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# Organizational AI Readiness

Evaluating Employee Attitudes  
and Management Responses

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# Master Thesis in Management

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## Abstract

**Background** As a result of the latest advances in artificial intelligence (AI), the world of business is facing a major transformation where basic organizational principles are redefined initiating a new era. It is predicted that AI in the coming decades will make a significant imprint and organizations aiming to stay at the forefront cannot afford not to change. AI adoption can bring great benefits to organizations where a crucial factor is to establish AI readiness. However, as in any change, different perceptions are raised among employees which can either hinder or foster organizational AI readiness, placing leaders in a crucial position.

**Purpose** The purpose of this study is to investigate how managers can foster organizational AI readiness by understanding distinctive features of employee AI attitudes. By identifying how employees develop change attitudes towards AI, the opportunity to explore how managers should respond to these attitudes in order to achieve AI readiness opens.

**Method** To gain a greater understanding of the phenomenon managing AI attitudes and to fulfil the purpose of the study, a mix of a qualitative and quantitative research methodology was used. The empirical data were abductively collected through a single case study via a survey containing 80 respondents and through a focus group including six participants holding different roles affected by an AI implementation. The empirical data were processed using thematic analysis and further analysed through systematic combining.

**Conclusions** The conclusions in this study confirm already existing theory. It also expands it as the phenomenon managing attitudes towards AI change was placed in a new context. The research results indicate that employees' change attitudes towards AI are affected by the organizational AI maturity, personal interest, and personal and organizational AI knowledge. They also indicate that employees develop their change attitudes towards AI depending on how managers handle or not handle their attitudes. Finally, four dimensions along which leaders should manage employee change attitudes to promote AI readiness were elaborated.

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## 1 Introduction

In this chapter, background and problem definition of the research are presented aiming at explaining and introducing the research purpose. The main focus is placed on artificial intelligence (AI) and its impact on organizations. The importance of managers and employees for organizational AI preparedness is also introduced. The purpose of the study and research questions are lastly presented.

### 1.1 Background

The ongoing revolution in advanced digitalization, technology and intelligent machines is transforming industries and organizations, aging traditional companies, and generating social change and anxiety (Canals & Heukamp, 2020). Daugherty and Wilson (2018) state that for a long time, intelligent machines have evoked feelings of a threat to humanity resulting in organizations seeing machines as something that threatens to replace humans. This view is misleading and perniciously short-sighted. Furthermore, they believe that machines will not take over the world, nor will machines eliminate the need of human workforce. Advanced digitalization, technology and intelligent machines enhance human skills and enable human-machine collaboration to achieve productivity that has not previously been possible.

In particular, it is the empowerment behind AI that redefines basic principles in organizations. AI offers door-openings and has the potential to make organizations both simpler and leaner (Canals & Heukamp, 2020). As there are difficulties in defining AI confusion, varying prognosis, and perceptions usually occur when discussing AI. Several suggestions exist, although, many researchers choose to define AI as an involving digital technology to accomplish things that would normally require human intelligence (e.g., Raphael, 1976; McCarthy et al., 1955; Minsky, 1968; Zhu et al., 2020). The development in AI has made rapid progress in recent years - from smart speakers to factory robots to self-driving cars and has gone from being seen as a theoretical discipline to acting as a practical tool (Canals & Heukamp, 2020). In the coming decade, the effects of AI will be magnified as organizations will be able to transform their core processes and business models to leverage machine learning (Brynjolfsson & McAfee, 2017). Machine learning is characterized by computational algorithms that are programmed to simulate human intelligence. The degree of complexity can vary between different processes and therefore also involves different stages of machine-human integrations (El Naqa & Murphy, 2015). It is crucial for organizations to harness the full potential of AI to increase their performance, remain competitive and not risk falling behind.

Today, AI is considered one of the world's three most advanced technologies and one of the most promising tools to implement, but there are still few organizations that practice the technology (Mao et al., 2019; Ellefsen et al., 2019). However, Ng (2019) states that AI is poised to change every industry comparable to what the power of electricity did a hundred years ago. The advancement of AI provides an opportunity for organizational leaders to differentiate and defend their business and is expected to generate additional global economic activity of approximately \$13 trillion by 2030 (Ng, 2019; Bughin et al., 2018). AI can be applied to fulfil various business purposes, such as enabling better decision making and improving processes, products, and services (Davenport, 2020). Nonetheless, it remains an organizational challenge

to become organizationally AI ready in order to succeed in implementing the technology of AI organization wide.

AI adoption involves more than reimagining a business process (Daugherty & Wilson, 2018). In order to succeed with AI adoption, a key element is to establish AI readiness, which places demands on solid preparatory work (Jöhnk et al., 2020). Readiness indicates the condition required to assume a specific activity (Lokuge et al., 2019). Furthermore, Alsheiabni et al. (2018, p. 3) describes AI readiness as “the preparedness of organizations to implement change involving applications and technology related to AI”. Previous research believes that there are various contingency factors that affect organizational AI readiness such as financial and technical resources, management support, organizational culture, communication of purpose and goals, and partnership readiness (Chwelos et al., 2001; Damanpour & Schneider, 2006; Iacovou et al., 1995; Lokuge et al., 2019; Robey et al., 2008). Also, readiness is often directly affected by psychological factors such as the will, support, and commitment to change, structural components such as the ability to change, and contextual factors (Lokuge et al., 2019; Weiner, 2009). Snyder-Halpern (2021) and Weiner (2009) agrees on that a high level of organizational readiness for change increases the success of an AI adoption, while reducing the risk of failure. Due to AI’s technical properties and knowledge barriers, implementation often involves high complexity (Gallivan, 2001), making organizational readiness a crucial factor for organizations desiring to adopt AI (Jöhnk et al., 2020). Hence, organizations that are not ready for a technology adoption will face the risk of failure.

Knickrehm (2018) states that although the development in AI is moving forward at a fast pace, it is challenging to predict future scenarios. The extent to which AI development will reach in the next coming years is cloudy. What is definite, however, is that business leaders have a significant role in the development. Knickrehm (2018) further express that views on AI vary dramatically by both managers and employees and the range of opinions is wide. It is essential for business leaders to understand the spectrum of views and opinions in order to advantageously shape the workforce of the future. In order not to risk falling behind, managers must already today take measures to shape their workforce towards the emerging intelligent technologies (Knickrehm, 2018). Decisions made today will have a major impact on organizations ability to stay in the forefront and compete today, tomorrow and in the future.

To find the right balance between maintaining existing businesses and investing in intelligent technologies, managers need help from their employees (Knickrehm, 2018). Tomorrow’s leaders will be those who embrace collaborative intelligence, transform the business, the market, and industries, and, not least, the employees (Daugherty & Wilson, 2018). An equally wide range of opinions regarding AI, an equally wide range of emotions evokes the rapid rollout of AI which will affect the success of organizational AI readiness. The fast pace results in, and will result in, many employees experiencing stress and loss of power and control (Zhu et al., 2020). Kotter and Schlesinger (1979) believe that fear of any change is inevitable. In general, negative attitudes will arise when people are threatened with change but shifting is a must in today’s rapidly changing world.

The most common causes of negative attitudes according to Kotter and Schlesinger (2008, p. 107) are “a desire not to lose something of value, a misunderstanding of the change and its

complications, a belief that the change does not make sense for the organization, and a low tolerance for change in general”. Changes are difficult to accomplish, and few managers handle the process successfully. In fact, approximately 70% of all change initiatives fail (Nohria & Beer, 2000). Managers tend to underestimate the ways they can influence their employees during a change. However, Kotter and Schlesinger (2008) suggest six strategies for managing change: education and communication, participation and involvement, facilitation and support, negotiation and agreement, manipulation and co-optation and, explicit and implicit coercion. Worth mentioning, different changes demand different strategies. Despite the challenges of change, organizations cannot afford not to change, and managers must develop their skills to diagnose different attitudes to change in order to use appropriate methods to overcome them.

Consistent to other changes, but to an expected greater extent, AI will naturally encounter different attitudes among different employees. To fully exploit the positive outcomes of AI, managers cannot expect employees to passively accept the consequences that befall them (Zhu et al., 2020). Thus, it is essential for managers to get all employees “on board”.

### **1.2 Problem Definition**

As a result of recent advances in AI, the world of business is facing a major transformation. The fundamental rules by which organizations are being run are rewritten daily, leading towards a new era. AI not only automates and streamlines processes but also enables people and machines to function together in new ways, placing business leaders in a significant position. AI development is changing the mode of operation, which requires managers to manage their businesses and employees in dramatically different ways (Daugherty & Wilson, 2018). Therefore, managers face a prevailing challenge as changes, more or less, yield negative attitudes among their employees, which consequently hinders AI readiness (Frick et al., 2021).

Influenced by, amongst other things, news and media, perceptions of what AI is and what the technology is capable of differ between employees (Aleksander, 2017; Borges et al., 2020; Johnson & Verdicchio, 2017). Negative perceptions among employees can result in organizations not being AI ready since people are a big part of what determines organizational AI readiness (Groopman, 2018). According to leading research in the field of change management, negative attitudes to change is avoidable (Prosci, 2018). Therefore, a fundamental focal point for managers is to find ways for managing attitudes to change (Pharoah, 2018).

Additionally, research highlights that the interaction between managers and employees is vital for change processes (Ahmad et al., 2020; Stefanou, 2001), especially in digital transformations (Baptista et al., 2020; Heavin & Power, 2018; Prince, 2017; Vial, 2019). In this context, managers have the ability to positively influence employee attitudes and being the crucial component between success and failure (Alsheiabni et al., 2018; Lichtenthaler, 2020). The interaction between managers and employees and its attitudes to change is determined to constitute affect organizational AI readiness. When reading existing literature in this area, it is believed that there is yet little knowledge about these three factors - AI readiness, managers, and employee AI attitudes, in any specific context. Since the correlation has a direct impact on organizations’ ability to overcome AI readiness obstacles, it is of value to research this gap further.

### 1.3 Purpose and Research Questions

As stated in the background and problem definition, AI adoption can bring great benefits to organizations (Canals & Heukamp, 2020). It is predicted that AI over the coming decades will have significant imprints on organizations as they through the technology will be able to transform their operations and utilize machine learning to its full potential (Brynjolfsson & McAfee, 2017). In order to make a successful AI adoption, a crucial factor is to determine organizational AI readiness (Jöhnk et al., 2020). However, as for most changes, the change of AI will arouse various perceptions, positive as well as negative, among employees (Zhu et al., 2020). Consequently, these perceptions can either hinder or promote organizations to establish AI readiness, placing business leaders in a crucial position. A fundamental belief for enabling organizational AI readiness lands in managers' ability to find ways for managing distinctive AI change attitudes (Pharoah, 2018). Thus, the purpose of this research is to:

*Investigate how managers can foster organizational AI readiness by understanding distinctive features of employee AI attitudes.*

While the purpose is to investigate how managers can foster organizational AI readiness through understanding AI specific attitudes among employees, it requires knowledge in how employees develop attitudes when introduced to an AI adoption. There is already a solid base of research to lean on in the field of change management - what kind of attitudes managers face in the event of a change and how these attitudes are effectively handled (e.g., Kotter, 1996; Kotter and Schlesinger, 2008; Todnem, 2007; Nohria & Beer, 2000). Research in AI implementation is still in its initial phase and research regarding employee AI attitudes is limited leaving room for further investigations. With this argument in mind, the first research question is:

*1. How do employees develop change attitudes towards AI?*

By mapping employees' AI attitudes, the possibility opens up for further investigation on how managers have handled or not handled these attitudes. As previously stated, it is believed that by managers managing employee attitudes, organizational AI readiness is enhanced. Thus, the second research question is:

*2. How can managers act to deal with AI attitudes from employees?*

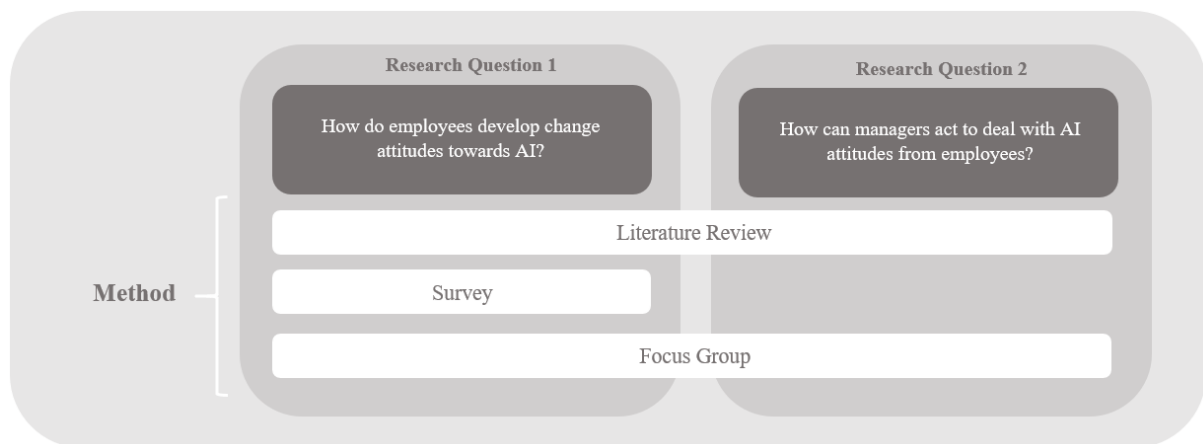
With this purpose and issues, the research desires to be able to identify how employees develops AI attitudes and how managers face them. It is also of interest to investigate whether, how and to what extent managers' management of employees' AI change attitudes differs from previously studied organizational change processes.

## 2 Research Methodology

The aim of this chapter is to create an understanding of the researchers' assumptions regarding methodology and provides an overall description of the research process. The following chapter is crucial for establishing an understanding for the reader of how the research was conducted and reasoning behind the methodological choices made. First, a summary of the connection between research questions and method is introduced. Furthermore, the underlying philosophical assumptions are introduced which positions the study within its wider context. It enables a further detailed description of the research approach, strategy, and design. The chapter continues with a presentation of methods used for data collection followed by the data analysis performed. A thorough consideration of ethical issues arising from the methodological implementation as well as the content of the research is highlighted. The chapter concludes with presenting the quality criteria of the study. By describing the quality criteria approached in this study, the researchers hope to provide a basis for the reader for determining the trustworthiness of the study.

### 2.1 Connection between Research Questions and Method

Saunders et al. (2009) believe that it is of great importance for the research outcomes to combine the right method with each research question, which either prevents or enables the study to achieve high reliability and validity of the results. To collect empirical data for the research questions, a survey and a focus group was used, Figure 2.1.



**Figure 2.1:** Method used for research questions

### 2.2 Research Philosophy

A well-thought-out research design is fundamental for achieving high-quality research and Easterby-Smith et al. (2018) believe that it is the research philosophy that forms the basis for the research. To describe the philosophical assumptions made in this dissertation, the two main positions of research philosophy need to be discussed: ontology and epistemology. Ontological assumptions explain the researcher's view of the nature of reality and what there is to know about it, while epistemological assumptions describe the researcher's general set of assumptions about the most appropriate and best way to investigate the nature of the world. The assumptions are determined by the researcher's individual perspective on and views of the world (Easterby-Smith et al., 2018) and by choosing a research philosophy that is in line with the researcher's

own belief in the nature of reality, a strong research design is ensured (Mills et al., 2006). Also, Guba (1981) asserts that to clearly state the philosophical perspectives, researchers can ensure that their research is verifiable and reflexivity. There is an interplay between the ontological and epistemological assumptions meaning that a specific ontological view is often translated into an associated epistemological view and vice versa (Easterby-Smith et al., 2018).

The data collected in this study depend on the individual's own perception of a specific phenomenon and are relative, that is, there may be multiple truths (Easterby-Smith et al., 2018). The phenomenon in the study, attitudes towards an AI change, is considered to be the result of previous experiences, events, and interactions between people where all individuals possess their own truth. Thus, this research assumes an ontological position in relativism and by that, shows acknowledgment that the outcomes of the study depend on the beholder embedded in the specific context. According to Easterby-Smith et al. (2018), relativists believe that there is not a single truth, but that there are many truths where the facts depend on the viewpoint of the observer. This research assumes an epistemological position in social constructionism. According to Easterby-Smith et al. (2018, p. 120), social constructionism is defined as "the idea that 'reality' is determined by people rather than by objective and external factors, and hence it is most important to appreciate the way people make sense of their experience". As in a relativistic ontology, social constructionists believe that there are several different realities and therefore researchers in this epistemology must gather many different perspectives. The data collection is done advantageously through a mix of both qualitative and quantitative methods, and with a sampling containing individuals with different views and experiences (Easterby-Smith et al., 2018).

It is considered that the phenomenon of attitudes towards a technological change is socially constructed, which according to several researchers (e.g., Berger & Luckman, 1966; Watzlawick, 1984; Shotter, 1993) involves how individuals understand reality by sharing their experiences with others. Since it is considered that there is no single truth about why different attitudes to technological change arises, an epistemological position in social constructionism will enable a deeper understanding of the phenomenon by discovering essential perceptions based on the perspectives of the elect (Easterby-Smith et al., 2018).

### **2.3 Research Approach**

After a decision on a philosophical position, a decision on which research approach is appropriate to lead the researcher to reflect on the relationship between research and theory (Bryman, 2012). Hällgren Graneheim et al. (2014) state that the research approach is a procedural plan that includes broad steps in assumptions and detailed methods for data collection, analysis, and interpretation. In this context, there are three main research approaches that can be discerned: deduction, induction, and abduction.

With the aim of investigating how managers can foster organizational AI readiness through understanding AI specific employee attitudes, abductive reasoning has been identified and chosen as the most appropriate research approach. Patel and Davidson (2011) propose that an abductive research process implies that the researcher, based on a single case formulates a presumed pattern which can explain the case and thus reach a theoretical depth. Furthermore,

they bring forth abduction as a combination of an inductive and deductive process with the reasoning that in induction, theory is generated by learning from what is happening in the world and in deduction, conclusions are drawn about an individual phenomenon based on general principles and existing theories. The first step in an abductive process is characterized by being inductive to, in a subsequent step, be deductive. This entails that after data collection, patterns within the data are identified and compared to existing theory that either will lead to a confirmation and/or extension of existing theory and/or to the creation of additional theory. It is an appropriate approach to take when the researcher wants to orientate in an area to emphasize theory development rather than to generate new theory (Dubois & Gadde, 2002).

### **2.4 Research Strategy**

According to Myers (2009), a key element in business and management research is its reliance on empirical data from the social or natural world, in the form of qualitative or quantitative data, or in a combination. The terms “qualitative” and “quantitative” refer to how the collected data is generated, processed, and analysed. Qualitative data collection involves a focus on soft data such as interviews and interpretive analysis, while quantitative focused research means that statistical processing and analysis methods are used on the measurements performed during data collection (Patel & Davidson, 2011).

