor 4)

Integration of AI in Different Business Units on a Pilot Level

All categories of respondents, noted integration of AI in different business units on a pilot level as a neutral factor with an average score of 5.55. Although they stated different opinions, on average they didn't see it as a significant factor.

“I don't think it matters, because there have to be services to actually use, to be able to adopt in the first place.”
(Employee 4)

“HR tends to be kind of a singularity in all organisations that they don't really know what is going on, product wise or tool wise in other departments.”
(Investor 2)

“I think that it actually will speed up the adoption in the HR department because they are lagging behind. If you look at sales or marketing departments, they are already running with AI programs. If you look at the warehouse departments and logistic departments, there are a number of departments using AI already. So I think HR is lagging behind and that will put a pressure on them to use it as well.”
(Investor 1)

Competitors mentioned that it can hamper the pace of adoption with staying close to the neutral:

“If the integration was bad, it would be bad. But if it's good, it's good... They're connected specially in AI systems. AI could work for one thing and doesn't work at all for another thing. It might trigger another project. Like if you have AI in a department, a certain department, it might trigger the idea or project in another department. But I don't have a feeling that it will disrupt it or affect negatively. If it fails in one that you will expect that it will fail in the other or discourage you.”
(Competitor 2)

“I think it's pretty well known that a lot of innovation projects are specifically AI projects that end up with just being pilots. And I think that has something to do with just how large companies work. People are incentivized to have innovation, KPIs, and then they want to be able to show that they did an experiment and then did some of that. And then they use that to get a promotion, maybe move to another company. But it takes full commitment to make sure something gets adopted fully. We see companies can get distracted every year by new ideas that are being pitched to them and then they'll do a lot of pilots with them rather than focusing on a technology that they bet on last year, and
then driving adoption of that technology. So in our opinion, driving adoption and all that technology that they picked last year, would give them a higher ROI. But very soon they start to get distracted because they're hearing a new page on a new technology. So I think in large companies, mostly the people you'd end up working with, they don't have the experience or understanding of what it takes to do long term change management, when it comes to adoption of technology.” (Competitor 4)

**Current Level of Development of the Technology**

All categories of respondents, except investors, referred to the current level of development of the technology as a neutral factor close to being a fostering factor, with a 5,17 on average.

“I think, especially the entire technology and machine learning, especially the NLP, is advancing so fast and there is a huge push for the adoption of AI.” (Competitor 1)

However, specifically Customer 3, stated a different opinion on it:

“In my opinion, in general it is not super developed.” (Customer 3)

Also, as the category of respondents, Investors noted it as a hampering factor with an average score of 2,5.

“I think it's kind of new and I think that has a major impact, because when a new technology that nobody is used to, people tend to be skeptical about it. So that's an important part for delaying it.” (Investor 1)

**Complexity of HR Phenomena**

The average score of the responses for complexity of HR phenomena is indicated as neutral with 5,90 but mostly closer to being a fostering factor:

“I think those AI solutions will make companies' job easier to define who is the best fit for this job role, actually, by these AI solutions, many times you can assess candidates' capabilities in a really good way.” (Job Applicant 3)

“I think that is something that might foster the adoption but it's not a very important factor... because when you turn interview technique from humans into a machine, you have to structure that way of working. And that gives the robot the advantage of doing the same thing all over again. So you can evaluate the candidates based on the same criterias. Always. And that really doesn't happen in real life today, when humans make interviews.” (Employee 1)

However, Competitors pointed out that it can be a hampering factor:

“I think it's positive to have an AI system that thinks about deeper metrics of how and why this is a good person but at the same time, it's bad. If you, yourself don't know what a good employee is, or who is a good employee, how would you trust the result of an AI system?” (Competitor 2)

“Unfortunately, there's this resistance to thinking things through, you know, just sitting down and defining what the role requires, which is a very basic thing in HR, right? Job analysis. At least in our market, very few people want to do a proper job analysis and really think through what is required for this role. Let's define this role properly, and then it's easier to figure out how we can assess for that role. So there is a resistance to doing that and it requires work, right? So it actually leads to some friction and reduction as well. I would say, this is also something that, okay, this can work in two ways. So in our case, it probably hampers but if you look at certain other technologies, which say, we are going
to look at all your data. And, you know, we're going to look at the resume and profiles of all the people you've hired and how they performed over the years, and we're going to tell you what your ideal employee looks like. And some companies make that claim. I don't know how well they do it. But if we were to make that claim, we'd probably get a lot more people buying, but I don't know whether director technology delivers. So yeah, in our experience, this probably is a hampering agent.” (Competitor 4)

Risk of Candidates Might Find Out How the Algorithm Works

All categories of respondents stated the risk of candidates might find out how the algorithm works, as a neutral factor. Although some of the employees and competitors said it can be a hampering factor to a low extent, in general all stated that it is a factor that doesn’t impact the pace of adoption in both positive or negative ways.

“That's not a risk at the moment, as I see… We would notice that because it's very hard to cheat in these kinds of systems, because we can check everything, if you're cheating or not.” (Employee 1)

“Perhaps it can. But that is exactly what is going on today. As soon as I sit down with an interview with you, I will immediately picture myself on how I should behave in order to get the job. So we're actually doing that already. All the time.” (Investor 2)

“I don't think it has an effect, because when we say the candidate knows how the algorithm works, I mean, what can they do on their side? Yeah, they will improve their CV but that's a positive thing. You always want a better CV from the candidate side. So their cheating of the system is actually just self improvement.” (Competitor 2)

Bias

Bias does not result to be a relevant factor when it comes to adopting AI in recruitment. The average result among all the interviewees is 4.95. However, the neutral final result is driven by the combination of opposite results, for instance Employee 3 valued bias a 9 while Employee 1 valued this factor 1. The majority of the interviewees considered bias to be a very influential factor, positively or negatively. Job applicant 2, who thinks bias fosters the adoption to a high extent claims:

“I think it's really good with handling bias. So I think it will be adopted more because it's not biassed.” (Job applicant 2)

In contrast, Investor 1, who believes this factors hampers the adoption to a high extent said:

“That's a hot topic, out there. For sure. It's an important factor and it delays the adoption, I would say.” (Investor 1)

Digitalisation

All the candidates agreed that digitalisation fosters the adoption to a high extent. For this reason, digitalisation recorded the highest score in terms of fostering factors having 8.52 as average total score.

“I would go with nine. [...] I think it's one of the driving factors for many companies. If they want to go digital, why not like automate the whole thing. Most big companies are already digital. But most big companies are also, I believe, using some sort of [potential competitor software] system. So, but there are so many other smaller companies that still do things manually. So I think the movement towards digitization affects the majority of companies, much more than the few big ones who already use such a system.” (Competitor 2)
Competition

Competition is considered to be a factor fostering the adoption to a moderately high extent. The average value is 7.90 and all the categories of respondents present similar perspectives. The customers are the most positives about it while investors are slightly less convinced of its importances.

“I think here also high, that it fosters to high extent maybe eight, because I know how we looked at it, we look, compared to other companies in our area, we saw that here we are something that we are early on. That's not good for us. So I think it will impact the pace of adoption positively.” (Customer 3)

“I think it fosters it to some extent, seven perhaps. It's also that you don't want to go to a conference once again, and be the only one that haven't implemented new stuff. You don't. At the end of the day, you don't want to come across as being lazy, not interested, not forward leaning individual.” (Investor 2)

Brand Image

According to the interviewees, implementing AI in recruitment has a positive impact on the brand image of a company and it represents a relevant factor driving the adoption of the technology. The average total value is 6.95 and it is distributed almost uniformly among the categories. However, a few interviewees find brand image as a factor hampering the adoption of AI in recruitment.

“It's a positive thing I would say. So it's something that is important for Hubert. And that foster the adoption of the technology” (Employee 1)

“I think it's really personal. For me, it hampers. So I would go for a three… I mean, if I really liked the company, I would continue to proceed with it, but it's not something that I enjoy.” (Job applicant 1)

“Yeah, I would say this could be problematic based on or depending on, what kind of AI that you're, you're using, and how open you are about it, right. There is a case in the UK right now where a labour union is actually speaking up against some companies that have used AI in the recruitment process. And so this is definitely something we'll see, you know, just as when production was automated using robots on the factory floors, labour unions were, you know, dead against it, right. But you can put the genie bad back in the bottle, right? It's, it's something that is going to happen and you can't stop it. But there's definitely something around brand image that is fragile here. So you have to be mindful about how you implement AI and how you use it.” (Competitor 2)

Candidate Engagement

Candidate engagement resulted to be a factor fostering the adoption to a low extent. The total average is 6.70 and it reflects what most interviewees have expressed. However, End-user 1 believed that candidate engagement hampers the adoption to a high extent given her bad experience. However, Job applicant 3 sums up very well the vision of most respondents.

“ I would say seven. So, yeah, I mean, it definitely increase the engagement. So by just like sitting on this chair, you can understand what company is looking for in a better way, I would say, and you can just like play fancy games. So it definitely increase the engagement level.” (Job applicant 3)
Candidates’ Perspective
The total average value of candidates perspective is 5.13 which leads to think that it is in fact a neutral factor. However, the interviewees did not believe it’s a neutral factor as this result emerged by calculating the average of both positive and negative comments. For example, Competitor 1 was pretty convinced that candidates' perception of AI tools in recruitment is an hampering factor.

“I think most candidates, if you just ask them, you know, being evaluated by a robot, so to say, right, is that good or bad? They would say it's bad. So it's definitely not a good thing, you know, with the press as it is today. So I would say it's, and it's something that companies are mindful about, you know, you know, they need and that's why it relates to the earlier question, companies need to feel confident that they've chosen a solution that they can stand by and that they can explain to candidates and that candidates can see the benefit of. So, but that's not the case out there today. Most companies and most AI solutions cannot really, and do not really want to open up and explain what it is that they're doing. And that hampers the adoption, I'm sure. So I would give this maybe a, I would give this a three, based on the development in the UK, for instance where, you know, labour unions, and all of that is on the job applicant side of things. And that's, that's not a good thing right now.” (Competitor 1)

In contrast, Employe 1 believes that candidate perception is a fostering factor.

“Positive. So far, we have asked the candidates about the perception of Hubert, our service. It's been very positive eight out of ten say that they have a truly positive experience of Hubert. But I have no idea of other services. I know when it comes to conducting tests, like cognitive tests or personality tests, etc. The general opinion among candidates is kind of boring. [...] We can see that they write extensive answers to the questions from Hubert. Is that dependent on Hubert, making them the context for the candidate to be more relaxed? Or is it because they are eager to get the job? I think it's a combination. They, if you compare it to answering our survey, the engagement level is 100 times higher. Answering questions from Hubert. And I think the main reason for that is that when you answer a survey, you're not very much engaged. But answering questions that could particularly lead to a job, you tend to do your best" (Employee 1)”

Average Number of Candidates
According to our interviewees, the average number of candidates is the second most impactful fostering factor scoring a total average equal to 8.15. It’s noteworthy that Hubert’s employees and investors all valued this factor as very impactful (9) while the other categories provided this factor with a more moderate valuation on average.

“Well, that Covid seems to make this number go up quite a bit, because a lot of people have been laid off. And a lot of people are now looking for job. So most companies have seen an increase in the number of applicants per job, which drives some interest in automating the screening process of candidates. So I would say this, this fosters it a bit, not too much, but I would give it a six, it is something that they're considering.” (Competitor 3)

“Yeah, if there's a lot of candidates, I think it fosters to a high extent. For us, for example, during the pandemic, we got a lot more candidates per job than we had before. So we went from maybe 30 applicants on the job to 250 very fast. So that was actually the time when we started to try different AI solutions to spare some time. So yeah, a 9.” (Customer 3)
Fairness

Fairness is widely considered a moderate fostering factor among the interviewees as its total average is 7.10. The only interviewee who claimed fairness is a hampering force was job applicant 1 who claimed that the technology is not developed enough to deliver fair outcomes.

"I would even go for eight, because this is also simplified in terms of company brands, so just company wants to show that they are keeping sharpness in mind as a company brand." (Competitor 2)

“I would say four, maybe? [...] They're related to the fact that I think it's, the current level of its development is not enough. So I don't know if it's accurate enough, and so fair enough to reevaluate a candidate.” (Job applicant 1)
5 Discussions
At the core basis of this research there was the interest of understanding the causes behind the slow adoption of AI technologies in recruitment. The first action we have done was analysing the existing literature and checking what it had been said about it. We did find many articles proposing different factors that could explain such a phenomenon. However, there’s a lack of continuity between these articles. Many of them seem to be in contrast with each other while others provide only a partial representation of the reality as they only discuss the perspective of one category of stakeholders. In order to grasp the understanding we were seeking, we designed this thesis project to fit into the discontinuities of the literature. We did so by conducting three operations. First, we have collected all the factors existing in the literature that are impacting the pace of adoption of AI in recruitment, according to the other researchers. Second, we have conducted 16 semi-structured open-ended interviews to empower the categories of stakeholders to express their opinions on what is impacting the adoption pace of AI in recruitment unbiasedly. Finally, we have shown the literature-sourced 15 factors to the 16 interviewees and we asked them to reflect on them as well as provide an indication of each factor’s magnitude and direction. Thanks to this approach, we understood the positions of those articles that seemed to be in contrast as well as got a wider picture of the relevance of each factor from the perspective of all the stakeholders. In addition, thanks to the combination of the three operations, we can finally come up with a more robust list of factors and explain their impact on the pace of adoption of AI in recruitment.

5.1 Research Question 1: “What are the factors that impact the pace of adoption of AI in recruitment?”
To say what are the factors that impact the pace of adoption of AI in recruitment we have examined the following elements, if they are mentioned by other scholars, if the interviewees of this study reported them spontaneously, and if the interviewees of this study believed in their significance once questioned. The factors that were both mentioned by literature and interviewees are the number of candidates, bias, band, HR budget, candidate perspective, digitalization, current level of development of the technology, fairness, fear, trust. Differently, the factor existing in the literature but that were not mentioned by the interviewees are candidate engagement, risk of cheat, competition, department integration and complexity of the HR phenomena. Finally some factors that emerged from the interviews but that we did not encounter in the literature are lack of awareness, frustration, resistance to change, and company size.

5.1.1 Average number of candidates
The increasing average number of candidates per job offer is a factor that was mentioned both from all competitors both from the literature (Black and Esch, 2020). When we tested this factor in the structured interviews, all the categories of respondents agreed on saying that it is an impactful factor.

5.1.2 Bias
Many interviewees have mentioned bias naturally when we asked them about the factors that impact the pace of adoption of AI in recruitment. Similarly, bias was reported in many articles with the same argumentations (Bersin and Chamorro-Premuzic, 2019; Chapman and Webster, 2006; Tambe et al., 2019). Noteworthy, this is one of the cases where the sources are in contrast to each other. In our test, every single interviewee believed that bias is a highly impactful factor. However, since the number of interviewees who believed that it has a positive impact is similar
to the number of interviewees who believed in the opposite, the resulting impact is null. Due to the design of our study, we cannot claim whether this reflects reality but we observed that people have very different opinions on this factor. We find it plausible that due to the misaligned perspectives this factor has an insignificant effect on the adoption, but we invite our audience to test this possibility in quantitative study.

5.1.3 Brand

Coherently with the literature (Miles and McCamey, 2018), some interviewees (investors and competitors) mentioned brand image as a factor that impacts the adoption. When we tested the factors, most categories believed that it does have an influence on one adoption rate. In contrast, on average job applicants believe the opposite.

5.1.4 HR Budget

Competitors have claimed that a factor impacting the adoption rate of their technologies is the HR department’s budget. This resonates with the claimings of Bersin and Chamorro-Premuzic (2019), who said that the HR budget is still an issue when it comes to implementing new technology. When we tested this factor we got an unexpected result. Although we did get confirmation that this factor impacts the adoption of AI in recruitment, the different categories of respondents believed on average that it is a fostering factor, in contrast with the literature and the interviews.

5.1.5 Candidate engagement

Although Black and van Esch (2020) claimed that the engagement management of the candidates was an impactful factor, none of the interviewees mentioned it when we asked them open questions. Nevertheless, when we asked them a direct question on this factor, all the categories of respondents (with the exception of end-users) believed that it is impactful.

5.1.6 Candidate perspective

Black and van Esch (2020) believed that the candidates’ perception of AI tools does have a role on the adoption pace. Customer 1 backed this claim up by mentioning candidate perspective first when we asked about factors that impact the adoption negatively. However, when we aggregated all the results together this factor resulted to be neutral. As per bias, the neutrality was driven by a misalignment of perspectives rather than a shared opinion of insignificance.

5.1.7 Competition

Competition is a factor brought up from Black and van Esch (2020) that has never been mentioned in the interviews we have conducted. However, all categories of respondents confirmed that it is an impactful factor.

5.1.8 Department integration

Fountaine et al. (2019) claimed that the integration of AI in other departments would have an important role on the pace of adoption of AI in recruitment. However, this factor was never mentioned during our interviews and all the categories of respondents agreed on the fact that department integration is not significant to explain this phenomenon.
5.1.9 Digitalisation

Digitalisation was a common factor in both the literature (Baykal, 2020; Black and van Esch, 2020) and the interviews. Furthermore, all respondents believed it is an important and influential factor.