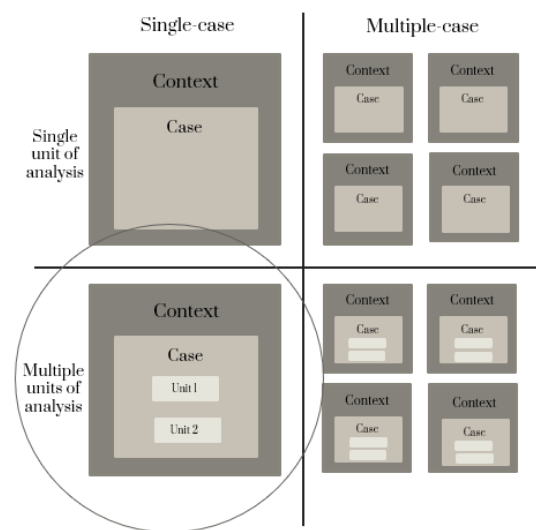
As stated, researchers in a constructionist position must gather several different perspectives, advantageously through a mixture of qualitative and quantitative methods, due to that there are many different realities (Easterby-Smith et al., 2018). Hence, given both the philosophical stance and the abductive approach taken in the study, a qualitative and quantitative research strategy is considered a reasonable method for answering the research questions. Using both a qualitative and quantitative strategy serves well as each method compensates for each other’s weaknesses. Qualitative studies are considered weak in terms of generalization, while quantitative studies are considered weak in explaining why the result was obtained (Easterby-Smith et al., 2018). A mixture of methods is advantageous as this bridge the gap between academia and the practical world (Myers, 2020). In this study, the methods were used in a sequence where the quantitative technique were performed first followed by the qualitative. The aim was to achieve a balance between quantitative and qualitative data in order for the methods to complement each other. By placing this study in this environment, it opens up the possibility of viewing the information retrieved in its context (Myers, 2009) and understanding how individuals make sense of their world (Easterby-Smith et al., 2018).

### **2.5 Research Design**

Easterby-Smith et al. (2018) claim that research design refers to how researchers organize their research activity in the most optimal way to achieve the research aim. Yin (2018) states that a research design is a logical sequence linking empirical data and research questions in order to be able to connect conclusions. Hällgren Graneheim et al. (2014) further believe that a clear definition of the research design is of great importance. The definition should cohere the research questions, stated objectives and methods proposed. To meet the purpose of the study, a case study was used as research design. Patel and Davidson (2011) believe that case studies are most appropriate when changes and processes are to be examined as they are based on a

holistic perspective in order to obtain as comprehensive information as possible. According to Yin (2018), a case study is suitable as a research method when the research questions are designed as “how” questions, making it appropriate using this type of design for the study. Furthermore, he believes that a case enables operationalization of research since it is a delimitation of the real world. In this study, the case is an organization, but it can also be, among other things, an individual or an event (Yin, 2018).

Once a choice of appropriate research design was made, the outline of the case study was formed choosing between a single or multiple case study. The research was designed as a single case study as it examined one unique organization in its specific context. A single case study is characterized by either one unit of analysis or several units of analysis, Figure 2.2 (Yin, 2018). Since the study was performed in a limited period of time and with a desire to capture several different perspectives, a single case study was chosen in order to not lose depth of data. This study examined one single organization and two units where one represents employees and the other managers. According to Patel and Davidson (2011), it is common to collect information of different natures in order to give as complete a view of the current case as possible. In this study, a survey was conducted at all organizational levels and a focus group at management level to increase the understanding of the unique case.



**Figure 2.2:** Case study design, modified from (Yin, 2018)

As this study will serve as a feasibility study for the research project PrepAIr placed within the larger research profile AFAIR (Ambidexterity, Flows and AI for competitive Responsiveness), the researchers gained access to the partner organizations in the initiative. The research project is part of Jönköping University’s research and educational environment SPARK, which promotes companies’ development of knowledge-intensive products, services, and processes. Overall, the research initiative aims to understand the mechanisms that affect organizations’ readiness for a potential AI transformation. The selected case company, which is one of the partner organizations in AFAIR, was an appropriate candidate for this research since they are committed to an AI future and aim to implement AI in their organization. The above is the

reasoning behind the choice of a case study with several units of analysis to appear relevant to the study’s purpose and issues.

## 2.6 Literature Review

The literature review served as a research overview and was conducted to identify a focus for the research. It was also used to form parts of the frame of reference. According to Easterby-Smith et al. (2018), relevance of an article focuses on the research topic itself and how well it is suitable for it. Different criteria were used to determine which articles were considered relevant to the research. First, the search of existing literature was made in appropriate databases for the area, such as Web of Science and ScienceDirect. The reason for the selected databases was due to that both include the selected research area digitalization, AI, and business management as well as its ability to rearrange settings to match the requirements of the research topic. Second, the researcher ensured that all articles were peer-reviewed, meaning that the researchers can guarantee that a selected article maintained a high quality and standard (Easterby-Smith et al., 2018). The third criterion was set to confirm that the selected articles were current, especially since the development and research in AI is emerging at a rapid pace. It was also important for the researchers to find current articles to stay in the forefront of research in the field. To enable the selection of current articles, the searches containing the keyword “AI” were filtered to the last three years. The search that did not include the keyword “AI” was filtered to the last ten years. The above criteria formed a first set of measures used to determine whether an article was to be examined more closely or not.

The focus of the literature review was AI transformation, organizational change, leadership, and resistance to change and thus, keywords matching the focus were chosen. The reason why “resistance” was included as a keyword was due to that the researchers initially planned to investigate employees’ resistance towards an AI implementation. The reasoning behind including different inflections of the keyword “manufacturing” was due to that the case company in the study is a manufacturing organization. Table 2.1 illustrates in what database the search was made, keywords used and in which different combinations, filters used, number of hits, and number of used articles.

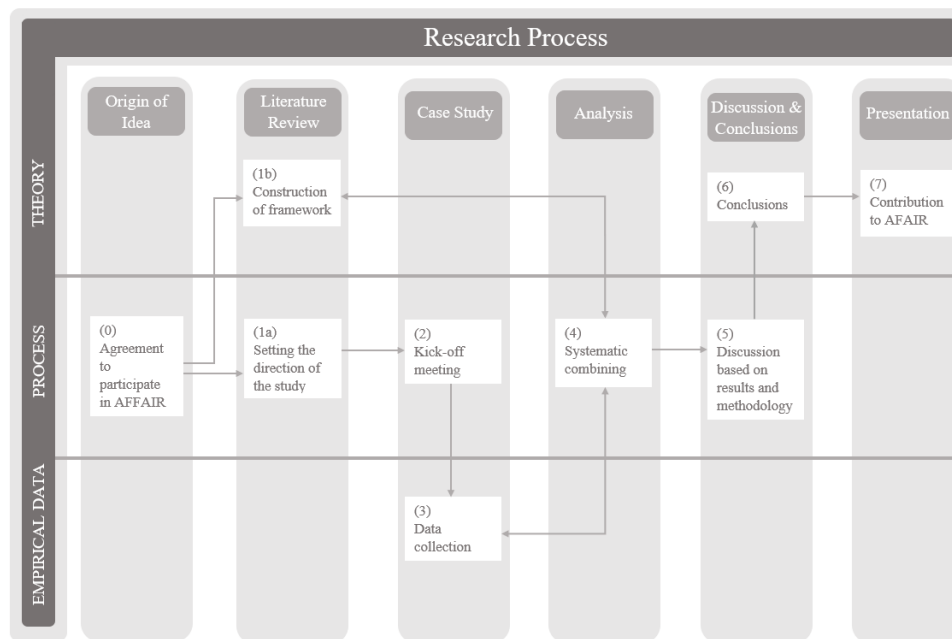
**Table 2.1:** Literature review

Database	Keyword	Filters	Number of hits	Number of used articles	Year
Web of Science	("AI" OR "artificial intelligence") AND trend* AND "manufactur*" AND (organization OR organisation OR company)	Topic	28	3	No limit
Web of Science	"AI transformation"	Topic	5	2	No limit
ScienceDirect	"AI"	Business Horizon	60	7	2018-2021
ScienceDirect	"AI" AND "biases"	Title, abstract, keywords	95	1	2020-2021
ScienceDirect	("AI" OR "artificial intelligence") AND "employee resistance"	Title, abstract, keywords	17	1	2018-2021
ScienceDirect	"change management" AND ("overcome resistance" OR "overcoming resistance")	No filter	95	7	2010-2021

After considering the above criteria, the selection of articles was made according to a set up sequence. For the articles whose title caught the interest of the researchers, the abstract was read. If the article was still considered applicable, it was studied in full text. If the content was assumed useful, the article was believed applicable to the study and structurally noted. The review was concept-centric structured to promote the synthesis between literature (Webster & Watson, 2002). With that said, up to 100 abstracts were read resulting in 21 articles relevant to the research area. When reviewing the literature, the researchers found that resistance is just one of many attitudes that arise during changes connected to AI implementations. Therefore, it was chosen to focus on attitudes from employees instead of resistance from employees. The purpose to identify the direction of the research through the literature review was thus fulfilled.

## 2.7 Research Process

The research process was divided into six general activities: origin of idea, literature review, case study, analysis, discussion and conclusions, and presentation. Figure 2.3 illustrates whether the activities constituted a process, theoretical or empirical basis, and in what order the activities were performed. To achieve high transparency and clarity, the activities with associated numbering are presented in the figure (0-7).



**Figure 2.3:** Research process

(0) The researchers were asked to participate in the research project AFFAIR to act as a feasibility study. Thus, the main area of the research was predestined to be carried out within AI. To create a basic knowledge and understanding of the field as well as for previous research in AI, a literature review was conducted. (1a) The literature review contributed to the choice of a focus for research on employees' attitudes towards AI and managers' handling of these AI specific attitudes. (1b) It also contributed to the basis of the frame of reference.

(2) In the initial phase of both AFFAIR and this study, a kick-off meeting was held with all involved. The researchers decided to carry out the research as a single case study and to collect

empirical data from one single case. Therefore, they took the opportunity to identify a suitable participant during the kick-off. The choice was based on how far the company had progressed with AI in their organization.

(3) The data collection was performed in two phases in a sequence. The first phase consisted of a survey with all employees regardless of profession, followed by the second in form of a focus group consisting of managers. (4) The data collected constituted the empirical results which were analysed according to systematic combining. Systemic combining moves between different research activities, theory and empirical data (Dubois & Gadde, 2002), hence the double arrows. (5) The study was discussed based on results, previous research, and method followed by (6) identifying conclusion. (7) Lastly, the final results were presented for the case company as well as for the research project AFAIR.

### **2.8 Data Collection**

According to Yin (2019), a case study should rely on different sources of data collection to increase quality. In addition, Guba (1981) argues that a higher trustworthiness is made possible by the use of several data sources. The use of several data sources is called triangulation and Easterby-Smith et al. (2018, p. 126) describe it as “using different kinds of measures or perspectives in order to increase confidence in the accuracy of observations”. It is particularly applicable in studies of social phenomena, such as AI. The choice of data collection method is governed by the research questions (Saunders et al., 2019) and can be sorted by primary and secondary data. Primary data refers to new data collected by researchers themselves while secondary is described as already existing research information (Easterby-Smith et al., 2018). To increase the quality and trustworthiness and to obtain empirical data for this study, primary data in the form of a survey and a focus group was collected. According to Yin (2019), analysis and comparison of different collected data contributes to a reliable result. Notable is that the survey is collected partly to serve as an analysis basis for the first research question, partly to generate preparatory material for the focus group.

#### **2.8.1 The Survey**

Surveys are an advantageous way of collecting data when aiming to identify the behaviours and opinions of a larger population (Easterby-Smith et al., 2018). For this research, the use of a survey provided an opportunity to identify and map employees’ attitudes towards AI. The survey in this study served as an exploratory survey as a support for data triangulation. According to Easterby-Smith et al. (2018), an exploratory survey investigates different units in different contexts and focuses on identifying patterns in data. Through a more general and exploratory design of the survey, a wider picture of the key issues in the case company could be collected for the study.

To achieve a representative result for a population, a probability sampling should be used as a sampling strategy (Saunders et al., 2019). Easterby-Smith et al. (2018) believes that with a probability sampling it is possible to state the probability of why each individual respondent is included in the study. Since this study is part of the larger research project AFAIR and therefore had access to the partner organizations, this type of sampling was possible despite a limited

period of time. The researchers were therefore able to retain control over who the respondents were. In order to obtain as high a response rate and as truthful answers as possible, it is important that the respondents perceive the survey as professional and reliable and that it is comprehensive for the respondents (Saunders et al., 2019; Buglear, 2012). Hence, the survey was designed with an introductory page containing a brief description of the survey and its purpose, the role of the case company and the respondent in the research, as well as information on how personal data was handled. Furthermore, there was also a page with a short definition of AI to ensure that the respondents did not misunderstand or misinterpret the research area (Appendix A).

The survey was created through a web-based survey and analysis tool called esMaker. The questions were formulated with a high degree of standardization so that all respondents answered identical questions in the same order to facilitate the analysis (Patel & Davidson, 2011). The questions were also constructed with a high degree of structuring. The answer alternatives for all questions were fixed, but some were provided with space for open answers in case the respondent would end up in a situation where one of the fixed answers did not fit.

To answer the study's purpose and questions, the researchers considered it important to map all employees' attitudes towards AI. The researchers relied on previous literature and thus, the content of the survey was based on a framework containing four AI profiles developed by Zhu et al. (2020). The framework was considered a good starting point for the content of the survey as the different profiles have different attitudes towards AI. The reliance on previous literature made it possible to map the proportion of which employees belonged to which respective profile. The description of each profile was examined in detail and specific rational and emotional attitudes were selected to be included as statements in the survey (Appendix A). All statements were provided with a scale, ranging from 1 to 5 where 1 stood for "not true at all" and 5 for "completely true". The respondents placed their personal agreement on the extent to which each statement was true. The reason why a multi-point scale was used was to be able to measure which profile the respondent belonged to and thereby identify patterns of attitudes among the respondents. The respondents were also asked to answer whether they were familiar with the concept of AI from before or not and if so, where they had come in contact with it, as well as to what extent they would be willing to engage in an AI implementation.

The accessibility to the survey was shared with the contact persons at the case company and through them, shared with all employees via their intranet. The survey was open and accessible for 19 days and the contact persons from the case company declared that the survey was viewed by 316 individuals, of whom 80 chose to respond. To reduce the risk of misunderstandings, the survey was formulated with easy-to-understand questions and entirely in Swedish since the population was Swedish-speaking. The respondents to the survey were completely anonymous, which according to Patel and Davidson (2011) means that the researchers cannot identify who the answers come from as either name, number or other identification information is given.

### **2.8.2 The Focus Group**

As a subsequent step to the survey, a focus group was used to explore how managers have experienced, managed, or not managed employees' AI specific attitudes. Focus groups are useful for gaining insights on how certain groups of individuals react to a specific problem or to a shared experience (Easterby-Smith et al., 2018). Through the focus group, the researchers aimed to obtain the participants' personal views, as well as answers to each other. According to Easterby-Smith et al. (2018), this can say more about the broader discourse as the participants get a chance to listen and respond to other individuals' perceptions. Tracy (2013) and Easterby-Smith et al. (2018) believe that it is of great importance to carefully consider the criteria that govern the selection of participants and dynamics. The focus group consisted of six participants, all employed in the case company. To achieve a good mix of people, the roles constituting the focus group was HR director, IT manager, logistics manager, production leader, digitalization manager, and simulation and DevOps manager. The criterion to meet in order to participate in the focus group was to hold a managing role, affected or to be affected by a potential implementation of AI in the organization. As the researchers had no previous relations to the case company nor its employees, the responsibility for selecting participants of the focus group was assigned to the contact persons of the case company. After the contact persons had made their selection, the chosen ones received a request from the researchers to participate in the focus group in order to give their consent to participate in the study. The researchers had high confidence in them making appropriate choices as they had great insights in the organization's departments and AI related work.

Walker (1985) outlines that a moderator of a focus group should create a situation where all participants feel comfortable expressing their opinions. To ensure that the participants felt comfortable in the focus group, the researchers believed it was important to properly prepare them. Therefore, the researchers assigned the participants with preparatory material containing a brief description of the research, a short presentation of the framework used when mapping employees' AI attitudes, and main issues for the focus group (Appendix B; Appendix C). Furthermore, the focus group was introduced with all participants introducing themselves and their role in the company. The agenda for the meeting was presented, which was then followed by the researchers starting by repeating the content of the preparation material. The purpose of the meeting and the study were repeated as well. Although focus groups should be loosely guided, they should not be completely without structure (Stokes & Bergin, 2006). To ensure that the conversation during the focus group remained within the area and to maintain some form of structure, the researchers chose to start from four main issues regarding employees AI attitudes and management responses (Appendix B). Thus, a loose structure was maintained while the possibility of asking follow-up questions was opened. Through this, the participants got a chance to respond openly and contribute their own thoughts. The focus group ended when all participants had been provided the opportunity to add opinions that had not yet been raised.

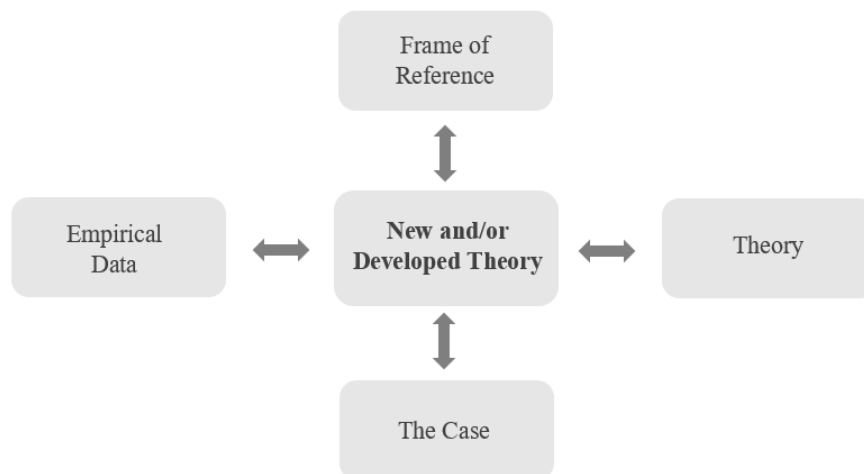
Due to COVID-19, the focus group was held online through Zoom and lasted for 51 minutes. In order not to miss crucial data, the conversation during the focus group was, with the approval of the participants, recorded. This incited that the researchers were able to focus entirely on leading the conversation instead of noting data at once.