5.1.10 Fairness

Many authors (Black and van Esch, 2020; Wilfred, 2018) argued that the possibility of making more fair decisions is a factor impacting the pace of adoption of AI in recruitment. Although many interviewees covered the topic of fairness when discussing the bias issues, no one explicitly mentioned this factor as one being impactful. However, during the structured interview, on average all the categories of respondents agreed it is an impactful factor.

5.1.11 Fear that AI might cause people to lose jobs

Several authors (De Stefano, 2019; Fountaine et al., 2019) believe that the fear that AI might cause people to lose jobs exists and that it operates as a factor impacting the adoption rate of these technologies. Also an investor has mentioned it during the semi structured interviews. On average, all the categories of respondents considered it to be an impactful factor.

5.1.12 The complexity of the HR phenomena

According to Tambe et al., (2019) since it is difficult to design metrics that could identify a good employee, the complexity of the HR phenomena can represent a factor impacting the pace of adoption of AI in recruitment. However, none of the respondents mentioned this factor during the semi structured interviews. Furthermore, when we tested it, this factor resulted to be neutral because all the categories of respondents had on average different opinions on its importance and direction. The same consideration made for bias can be extended to this factor.

5.1.13 Level of development of the technology

In literature, the current level of the technology was mentioned by Tambe et al., (2019) as a factor limiting the adoption of AI in recruitment. In contrast, in the interviewees we have conducted, one employee did mention the current level of technology as a fostering factor. The resulting average value from the quantitative interviews suggest this factor to be neutral. However, the investors believe it is very impactful.

5.1.14 Risk of cheat.

Tambe et al., (2019) provided the literature with a factor correlated with the risk that candidates might cheat by understanding the algorithm. This factor has never been mentioned during the interviews and all the categories of respondents were aligned on labeling it as insignificant.

5.1.15 Trust

The trust factor was covered many times in our research, both in the literature (Davenport, 2018) both in the interviews. In addition, it also resulted to be an impactful factor from the quantitative interviews. Unexpectedly, competitors did not consider it to be significant.

5.1.16 Lack of Awareness

A factor that was not mentioned in the literature but emerged from our study is lack of awareness. Very few people in the market have a full understanding of what AI is, how it works, what it can or cannot do. In this sense, Hubert’s customers and competitors have
described the implementation of AI technologies as the implementation of a black box. In the specific case of recruitment, some customers would not adopt because they believe that machines are not developed enough to assess candidates while others believe in AI blindly. Similarly, some job applicants do not believe that using AI is an effective way of recruiting while others prefer being judged by machines rather than humans. This impacts the engagement of the candidates as well as the likelihood that they reach the end of the recruitment process. When a company decides on whether to implement AI they usually think about the effect it would have on the candidates.

5.1.17 Frustration

Another factor that emerged from our interviews but we did not cover in our literature review is the general frustration within the industry. According to investor 2, the conventional recruitment is a source of frustration for every stakeholder. Recruiters have to perform a lot of manual and monotonous tasks that do not leverage their higher-education skills. Also, the job applicants are so many that it is impossible for them to treat them as well as they desire. Managers face very high labour costs and they are not happy that their expensive human resources have to dedicate their time in manual operations. Job applicants are very unhappy with the way they are treated and they feel powerless. This general frustration seems to be a factor that could motivate companies to adopt new technologies, if it can relieve them from this frustration.

5.1.18 Resistance to change

During the semi-structured interviews, the respondents have often mentioned the human resistance to any change as a factor impacting the adoption of AI in recruitment. However, we did not read about this factor in any of the articles we covered in the literature review. For some interviewees, it’s just about being lazy and being fine with the way they had been working until that day. For others, recruiters are not self-aware and they do not notice they have flaws that can be improved with AI. Some respondents claimed that recruiters do not realise they take biased or unfair decisions. Finally, for other respondents the resistance to change is driven by the belief that humans always know better, which stops them from delegating common human operations to machines.

5.1.19 Company size

This factor has emerged when we ask the opinions on the pace of adoption. One investor mentioned that the adoption of AI in recruitment in large scale firms is always very slow. It could result worthy to investigate this factor further on future studies.

5.1.20 Key Takeaways from Research Question 1

Besides the factors that is frequently mentioned both in the literature and the interviews such as bias or the average number of candidates, there are some factors that were not mentioned by the interviewees as it has been discussed. Those factors are candidate engagement, risk of cheat, competition, department integration and complexity of the HR phenomena. Here, it is worth to mention that these factors are not excluded from the study just because of it has not been mentioned by the respondents. This is just one of the outcomes of the interviews. For instance, although candidate engagement and competition have not been mentioned in the first part of the interviews, when we directly asked if they are impactful factors for them, they addressed that both factors are impactful. However, department integration and risk of cheat both didn’t
mentioned and haven’t found impactful by the respondents even when we asked directly. Similarly, complexity of HR phenomena both didn’t mentioned in the first part of the interviews and found less significant during the second part of the interviews.

5.2 Research Question 2: “How do these factors impact the pace of adoption of AI in recruitment?”

To answer the first research question, factors that impact the pace of adoption of AI in recruitment have been investigated. A literature research has been conducted and in total 15 factors have been derived from the literature. Although the factors have not been classified as hampering or fostering factors in the literature, authors reflected on which way it impacts the pace of adoption to some extent. Therefore, after conducting the literature research, all factors have been classified as hampering and fostering factors, to be able to answer the second research question: “How do these factors impact the pace of adoption of AI in recruitment?”. The aim with this question was to test each factor, magnitude and direction wise with underlying the relationship between each factor and the pace of adoption as hampering and fostering factors. To do so, the factors from the literature and the empirical findings from the interviews are compared and considered together. This also helped to fill the gap in the literature with providing an understanding to what extent each factor impacts the pace of adoption. In the following part, each factor will be discussed with the same order that is presented in the results section.

5.2.1 Fear of Losing Jobs

According to De Stefano (2019) and Fountaine et al. (2019), there is a debate of a fear that AI might cause people to lose their jobs. While De Stefano reflects on that fear, Wilfred (2018) stressed that AI tools cannot completely take over human’s place if we consider the emotions and moral values and AI cannot make decisions. Although that fear is obviously a negative factor according to all categories of respondents, the significance of this factor still has been tested. The respondents agreed with what De Stefano said, however some stated similar opinions to Wilfred as well. Those respondents mentioned that a human will always make the final decision. They also added that it might be hampering for now, but it is about resistance and it will not hamper in the future. Also, innovations come with consequences, just like in creative destruction, while some jobs are destroyed, others will be created (Caballero, 2010).

5.2.2 Level of Trust Towards AI in Recruitment

The second hampering factor that is mentioned by (Davenport, 2019), is the lack of trust towards AI tools. Trust is a factor that has been mentioned many times during the interviews and all categories of respondents agreed that this factor has a highly negative impact on the adoption pace. Some respondents mentioned that the reason behind it could be that people want AI to be perfect and when it is not perfect, it may slow down the adoption since there has to be decisions taken. However, it should be kept in mind that to benefit from AI tools, it is not necessarily to leave the last decision to the tool instead of a human. On the contrary, most of the time, it can be used to support the decision process instead of decision making itself. Also, the expectations from AI tools should be well understood as well as how these tools work. In addition to the expectations from AI tools, some other respondents stressed that trust depends on certain types of people and it is about their personality. Here, the need of understanding the reasons behind this lack of trust rises because one thing that is mentioned by several respondents was the human resistance to change and it would be a good contribution to the literature to investigate the psychological or other factors behind the lack of trust. Also both, employees and competitors complained that, every time they discuss with potential clients, an
effort is always needed to break all their mistaken prejudisms. However, not always AISP\'s manage to break these prejudisms, which would lead to a failed adoption. At last, some competitors and end-users didn\'t agree that it is a hampering factor. A job applicant noted that, eventually, AI is created by a human, and it will not be worse in terms of the trustworthiness compared to a human recruiter. Similar to the job applicant, a competitor highlighted that it can foster the adoption, if the research and training of the model is done in a good way. At the end of the day, as both job applicant and competitor mentioned, AI is trained by humans, and it is up to humans how to train the model as well as how to assess a candidate.

5.2.3 HR Departments\' Budget

Another hampering factor from the literature is HR departments\’s limited budgets to invest on assessment tools (Bersin and Chamorro-Premuzic, 2019)While one of the competitors, and one employee agreed that it could be a hampering factor, none of the other respondents called it a hampering factor. Instead, on the average, they called it as a fostering factor including the customers. A customer mentioned that today, HR departments have more budget. A report that is published by Bullhorn (2020) approves that comment. In the preparation of the report by Bullhorn, more than 2000 experts from the industry have been surveyed, and 41\% of the experts stressed that the expectation on the operating budget will increase from 2020 to 2021 and 47\% said investments on tech in recruitment will also increase (Bullhorn, 2020). In addition to that, just like one of the employees stressed that they need to prove to the customers that it will save money in the long run, the report published by Bullhorn reflected on the communication between people who are selling the product and the product itself by adding: “Make it more personable. People buy because of the person selling to them, not simply because of the product being sold to them.” (Bullhorn, 2020, p. 15). Eventually, the problem may not be only the budget, it may be about how AISP\'s sell it.

5.2.4 Integration of AI in Different Business Units on a Pilot Level

A hampering factor according to (Fountaine et al., 2019) is the organizational culture meaning that companies implement AI into single business units instead of all core businesses and they stay in the level of running a pilot (Fountaine et.al., 2019). According to the Bullhorn\’s report, only 13\% of the recruitment teams have a full adoption of recruitment technologies (Bullhorn, 2020). However, according to all categories of respondents, it is not that significant factor that impacts the adoption. They all stayed close to the neutral on average. While an employee mentioned that it is about how useful service you provide, an investor mentioned, HR departments do not know about the tools that are used in other departments, and a competitor said if you do the integration good in other departments, then it can foster, if you do it bad, then it can hamper. And a competitor inconsciously agreed with Fountaine et al. (2019) on AI projects, usually ending up staying on a pilot level, and highlighted the importance of the need for understanding of long term change management.

5.2.5 Current Level of Development of the Technology

A factor that is mentioned in the literature is the technological limitations and current level of developments of AI (Tambe et al., 2019). For instance, small data sets are a limitation on the development with leads to poor outcomes (Tambe et al., 2019). As one of the customers stated that the technology is not well developed yet, it is advancing as one of the competitors stressed. On the other hand, as a result of the interviews, respondents stated that it is a more neutral factor on average in terms of impacting the pace of adoption. The development level is of course important to have better products, but the outcomes of the interview results show that there are different opinions on it. While some think that it may foster, others think that it may
hamper. Therefore, when it comes to impacting the pace of adoption, it may not hamper or foster the adoption. In this case, the developments can be looked at as a matter of time.

5.2.6 Complexity of HR Phenomena

According to Tambe et al., (2019), complexity of HR phenomena is a challenge, since it is hard to decide on the metrics that define a good employee. However, according to the respondents it is more like a neutral factor on average, closer to being fostering. For instance, an employee said that AI makes it possible to assess the candidates with the same criteria, different from how human recruiters do the interviews. As it is definitely a challenge to define a good employee for the AI tools, it is also true that it gives the chance to standardise the assessment methods. On the other hand, competitors noted that it is a real challenge to define a good employee and therefore, it could be a hampering factor. In the end, one can easily say that defining a good employee is not easy. At this point, it is important to understand the difference between how a human defines it and how it is defined within AI tools. We, as authors of this study believe that, it requires a focus to understand the differences in terms of, how human recruiters assess a candidate, do the recruiter use standardised process, to what extent, what kind of metrics are used by recruiters and how they can turn into measurable, standardised metrics and assessments methods for the AI tools. These questions are also related with the transparency of the assessment methods that some respondents mentioned during the interviews. However, one should also consider that, is this transparency only valid for the assessment by AI tools or also the recruiters.

5.2.7 Risk of Candidates Might Find Out How the Algorithm Works

Another negative factor from the literature is the risk that candidates might find out how the algorithm works and change their behaviours accordingly which leads to biased answers and worthless algorithms (Tambe et al., 2019). However, according to all categories of respondents this is not a significant factor that impacts the pace of adoption at all. According to respondents, first it is possible to understand if someone is cheating, second cheating is not a problem because it is actually just meaning to improve the CV or interviews in a better way. Eventually, the possibility of candidates figuring out how algorithms work, exists. However, it doesn't seem like it is a significant issue to consider in terms of the adoption.

5.2.8 Bias

Bias is a widely mentioned topic in the literature. While some authors (Daugherty et al., 2018; Tambe et al., 2019) refers that the recent impressions of AI recruitment are not good in terms of bias, and most of the time these AI tools are trained by data sets that involve biases, other authors stress that AI tools helps to reduce the bias (Black and van Esch, 2020; Wilfred, 2018). As a widely mentioned topic, bias has also been covered in every single interview. Recruiters, as every human are consciously or unconsciously biased and it affects the way they select candidates. On the other hand, some famous cases have shown that AI machines can be biased too as they are designed by humans. Hence, some may decide to implement AI to solve the issues driven by the recruiters’ biases. Others may decide to not implement AI because they do not believe that it would actually solve any bias problem. Every respondent believed that bias was impacting the adoption of AI technologies to a high extent. However, when we calculated the average impression of its magnitude and direction it emerged that it was a neutral factor. This because the quantity of interviewees that believed it was a fostering factor was very similar to ones believing in the opposite. For us, it is plausible that bias does not really hamper nor foster the adoption pace of AI in adoption. However, we invite the audience to test this hypothesis into a larger quantitative study.
5.2.9 Digitalisation

According to the literature, digitalisation creates a big potential with regards to saving costs, increasing the efficiency in the hiring process, and also avoiding biases in the selection of the candidates (Chapman and Webster, 2006). All categories of respondents have identified digitalisation as significantly fostering factor on the adoption of AI in recruitment. The digitalisation wave is making the companies every day keener on delegating their operations to machines. On the one hand, this makes the companies accept these solutions more easily. On the other hand, it makes them search actively for digital solutions to their problems. However, it is also important to look at, to what extent companies are adopting digital solutions and implementing digital transformation strategies. According to a report of Bullhorn (2020), only 43% of the professionals in the industry are implementing a digital transformation strategy but 72% of the professionals are more likely to implement one compared to 2019 (Bullhorn, 2020). Therefore, although the numbers are promising, it may require more effort on the implementation part.

5.2.10 Competition

A fostering factor according to the literature is the competition in the business environment. Firms do not want to fall behind their competitors and this may entail them to quickly embrace and implement AI based systems (Black and van Esch, 2020). Similar to the literature, all respondents refer to it as a fostering factor that impacts the adoption to a high extent. Innovations impact the growth possibilities and create competitive advantage (Kretschmer, 2012). Therefore, many times, an innovation can be adopted due to the competitive pressure and obviously, it can foster the pace of adoption.

5.2.11 Brand Image

Miles and McCamey (2018), address that using AI as a forefront technology will create a better brand image. Also, Black and van Esch (2020) states that, most of the candidates find AI tools novel and convenient. The interviewees agree with that and they call brand image as a fostering factor. Only one competitor and one job applicant indicated that it can be a hampering factor. The job applicant mentioned that she/he really doesn't like her/his experience with AI tools in the recruitment process and she/he merges this experience with the company that she/he applied for. It is understandable that the applicant sees the company as the problem, instead of the AI tool. This is also something that a customer mentioned, when it comes to AI tools in recruitment, job applicants see the company that they applied for instead of the tool itself. Also as a competitor mentioned, it could be problematic as well, since the brand images are very fragile. She/he also added that how they implement AI solutions are important.

5.2.12 Candidate Engagement

Another factor is the engagement management of the candidates. Black and van Esch (2020) claim that candidates do not feel disturbed with chatbots, instead they feel comfortable and it leads them to finish the application process with a higher likelihood (Black and van Esch, 2020). On average, all categories of respondents reflected on the candidate engagement as a fostering factor. However, ironically, candidates stayed on a neutral level on the average, and stated different opinions. While one reflected on playing fancy games, increase the engagement level, another stated that she/he didn't even apply for a position just because that company is using AI tool. Also during the interviews, most of the respondents claimed that although there is a lack of human interaction in AI tools, it increases the candidate engagement. However, candidates have different opinions on their engagement.
5.2.13 Candidates` Perspective

As it has been mentioned before, according to the Black and van Esch (2020), most of the candidates find AI recruitment tools novel and convenient and candidates do not feel disturbed with chatbots, instead they feel comfortable (Black and van Esch, 2020). There are different opinions on the respondents side, while investors and employees are closer to call it a hampering factor, other categories of respondents are closer to call it a fostering factor. The respondents who called it a hampering factor, explained the reasons behind it as it could be boring and tiring for the candidates. Also a job applicant said she/he almost hates to use AI tools, because it lacks human interaction, and she/he prefers to speak with humans. On the other hand, the respondents who call it a fostering factor, said that filling a survey is more boring, and these tools make the process more engaging. Also, some respondents including a job applicant, emphasized that these tools reduce the bias, and increase the diversity. The job applicant mentioned the importance of reducing the bias several times during the interview. At the end, while most of the negative reasons are about lack of human interaction, and candidate experience, positive reasons are about diversity, bias and engagement.