## 2.9 Data Analysis

The analysis of the collected empirical data formed the basis of this research to enable the research questions to be answered. To maintain the relevance, transparency, and quality of the data, it was collected with constant consideration of the purpose of the study. Also, to ensure that no data was lost, it was documented simultaneously. Below, the analysis method and how the analysis proceeded is presented. How the development of the analysis basis for both the survey and the focus group was created is given as well.

### 2.9.1 Systematic Combining

Systematic combining was used to analyse the empirical data, as a frame of reference guided the researchers search for empirical data. Systematic combining is described as a non-linear process where existing as well as new research efforts are combined to finally achieve the goal of matching theory with reality, Figure 2.4.



**Figure 2.4:** Systematic combining, modified from (Dubois & Gadde, 2002)

Eisenhardt (1989) states that systematic combining forms a good basis for building theories from case studies. Although, the idea of conducting and directing research without preconditions has been questioned (Strauss & Corbin, 1990). As mentioned, this study is based on an abductive approach, that is, partly in an inductive logic, partly in a deductive logic. The inductive reason aims at ensuring that theory is systematically generated from data (e.g., Glaser and Strauss, 1967), while the deductive reason involves developing and testing premises from current theory (e.g., Hempel, 1965). Accordingly, systematic combining works well for both an inductive and deductive approach, (Dubois & Gadde, 2002), making it in line with this study.

According to Dubois and Gadde (2002, pp. 555), case studies provide “unique means of developing theory by utilizing in-depth insights of empirical phenomena and their contexts”. Furthermore, they believe that by moving back and forth between different types of research activities, existing theory and empirical data, researchers can expand their understanding of both theory and empirical phenomena. Researchers get the chance to develop existing theory with the help of empirical fieldwork, analysis, and interpretation, which stems from the notion

that theory cannot be understood without empirical data and vice versa. By using this type of analysis, the researchers were able to move back and forth between the theoretical framework, the case, empirical data, and analysis.

### 2.9.2 Compilation and Creation of Analyse Basis from the Survey

Once the survey was completed and closed, an analysis basis was obtained automatically through the web-based survey and analysis tool esMaker. The basis contained compiled statistics of all questions as well as separate answer journals for each respondent and question. To enable an AI profile distribution of the respondents based on Zhu et al. (2020) framework, the researchers examined the individual answer journals more closely, especially question 6, 7 and 8 in the survey (Appendix A). The statements in the questions were divided into four categories related to emotional and rational as well as whether the statements were more positive or less positive, Table 2.2.

**Table 2.2:** Statements divided into four categories

Rational More Positive	Rational Less Positive	Emotional More Positive	Emotional Less Positive
Have great organizational potential	Make me lose control of my work	Expectancy	Fear
Increase my potential	Involve a risk of my work role being replaced	Exhilaration	Concern
Generate better results	Involve a risk of losing my job	Positivity	Anger
Generate big time savings	Lead to lost jobs	Curiosity	Discomfort
Be easy to use	Lead to a negative effect on employees	Reliability	Bad gut feeling
Entail great competitive advantages	Involve threats from employees about dismissal		Despair
Be a valuable investment	Evoke negative attitudes in employees		Irritation
Mean financial savings			Stress
Generate more time for value-creating activities			

For each statement, the value obtained from each respondent’s answer journal was filled in. Then the mean value for each category was calculated. Since the survey was formulated in Swedish, the researchers chose to subsequently exclude certain statements (e.g., require new knowledge, require new ways of working and excitement) for the calculations of the mean value as they experienced difficulties with a correct English translation. In other words, it was difficult to determine whether the Swedish statement was a more positive or less positive attitude. To determine the respondents’ positions on the vertical and horizontal axis (Figure 3.5), and thus which AI profile each respondent belonged to, the less positive value was subtracted from the more positive value. This was done to balance the more positive with the less positive attitudes as each respondent in the survey was allowed to value the statement on a multi-point scale ranging from 1 to 5. In this way, the compilation considered the scale on which the respondent was more or less positive, both rationally and emotionally. That is, even if a respondent had an average value of 4 in the category more rationally positive, the same respondent could have an average value of 3 in the category rationally less positive. The respondent thus ends up at a final value of 1 of rational attitudes. Each value was placed on the four-field consisting of the AI profiles, Figure 3.5.

After calculations and AI profile assessment of each respondent, a protocol was kept containing information on how many women and men with associated roles and positions belonged to which AI profile, Table 2.3. In this way, statistics were obtained on the outcome of the AI

profile distribution between individuals with managing and non-managing positions, as well as the distribution between the different roles.

**Table 2.3:** Analysis base protocol

		AI Reticent	AI Intrepid	AI Dissenter	AI Skeptic
White-Collar	Female Manager				
	Female Not Manager				
	Male Manager				
	Male Not Manager				
Blue-Collar	Female Manager				
	Female Not Manager				
	Male Manager				
	Male Not Manager				

Through this processing, significant data was produced for further analysis.

### 2.9.3 Compilation and Creation of Analyse Basis from the Focus Group

The researchers conducted a focus group to abductively explore how employees develop change attitudes towards AI and how managers act to deal with it. When the focus group was completed, the researchers chose to transcribe it in order not to miss important data, create familiarization of the data and to be able to sort the data in a structured way. Hence, it was possible to thematically identify patterns in the data to obtain a solid basis and structure for the analytical process. Easterby-Smith et al. (2018) propose that to systematically and thematically structuring the data facilitates and guides the analysis of qualitative data. King and Brooks (2017) argue that this type of approach is beneficial when combining an inductive and deductive reasoning to reveal patterns in data, which coheres with this study.

The aim of a thematic analysis is to identify dimensions, i.e., significant and interesting patterns in the data, and then use them to address the research questions of the study (Maguire & Delahunt, 2017). The researchers chose to independently conduct a thematic analysis (Boyatzis, 1998) of the focus group transcript and initially coded it according to the degree of relevance of employees' AI attitudes and the leader's handling of them. The recurring codes and patterns identified were translated into key dimensions in order to be able to, through systematic combining, analyse these in light of current theories. According to Yin (2007), the advantage of equating empirical data and current theories is that the results can enable enhanced internal validity. In order to make the dimensions to completely make sense and to ensure that they retain the basic meaning from the original data (Braun & Clarke, 2006), the researchers moved back and forth between reviewing, modifying and defining the dimensions. The thematic analysis of the focus group allowed the researchers to abductively reach four key dimensions to further analyse, all of which fell within the framework of employees' AI attitudes and managers' handling of them.

### 2.10 Research Ethics

Research ethics should be considered and taken seriously, especially for research conducted in business and management, as it involves interactions with real people (Myers, 2020). In general, ethics is described as the moral principles people have, which guide them in their actions and thoughts in specific situations. Research ethics involves considerations about what measures can be taken to ensure ethically correct behaviour in every part of a study (Maylor & Blackmon, 2005; Easterby-Smith et al., 2018; Myers, 2020). In general, the least expected of any researcher is to do no harm (Maylor & Blackmon, 2005; Easterby-Smith et al., 2018). Bell and Bryman (2007) propose ten principles for ethical practice in research to protect the interests of the research subjects or informants, and to protect the integrity of the research community, Table 2.4. The principles range from doing no harm to avoid misleading.

**Table 2.4:** Key principles in research ethics, retrieved from (Bell & Bryman, 2007)

Ethic Key Principles	Description
Protection of research participants	
1 No harm	Ensuring that no harm comes to participants
2 Dignity	Respecting the dignity of research participants
3 Informed	Ensuring a fully informed consent of research participants
4 Privacy	Protecting the privacy of research participants
5 Confidentiality	Ensuring the confidentiality of research data
6 Anonymity	Protecting the anonymity of individuals or organizations
Protection of integrity of research community	
7 Avoiding	Avoiding deception about the nature or aims of the research
8 Conflicts	Declarations of affiliations, funding sources and conflicts of interest
9 Transparency	Honestly and transparency in communicating about the research
10 Misleading	Avoidance of any misleading or false reporting of research findings

To achieve high clarity, the ten ethical practices are explained in detail how they were addressed in this research (1-10). In order to ensure both physical and mental well-being and to avoid causing discomfort, participation in the research was always a free choice. In order not to cause harm and respect dignity of the respondents, the participants, the researchers themselves, or others, questions were always asked without the intention of harming the integrity. Account was always taken into of the case company’s policies and potential conflicts of interest. Both when participating in the survey and in the focus group, all participants were allowed to give their consent. The need for consent was important for the researchers to obtain respondents and participators with a willingness to participate and share their insights as well as to safeguard a reality-based result. Before the respondents and the participants gave their consent and chose to participate in the research, they were assigned information about privacy, confidentiality, and anonymity. Privacy was kept by avoiding issues that pose a risk of invading respondents’

and participants' privacy. All questions were asked within the research area and related to the respondents and participants work role, tasks, and organization. In order to inform the respondents and participants about the confidentiality and their anonymity, they received information about the purpose of the study, that the study will be published, and no data collected can be linked to them. Thus, the anonymity was maintained for both individuals and the case company. Throughout the process, the researchers communicated information about the research to all interested parties, to avoid deception and misrepresentation and to increase honesty and transparency. No personal preferences, opinions and experiences from the researchers was included in the presentation and reporting of the research results.

### **2.11 Research Quality**

The quality of a research is important in its usefulness. To make research useful, the relevance, credibility and attractiveness for others must be discussed. The quality of a research is assessed on how researchers describe their research - from the first argument to publication. A transparent research process is fundamental when aiming to convince others about the quality of research (Easterby-Smith et al., 2018). According to Lincoln and Guba (1985), it is important that the reader is given the opportunity to decide whether the results of the study are reliable and given the opportunity to evaluate the research path to be able to evaluate the research. Additionally, Eriksson (2014) believes that it is up to the researcher to provide sufficient information to enable the reader to determine whether the study is considered trustworthy. Considering this, the research focused on enabling transparency in the processes for the reader.

Lincoln and Guba (1985) suggest that there are four criteria to be fulfilled in order to achieve reliability, where credibility is considered to be the most important. Credibility consists of seven activities divided into five main techniques to apply to make the produced and presented findings and interpretations more credible. The first technique consists of three activities: prolonged engagement, persistent observation, and triangulation. The other four techniques consist of the following activities: peer debriefing, negative case analysis, referral adequacy and member checks. The remaining three criteria are transferability, dependability, and confirmability, Table 2.5. Several authors provide a more in-depth explanation (e.g., Eriksson, 2014, pp. 42-44).

**Table 2.5:** Quality criteria described, based on (Lincoln & Guba, 1985) with inspiration from (Eriksson, 2014)

<b>Quality criterion</b>	<b>Description</b>
Transferability	The ability, for someone interested, of determining whether the study's findings are applicable, even if the context is different, or even in the same context at another time, is possible.
Dependability	The possibility of examining the research process for the reader.
<b>Credibility</b>	
<i>Prolonged engagement</i>	Invest enough time to get involved in the situation of the study as well as to appreciate and understand the context correctly.
<i>Persistent observation</i>	Widening the depth of the study, invest the time considered necessary to reach a sufficient depth.
<i>Triangulation</i>	Several data collection methods are used, which strengthens and ensures the study's data collection.
<i>Peer debriefing</i>	The process of exposing the study to an uninterested peer, with the aim of discovering aspects of the research that would otherwise remain incomprehensible to the peer.
<i>Negative case analysis</i>	A review process to test hypotheses with hindsight, with the purpose to continuously refining a hypothesis until it stands for all known cases without exception.
<i>Referential adequacy</i>	Maintain some of the raw data unprocessed to allow the data to be revisited.
<i>Member checks</i>	Data, analytical categories, interpretations and conclusions are tested by the member (s) who are the source of origin.
Confirmability	The assessment of the product of the research and the consistency between theory, framework, data, and findings.

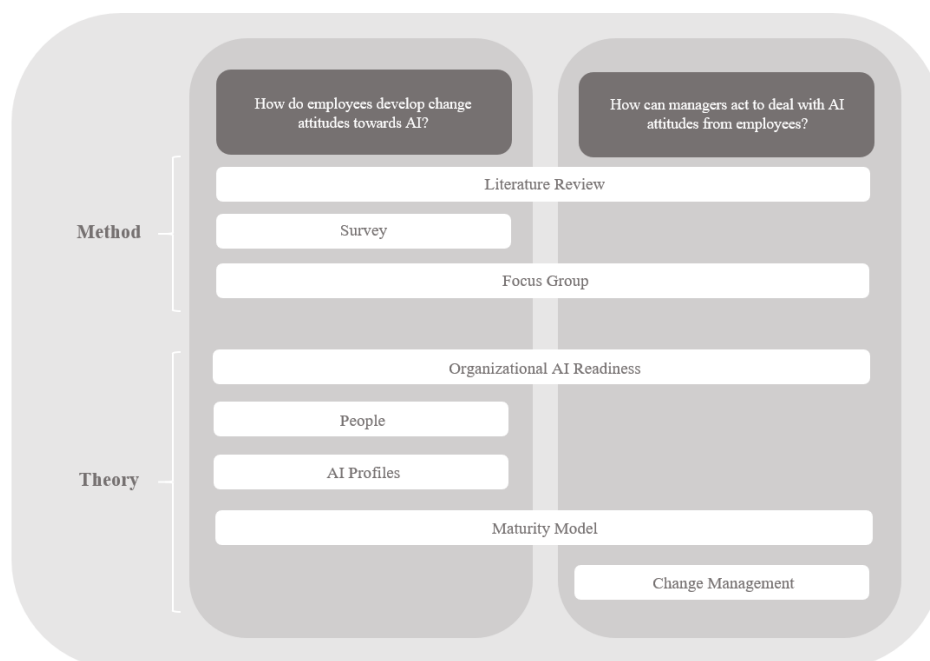
The application of the quality criteria in this research is presented under sub-heading 6.2. It will form the basis for the reader to determine the trustworthiness of the study.

### 3 Frame of Reference

This chapter contains the theoretical framework that serves as a support for answering the research questions. A brief introduction to the historical imprint of AI as industry 4.0 is presented, followed by an introduction to AI. The reason why it is included in the frame of reference is to emphasize the impact AI will have on organizations in the future and to create a basic understanding of the technology. The main theories presented are organizational AI readiness, including concepts about people as part of AI readiness, a framework for AI profiling individuals, AI maturity model, and change management. The reason why these theoretical parts are included is due to the fact that people are an important and crucial part of an organizational change and AI readiness, and that a maturity model is a useful model for determining an organizational maturity before an AI implementation. It provides organizations with a good foundation for creating an understanding of how their preparation and employee involvement promotes AI readiness. Change management are included as the implementation of AI is a big change for organizations. It is considered beneficial to include it as theory to give the reader a basic understanding of the managers' influence and role in the process of a journey of change, which an implementation of AI entails.

#### 3.1 Connections between Research Questions and Theory

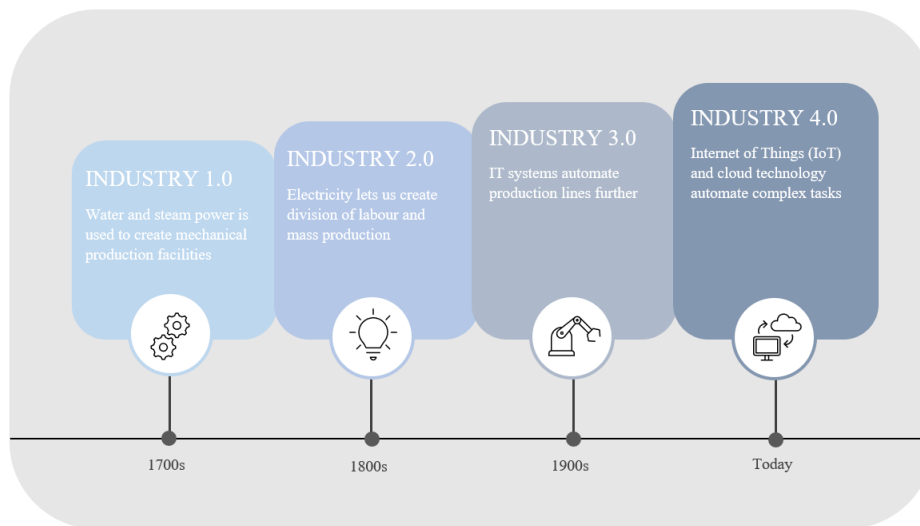
The purpose of this study was to investigate how managers can foster organizational AI readiness by understanding distinctive features of employee AI attitudes, and hence, emphasis was placed on identifying models, frameworks, and theories useful for supporting a fulfilment of the purpose. In order to achieve a credible result, the frame of reference was constructed through conscious choices and in connection with the research questions. Figure 3.1 is an extension of Figure 2.1 and illustrates the connection between the study's research questions and frame of reference.



**Figure 3.1:** Theories used to support the answering of research questions, continuation of Figure 2.1

### 3.2 Industry 4.0

The industrial revolution became the starting point of the industrial age and is considered the transformation from the agricultural economy to the industrial production. Ever since the beginning of the industrialization, technological leaps have led to paradigm shifts which are today referred to as industrial revolutions, ranging from the first to the fourth. The first industrial revolution was characterized by steam and water in the field of mechanization and started during the late 18<sup>th</sup> century. The second revolution lasted during the 19<sup>th</sup> century and is characterized by the intensive use of electrical energy for mass production. Internet, communication technologies and the adoption of major digitalization processes marked the third industrial revolution which lasted during 20<sup>th</sup> century (Lasi et al., 2014; Lele, 2019; Morgon, 2016). The fourth industrial revolution is in the middle of an interesting phase where a combination of the real world and the technological world shows clear signs of becoming reality, Figure 3.2 (Lele, 2019).



**Figure 3.2:** Industrial revolution timeline

Lele (2019) believes that since the first revolution, significant industrial advances have been made and the technological development has been fascinating. Moving from the steam engine to railways and the steel industry to electronics and computers has laid the ultimate foundation for the fourth industrial revolution. Furthermore, Lele (2019) considers that the fourth revolution not only includes a leap in technology, but so much more. Lasi and Kemper (2014) state that with the advanced digitalization, the combination of internet technology and future orientation of technologies is predicted to result in a new fundamental paradigm shift. Tempted by this expected future, the concept of “Industry 4.0” was founded by German agencies in 2011 (Lasi et al., 2014; Lele, 2019; Culot et al., 2020). Today, the term is used to describe the new “smart factory” that realizes an increased interaction between automation, digitization, machines, IT systems and people (Ustundag & Cevikcan, 2017).