5.2.14 Average Number of Candidates

Another fostering factor from the literature is the increasing number of candidates. AI solutions make it possible to assess the high number of applications for each position with a high speed (Black and van Esch, 2020). According to all respondents, it is a significant factor that fosters the pace of adoption to a high extent. Many interviewees have also reported that the Covid-19 pandemic made the average number of candidates per job offer rise very quickly. The impossibility of managing all the applications and treating all the candidates with the same attention has been a key motivation for Hubert’s customers to adopt their solutions.

5.2.15 Fairness

Many authors (Black and van Esch, 2020; Wilfred, 2018) highlight the advantages that AI brings to the recruitment process and one of them is the fair decisions. All respondents except one job applicant claimed that it is a fostering factor. While the job applicant thinks that the technology is not well developed to make fair decisions, the rest of the respondents think that it provides a more fair process. When it comes to fairness, one thing that should be kept in mind is the transparency as some of the respondents stated and another is to compare it with the human recruiters, and consider any biases that both AI and human can involve.

5.2.16 Key Takeaways from Research Question 2

Eventually, three factors have been found that have a less significant impact on the pace of adoption of AI in recruitment compared with all the others: integration of AI in different business units on a pilot level, complexity of HR phenomena, and risk of candidates finding out how the algorithm works. For instance, it has been referred by interviewees that integration of AI in other departments is not an issue because many times, HR departments do not know about the tools that are used in other departments. Also a respondent stated that it is more about how useful the service you provide rather than the ones implemented in other departments. Similarly, as it has been explained already, the interviewees agreed on saying that the other two factors are not significant.

On the other hand, there are three factors that although they have been found important by the respondents, they also came with highly varying opinions on their impact on the pace of
adoption. They are: bias, current level of development of the technology and candidate’s perspective. For instance, while some respondents addressed bias as a factor that fosters the adoption because it reduces the bias, another stressed there have been cases where AI tools are biased, and it may hamper the adoption. We find it very surprising that although bias is such a hot topic, and this factor has been covered in literally every interview, it might eventually result in having no effect on the pace of adoption because of the extremely divergent opinion within the market.

At last, two factors have been found highly significant and hampering the adoption.

**Fear of losing jobs**

An outcome of our study that accounts to explain why the pace of adoption of AI in recruitment is slower than expected is the fear of losing a job. This factor is notably important in this specific industry because of the role taken by decision makers. HR manager’s task is not to save costs or make operations efficient, but rather to make the work environment better for the employees, according to our interviews. For this reason, adopting a new technology that would cost its employees to lose their jobs is not something very attractive for them. However, most interviewees agreed, saying that it is probably a temporary problem as it is impossible to stop technological development, in accordance with De Stefano (2019) claims. This can be implemented with the creative destruction notions (Caballero, 2010) which assert that when jobs are lost as a consequence of an innovation, they will be replaced by other different job opportunities. In addition, it’s worth mentioning the contribution given by Hmoud and Laszlo (2019) who claimed that AI will be used to increase quality and efficiency. We believe that the latter two dimensions contribute to improving the work environment for the employees which is within the interests of the HR managers.

To conclude, some respondents claimed that AI cannot ever substitute humans when it comes to recruitment because emotions and feelings will always be taken into account, and they cannot be replicated by machines (Wilfred, 2018).

**Level of trust towards AI in recruitment**

The other factor that in our study results to hamper the adoption of AI in recruitment to a high extent is the general level of trust towards AI. Most interviewees have, in fact, claimed so. Some of them argued that the lack of trust is driven by mistaken prejudices as most people underestimate or overestimate AI potential. Those who underestimate it simply do not believe what AISPs say and simply do not adopt. On the other hand, those who overestimate AI end-up being disappointed when the technology does not meet their expectations which also accounts in slowing down the adoption. This could be related to Davenport’s (2018) claim, as the scholar stated that AISPs use to oversell AI and it affects the general level of trust towards it. However, a job applicant noted that AI should not be trusted less than humans. At the end of the day, s(he) claimed that AI is created by humans, instructed by humans and used by humans so there is no base to trust humans more than AI. A competitor had a very similar position on this matter, and s(he) said that as soon as AISPs will design these technologies in a better and more transparent way the level of trust will become a fostering factor. We suggest that this factor can be faced by acknowledging people the fact that AI is a tool whose purpose is to support decision making rather than actually take decisions.
Research Question 3: “How could a generic AI solution provider startup approach the AI recruitment market from a strategic perspective?”

As mentioned, the mean we have chosen to answer this question is a strategic analysis. We have followed the workflow proposed by Lafley and Martin (2013) and we have collected information over the following dimensions: industry, customer value, and relative position. The data we had collected to explore the factors that impact the pace of adoption of AI in recruitment was re-used and transformed to fill the framework, given the strategic relevance of the factors. However, to fill the framework in all the required fields, some other data was also collected with the sole purpose of answering this research question. Thanks to the information on the industry any AISP startup can identify what segments are the most attractive for them. In the customer value analysis section, we collected information on both the customers and end-users. In the following sections, it will be shown that the channel is highly dependant on who takes the adoption decisions. Differently, it is hard to establish the attributes that constitute end-user value precisely like the job applicants we interviewed all experienced different emotions. Finally, in the relative position analysis, we have collected information on the industry trends in terms of customer needs served and internal costs. In this way, companies could compare their capabilities and costs with the rest of the market. Following Lafley and Martin (2013) we suggest AISPs startups to combine all this information and develop a strategy to approach the AI recruitment market.

5.3.1 What are the strategically distinct segments?

The first element of the workflow from the strategic framework (Lafley and Martin, 2013) is the industry analysis and it starts with segmentation. The market overview part of the report has been used to answer this question. Since several market research providers segment the market in the same way (Absolute market insights, 2020; “Artificial Intelligence in Recruitment Market Research Report,” n.d.; “Global AI Recruitment Market,” n.d.), their reports have been taken as a basis. However, most of the parts in these reports are not publicly available. Therefore, only the parts that have been published are used and the rest are neglected due to limited data.

As it has been presented in the market overview part of the report, according to these reports (Absolute market insights, 2020; “Artificial Intelligence in Recruitment Market Research Report,” n.d.; “Global AI Recruitment Market,” n.d.), AI recruitment market is segmented by offering, by application, by end-users, and by geography. Respectively, the “offering segment” involves service and solution. “Application segment” involves job campaigning, candidate communication & assistance (chatbot), candidate screening and rediscovery, process automation, and others. Although other applications are not publicly available, candidate sourcing can be added based on the interview results. “End-users segment” involves recruitment firms, enterprises in terms of business, financial services and insurance, government, healthcare, hospitality, manufacturing, retail & e-commerce, and others. The end-users that are mentioned here are different from how it is used in this study. Here, it refers to the customers of AISPs. Also, almost any industry can be added to the others section. At last, the “geography segment” involves North America, South America, Europe, APAC, and RoW (Middle East and Africa).

5.3.2 How structurally attractive are the segments?

The second part of the industry analysis is the structure. Similar to the segmentation part, the market overview part of the thesis has been used to answer this question and the market research provider reports have been taken as a basis. The largest market shareholders in each

While respondents did not specifically touch upon the segmentation by offering, some respondents reflected on applications. One of the Hubert employees stated the same opinion with the market reports. She/he stated that process automation is the biggest factor. On the other hand, a customer emphasized that the use of applications depends on the industry. She/he addressed that candidate screening is not a problem in the IT industry, when it comes to the tech industry, sourcing candidates is a bigger problem. She/he also added that, in their organization, the biggest usage areas of AI are candidate sourcing, screening, and interviews. Also most of the respondents, specifically mentioned candidate screening, interviews, and process automation several times, but didn’t reflect on which has the biggest share.

When it comes to segmentation by end-users (customers in this study), respondents several times reflected on, usually, companies who receive high volumes of applications are more likely to use AI solutions. However, the market reports provided more information in terms of the industries as well. According to these reports, enterprises that include business, financial services, and insurance have the largest share due to the frequent changes of the financial industry dynamics, regulations, and policies which entails difficulties in employee management (“Artificial Intelligence in Recruitment Market Research Report,” n.d.)

At last, based on the reports, North America was dominating the market with 42.25% in 2018, while Europe is following with 30.85% (Absolute market insights, 2020). According to IndustryArc, the market share of North America was reached 43.7% in 2019, mainly due to the rising number of technology companies in the region and improvements in job applicants’ sourcing and screening processes (“Artificial Intelligence in Recruitment Market Research Report,” n.d.). All aside, the fastest growth is expected from APAC in the future based on the increasing industrialization and recruitment activities (“Global AI Recruitment Market,” n.d.).