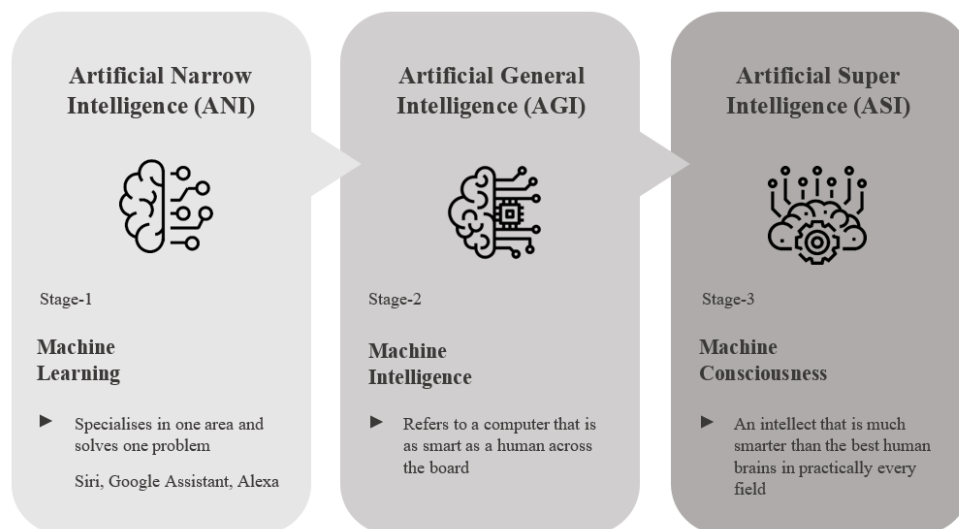
In the early 2010s, the concept spread and became a global phenomenon as several authorities understood that the future of industries rests in Industry 4.0. The advancement of technologies within Industry 4.0 results in profound changes in many functions (Martin & Leurent, 2017),

not least AI. Riberio (2021) believes that AI can be considered as one of the essential components of Industry 4.0 as it has the possibility to make manufacturing more autonomous and more productive.

### 3.3 Artificial Intelligence

In recent years, AI has made rapid progress and gained a lot of attention. Although, Canals and Heukamp (2020) state that there is not a new concept since it was introduced already in 1956. In the upcoming years, concepts as neural networks and machine learning were coined, which had a major impact on AI development (Canals & Heukamp, 2020). Neural networks arose when trying to understand how the human brain could produce complex patterns through the use of many base cells (neurons) (McCulloch & Pitts, 1943). Many AI systems today are based on artificial neural networks, inspired by the architecture of the human brain giving the networks a more organic way of working. The development has led to the networks being good at pattern recognition and to categorize problems, which is useful in, for example, medical diagnoses, optimization problems, weather forecasts, and forecasts of the stock market (Bostrom, 2016).

There are three main categories of AI, artificial narrow intelligence (ANI), artificial general intelligence (AGI) and artificial super intelligence (ASI), Figure 3.3.



**Figure 3.3:** Categories of AI

ANI is AI that does not possess human intelligence in all areas - intelligence is achieved in a specific area (Russell & Norvig, 2016). It mainly refers to the specialization of AI machines, which means that a specific task is performed using machine learning and deep learning tools (Hassabis, 2016). ANI is the type of AI that has existed for many years and is used in systems and in businesses today (Carrico, 2018). The systems learn to complete specific tasks and is today, among other things, used in medicine, for example to diagnose cancer and other diseases, by replicating human reasoning and cognition (O'Carroll, 2017). Other examples of ANI that many people encounter on a daily basis are devices such as Alexa, Google Assistant, and Siri as well as self-driving cars, face recognition, and recommendation systems (Davidson, 2019).

AGI refers to a system that exhibits clearly intelligent behaviour, at least as advanced as a human's intelligence across the entire spectrum of cognitive tasks. Researchers predict that this type of AI will take place in 20-100 years (Russell & Norvig, 2016). In AGI the machine has the ability to learn and develop itself to apply its intelligence to solve problems. ASI is the next step from AGI, which implies an AI that is significantly more intelligent than humans in all respects (Barrett & Baum, 2016). Machines become self-aware and exceed the capacity of human ability and intelligence and would theoretically be much better than humans at everything. This implies that ASI would have faster ability to process and analyse data, a greater memory as well as better decision-making and problem-solving capacity (O'Carroll, 2017). For some, the potential of such powerful machines is considered attractive, while some are concerned about the consequences it may entail. Some argue that there is a risk that the realization of ASI could create a global catastrophe, possibly even result in human extinction, as the risk is high that humanity will lose control (Barrett & Baum, 2016).

The questioning of a world with AGI and ASI worries many, even AI experts, but that world is still only hypothetical, in particular as ASI is several decades away. Despite this, Zhu et al. (2020) states that the AI applied today and the one that is planned to be applied concern many people. AI has raised concerns among organizations and individuals about ethics, integrity, data security and unemployment, to name a few. Many employees will express feelings and resistance. Many will feel a loss of control and loss of power as well as a fear about their work. It can even be a matter of a deterioration in trust between employers and employees. Hence, Zhu et al. (2020) suggest that a crucial factor will be to get all employees on the journey to exploit the potential of AI.

### **3.4 Organizational AI Readiness**

Several large organizations have begun to experience AI, but the majority are still in an adoption phase. As in any change, the adoption phase is crucial as it sets the conditions for future implementation efforts (Zhu et al., 2020). To be ready for the adoption phase, organizations must establish change readiness. The most common definition of change readiness was provided by Armenakis et al. (1993, p. 681) and is defined as an individual's "beliefs, attitudes, and intentions regarding the extent to which changes are needed and the organization's capacity to successfully undertake those changes". Due to the lack of knowledge, most organizations are struggling with where to start in the process (Groopman, 2018).

Rafferty et al. (2012) imagine that the antecedents and outcomes arising from change readiness will differ at the different organizational levels. Furthermore, according to Rafferty (2012, p. 112), change readiness is isomorphic meaning that "all individuals perceive readiness along the same set of dimensions, or all group or organizational members consider change readiness the same way". At the individual level, change-supportive behaviours, positive job attitudes, job satisfaction and organizational commitment are key outcomes of individual change readiness where change-supportive behaviours, according to Kim et al. (2011, p. 1665) are defined as "actions employees engage in to actively participate in, facilitate, and contribute to a planned change initiated by the organization". Change-supportive behaviours and positive work group attitudes are key outcome results of change readiness at team level. Key outcomes of change

readiness at the organizational level are the development of dynamic capabilities concerned with change implementation. Dynamic capabilities help a company to adapt devices at lower levels (mainly routines and standard functions) for dynamic environments in a systematic and reliable way (Salvato & Rerup, 2011).

Ransbotham et al. (2018) state that their research showed that an estimated 85% of the participating organizations wanted to undergo a change towards AI but had not yet done so. Groopman (2018) argues that in order for organizations to achieve the benefits of AI, it takes more than just understanding its benefits; it requires readiness across five critical areas: strategy, people, data, infrastructure, and ethics. Many believe that data is the most important factor when investing in AI, but the fact is that it is as much about investing in people as it is in data. Since the purpose of this study concerns people, the critical area for people will be studied in more detail.

### **3.4.1 People as One Critical Area of AI Readiness**

In the implementation of AI, organizational culture is inextricably linked to the employees' willingness to adapt, engage, and innovate. Technology can be seen as only half the battle of innovation in digital transformation and the spectrum of employees' and managers' expectations of technology is wide. Some employees tend to be optimistic to AI and enthusiastic about applying and learning automation while some are sceptical or even apprehensive. Some are even overwhelmed by AI's potential and real performance (Groopman, 2018).

Organizations need to prepare their employees by promoting the right mind-set - the AI mind-set. To build people's understanding and commitment, diversified, directional and democratized AI should be achieved meaning that AI should be managed and designed by several sets of knowledge and perspectives, not just computer scientists. In order to diversify AI development, all perspectives and knowledge must be involved and considered. Furthermore, there must be an understanding that AI is not a linear destination, AI requires continuous learning. Finally, organizations must enable a broad contribution to AI through available tools, training, and multi-function collaboration (Groopman, 2018).

To prepare employees for AI, Groopman (2018) believes that it is not just about training employees in new technology but embracing a new mentality. Through education, trust can be built, and fears suppressed. It is also of great importance to convey the availability of AI, the growth opportunity and formulate roles for the employees as well as to identify the key people in the organization and engage stakeholders. A summary of best practices for AI readying employees' thinking proposed by Groopman (2018) is illustrated in Table 3.1.

**Table 3.1:** Best practices for readying employees, with inspirations from (Groopman, 2018).

Best Practices	Description
Learning & sharing sessions	Conduct workshops, lunch meetings, brainstorming groups, thought exercises, etc. with the aim of educating employees about AI in the context of their work.
Do not overemphasize AI	There is a risk of emphasizing AI too much. If it becomes too much, there is a risk that employees backfire, as people feel ownership of their work and concern that it may change.
Before & afters	Valuable to show both the value and the risks of AI implementations, be transparent. Show both before and after, analyze prejudices, impact of implementation in terms of environment, costs, end user experience, etc.
(S)low-hanging fruit	Empower employees to identify low-hanging fruit in the areas much time is spent finding things, people or other business assets, where AI could provide a much-needed assist.
Internal champions	Cultivate in-house experts by offering and encouraging employees to volunteer and participate in AI software development. Can receive influential input and optimize the AI process.
Communicate about the use of AI	Train both employees and AI systems to communicate about the use of AI in the application, do not hide the AI recommendations and obtain transparency to involve more people.
Deploy programs	Include skills agility, learnability, creativity and emotional intelligence by deploy programs to increase employees' professional development and skills.
Invest in everyone	Train all employees to understand AI, whether directly or indirectly influenced by current initiatives, given the lack of AI experience and the need for diversity. A first priority should be to invest in developing existing employees through training.

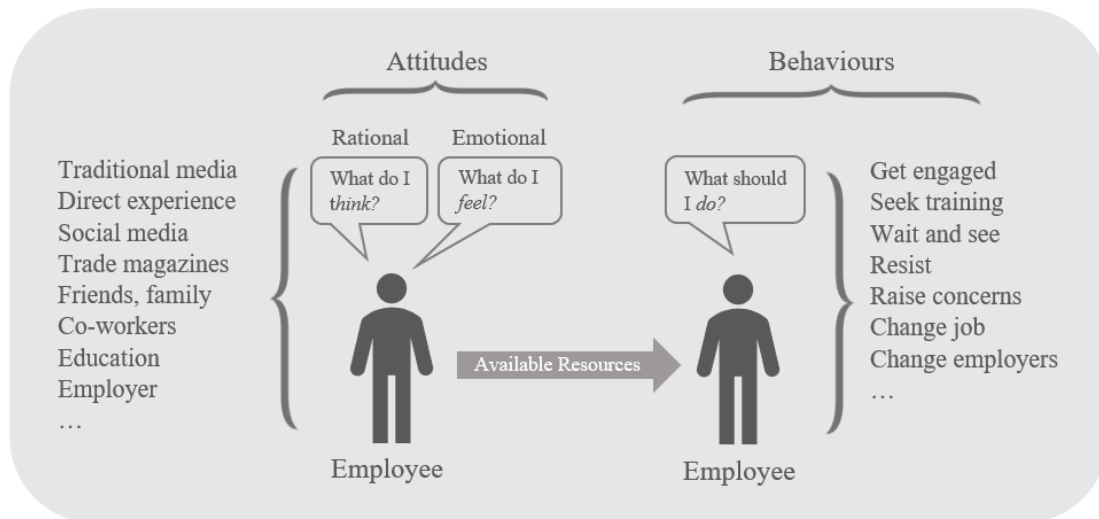
AI differs from other technologies in that it challenges employees' sense of importance and relevance with regard to their workplace. Although the success of AI is driven by employees' willingness to adopt the technology, a survey of 3,000 employees in eight nations showed that 58% of organizations internationally have not discussed the impact of AI on the workforce (Bolden-Barrett, 2018). It is therefore of great importance for organizations whose aspiration is to use AI, to assess how employees' feelings, fears, issues, and uncertainties affect their propensity to adopt AI. Through such an assessment, it is possible to locate where and how the organization can support its employees at a potential AI implementation (Groopman, 2018).

### 3.4.2 Profiles of Employees' Attitudes Towards AI

Various large organizations have begun to experience AI. Zhu et al. (2020) declare that despite this, the majority is still in a pre-adoption phase - a crucial phase since it sets the conditions for future implementation efforts. If negative attitudes are formed by employees or stakeholders in this phase, they are more difficult to transform further. As it appears today, there are unfortunately often more questions than answers in organizations regarding AI. Consistent for employees, from front-line to top management, is a limited AI work experience which often originates from impressions from news, journals, mass media, movies, and/or personal social networks. These sources of information can in many cases be sources of incomplete or incorrect information (Zhu et al., 2020).

Whether employees' reactions to AI are positive or negative, Zhu et al. (2020) believe that they are based on attitudes. Attitudes include both rational evaluations (thoughts) and emotional responses (feelings). As employees are a crucial key factor for a successful implementation, organizations cannot blindly trust that their employees will passively accept the consequences

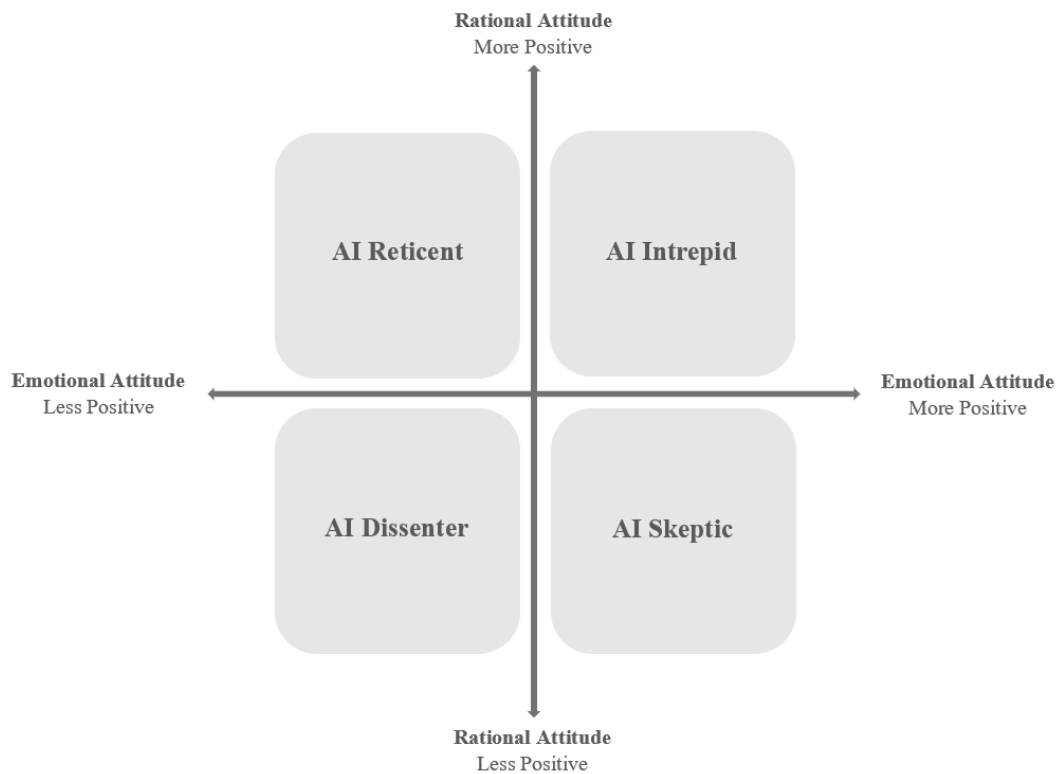
of an AI implementation. To ensure an effective implementation of AI, it is important that managers interpret employees' attitudes towards AI and understands how they will influence future behaviours to introduce appropriate measures to motivate and create an AI commitment among employees. When people end up in stressful situations, their thoughts, feelings, and behavioural reactions are affected according to the cognitive appraisal theory (Lazarus & Folkman, 1984). With this in mind, Zhu et al. (2020) implies that employees before direct workplace experience of AI acquire attitudes towards the technology, Figure 3.4.



**Figure 3.4:** Forming attitudes and behaviours towards AI, modified from (Zhu et al., 2020)

Cognitive attitudes vary between rational and emotional dimensions, ranging from more positive to less positive. In rational evaluations, employees reflect on the potential cost-benefit balance that follows from AI in their organization (Zhu et al., 2020). More positive rational attitudes are formed when employees believe that AI has the ability to, among other things, improve productivity or reduce routine activities. On the other hand, when employees believe that AI will reduce their work performance or disrupt work routines, their rational attitudes will be less positive (Davenport, 2019). The emotional attitudes are not a result of a consideration - emotions are complex, psychological states that naturally arise in response to different situations. Perceived threats and challenges result in anxiety and stress, while perceived opportunities lead to interest and curiosity. More positive emotional attitudes related to AI are linked to an optimism about the future of the technology while the less positive are linked to a concern about how AI will develop in the future (Zhu et al., 2020). The cognitive attitudes that are created during the assessment of a situation affect subsequent behaviour where people consider whether they have the necessary abilities and resources. Employees with multiple resources (i.e., personal knowledge, social support) tend to feel less threatened by a potential AI implementation, while employees with limited resources, who feel a loss of control tend to adopt a defensive strategy (Fadal & Brown, 2010; Zhu et al., 2020).

Zhu et al. (2020) proposes four profiles based on employees' attitudes towards AI: (i) AI Reticent, (ii) AI Intrepid, (iii) AI Dissenter, and (iv) AI Skeptic, Figure 3.5. Overall, it is the rational and emotional attitudes that differentiate the four profiles.



**Figure 3.5:** Profiles of employees' attitudes towards AI, retrieved from (Zhu et al., 2020)

(i) AI Reticents are employees who on a rational level see AI as a beneficial, wise, and valuable investment for their organization. However, AI Reticents are emotionally less positive, sometimes negative towards the technology. This means that when discussing implementation, they may recognize the potential benefits but are reluctant to embrace it due to feelings such as anxiety, fear, and a bad intuition.

(ii) AI Intrepids refers to employees who are both rationally and emotionally positive towards the technology. They welcome AI with their mind and heart. These people see the value and benefits of AI and are emotionally optimistic. They express emotions such as elation, curiosity, and energetic towards the technology. Due to their "all in" to AI, AI Intrepids are most likely to lead the charge in implementing AI.

(iii) AI Dissenters are less positive, both rationally and emotionally, and whose attitudes are least positive towards AI. They have strong negative feelings and reactions towards the technology and believe that AI has very little or no

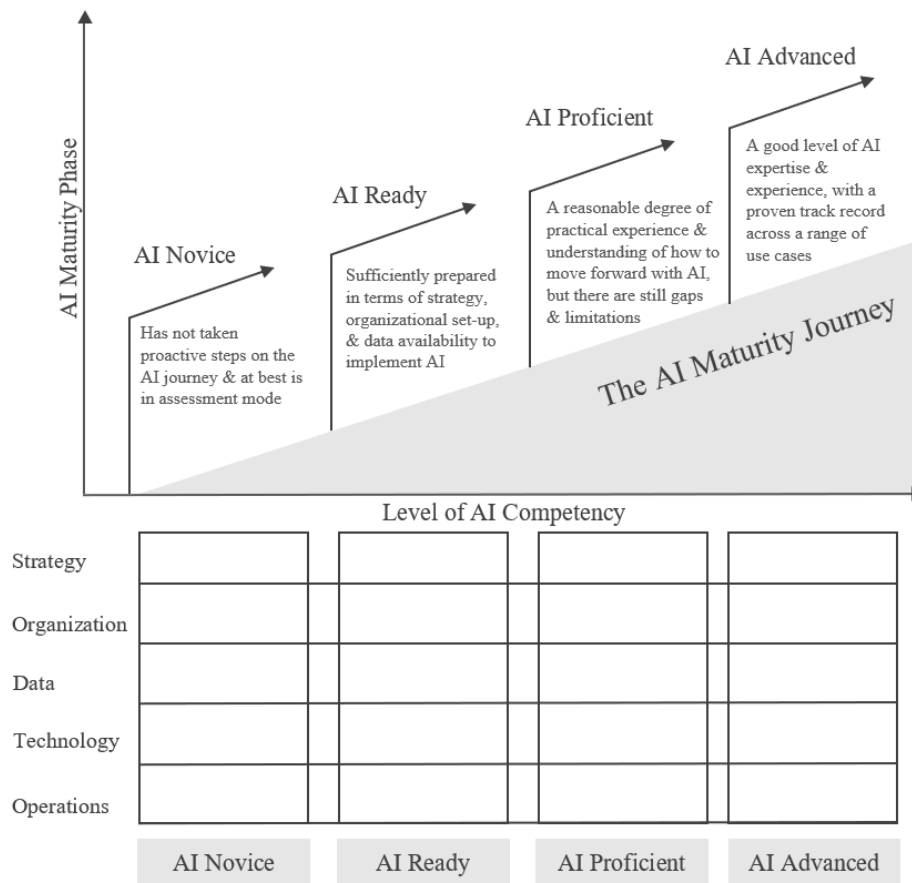
meaningful business value at all. Some AI Dissenters may show great concern and resistance to AI, while some are more discreet and passive opponents.

(iv) AI Skeptics are emotionally positive about AI, but they do not see the practical value to their organization. For AI Skeptics, the less positive attitudes are often rationally driven by the strategic or operational environment. They evaluate, for example, the costs of implementing AI being too high compared to the operating savings and that AI would not provide significant competitive advantages. They probably express optimism and interest in AI, but nevertheless argue against an implementation until its dividends and benefits are clearer.

### **3.4.3 AI Maturity Model**

Organizational AI readiness is a crucial factor in achieving a successful AI adoption (Jöhnk et al., 2020). The term readiness is associated with maturity, where the difference between readiness and maturity is that the assessment of readiness takes place before the maturation process begins. Ellefsen et al. (2019) positions the purpose of the assessment to ascertain the specific state of maturity during the maturation process. Furthermore, she declares that for those organizations that want to maintain competitive advantages and follow new innovations and technologies, maturity models and contingency models are valuable tools to use. There are many different models available that have different properties and complexity, but the model on which this study is based on is the AI maturation model formed by Pringle and Zoller (2018). The model is based on four key development phases: AI Novice, AI Ready, AI Proficient, and AI Advanced, Figure 3.6. For the phases, there are five associated assessment criteria forming the critical basis that creates a detailed and actionable assessment of organizations' AI positioning. The assessment criteria are strategy, organization, data, technology, and operations, which in turn consists of a detailed set of measures that are designed to assess the level of AI maturity. The assessment criteria examine and evaluate the following:

- **Strategy:** this pillar examines organizations' state of action plan and roadmap to support AI,
- **Organization:** examines how organizationally and culturally ready the organization is to support AI as well as the effects on business transformation,
- **Data:** to evaluate the data, the availability of the existing data assets and its analysis capacity as it is crucial for successful use of AI,
- **Technology:** this pillar evaluates and explores various AI functions and AI technologies that can be utilized and how the organization has implemented AI solutions,
- **Operations:** examines how the organization implements AI across operational elements such as customer support, sales and marketing engagement, and networking.



**Figure 3.6:** AI maturity model with included assessment pillars, modified from (Pringle & Zoller, 2018)

Pringle and Zoller (2018) states that AI Novice is the most immature phase meaning that no proactive steps have been taken towards a fully AI implementation. The organization is at best in an “assessment mode”. When using the technology in this phase, there is a great risk of not being able to take advantage of the possibilities with the AI functions. There is also a risk that the lack of coherent strategy and data availability, as well as limited organizational adaptation constitute an obstacle. Measures must be taken to reach the next phase to not risk falling behind other actors in the market. Organizations that are in the AI Ready phase are well positioned to begin their AI journey. There is a sufficient strategic basis, organizational set-up, and data availability in order to implement AI technology. Tactical investments should be made to obtain relevant skills, data, and technology in order to reach the next phase. The AI Proficient phase means that there is a reasonable degree of experience and understanding of how the organization wants to proceed with its AI development. However, there are limitations and gaps regarding strategy, technology resources and data that affect the depth and scope of AI driven operational scenarios which can result in lost opportunities. The final phase, AI Advances, implies that the organization has reached a good level of AI maturity and tends to be ahead of others in the AI journey. Despite this, the organizations that are in the AI Advanced phase should not loosen up, but make sure to follow the development and be updated, in order not to fall behind other players entering the phase (Pringle & Zoller, 2018).

### 3.4.4 Change Management

As in any change, solid change management is required. Change management is described as the application of a process and set of tools for the human perspective of a change to achieve a desired result (Prosci, n.d.). In today’s rapidly changing world, organizations are forced to change in order to survive (Kotter & Schlesinger, 1979; Gordon et al., 2000). Advanced technology, a changing workforce, fierce competition, and globalization are some of the forces driving change (Burnes, 2004; By, 2005; Kotter, 1996). However, organizations are struggling to survive these forces as they have resulted in increasing environmental complexity (De Meuse et al., 2010; Gordon et al., 2000). Despite large-scale organizational change attempts, Beer and Nohria (2000) state that too many fails, as many as 70%. Previous research reveals that, among several factors that affect the failure of a planned change, nothing is as crucial as employees’ attitudes towards change (e.g., Miller et al., 1994; Rafferty et al., 2012). A large number of evidence exist that the characteristics and behaviours of a leader influence the success of a change (e.g., Berson & Avolio, 2004; Bommer et al., 2005; Eisenbach et al., 1999; Fiol et al., 1999; Higgs & Rowland, 2000; Higgs & Rowland, 2005; House et al., 1991; Howell & Higgins, 1990; Struckman & Yammarino, 2003; Waldman et al., 2004), placing leaders in a crucial role of change (Knickrehm, 2018).

Due to the challenges of change managers must develop their skills to diagnose different attitudes towards change in order to use appropriate methods to overcome them. There are many approaches to manage change, but the approaches which the study includes is the six strategies suggested by Kotter and Schlesinger's (2008). The strategies for managing organizational change are: education and communication, participation and involvement, facilitation and support, negotiation and agreement, manipulation, and co-optation and, explicit and implicit coercion, Table 3.2.

**Table 3.2:** Six strategies for managing change, modified from (Kotter & Schlesinger, 2008)

Strategies	Description
Education and communication	Educate about the change in advance and generate an idea communication, through one-on-one discussions, presentations or reports. Valuable to use education and communication programs to minimize the risk of those concerned having incorrect information.
Participation and involvement	Involve employees to prevent resistance. The involvement can take place in the design of the change or in the implementation. By involving, employees become involved in the change, which leads to commitment.
Facilitation and support	Managers should act supportively. For example, by including providing training in new skills, listening and offering emotional support. Facilitation and support are effective when employees experience anxiety or fear of a change.
Negotiation and agreement	Offer incentives to active or employees who are opposed to changes, such as higher salaries. Effectively if there is awareness that employees will be disadvantaged by the change.
Manipulation and co-optation	Selective use of information and conscious structuring of events. Co-opting is common, employees are given a certain key role in the design or implementation of the change.
Explicit and implicit coercion	Managers often deal with negative attitudes coercively. Employees are forced to accept the change by being explicitly or implicitly threatened with losing their job, marketing opportunities, etc.

Kotter and Schlesinger (2008) claim that one of the most common ways to prevent negative attitudes towards change is to educate in advance and to communicate the change helps people see the need for it. They also believe that research has shown that participation results in commitment and not only compliance (e.g., Marrow et al., 1967). Furthermore, they claim that in some cases commitment is required for the change to be successful. However, if a change must take place immediately, it may be unsustainable to involve others. Giving employees facilitation and support in form of, for example, educating new skills, time-off after a challenging period, or by simply listening can help overcome negative attitudes. Another way to deal with negative attitudes is through negotiation and agreement. By offering, for example, a higher wage rate in exchange for a change, negative attitudes can be avoided. Finally, Kotter and Schlesinger (2008) believe that managers in some cases resort to manipulation through co-optation to influence employees. They continue that managers can resort to explicit and implicit coercion with the intention of forcing employees to accept a change.

## **4 Empirical Findings**

This research focused on examining how employees develop change attitudes towards AI and how managers handle these to achieve organizational AI readiness. To provide answers to the research questions, empirical data were collected through a survey and a focus group. As mentioned, the roles constituting the focus group was HR director, IT manager, logistics manager, production leader, digitalization manager, and simulation and DevOps manager. When presenting the results, the participants will not be named by role, for the reason that the participants in internal use of the results at the case company should not be able to be identified regarding which participant stated what. Therefore, the participants will be named by Participant 1-6 (henceforth P1-P6). The presentation of the empirical data begins with a brief description of the case company and a current assessment of the case company's AI maturity. After that, the results from the survey are presented, followed by the data from the focus group. In order to enable an assessment of the case company and to present the results of the survey as efficiently as possible, certain data have been processed.

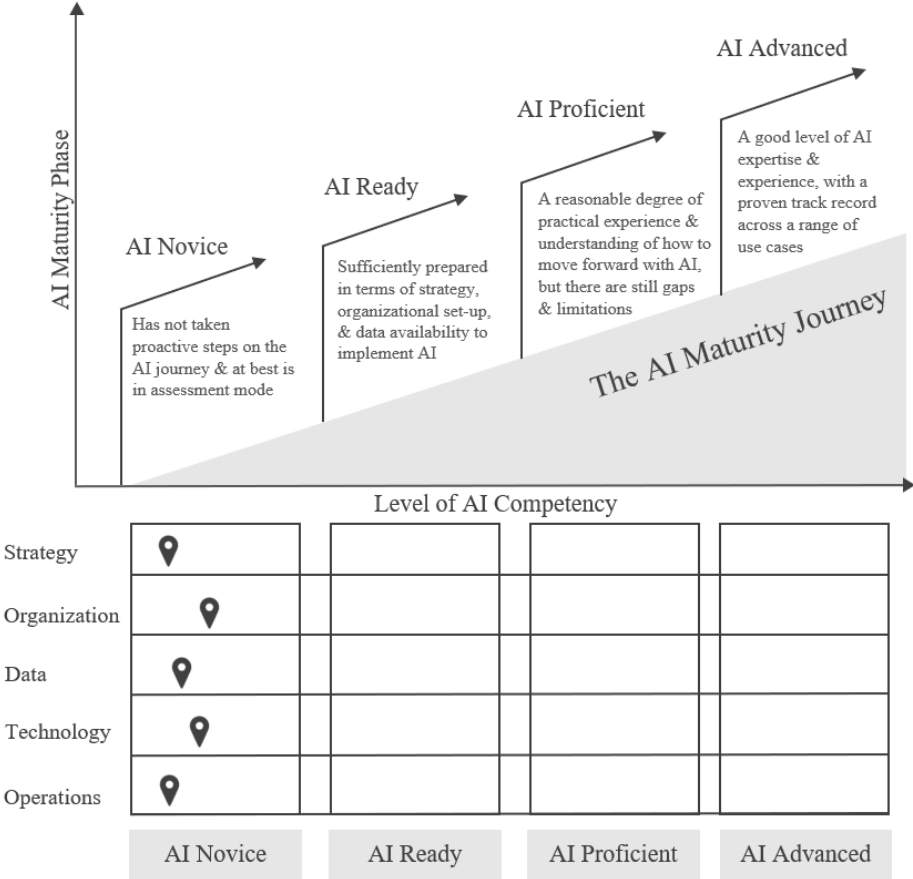
### **4.1 Case Company**

Since this study serves as a feasibility study for Jönköping University's research project PrepAIr placed within the larger research profile AFAIR, the researchers gained access to the partner organizations in the initiative. The case company is one of several key companies participating in the multidisciplinary research initiative AFAIR and also the case company that this study was conducted in collaboration with. The organization is a manufacturing organization with site locations and customers all over the world at group level. The case company is located in several places in Sweden, but not every site was involved in the study. With that said, only parts of the case company have been involved. The study has reached employees from all departments of the case company. However, the researchers cannot guarantee that there are representatives from all departments as it was beyond the researchers' control. The reason why the case company's name, industry, size, and location are not mentioned is to keep the information confidential.

#### **4.1.1 Situation Assessment in Relation to AI**

The case company was chosen as a collaborative partner as they have a great commitment to an AI future and aim to implement AI to a greater extent in their organization. They see AI as a strongly emerging area that they want to be in the forefront of developing. At present, the case company is a newcomer in the area and is yet early in the discussion about AI at both management level and among employees, while in some departments not at all. The company see great benefits in participating in both this study and the research AFAIR to begin their journey towards becoming AI ready, as they strive to start the discussion on a larger scale internally. Already at the first contact with the case company, they expressed the value of gaining an insight about the rational and emotional attitudes that their employees possess towards AI. They consider it as a good starting point to start communicating about AI internally and that the insights will provide good conditions for future work.

To enable an assessment of how AI mature the case company was, the AI maturation model developed by Pringle and Zoller (2018) was used. Through collected data via the survey, the focus group and through sporadic dialogues with the contact persons, the criteria for the five pillars were considered and assessed by the researchers themselves, Figure 4.1.



**Figure 4.1:** Assessment basis for the case company’s AI maturity, based on (Pringle & Zoller, 2018)

The case company is assessed to be in the AI Novice phase as it is placed in the first phase for all five assessment pillars. The case company stated during the focus group that an action plan and roadmap to support an AI implementation is something that is missing and that they must put in place in the near future, making them novice in the strategy pillar. P2 pointed out that in order to become ready for an AI implementation, the organization needs a well-thought-out step by step roadmap, which indicates that the company had not developed an official strategy at the time. Furthermore, for the assessment of the organization pillar, the case company is considered to have started the process. Through the survey, the majority of the employees appeared to have a more positive attitude towards AI, which was somewhat confirmed by the participants in the focus group. All stated that many are curious and positive about the technology, an attitude they believe is due to the fact that they are starting to discuss AI internally and that they participate in AFAIR. Since employees are an important part of the culture and AI maturity of the organization, there are many indications that the case company are beginning to approach the second phase, AI Ready, but that they have a bit left. Regarding the assessment of data, the case

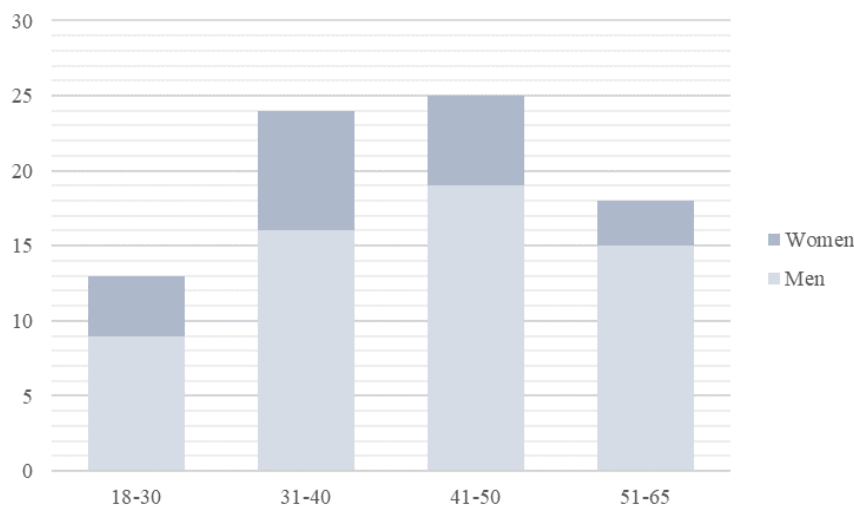
company have a lot of work ahead of them. It emerged during the focus group that data is spread over several different enterprise resource planning (ERP) systems and documented in different ways. P2 expressed that they have valuable data, but that it is important for the company to collect all data in one place and make it easily accessible to really exploit the potential of AI. As for the assessment of the technology and operating pillars, the case company has implemented certain AI technologies, but on a small scale. According to the participants in the focus group, there are plans for an expansion of the existing AI technology in production. It also emerged during the focus group that employees have identified several possible functions to implement AI in, both for production as well as for operational elements in the future.

### 4.2 Compilation of the Survey

Below a summary of the data collected and processed from the survey are presented with regards to rational and emotional attitudes.

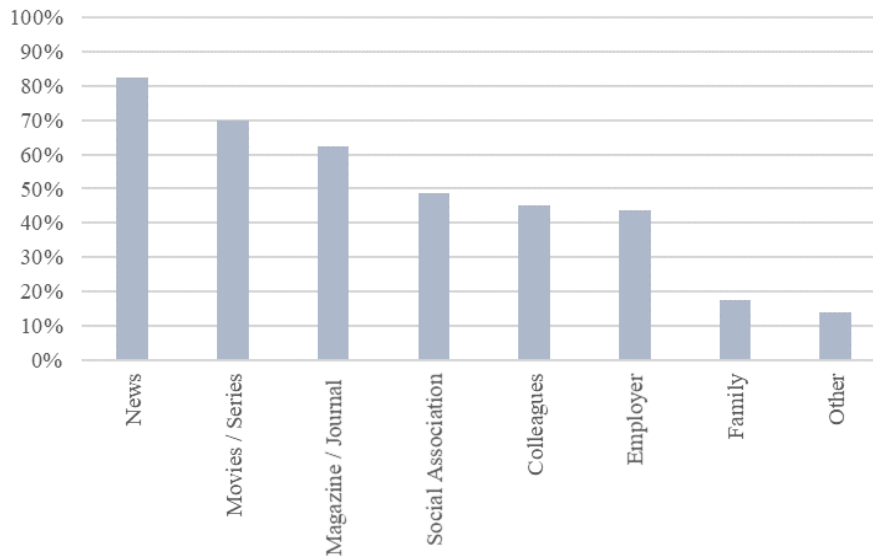
#### 4.2.1 Overview

80 respondents participated in the survey, of which 21 were women and 59 men between the ages of 18-65. The gender and age distribution are illustrated in Figure 4.2. 76 (95%) of the respondents were white-collar employees, with 24 (30%) holding a managing position. The remaining 4 (5%) consisted of blue-collar employees where no one held a managing position.