5.3.3 What attributes constitute channel value?

According to (Lafley and Martin, 2013), understanding channel value is very important for positioning purposes. In this thesis, we have categorized as channel value all the information that enriches the knowledge on the attributes that the customers value the most. In this sense, the themes of channel value, recruiters’ role, and adopters’ profile will be discussed together with the communication strategy part of the competitors analysis.

Channel value theme

Starting with the channel value theme, the different categories of respondents provided different information on this topic. Hubert’s employees believe that channel value is mainly driven by two attributes: diversity and efficiency. However, they point out that in general customers do not really prioritize both, some prioritize diversity while others prioritize inclusion. Employee 4 suggested that companies having high employee turnover, like in warehouses, are more interested in AI because of its efficiency. Differently, companies like Spotify value AI because it enables them to build more diverse teams. However, it’s hard to define what companies are like Spotify.
Differently, Investor 2 believed that the attribute that the customer value the most at the moment is innovativeness. The customers are not aware enough of the potential of AI to understand the benefits it can bring. For this reason, at the moment, they value the technology’s innovativeness better as it improves their brand. On the other hand, Investor 1 ideas are aligned with the employees as he claimed that diversity and efficiency are the attributes most valued by the customers.

The competitors did not cover this theme as much as the other categories. However, they provided this research with some useful information. First, competitor 3 claimed that a basic requirement for any technology in the market is security and privacy of data. Secondly, the same competitor mentioned that more than half of the customer is curious about the transparency of the technology. Differently, the rest of the customers adopt these technologies as black boxes and trust them blindly. In addition, competitor 4 mentioned that conventional recruitment is ineffective. According to the competitor, the ineffectiveness is driven by two phenomena, the lack of standardization and the substantial differences of each role a recruiter is asked to fill. The lack of standardization is a problem because, within the same department, different recruiters screen the candidates for the role based on subjective criteria. The latter phenomenon is a problem because the same recruiter would hire for very different roles, hence they need to be up-to-date with the most important skills for each role.

The customers did confirm what was mentioned by the employees as they said that they adopted AI to improve the efficiency of their operations or build a more diverse team. However, they also mentioned that they value the service of sourcing more candidates.

Finally, job applicants also mentioned bias and diversity as main attributes for the channel value. In addition, they also believe that companies use these technologies to find the best talents. It’s noteworthy that no other category of respondents mentioned this attribute.

**Recruiters’ role theme**

This theme collected all the information regarding the recruiters’ role in the adoption process. The investors and the employees both mentioned that recruiters do not truly understand the value of the economic side of digitalization. Proposing them a solution that would make them save costs would not be effective, they only look for solutions that improve the effectiveness or the efficiency of their operations.

The customers reported that it took some time for them to actually understand and trust the outcomes of AI. It is something new for everyone and they did not know the right way of behaving. They all mentioned that once they managed to understand the technology well, they could see the value of AI better. However, Customer 1 complained that it took a lot of competencies for the recruiters to understand and accept AI.

**Adopter’s profile theme**

The adopter’s profile theme emerged from a thematic analysis of the literature. The information gathered under this theme orbits around the objective of explaining who are the companies that, at this stage of diffusion, are adopting AI in recruitment. According to Hubert’s employees, as the technology is still at the adopters’ stage of the diffusion model (Rogers, 2003), the companies that are adopting now are the ones that are more curious and keen to try new things. According to the investors, the adopters can be distinguished into two separate groups. The ones where the decisions are taken by the owners and the ones where an officer is in charge of
making decisions. Regarding the former group of companies, they decide to adopt because they are highly interested in the cost-saving attribute of AI. In contrast, for the latter group, curiosity and the interest in trying new things are the drivers of the adoption. Investor 2 also added that on average, only 8% of the latter group of companies usually have the curiosity or interest to try new things. Also, it is impossible to predict beforehand who is part of this small group of companies.

The competitors who provided information on this theme are Competitor 1 and Competitor 4. The first one distinguished the adopters into three categories, those who adopt because they just want to try new things, those who adopt for marketing reasons, and those who recognize of having a problem that AI could solve. Competitor 4 also mentioned that companies adopt because AI can solve their problems or allocating recruiters’ time more effectively.

The customers’ perspectives on this theme reflect what said by the other interviewees. They mainly adopted to improve the efficiency of their operations. In addition, one customer added that they were looking for a solution that could foster diversity in their teams.

**Competitor’s analysis communication strategy.**

By analyzing the communication strategy of the other AISPs we can extrapolate what attributes they believe structure channel value in the AI recruitment market. In the results, we aggregated all the competitors’ USPs into five themes: business model, efficiency, fairness, job applicant focus, top talent acquisition. Most of the companies selling AI-based services or products mention efficiency in their business model. Differently, fairness is an attribute that is mentioned frequently in companies part of every category of competitors. Finally, Top talent acquisition, job applicant focus, and business model are the least used. What we extrapolate from this analysis is that efficiency is the most appreciated attribute when it comes to adopting an AI-based solution. Customers do value fairness regardless of the type of service, type of technology, and phase of the application process.

**Takeaways**

Considering all that has been mentioned so far, the attributes that constitute channel value differ significantly depending on the customer. As suggested by Competitor 1, there are probably three types of adapters, and they value different attributes. The adopters who genuinely want to improve and try new things value efficiency and innovativeness. The adopters who adopt for marketing reasons value the innovativeness and the technology itself. Or in general, any attribute that can enhance their brand of innovators or technology enthusiasts. These two categories of companies together represent 8% of the potential market, according to Investor 1. Finally, the companies adopting AI because they have a problem to be solved value the attributes that solve their specific problems. From our results, the customer problems are highly correlated with efficiency and diversity, for this reason, we suggest that these attributes constitute channel value for this category of respondents. However, all the adopters will face an initial skepticism from their recruiters, meaning that they value communication and education efforts from the AISPs. Both primary and secondary data suggest that cost-saving benefits are not an attribute that constitutes channel value.

5.3.4 What attributes constitute end-user value?

In the specific case of Hubert and its direct competitors, the end-users of its product differ from the customers. In this market, the risk of selling a service or product that is not appreciated by the end-users might cause the customers to have fewer candidates and, consequently, higher
chances of making bad hires (Tambe et al., 2018). Consequently, the customers would be more reluctant to adopt technologies that do not take end-user value into consideration. In this thesis, we have covered the end-user value theme by asking all the categories of respondents. In this way, we can discuss if the opinions of AISPs and Customers are aligned as well as check if they reflect what job applicants feel.

According to Hubert employees, the end-users appreciate the possibility of being heard before being screened. Specifically, they are happy to be screened based on what they say in an interview rather than being screened based on their resume, according to them. In addition, they also mentioned the value of receiving quick feedback.

Hubert’s investors mentioned how frustrating is the conventional recruitment process for job applicants, as it takes a lot of time and effort and they get mistreated most of the time. They believe that making the process shorter and easier for the end-user would create great value for them.

The competitors provided the end-user theme with some other attributes. Competitor 1 reflected that some end-users might not appreciate being judged by a machine because of the trust issues reported when discussing the first two research questions. When asked about this specific phenomenon, Competitor 2 joked by saying that he/she would be more scared of being judged by a human. Although it was a joke, Competitor 2 brought up the bias attribute. Being screened by a machine means having less probability of receiving biased assessments. For the job applicants who usually are victims of bias, this attribute would be of great value. In addition, Competitor 2 also mentioned data privacy and security as attributes valued by end-users.

Hubert’s customers mainly mentioned candidate engagement in regards to this theme. For some of them, engagement would be affected by both the lack of human interactions and the lack of understanding of the process. In contrast, Customer 2 believed that AI would have impacted positively the engagement of their candidates. However, Customer 2 believed so because their candidates are very young and he/she noticed that most young people enjoy using chat-based services.

What emerged when interviewing job applicants is that they all value different things as they all experience different feelings. Job applicant 1 dislikes AI-based interviews so much that it stops him/her from continuing with the recruitment process. Furthermore, the same end-user even says that using AI for interviewing candidates affects the companies’ brand negatively. However, she believes that AI can be used for other purposes during the recruitment process, such as CV screening. The attribute this candidate values the most is human interaction. In contrast, Job applicant 3 had a very positive experience with AI tools. He stated that AI-based interviews are more reliable, fun, and challenging than conventional recruitment. For this reason, he is so satisfied that he did not have any suggestions for further improvements. The satisfaction was driven by the effectiveness of AI tools in assessing the candidates and the customization of the interviews. Yet, he also specified that AI-based interviewing is a good solution for entry roles only. Job applicant 3 expects to have a human to assess his IT auditing capabilities, not a machine. The attributes this end-user values the most are engagement, reliability, and customization. Finally, Job applicant 2 was more reflective over AI-based interviews and provided this research with both positive and negative experiences. The first time he was invited to an AI-based interview he was uncomfortable because he did not know how to behave nor how to succeed. Other negative aspects of his experience are the lack of
human interaction and poor engagement. However, he also pointed out some positive aspects of AI-based interviews. First, he was very happy to receive instant feedback. Secondly, he appreciated the fairness of the process, as he felt he received an unbiased assessment. The attributes this end-user values the most are transparency, engagement, receiving instant feedback, and fairness.