**Figure 4.2:** Distribution of gender and age among the respondents

79 (99%) of the respondents knew the concept of AI before taking part in the survey. The majority knew the concept from several different sources where news was the largest source of information. 28 (35%) respectively 29 (36%), had come into contact with the concept through their employer respectively their colleagues, Figure 4.3.

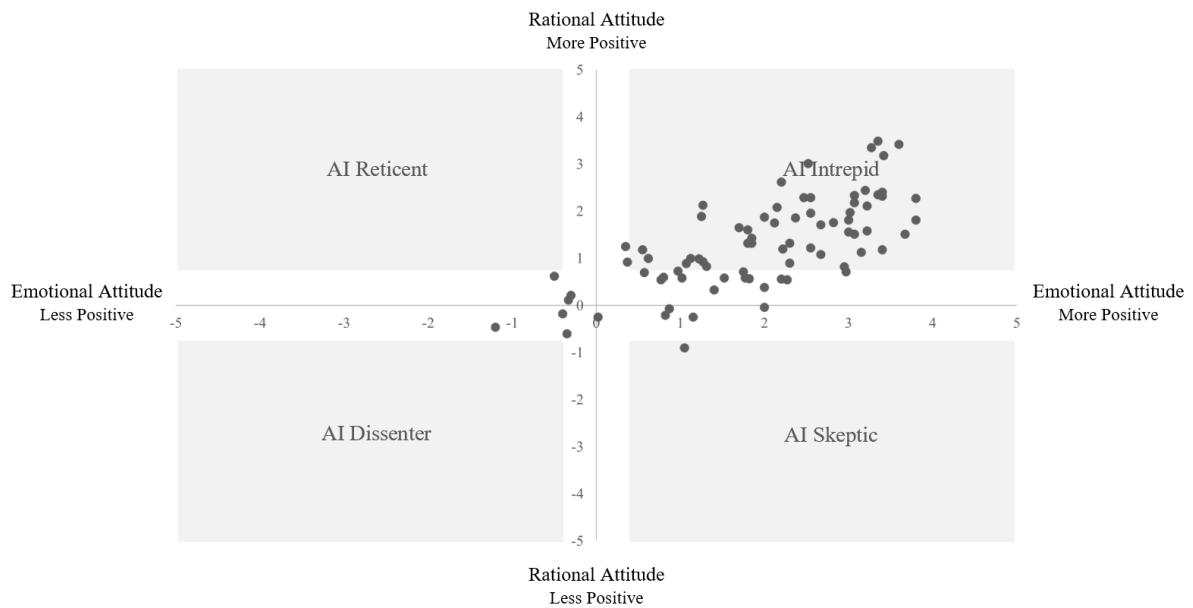


**Figure 4.3:** Distribution of sources for concept recognition

One respondent stated that there is frequent conversation of innovative industrial development in its work role and that there is a personal interest in keeping up to date. Similar to this, another respondent stated that due to its own interest in technology development, the employee keeps searching voluntarily for news in the area to stay updated. Another respondent also declared that AI is a claimed and inevitable topic.

### 4.2.2 Mapping Employees' AI Profiles

When processing the collected data based on the four profiles, illustrated in Figure 4.4, it is seen that the majority of the respondents, 68 (85%) belonged to AI Intrepids. That means that the respondents have a more positive attitude, both rationally and emotionally, compared to the remaining three profiles. 6 (8%) respondents belonged to AI Skeptics, meaning that they are more emotionally positive but less rationally positive towards the technology. Contrary to AI Skeptics is AI Reticent, which is characterized by respondents who are less emotionally positive but more rationally positive. There were 3 (4%) respondents who belonged to AI Reticents. Lastly, there were 3 (4%) respondents who belonged to AI Dissenters who have a less positive attitude towards AI, both emotionally and rationally.



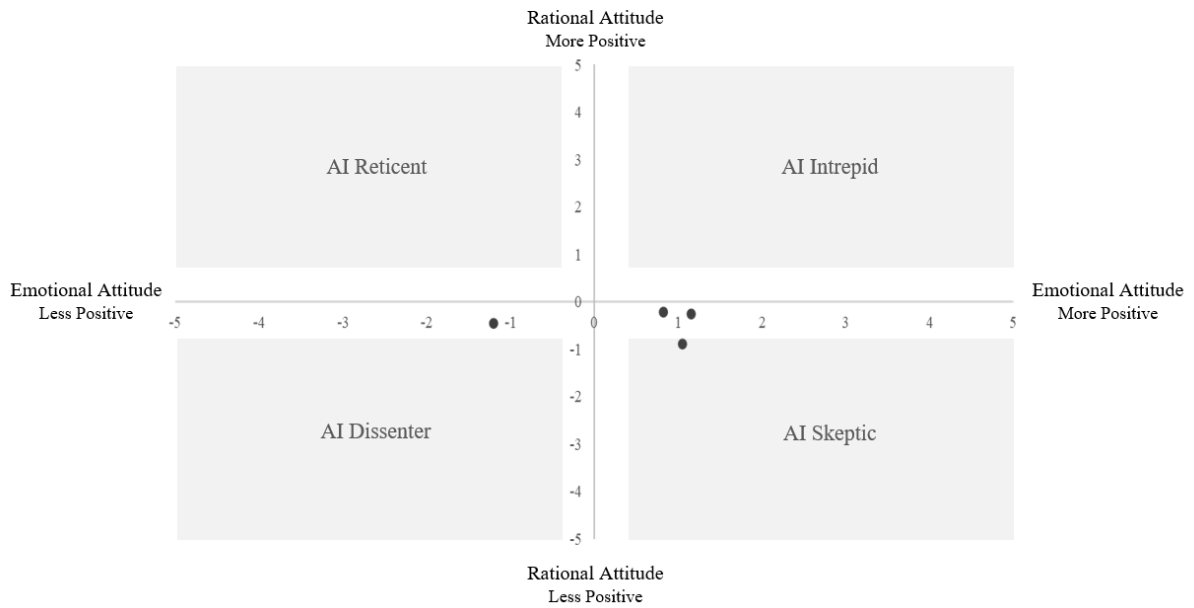
**Figure 4.4:** The distribution of the respondents in relation to the AI profiles

From the compiled and processed data that led to the distribution of the four profiles, a protocol was kept of which gender, role and position each respondent had, Table 4.1.

**Table 4.1:** Compiled data in analysis base protocol

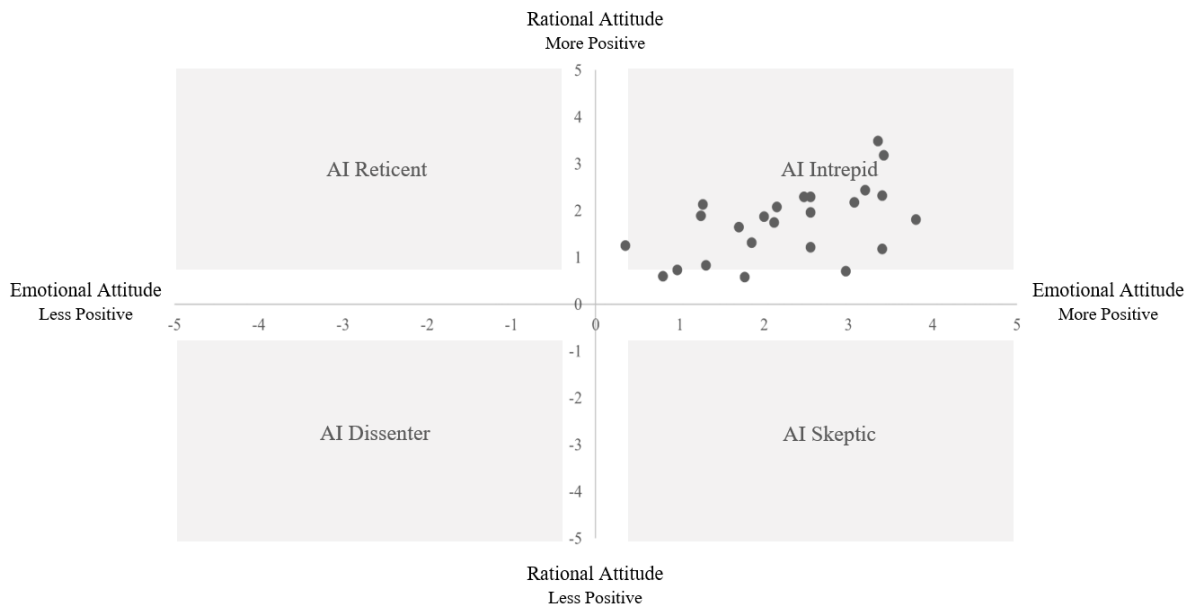
		AI Reticent	AI Intrepid	AI Dissenter	AI Skeptic
White-Collar	Female Manager		5		
	Female Not Manager	2	13		1
	Male Manager		19		
	Male Not Manager	1	31	2	2
Blue-Collar	Female Manager				
	Female Not Manager				
	Male Manager				
	Male Not Manager			1	3

From that data, it was found that none of the respondents with a blue-collar employment belonged to the profile AI Intrepid, but to AI Dissenters and AI Skeptics, Figure 4.5.



**Figure 4.5:** The distribution of the respondents with a blue-collar employment, in relation to the AI profiles

All of the respondents with a managing position belonged to AI Intrepids, Figure 4.6.



**Figure 4.6:** The distribution of the respondents with a managing position, in relation to the AI profiles

### **4.2.3 Mapping Employee' AI Attitudes**

To present the results of the survey containing employees' attitudes towards AI in a clear way, the data and presentation is divided into rational and emotional attitudes.

#### **4.2.3.1 Rational AI Attitudes**

Overall, the employees' rational attitudes towards AI are more positive. 62 (78%) of the respondents believed that AI has great organizational potential. 39 (49%) thought that AI can lead to increased work performance and 37 (46%) are less convinced, while the remaining 4 (5%) did not believe that AI will have a positive outcome at all on work performance. Many of the respondents believed that AI could lead to better results, both individually and organizationally. 58 (73%) considered that it will generate time savings and 56 (70%) that it will generate financial savings.

On the question of the impact of AI on individual level, one respondent commented the following:

“Will be able to shift focus to more important tasks if we through AI can get more time-consuming “simple” tasks done with AI. But do not think that we will earn time in terms of work, but instead see it as we become more efficient towards our customers.”

Another respondent stated the following:

“I think most of the statements in the survey are true to some extent, that AI can bring both good and bad things with it and that what is good for a company is not always good for an individual employee. If my work role is made more efficient, me and my colleagues can spend more of our time on value-creating work. It would make the job even more fun at the same time as the risk of disappearing in the next reorganization increases.”

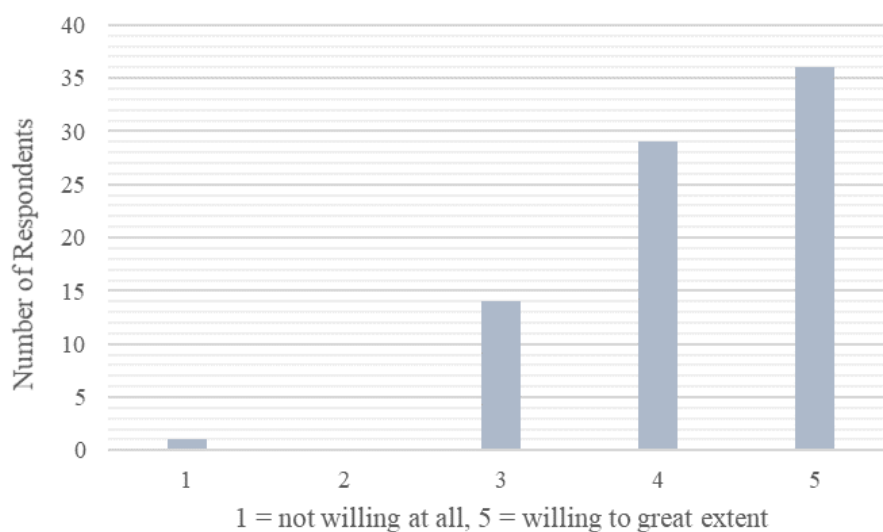
The survey also showed that the majority of the respondents believed that an implementation of AI would entail great competitive advantages, be a valuable investment and that it would lead to employees being able to spend more time on value-creating activities. Despite that, 23 (29%) respondents considered that an implementation of AI in the organization will provoke negative attitudes among employees. Approximately the same proportion do not imagine that it will provoke negative attitudes, while 32 (41%) indicated an ounce of belief that it may provoke negative attitudes. One respondent stated that the case company is in many respects very backward-looking and that resistance among the employees would be inevitable when implementing AI.

Although many respondents leaned to a more positive attitude towards AI, 20 (25%) stated that they believe it could lead to a negative effect on employees and consequently 16 (20%) stated that it would even pose a threat of dismissal from employees. 20 (25%) more or less believed that their work role will be replaced by an AI implementation and 13 (16%) that it would entail a risk of them losing their job.

### 4.2.3.2 Emotional AI Attitudes

The emotional attitudes of the respondents are generally more positive. Data show that when asked to what extent emotional attitudes a proposed AI implementation evokes, among other things, 60 (74%) respondents stated an expectation, 76 (95%) curiosity and 37 (46%) elation. Despite the overall more positive emotional attitudes, 19 (24%) respondents stated a fear of technology, 24 (30%) a concern and 29 (36%) that it causes stress. One respondent stated “I think it takes a lot of knowledge to use AI properly. If you do not have that knowledge, the negative emotions will come, if you have the knowledge, there are great opportunities and all the positive things”.

The distribution of the extent to which the respondents are willing to actively engage in a potential AI implementation is illustrated in Figure 4.7.



**Figure 4.7:** Distribution of willingness to engage in an AI implementation

The majority show a great willingness to get involved in a potential implementation of AI in their company, regardless of position and role.

## 4.3 Compilation of Focus Group

Below the data collected from the focus group are presented with regards of managers’ perception and managing of employees’ AI attitudes.

### 4.3.1 Managers’ Perception of Employees’ AI Attitudes

The focus group began with a discussion of how the participants expected the results of the survey, and thus the distribution of their employees according to the four AI profiles, would appear. The participants from the case company had a common opinion that the allocation of AI profiles among the employees would have a relatively even distribution over all four profiles, with margin for the less positive profiles. P1 expressed a belief that many of the employees would be AI Reticents as many are positive about AI, but emotionally doubtful. P4 agreed that there are many who are emotional doubtful to AI but that there probably are many

AI Skeptics: “I really think there are AI Sceptics who are thinking about what it can do for us, there I think there are quite a few”. P5 also shared the belief that many are AI Skeptics: “I think we are interested and curious about AI, but have a hard time seeing what advantages it gives us. It is difficult to find clear examples”. Furthermore, P4 reasoned that many employees, due to ignorance and fear, are AI Dissenters. This reasoning was confirmed by P6, who also discussed the distribution between white-collar and blue-collar employees:

“I think it looks different if you look at the white-collar side and blue-collar side, where you might be a little more positive on the white-collar side and of course have more knowledge about it. Of course, it might be a little more, what can you say, more frightening on the blue-collar side in some way - that you have both negative feelings and less positive ones. AI Dissenters then, maybe we have a larger share on the blue-collar side.”

P5 added that there is also a fear among white-collar employees based on the fact that specialist knowledge risks not being as important in the future when AI replaces many work tasks. Unlike the other participants, P2 believes that many of the employees are in the more positive profiles due to that many employees are perceived as curious and positive.

When the survey outcome of the distribution of the employees’ AI profiles was later presented, all participants reacted surprised and positive, as they had not seen the results before. P2 expressed that the result reflected the reality, while P4 added that those who responded probably have an interest in AI and that the result would probably have looked different if the survey had been mandatory. In line with this, P1 pointed out: “I tried to get some to answer where I got someone who expressed that 'I have no idea what AI is so I cannot answer'“.

P6 confirmed its assumption that employees with a blue-collar employment are less positive in some respects and gave an example from reality: “Our automated trucks were met with scepticism, it took a long time before people learned to live with them in their everyday lives [...]”. P6 continues:

“I think it is due to ignorance, it does not become natural to talk and read about it in our daily work in the same way as we white-collar employees may do when we discuss the future. I think it is a bit ignorant, then it could probably be a bit like P1 and P4 discussed, that blue-collar employees might care more about their job and their position. You are afraid that someone will come in and take what you have done for a number of years and are happy with.”

Many of the participants stated that they have met many positive attitudes from employees, such as curiosity and ideas about how AI can be implemented and streamline work. Some of the participants also pointed out that this is largely due to their participation in AFAIR, which has resulted in the communication of AI internally. P1 commented:

“In general, I feel that it is positive, there are many who see opportunities and there has been more talk about it in the organization now just because we are part of AFAIR, which leads to positive ideas and thoughts [...].”

Nevertheless, P3, P5 and P6 claim that they have met fewer positive attitudes among the employees. P3 stated that there are employees who are cautiously positive and P5 that many are still looking for concrete examples of what AI can contribute. P6 expressed:

“If I get to rattle a little, the younger ones have found it easier to absorb it, and just realize the situation and the way they work. They have an easier time changing their pattern in some way, more than the slightly older ones who have a little harder to deal with the reason. [...] it took longer for the elderly to accept it and live with it.”

All participants had a common view that it is positive that the majority of the employees and those with a managing position are AI Intrepids. P4 stated: “Then we have a very good foundation to stand on and build on”.

#### **4.4 Managers’ Management of Employees’ AI Attitudes**

All participants agreed that an AI change should be treated as any change and thus, aroused AI attitudes should be treated as in any change. However, P1 pointed out that other changes are often clearer and that “the difference between an AI change and other changes is that it is more difficult to grasp, difficult to define, and difficult to see what AI is”. Furthermore, P1 also questioned whether the organization should talk about AI as a concept, or if it would make it scarier. P1 continued with suggesting that it is about finding and communicating what the goal of the AI implementations is in order to establish AI readiness.