5.3.5 Hubert’s capabilities and costs

In the strategic workflow proposed by (Lafley et al., 2012), there are two dimensions that one needs to analyze in order to assess the company’s relative position. The first one regards the capabilities of the company and how they differ from the competitors. Similarly, the second one regards the company’s costs and their differences with the competitors’. The primary data resulting theme “Hubert’s capabilities and costs” and the secondary data competitor analysis will be discussed to perform this analysis.

Starting with capabilities, during the semi-structured interview Investor 1 described Hubert’s current service. They offer to automate the screening process through a conversational chatbot. Furthermore, they rank the candidates based on how well they perform in the interviews. They differ from other companies assessing candidates because they have a conversational bot that performs way more sophisticated interviews compared to the classical frequently asked questions robots of other companies, Employee 1. In line with their capabilities, Employee 2 states that their ambition is to become the best company in assessing candidates.

Screening candidates is an operation performed by most competitors, with no distinctions of direct, indirect, and potential type. However, only direct and indirect competitors perform conversational interviews. The main differences between the two categories are technology and economic resources. Direct competitors’ conversational interviews are based on AI, just like Hubert. The indirect competitors’ conversational interviews are performed by humans. On the other hand, indirect competitors have massively larger economic resources compared to the other categories.

Regarding costs, Hubert’s investors and employees stated that they have the same cost structure as other startups. Their costs are driven by the salaries and office rent. However, they have a significantly fewer number of employees (<15) compared to indirect and indirect.

5.4 Ethical Implications

As Lennerfors (2019) stated in his book “Ethics describes the process of reaching a judgement about what to do.” (Lennerfors, 2019, p.16), and this process has four steps: awareness, responsibility, critical thinking and action (Lennerfors, 2019). One outcome that has appeared from the interviews is there is a lack of awareness in regards to defining AI and how AI works. The lack of awareness can cause many issues, including accepting badly trained AI tools, biased and unfair assessment methods, and unequal assessment of the candidates. Although, the interviewees mentioned that the lack of awareness is on the recruiters and job applicants side, the designers, developers and engineers who train and design these tools need to be well aware of any ethical issue that they can cause (Daugherty et al., 2018). They also should keep in mind that they have the ability to think, be aware, and once people are aware, they should take responsibility for their actions (Lennerfors, 2019). For instance, during the interviews, a frequently mentioned topic is that while some recruiters think that AI tools could be biased, AI
tool developers say that recruiters have their own biases. Here, it is worth keeping in mind that, people might avoid responsibility (Lennerfors, 2019), and just like a job applicant reported, eventually AI tools are trained by humans, and to train responsible models is their responsibility. Therefore, instead of blaming others or the previous bad impressions, developers should focus on developing responsible models and recruiters should focus on what is the best way to be less biased. Although, it is not easy to define what is a good employee (Tambe et al., 2019), and to train a bias free or perfectly fair model, it should be aimed to develop the models as much bias free and fair as possible. So that everyone can have equal opportunity.

Another point that is commonly referred by the interviewees is the lack of transparency in the algorithms. Most of the time algorithms are like a blackbox and it doesn't make it easier to assess the fairness of these tools. However, if companies publish their algorithms then they can lose their competitive advantage. On the other hand, there can be laws and regulations to regulate the assessment processes and algorithms. Yet, the scope of the regulations should be well defined. To give access to such algorithms and data means to give a lot of power to the governments in the sense of both technological developments and data collection. Also, when it comes to data, data protection is another subject that is arrestingly mentioned by the competitors during the interviews. A competitor specifically highlighted that one big concern these days is data security and privacy. She/he also added that people should be concerned about how their data is processed and it is just one step towards Big Brother watching us.
6 Conclusion
The time when companies have started adopting AI in recruitment was considered so revolutionary that scholars (Black and van Esch, 2020; Kaplan and Haenlein, 2019) labelled it as the beginning of a new era for recruitment, namely digital recruitment 3.0. The disruptiveness was explained by the performance improvements that AI could have brought into recruitment, among others: efficiency, cost savings and bias minimization (Black and van Esch, 2020; Tambe et al., 2019). However, the initial hype has not been backed up by a strong adoption from companies. In fact, despite most of the companies believed that AI could bring tangible benefits since beginning of the digital recruitment 3.0 era (Human Resources Professionals Association [HRPA], 2017), more recent studies showed that few companies have actually adopted the technology in recruitment (Kaji et al., 2018; Tambe et al., 2019).

As already mentioned many times in the thesis, scholars (Daugherty et al., 2018; De Stefano, 2019; Tambe et al., 2019; Wilfred, 2018) have long debated on the factors that have an impact on the adoption of AI in recruitment. The problem we outlined is that all articles discuss just a few factors and present a narrow perspective. This discontinuity in the literature might mislead startups in taking strategic decisions as there is no information on what factors are the most impactful. For instance some claimed that there is a general lack of trust which is slowing down the adoption (Davenport, 2019) while others claimed that the HR department's low budget is one of the main reasons behind its slow adoption (Bersin and Chamorro-Premuzic, 2019). Which of these two factors are the most impactful? Should a startup invest in increasing the level of trust or in reducing the price of their offers? Or also, some scholars (Bersin and Chamorro-Premuzic, 2019; Tambe et al., 2019) mentioned bias as a factor that fosters the adoption of AI in recruitment while others reported that bias is actually slowing down the adoption (Daugherty et al., 2018). What do companies really think about using AI to cope with bias?

To empower startups to answer these and many other questions, we have designed our thesis to fill the discontinuity in the literature by adopting the contingency perspective (Thai, 2015). Specifically, we designed a typical case study focused on one AI solution provider startup, Hubert AI. Thanks to this design, we have been able to grasp the perspectives of different categories of stakeholders, namely, Hubert’s employees, Hubert’s investors’, Hubert’s customers, Hubert’s competitors, and Job applicants. We conducted 16 interviews in total and each of them was composed of two parts, a semi-structured one and a structured one. The semistructured part was different for each category of stakeholders while the structured one was the same for each interviewee. Thanks to the semi-structured interviews we got information on the following themes: pace of adoption, fostering factors, hampering factors, adopters’ profile, Hubert’s capabilities and costs, recruiter's role in adoption process, channel value, end-user’s value. Differently, thanks to the structured interviews we managed to collect the perspectives of each category on the magnitude and direction of each factor previously collected from the literature.

Now we can suggest startups to focus on trust issues, as most respondents agreed on saying that it represents a factor that hampers the adoption to a high extent. In contrast, it emerged that the HR department's limited budget is a factor that actually fosters the adoption of AI, as the latter technology enables companies to save costs. Other factors that foster the adoption of AI in recruitment are: the average number of candidates per job offer, branding, candidate engagement, competition, digitalisation and fairness. Among these, the most impactful factors are digitalisation and the number of candidates. On the other hand, trust is surprisingly the only factor where all the respondents agree on claiming that it hampers the adoption of AI. In addition, the interviewees agreed that the following factors do not impact the pace of adoption
of AI in recruitment: departmentment integration, the complexity of the HR phenomena, and risk of cheat. Regarding bias and candidates’ perspective it was impossible, with our design, to assess their impact on the adoption of AI in recruitment as all interviewees had different opinions.

In addition to testing the factors existing in the literature, this research also provided research with some additional factors. They are: lack of awareness, frustration and resistance to change. Very few companies or job applicants can confidently describe what AI is or how it works. However, the more this technology is adopted in the market the more they will be forced to work with it. As long as they do not comprehend the benefits and the limitations of the technology, the general lack of awareness will create friction and hamper the adoption of AI in recruitment. Another factor that emerged is frustration. All the stakeholders are somehow frustrated by the conventional way of recruiting. Recruiters have a lot of monotonous tasks to perform and do not have the time to treat the job applicants well. On the other side, job applicants feel completely powerless. This factor fosters the adoption of AI in recruitment as the latter technology can effectively relieve all the stakeholders of their frustration. Finally, a last factor that emerged from our study is resistance to change. Although this factor is present in each industry and each technology (Rogers, 2003), it is worth mentioning because it seems like that in the specific case of AI in recruitment it has a stronger impact. Although we cannot make the latter claim confidently as we did not test the emerging factors, some respondents mentioned that it takes an extra effort for the recruiters to be self aware of their bias and look for ways to improve. With this said, we invite future researchers to test all the factors mentioned in this research with a more generalizable study.