Various quotes regarding managers’ management of employees’ attitudes towards AI, generated from the focus group, are summarized in Table 4.2.

**Table 4.2:** Quotes from focus group

Quotes	
P1	"Give concrete examples where, in order to de-dramatize, [...] start with something less concrete, delimited, where you can show a positive result and have it as a good example"
P2	"Short examples of how it can work, which you can bring with you to make more people understand"
P3	"[...] without knowing a 100% myself, but when you go into something like this, it is something you have to build up and inform about"
P4	"It is about building safety, so that employees do not worry"
P5	"Show profits and good results to give a positive feeling"
P6	"Inform and explain, show that you involve e.g. safety representatives so we get them to know that it is safe and no strange things"

To manage employees’ attitudes in future implementations of AI, P3 and P4 highlighted that change management is needed. P1 added: “We need someone who is good at talking about AI in a way, so it is understandable” and continued with:

“There are different roles as a data scientist and other things that you need in the long run, but I do not think it is where we should start, but maybe we should bring in someone on a consulting basis and to make it work.”

Several participants stated during the focus group that people today are generally more likely to change due to that everyone today copes with rapid changes in everyday life. Despite that, P6 pointed out:

“Many of those who were negative from the beginning are still negative, they still get the feeling that AI is something dangerous and that it has removed job opportunities. [...] leaders will experience the same attitudes from certain employees in future implementations that are planned.”

The participants argued that their organization must have more clear and solid information, as well as educate employees to face future AI implementations. In discussions regarding education, P1 also claimed that competence is an important resource and that the case company must see how its employees can be used in other ways when AI replaces work tasks. It emerged during the focus group that some employees want simpler tasks such as repetitive ones, and that it is a challenge they believe they will have to deal with. P1 said: “Some employees want repetitive tasks and that it is a challenge in itself, one may not want to get an education to do more complicated tasks and enjoy simpler tasks - something we also need to handle.”

Worth mentioning is that all participants agreed that the case company has not yet discussed AI at a deep level and that they are at an early stage. Understanding was shown, however, that they cannot afford not to act in order not to be run over.

## 5 Analysis

In this chapter, the analysis is presented according to systematic combining based on collected empirical data and the frame of reference. Since the purpose is to abductively investigate how managers can foster organizational AI readiness by understanding the characteristics of employees' AI attitudes, the aim for the study results was to confirm, expand or develop already existing theory. To meet the purpose, the data from the focus group was processed through thematic analysis and led to the identification of four dimensions. Also, the empirical data from the survey and the AI maturity assessment are elaborated in the analysis. Thus, the context and situation of the case company are covered in the analysis. First, the management dimensions are shortly presented followed by the analysis of them. Lastly, the research questions are addressed to summarize the analysis.

### 5.1 Dimensions

To investigate how managers can foster organizational AI readiness necessitates an understanding of readiness for AI implementations. A transition to AI is a major change, which places demands on organizations whose aim is to implement AI. This in turn requires managers to determine change readiness, in order to be ready for the AI adoption phase and to succeed with the change in the long term (Knickrehm, 2018). Groopman (2018) states that organizations can not only understand the benefits of AI, but it also requires readiness over several critical areas where people are an important area. Like other changes, if not to a greater extent, AI will naturally generate different attitudes by the employees affected by the change (Zhu et al., 2020). Miller et al. (1994) and Rafferty et al. (2012) both state that in order to succeed with change, nothing is as critical as employees' attitudes towards change, placing managers in a crucial role (Knickrehm, 2018). During the focus group, it emerged that solid change management is seen as something necessary to succeed with an AI adoption. Therefore, it is necessary for managers to have knowledge in and an understanding of distinctive features of employee AI attitudes as well as how they are to be handled to be able to support organizational AI readiness.

Readiness is associated with maturity (Ellefsen et al., 2019). In order for organizations to become AI ready, managers should perform an assessment of the organizational level of readiness through a maturity process and along to different criteria (Pringle & Zoller, 2018). The various criteria are considered to generate a valuable indication of where in the maturity process the organization is. The case company was placed in AI Novice, which indicates an early state in the journey towards becoming AI ready. Through this, the case company and other organizations that use an AI maturity model can get a clear picture of what criteria that is needed to be fulfilled and which steps that should be taken to move forward. It is considered a valuable frame for managers to use as an indication of which measures should be taken in the near future and which should be taken long-term.

The thematic analysis of the focus group transcript generated four dimensions: establish knowledge, leading by example, spread the word, and investing in internal power, all of which are analysed below. Through these dimensions, the researchers hope to create an understanding of how employees develop change attitudes towards AI and how they should be handled by managers to achieve AI readiness. Notable is that the emerged dimensions depend on the degree

of AI maturity in combination with the context of the survey as an intervention and exploitation. Thus, the findings are influenced by that the company is novice in AI and that they are involved in a research project containing consultant programs in AI. In the analysis of each dimension, a table is first presented containing the empirical quotations that the researchers considered to constitute the origin and strengthen the dimension, Table 5.1, Table 5.2, Table 5.3. The reason for not including a table for the fourth and last dimension is that it did not emerged spoken during the focus group. Still, the researchers see it as an important factor for organizational AI readiness. It is worth repeating that although the survey constituted a preparatory part for the focus group, it will be included in the analysis of the dimensions identified by the focus group.

### 5.1.1 Establish Knowledge

**Table 5.1:** Dimension - Establish Knowledge

Establish Knowledge
<p>"I tried to get some to answer where I got someone who expressed that 'I have no idea what AI is so I cannot answer'".</p>
<p>"I think it looks different if you look at the white-collar side and blue-collar side, where you might be a little more positive on the white-collar side and of course have more knowledge about it. Of course, it might be a little more, what can you say, more frightening on the blue-collar side in some way - that you have both negative feelings and less positive ones. AI Dissenters then, maybe we have a larger share on the blue-collar side."</p>
<p>"Start looking at what skills we have and what we will need"</p>

Gallivan (2001) argues that an AI implementation often involves high complexity due to knowledge barriers and technology properties. In line with this, Groopman (2018) claims that the lack of knowledge makes it difficult for organizations to know where to start in the AI process, which complicates organizations' level of AI readiness. Already existing research asserts that knowledge is a decisive factor for individuals, and thus organizations, to become AI ready which was confirmed in the focus group. It is claimed that knowledge simplifies learning and therefore simplifies the change process as people more easily have the ability to adapt a change. Armenakis et al. (1993) state that a person's change readiness depends on his or her own attitudes and experiences to what extent changes are needed and can be successfully implemented. It is believed that knowledge has the power to eliminate preconceived notions and that employees thus respond positively to acquiring new knowledge and consequently develop their change attitudes. The participants pointed out several times that the majority of the results in the survey reflected the level of knowledge that exists within the company at both individual and organizational level. It also emerged through the survey, which is illustrated, among other things, in what one of the respondents stated:

"I think it takes a lot of knowledge to use AI properly. If you do not have that knowledge, the negative emotions will come, if you have the knowledge, there are great opportunities and all the positive things".

Zhu et al. (2020) and Fadal and Brown (2010) confirm the approach to knowledge for more positive attitudes towards AI. They believe that employees with more resources, such as knowledge, tend to feel less threatened by an AI implementation while employees with less resources and knowledge tend to feel a loss of control and act more defensively, with less positive attitudes. In line with that and the quote above, it emerged during the study that employees who have a higher level of knowledge in AI perceived more positive attitudes towards the technology and with feelings such as curiosity and elation, while those with a lower level of knowledge or no knowledge had less positive attitudes towards AI. Thus, it is reasoned that the level of knowledge directly affects change attitudes, and it is therefore assumed that a deeper knowledge is fundamental to achieve more positive attitudes towards an AI change.

The outcome of the survey turned out to be more positive than the participants in the focus group expected. Only one of six participants within the focus group considered that the result reflected the reality due to a perception that many employees within the case company are curious and positive about AI. The remaining participants responded by pointing out that the result would probably have looked different if the survey had been mandatory as it would have resulted in a wider range of employees responding. It indicates that the managers have encountered less positive attitudes in the company or that they have preconceived notions that their employees are less positive than they actually are. However, they said that the majority of those who participated in the survey were probably employees who have knowledge of AI and who are more positive about the technology. It was based, among other things, on the fact that one employee had expressed that it did not want to participate in the survey because the employer did not even know what AI was. This is confirmed by that 79 (99%) of those who participated in the survey knew about the concept before, which suggests that, as the participants in the focus group claimed, the result could have looked different if the survey was mandatory for everyone in the case company. The study made by Zhu et al. (2020) revealed that the majority (46%) of the respondents belonged to AI Dissenters and that most (81%) of the respondents were in a non-managing position. At the same time, this study's survey contradicts their distribution of AI profiles, even though it was about the same proportion of employees in a non-managing position (70%). The reason for this is believed to be due to the context, organizational AI maturity, and that Sweden is at the forefront of technological progress. Sweden is the 5<sup>th</sup> leading country in AI development in the world. Given that Zhu et al. (2020) conducted their study in Taiwan which did not even appear on the list of 172 countries' measured AI development (Oxford Insights, 2020), is considered to be a reason why the respondents had more positive attitudes in this study compared to the respondents studied by Zhu et al. (2020). In Sweden, there is more rule than exception of living with technological changes, which increases the chance of people encountering AI and thus developing some type of knowledge. It confirms that knowledge leads to more positive attitudes. AI Dissenters have both less positive rational and emotional attitudes, which correlates with the level of knowledge of the participants in Zhu et al. (2020) study.

The participants in the focus group argued that the level of knowledge differs between employees in the company depending on position and type of employment. There was agreement that the results would have looked different in this respect as well if more employees

with a blue-collar employment had participated in the survey. P6 claimed that the company probably have more AI Dissenters due that employees with a white-collar employment are more positive and have more knowledge than the employees with a blue-collar employment. It emerged that this may be due to, among other things, that employees with a white-collar employment naturally encounter AI in different contexts in their everyday work, as many discussions are held about it when discussing the future of the case company. Employees with a blue-collar employment do not encounter the concept as naturally in their work as employees with a managing position does, as employees with a managing position drive the AI process forward. This is in line with the outcome of the survey, as none of those with a blue-collar employment belonged to AI Intrepids, compared with that all employees with a managing position belonged to AI Intrepids. Those with a blue-collar employment instead belonged to AI Dissenters and AI Skeptics. Considering that only four blue-collar employees participated in the survey, it is difficult to determine how the result would have been affected if more blue-collar employees had participated. However, based on the fact that all of the respondents with a blue-collar employment showed less positive attitudes in some respect, it is assumed that there are not as high knowledge requirements for blue-collar employees. Again, Zhu et al. (2020) and Fadal and Brown (2010) believe that employees with limited resources such as lack of knowledge tend to form less positive attitudes.

AI is a phenomenon that has existed for many years but has increased significantly in use in recent years (Canals & Heukamp, 2020). This means that many have not yet developed their knowledge of the technology and in some cases, have not heard of the concept at all. People have come into contact with AI via, among other things, movies, series, news or from social networks. One possible reason why many people have the wrong impression or ignorance about AI is considered to be partly due to the source of information. Zhu et al. (2020) believe that impressions from news, journals, movies, series and/or social networks in many cases result in incomplete and incorrect information. The survey showed that the largest source of information for the respondents was via news (82%) followed by movies/series (70%). The proportion who came in contact with it through their employer or colleagues is significantly lower (35-36%), which is a proportion that is considered important to increase. If employees are approached by information about AI via inappropriate sources, there is a risk that attitudes will be developed based on misconceptions and knowledge. It emerged during the focus group that some of the participants perceived that some employees have developed attitudes in the form of anxiety and fear due to the source of information. Employees have the perception that AI is similar to science fiction and thus has difficulties in seeing AI in everyday life functions, such as face recognition and google assistant (Davidson, 2019). Such attitudes are important to deal with in order to reduce the risk of employees developing less positive attitudes, as Zhu et al. (2020) claim that employees are difficult to transform further. Thus, it is considered crucial that managers in organizations, that strive to implement AI, offer education to employees to create a fair and reality-based perception and knowledge.

Diversified, directional and democratized AI should be achieved to build employee knowledge, understanding and commitment. This means that AI should be managed and designed by several sets of knowledge and perspective. All knowledge and perspectives must be involved to

consider diversifying AI development. It is also essential to create an understanding that AI is not a linear destination and that it requires continuous learning. Managers must manage their own and employees' AI knowledge through training, tools, and multi-function collaboration (Groopman, 2018). The participants in the focus group highlighted that the employees who were less positive about the simpler AI implementations the company had carried out are still less positive, which indicates that they have unsuccessfully handled the less positive attitudes. They also underlined that they need clearer information and examples, and that they need to train employees to achieve better results for future implementations. This is an important lesson about managing employees' attitudes. Organizations need to prepare their employees, by educating employees about AI in order to achieve continuous learning and thus reduce the proportion of employees with less positive attitudes. Groopman (2018) states that it is not only about teaching employees the technology but also fostering an AI mind-set. If organizations increase their level of knowledge within the company, as researchers and the participants in the focus group anticipated, trust will increase, and fear decrease leading to more positive attitudes. Employees will thus develop their change attitudes, i.e., become more prone to change, involved and curious, about taking advantage of the benefits of an AI implementation.

Groopman (2018) touches on the generation of a higher level of knowledge in many of her best practices for readying employees for an AI implementation. The best practices that include knowledge to some extents are learning and sharing sessions, deploy programs and invest in everyone. These practices in turn include conducting workshops, meetings, brainstorming exercises with the aim of educating employees about AI in the context of their work. It is also about offering training programs to increase employees' professional development and skills. Similar to what has been discussed, it is also about investing in everyone in the form of educating everyone in the company to understand AI, regardless of whether the employee is directly or indirectly affected by the implementation. The empirical data showed clear examples of the effect of, for example, conducting workshops. As the case company is part of AFAIR, they have participated in several workshops in the research project through which many encouraging mindsets from employees have arisen as well as curiosity about the technology. It has created an idea generation from the employees about where in the organization AI can be useful and constitute an efficiency improvement. It is considered that the company's participation in AFAIR has meant that AI has been introduced in a pedagogical way and thus generated a positive effect on the employees and its attitudes. Through this, it is assumed that the employees have been given the chance to develop their knowledge in AI, which is a clear sign that small funds such as workshops can have a great impact on the level of knowledge at both individual level and organizational level. Furthermore, the practices proposed by Groopman (2018) are examples of how managers in organizations should conduct learning and sharing sessions for employees with the goal of training employees in AI in the context of the organization and its work role. If these practices are used for readying employees, Groopman's (2018) best practice on (s)low-hanging fruit will naturally be achieved. The practice implies that employees are encouraged to identify where AI could provide a much-needed assist.

An increased level of knowledge about AI will generate more positive attitudes, which in turn results in more and more opportunities for AI implementations in organizations. All in all, it

can be stated that knowledge is a decisive factor in the fourth and ongoing industrial revolution, Industry 4.0. An increased level of knowledge of AI is considered crucial for organizations to become AI ready in order to succeed with AI implementations.

### 5.1.2 Leading by Example

**Table 5.2:** Dimension - Leading by Example

Leading by Example
"Short examples of how it can work, which you can bring with you to make more people understand"
"I think we are interested and curious about AI, but have a hard time seeing what advantages it gives us. It is difficult to find clear examples".
"Show profits and good results to give a positive feeling"
"Give concrete examples where, in order to de-dramatize, [...] start with something less concrete, delimited, where you can show a positive result and have it as a good example"

Groopman’s (2018) best practices touches upon the importance of organizations building mental performances with examples and by showing before and after, in order to readying employees for AI. As many researchers claim, AI is difficult to define and an elusive concept (e.g., Raphael, 1976; McCarthy et al., 1955; Minsky, 1968; Zhu et al., 2020), which challenges AI implementations. Most participants in the focus group believed that an AI change should be handled in the same way as general changes. However, P1 pointed out that managers should reflect about that AI is more difficult to grasp: “The difference between an AI change and other changes is that it is more difficult to grasp, difficult to define, and difficult to see what AI is”. Due to the challenge that people have difficulty grasping what AI means, in connection with the ignorance and inexperience that tends to exist in organizations, an important management dimension is considered to be leading by example. Groopman (2018) believes it is important to build a mental image of its employees that is easy to grasp. It is also essential to achieve transparency and exemplify the possibilities with AI. It is considered necessary to demonstrate both values and risks of an AI implementation in order to build trust among employees and to develop change attitudes. Leading by example helps others see what is to come while at the same time influencing other people’s behaviours and attitudes.

All participants from the focus group agreed that many of the employees have difficulties in seeing the benefits of AI and that many are searching for concrete examples of what AI can contribute to. This indicates that managers should deal with the less positive rational attitudes, which can be done beneficially by illustrating examples. In this respect, dealing with the less positive rational attitudes would lead to more positive emotional attitudes. Employees who are having a hard time imagine the benefits of AI and who cannot imagine what an implementation of AI could mean for their organization and/or work role have a greater tendency to develop more negative attitudes and feelings such as worry and fear (Zhu et al., 2020). It is thus considered important to involve the employees in the AI work and to keep the process transparent. Managers should first illustrate what the organization’s problems is or how the situation appear before an AI implementation begin. During the process, employees should be

involved in order to obtain examples of what AI more easily can contribute. Finally, when the implementation is complete examples should be illustrated, for an evaluation of what the implementation contributed to. P6 mentioned that their automatic trucks were met with scepticism and that it took a long time before the employees learned to live with them. P6 also mentioned that those who were negative at first did not change their minds. The negative attitudes are believed to have come from fear and anxiety about the technology. Instead of letting the employees learn to live with the automated trucks and allowing some of the employees to still have negative attitudes, the managers should have led by example. The managers could have produced evidence of, for example, whether the trucks have led to a smaller number of injuries compared to manual trucks and to what extent it has generated a time optimization and more efficient process. What technology contributes to can naturally be both positive and negative. It is argued important to show both sides with an AI implementation to build trust, something that can be crucial for the more positive emotional attitudes to be more superior to the less positive ones. This is something that is confirmed by Groopman (2018) who states that organizations by illustrating examples gain trust and fears suppressed.