In fact, the study design we have chosen in this thesis is not suitable to generalise the findings globally, it can be complemented by a quantitative study, to make it generalizable. Also, as a suggestion for the future work, more interviews can always be conducted, and more factors can be searched both through the interviews and the literature. Additionally, factors that emerged from this study can also be tested as magnitude and direction wise. At last, strategic suggestions can be made by the help of the strategic implications that is provide in the study.

Although, this thesis is not suitable to generalize the findings globally, still we aimed to achieve a case-to-case generalisation so that other AI solution providers like Hubert could benefit from our findings. This aim was reinforced by the strategic analysis we have conducted as it can be integrated with the internal analysis of any other similar company. Thanks to this study, AISPs have more information on the factors that shape the adoption process of their potential customers. The other companies, by reading this research, could grow a better understanding of AI’s benefits and limitations and take more informed adopting decisions. Finally, job applicants can understand better why employers might choose to utilize AI technologies in order to assess their fit to the company. Furthermore, we did fill the gap in the literature that we had outlined as we both presented an interpretation of the magnitude and direction of the factors that we had gathered from the literature as well as collected the perspectives of different categories of stakeholders.
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APPENDICES

APPENDIX A – INTERVIEW STRUCTURE

Part 1

**Employees**
- Can you tell us your name and role at the company?
- How do you perceive the pace of adoption of AI in recruitment?
- What do you think are the factors that impact the pace of adoption of AI in recruitment negatively?
- What do you think are the factors that impact the pace of adoption of AI in recruitment positively?
- What attributes do you believe customers value the most?
- What attributes do you believe job applicants value the most?
- What are your main cost drivers at Hubert?

**Investors**
- Can you tell us your name and role at the company you work for?
- How do you perceive the pace of adoption of AI in recruitment?
- What do you think are the factors that impact the pace of adoption of AI in recruitment negatively?
- What do you think are the factors that impact the pace of adoption of AI in recruitment positively?
- Why did you invest in AI in recruitment?
- How do you think the industry changed over time?
- What are the future scenarios you predict for the AI recruitment industry?

**Competitors**
- Can you tell us your name and role at the company you work for?
- How do you perceive the pace of adoption of AI in recruitment?
- What do you think are the factors that impact the pace of adoption of AI in recruitment negatively?
- What do you think are the factors that impact the pace of adoption of AI in recruitment positively?
- What attributes do you believe customers value the most?
- What attributes do you believe job applicants value the most?

**Customers**
- Can you tell us your name and role at the company you work for?
- How do you perceive the pace of adoption of AI in recruitment?
- What do you think are the factors that impact the pace of adoption of AI in recruitment negatively?
- What do you think are the factors that impact the pace of adoption of AI in recruitment positively?
What does the decision-making process look like when adopting an AI-based service?
What attributes do you or your company value the most when adopting AI-based solutions for recruitment?
What applications of AI are more valuable in recruitment?
How do you think AI impacts the job applicants recruitment experience?
Why did you choose Hubert?
How do you think adopting AI will impact your recruitment process?

Job Applicants
Can you tell us your name and occupation?
Which AI tool did you use?
For what position did you apply when you used this AI tool?
How was your experience with the AI tools within your past job applications?
If you would like to change anything in the recruitment process with AI, what would it be?
How do you perceive the companies that use AI tools in recruitment?
Why do you think they are using AI in recruitment?
How would you consider your engagement between AI tools in recruitment and conventional recruitment?
How do you perceive the pace of adoption of AI in recruitment?

Part 2

1. According to the literature, there might be "a fear of AI might cause people to lose their jobs in recruitment". In which way and to what extent this factor impacts the pace of adoption of AI?
2. In which way and to what extent does the "current general level of trust towards AI" impact the pace of adoption of AI in recruitment?
3. In which way and to what extent does the "HR departments' average budget" impact the pace of adoption of AI in recruitment?
4. AI could be integrated into several departments or operations in a company. However, most of the time there is no full integration of AI into all core businesses, and the adoption does not progress from the pilot stage. How do you think that the "integration of AI in other departments" impacts the pace of adoption of AI in recruitment?
5. In which way and to what extent does the "current level of development of the technology" impact the pace of adoption of AI in recruitment?
6. In which way and to what extent does the "complexity of HR phenomena (e.g., the difficulties in defining a good employee)" impact the pace of adoption of AI in recruitment?
7. In which way and to what extent does the "risk of candidate might find out how the algorithm works and change their behaviours accordingly" impacts the pace of adoption of AI in recruitment?
8. In which way and to what extent does the "performance of AI coping with “bias issues" impacts the pace of adoption of AI in recruitment?
9. In which way and to what extent does "digitalization" impact the pace of adoption of AI in recruitment?
10. In which way and to what extent does the "competition in the business environment" impact the pace of adoption of AI in recruitment?

11. In which way and to what extent does the "impact of implementing AI in recruitment on brand image" impact the pace of adoption of AI in recruitment?

12. In which way and to what extent does the "level of engagement of candidates with AI tools in recruitment processes" impact the pace of adoption of AI in recruitment?

13. In which way and to what extent does the "job applicants’ perception of AI tools in recruitment" impacts the pace of adoption of AI in recruitment?

14. In which way and to what extent does the "average number of candidates per job offer" impact the pace of adoption of AI in recruitment?

15. In which way and to what extent does the "fairness level of AI tools in recruitment" impact the pace of adoption of AI in recruitment?
APPENDIX B – LITERATURE FACTORS DESCRIPTION

<table>
<thead>
<tr>
<th>Factors from the Literature Review</th>
<th>Description of the Factors</th>
</tr>
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<tbody>
<tr>
<td>Fear of losing jobs</td>
<td>There is a possibility that AI might cause people to lose their jobs in recruitment (De Stefano, 2019).</td>
</tr>
<tr>
<td>Level of trust towards AI in recruitment</td>
<td>According to Davenport (2018), there is a lack of trust towards AI tools in recruitment. However, to avoid leading the interviewees, the factor has been stated as the current general level of trust towards AI in recruitment during the interviews.</td>
</tr>
<tr>
<td>HR departments` budget</td>
<td>Bersin and Chamorro-Premuzic (2019) stated that HR departments have limited budgets to invest on assessment tools in recruitment.</td>
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<tr>
<td>Integration of AI in different business units on a pilot level:</td>
<td>Fountaine et al. (2019), reflects on the companies that do not integrate AI to all core businesses and instead they only implement into a single business with staying on a pilot level, without taking any further steps.</td>
</tr>
<tr>
<td>Current level of development of the technology:</td>
<td>According to Tambe et al. (2019), there are technological limitations and small data sets might limit the development and entail poorly performed outcomes.</td>
</tr>
<tr>
<td>Complexity of HR phenomena:</td>
<td>HR phenomena is complex and it can be hard to define who is a good employee (Tambe et al., 2019).</td>
</tr>
<tr>
<td>Risk of candidates might find out how the algorithm works</td>
<td>There is a risk of candidates might find out how the algorithm works and change their behaviours accordingly (Tambe, 2019).</td>
</tr>
<tr>
<td>Bias</td>
<td>AI has the potential to remove the recruiters bias (Wilfred, 2018), however AI itself can be biased if not developed correctly (Tambe et al., 2019; Bersin and Chamorro-Premuzic, 2019; Daugherty and Wilson, 2019)</td>
</tr>
<tr>
<td>Digitalization</td>
<td>Nowadays, companies need to handle huge amounts of applications and conventional ways are not efficient (Chapman and Webster, 2003). In this sense, digitalization creates great potential with regards to saving costs, increasing the efficiency in the hiring process, and also avoiding biases in the selection of the candidates (Chapman and Webster, 2003).</td>
</tr>
<tr>
<td>Competition</td>
<td>Firms do not want to fall behind their competitors and this may entail them to quickly embrace and implement AI based systems (Black and van Esch, 2020).</td>
</tr>
<tr>
<td>Brand</td>
<td>Using AI as a forefront technology will create a better brand image (Miles and McCamey, 2018).</td>
</tr>
<tr>
<td>Candidate engagement</td>
<td>Most of the candidates find AI recruitment tools novel and convenient (Black and van Esch, 2020).</td>
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</tbody>
</table>
Black and van Esch (2020) claimed that candidates do not feel disturbed with chatbots, instead they feel comfortable. This positive approach leads them to finish the application process with a higher likelihood (Black and van Esch, 2020).

<table>
<thead>
<tr>
<th>Candidate perspective</th>
<th>Firms receive 20-200 applications for each position and AI enables it to assess high volumes of applications with a high speed (Black and van Esch, 2020).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average number of candidates</td>
<td>Fairness</td>
</tr>
</tbody>
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