### 5.1.3 Spread the Word

**Table 5.3:** Dimension - Spread the Word

Spread the Word
"Inform, explain why and make people understand the purpose, be clear about what is happening now, action plan"
"The dialogues are important as a preparation to get started"
"We need someone who is good at talking about AI in a way, so it is understandable"

Obtaining transparency when managing attitudes leads in on the importance of communication. Two of Groopman's (2018) best practices encompass communicating the use of AI although AI should not be overemphasized. Managers should communicate AI recommendations while gaining transparency in order to readying employees to become organizational AI ready. It is central to internally communicate the value, purpose, and goals of a planned AI implementation as well as why it is carried out. When informing about AI, there is a risk of emphasizing it too much if doing it in a mistreating way. If employees experience that it is too much to grasp, it is considered to result in a risk of employees developing negative attitudes that cause the employees to backfire. Employees backing down may be partly due to that they feel ownership of their work and do not want to lose control. There is also a risk that they experience a concern and fear of being replaced by AI. P1 speculated during the focus group on whether the case company should name AI as a concept or whether it risks being perceived as frightening by the employees. It is agreed that in order to manage the introduction of AI in organizations, an AI expert should introduce the concept to minimize the risk of employees experiencing it frightening or incomprehensible. If it means an internal resource or someone on a consulting basis is not considered to matter as long as it can lead to employees being able to develop more positive attitudes towards AI. Introducing AI properly at an early stage is crucial, as Zhu et al. (2020) states that the adoption phase sets the conditions for future implementation efforts.

Managers face an important role in managing attitudes from employees arising from fear and anxiety. That many people experience a threat of AI replacing jobs is not a new topic of conversation, but that employees experience fear of any change is inevitable. The most common causes of less positive attitudes according to Kotter and Schlesinger (2008, p. 107) are “a desire not to lose something of value, a misunderstanding of the change and its complications, a belief that the change does not make sense for the organization, and a low tolerance for change in general”. The results from the survey showed that 20 (25%) respondents believe that their job role will be replaced by AI and 13 (16%) that it may entail a risk of them losing their job. Davenport (2019) believes that when employees presuppose that AI will disrupt their work in some way, rational less positive attitudes develop. The managers who in the future will succeed in dealing with AI attitudes are the managers who will find the right balance of maintaining existing businesses and investing in new intelligent technology (Daugherty & Wilson, 2018). Many times, an organization that implements AI does not aim to completely replace its employees with AI, but to find a human-machine collaboration. The purpose of a human-machine alliance is to take advantage of the potential with AI to streamline operations and minimize the time that employees need to spend on activities that do not contribute value, while gaining time that allows employees to spend time on value creating processes. One survey respondent showed understanding of it:

“I think most of the statements in the survey are true to some extent, that AI can bring both good and bad things with it and that what is good for a company is not always good for an individual employee. If my work role is made more efficient, me and my colleagues can spend more of our time on value-creating work. It would make the job even more fun at the same time as the risk of disappearing in the next reorganization increases.”

The successful managers are considered to be the ones who accomplish embracing and managing a collaboration between humans and AI. That will serve as a proof that humans are not replaced by AI, it is positioned for more value-creating activities. To succeed in this, a combination of the management dimensions previously discussed together with sufficient communication is required. By offering skills development for employees in form of education, training, continuous learning and by leading by example, the phenomenon of AI will be easy to understand. This needs to be done in combination with keeping an open communication about the purpose and goals of the implementation to minimize the risk of employees experiencing threats of losing control and their jobs.

As previously stated, the fact that employees experience fear of any change is inevitable (Kotter & Schlesinger, 1979) and to change is a must in today’s rapidly changing world. Something that is considered to be an underlying reason why many of the respondents were more positive towards AI than expected, is that people are more prone to change today compared to before. Today, everyone lives in a more changing world and change is part of many peoples’ everyday lives. Industry 4.0’s rapid progress has meant that many of the later generations have become accustomed to change in a different way than the older generations. Examples of this were given from the focus group. P6 expressed:

“If I get to rattle a little, the younger ones have found it easier to absorb it, and just realize the situation and the way they work. They have an easier time changing their pattern in some way, more than the slightly older ones who have a little harder to deal with the reason. [...] it took longer for the elderly to accept it and live with it.”

It exemplifies that younger people are more prone to change, which facilitates managers' handling of attitudes as they are likely to move towards being more positive towards change. However, it is important to point out the management of the people with less positive attitudes. The same participant later argued:

“Many of those who were negative from the beginning are still negative, they still get the feeling that AI is something dangerous and that it has removed job opportunities. [...] leaders will experience the same attitudes from certain employees in future implementations that are planned.”

This indicates inadequate handling. It is considered that employees whose attitudes are less positive should be managed to facilitate future implementations and the organization's AI readiness. To facilitate future implementations, organizations need to design a clear strategy and understandably communicate it. Shaping a strategy is one of the five critical areas of AI maturity, required to achieve organizational AI readiness (Pringle & Zoller, 2018). To achieve readiness in strategy, an action plan and roadmap should be designed to support the implementation of AI (Groopman, 2018; Pringle & Zoller, 2018). If organizations do not formulate a strategy, it is considered an obstacle. It is valuable to start in step-by-step logic so that employees are not overwhelmed by the change. Like the importance of communicating the purpose and goals of the implementation, the strategy should be communicated to all concerned in order to obtain a transparent process.

#### **5.1.4 Invest in Internal Power**

Something that was not brought up in either the survey or during the focus group, but which is considered an important factor for organizational AI readiness is to take advantage of and utilize the employees with more positive, both rational and emotional, attitudes. The reason why it was not brought up is considered to be due to that when it comes to dealing with attitudes, managers tend to focus on the employees with less positive attitudes. Despite that, it is weighed equally important to deal with the employees with more positive attitudes as well. An organization is considered to have a lot to gain from making the most out of the employees with more positive attitudes. They are more likely to engage in AI development and not least, both consciously and unconsciously, assist managers in managing other employees with less positive attitudes. These employees can have a major impact on other employees' development of AI attitudes as employees influence employees. If some employees have a positive attitude towards AI, there is a great chance that they influence others to see it from their perspective.

One of Groopman's (2018) best practices includes identifying and cultivating internal champions meaning to cultivate in-house experts by offering and encouraging employees to participate in the organizational AI development. In turn, it is considered to lead to

organizations being able to get valuable and influential input to optimize the AI process. In order for managers within organizations to be able to identify key people, the aforementioned three dimensions are important. Yet, it is considered extremely significant to invest in every employee by involving them in training, workshops, clear examples, communication and well-thought-out strategies. Through such preparatory work, an identification of key people can be made possible as it becomes clear who shows a curiosity and commitment to the organization's AI work. To manage it in this way would also lead to more people developing more positive attitudes towards AI, both rationally and emotionally, and thus large proportions of organizations' employees would end up within AI Intrepids. AI Intrepids are the employees who are most likely to get involved in an organization's AI implementation (Zhu et al., 2020). The larger the share of employees being AI Intrepids, the better the chances of AI success. The survey showed that many of the employees who participated were AI Intrepids and that as many as 65 (82%) are willing to actively engage to a great extent in a potential AI implementation. Organizations should take advantage of committed employees for future AI implementations, as Gropman (2018) believes that through it they can achieve improved processes. Committed employees can also help articulate the value of an AI implementation and affect employees to positively develop their change attitudes towards AI and thus, AI change readiness. It results in a virtuous circle as Kim et al. (2011) suggests that positive change attitudes are outcomes of individual change readiness which contribute to employees engaging to conduce in a change.

### **5.2 Summary: Answering the Research Questions**

The analysis resulted in an understanding of how employees develop their change attitudes towards AI when introduced to the technology. The analysis also resulted in concrete management dimensions that organizations and their employees with a managing position should take in order to achieve organizational AI readiness. At an overall level, managers should use an AI maturity model to assess organizations' levels of AI maturity to understand the next step in the process. A solid change management should be applied in all dimensions of an AI change. Specific answers for each research question are obtained below as a summary of the analysis.

#### *How do employees develop change attitudes towards AI?*

Employees develop change attitudes towards AI depending on the organization's AI maturity, personal interest, and personal and organizational AI knowledge. The knowledge influences employees' rational and emotional attitudes towards AI, where it is established that employees with a broader and deeper knowledge develop more positive attitudes. The source of information is also a feature that affects how employees' attitudes develop. Depending on how the technology is introduced, either more or less positive attitudes develop. In order for attitudes to develop into more positive ones, managers and the organization should be the source of information so that employees get the accurate information needed for their work. Finally, it is managers who hold the crucial role in how employee change attitudes towards AI develop. Thus, how a manager handles employees' attitudes towards AI affects the outcome of how positive or negative attitudes organizations will encounter from employees.

*How can managers act to deal with AI attitudes from employees?*

First, it is important that managers understand their own impact on how employees develop change attitudes towards AI. AI will mean a vast transformation for many organizations where managers hold fundamental positions. With that said, managers should manage employees' attitudes towards AI by developing a strategy for AI implementation, consisting of an action plan and road map. The implementation should be carried out on a smaller scale, step-by-step so as not to overwhelm employees in the change. Managers should offer employees education and training, through workshops and deployed programs to increase employees' professional development and skills. Managers should lead by example, derive transparency towards the AI implementation and continuously internally communicate about the AI development. Managers must invest in everyone, who is both directly and indirectly affected, and encourage all employees to become involved in AI work. To manage attitudes, positive as negative, managers should take advantage of employees with more positive attitudes and identify the key people who articulate a commitment to the organization's AI implementation. Finally, managers should take all of the above-mentioned management dimensions in consideration to promote organizational AI readiness.

## 6 Discussion

The following chapter focuses on highlighting the essence of the study. First, discussion of the results and methodology are presented followed by addressing the trustworthiness. The chapter also presents implications of the study in relation to the purpose of the research.

### 6.1 Discussion of Results

There is a large amount of accepted research in change management (e.g., Kotter, 1996; Kotter and Schlesinger, 2008; Todnem, 2007; Nohria & Beer, 2000). However, research in AI implementation is still in its initial phase and research on employee AI attitudes limited. Only a few researchers have focused on gaining a better understanding of organizational AI readiness (e.g., Groopman, 2018) as well as employees' attitudes towards AI (e.g., Zhu et al., 2020). The imbalance created the starting point of this research to focus on evaluating employees' AI attitudes and management responses. As the research aimed at contributing to an unexplored managerial perspective, several vital approaches to managing employees' AI attitudes towards AI were identified. To determine the value of the research and to determine how and to what extent the results differ from previous research it is compared and discussed in the light of Kotter and Schlesinger (2008) and Groopman (2018).

With regard to whether how and to what extent managers' management of employees' AI change attitudes differs from previously studied organizational change processes, it is stated that there are both similarities and differences. The findings showed that managers' ability to establish knowledge through educating, communicating, and involving employees is consistent to what previous research in change management suggests, both in terms of general changes and AI changes. However, what distinguishes previous research in change management of general changes from AI changes is that there are aspects discovered in this research that are more emphasized in AI changes. The best practices for AI readying employees proposed by Groopman (2018) address the importance of showing before and after, which in this research's findings translates to leading by example. That managers should be leading by example was not identified in previous research in general change management. Also, it is not a part of any of the six strategies that Kotter and Schlesinger (2008) suggest for managing organizational changes. The reason why the results differ from previous research on general changes is considered, among other things, to be due to AI being a concept that is difficult to define and grasp. Hence, it is important that managers lead by example to make it easier for employees to understand and accept the technology. That managers should take advantage of employees (i.e., invest in internal power) with more positive attitudes towards AI and who show commitment to the AI change is a conclusion that has not been identified in previous research on general organizational changes or AI changes. Although, within invest in internal power, there are similarities that are emphasized in previous research in AI changes, but not found in Kotter and Schlesinger's (2008) strategies. Groopman (2008), just as this research indicates, addresses the importance of managers identifying key people in the change in order to involve and engage employees. In the long run, it will result in facilitators of the AI change process and is thus identified as an important dimension for managers to act on in AI changes.

The results of the study are largely based on employees' attitudes, both rational and emotional, towards AI in one specific case. Zhu et al. (2020) argue that emotional attitudes are not the result of a consideration but that emotions are complex, psychological states that naturally arise in response to different situations. Since psychological states and emotions are based on individual experiences and perceptions, attitudes become complex leading to the information collected from the survey is associated to the specific respondents, the specific case, and the specific context. If the same survey were to be conducted in another organization, the results might have occurred completely different. That is, even if the organization had been located in the same position and operated in the same industry the outcomes might have been different due to that AI so far lies in the interest of the individual.

The results of the study are considered to have been influenced by the choice of case company. The case company is part of the research initiative AFAIR, which is believed to have affected the employees' perceptions and knowledge of AI and thus their attitudes. Despite that the research is in its infancy, the case company have had time to conduct workshops with employees, which is also considered to have influenced their attitudes. Before this study was conducted, the concept of AI had begun to be communicated internally and the employees who participated in the workshops had received learnings from researchers in the field, which is considered to have affected the result. If this study had been carried out before their participation in AFAIR, most likely more and more employees would have shown less positive attitudes.

The results are also considered to have been influenced by the choice of way to conduct the survey. The survey was shared by the contact persons at the case company, who in turn published the survey on the intranet of the case company. It is considered to have altered the outcome of the survey and the distribution among the respondents in terms of role and position. If the survey had been mandatory, it is considered that a more fair distribution would have been obtained as it turned out that employees within the case company chose not to participate in the survey due to that AI was a foreign concept. It would have been interesting for the result to include employees within the company who did not know what AI was in order to get a wider spread and a more reliable result. It had also generated a more equitable distribution among white-collar and blue-collar employees. A wider spread with regard to these factors had probably affected the result of employees' attitudes towards AI, as the study showed that these are factors that influence how employees' attitudes develop. Despite certain limitations, the purpose of the study is considered to be fulfilled and the research questions answered.

### **6.2 Discussion of Methodology**

That this thesis serves as a feasibility study to the research initiative AFAIR enabled the definition of problem and formulation of the purpose and research questions relevant to the research. Furthermore, based on the problem definition, purpose and research questions, the basis of the frame of reference was created by delimiting the research together with essential theories. A single case study, at one of the key companies in the AFAIR, made it possible for the research area to be investigated in more detail to create a broader knowledge and understanding. It is worth pointing out that single case studies, from a validity perspective, are

not considered as advantageous compared to a multiple case study, as the results are difficult to generalize (Yin, 2018). This argument can be found in Eisenhardt (1989) who, beyond her own experience, proposes that seven is a decent number of cases. Nonetheless, this reasoning overlooks how statistical analysis is performed, moving from  $n=1$  to  $n=7$  may not significantly affect generalizability depending on the total population - a common error in this area where there is a persistence to evaluate research according to other scientific principles (Aastrup & Halldorson, 2008).

The quality of this research is based on its trustworthiness. Eriksson (2014) argues that quality and trustworthiness can only be determined by the reader, where the researchers' role is to provide sufficient information to enable the reader to decide whether the study is considered trustworthy. Proceedings used to increase trustworthiness and thus the quality of this study are presented in Table 6.1.

**Table 6.1:** Quality criteria and application

Quality criterion	Application
Transferability	<ul style="list-style-type: none"> <li>● Emphasis was placed on giving the reader an in-depth insight into the research process</li> </ul>
Dependability	<ul style="list-style-type: none"> <li>● The reason for all the choices in the research regarding method, theoretical framework and empirical data was explained in detail</li> <li>● There is a shortage of detailed information on changes made in the process</li> </ul>
Credibility	
<i>Prolonged engagement</i>	<ul style="list-style-type: none"> <li>● Idea for research in late 2020</li> <li>● The research was carried out for six months</li> </ul>
<i>Persistent observation</i>	<ul style="list-style-type: none"> <li>● Sufficient time was spent on formulating the purpose and research questions considering the type of study</li> </ul>
<i>Triangulation</i>	<ul style="list-style-type: none"> <li>● Several data collection methods were used to obtain the most truthful result possible</li> </ul>
<i>Peer debriefing</i>	<ul style="list-style-type: none"> <li>● Several uninterested peers have reviewed the research</li> <li>● Opposition has been carried out on all chapters by students as well as by two supervisors</li> </ul>
<i>Negative case analysis</i>	<ul style="list-style-type: none"> <li>● Not applicable, no hypothesis has been tested</li> </ul>
<i>Referential adequacy</i>	<ul style="list-style-type: none"> <li>● Raw data is presented and fully saved to be revisited</li> </ul>
<i>Member checks</i>	<ul style="list-style-type: none"> <li>● Participants from the focus group did not check the material</li> </ul>
Confirmability	<ul style="list-style-type: none"> <li>● Findings are based on the participants' narratives and words rather than the researcher biases</li> </ul>

The contact with those responsible for the research initiative at Jönköping University was obtained at the end of 2020 resulting in the idea for the study first arising at the turn of the year 2020-2021. The study was carried out for six months and during the process, the research experienced some crossroads that required methods, frame of reference and empirical data to

be continuously revised and updated. The various changes made during the process were not anticipated by the researchers from the start and the information of the changes made was to some extent deficient. To increase credibility, all types of change should be documented and explained in detail (Lincoln & Guba, 1985). However, all steps from data collection to use were explained. Sufficient time was spent formulating the purpose and developing an appropriate theoretical framework with regards to the scope of the study. Two methods of data collection were used that served as support for each other and triangulation. Due to the limited period of time, the participants in the focus group did not get the chance to check the content of the collected material, which can result in data being taken out of context. To continuously verify that an uninterested reader understands the content, several peers reviewed the study during the process. To allow data to be revised, raw data is saved and presented.

### **6.3 Implications**

This study has examined, identified, and presented how employees develop change attitudes towards AI and how managers should handle employee AI attitudes in order to foster AI readiness. The results of the study can be used as a frame to create an understanding of how an organization through understanding employee attitudes and its management can promote organizational AI readiness. In general, the research can serve as an indication of the complexity and scope of work required for organizations whose ambition is to achieve AI readiness. In cases similar to the investigated case, the research can contribute to more specific and clear measures to foster organizational AI readiness with regard to employees' attitudes towards AI.

#### **6.3.1 Theoretical Implications**

Theoretical implications are linked to the significance of the results in relation to existing theoretical knowledge in the research area. The elements of this study - AI readiness, managers, and employee AI attitudes have been studied in one specific context. A compilation of already existing theories and methods in the research area has been confirmed, but in a new context. Previous researchers' statements and theories have been strengthened through the analysis, which can form the basis for a further discussion on how employees' AI attitudes, positive and negative, should be prioritized and handled in organizations that strives to achieve a high level of AI readiness. In addition, the findings in the study contributed to extending the theory in the research area. As suggested in the discussion, an AI change necessitates an extension and enrichment of existing change theories and models. The researchers emphasize additional dimensions for managers to adopt in the event of an organizational AI change.

#### **6.3.2 Practical Implications**

Practical implications refer to the importance of the results for practitioners in the research area. Practitioners consist of, for example, professional companies and organizations. The presented results can be used as concrete measures for managers and organizations to implement to establish AI readiness. The results can also be used to increase the awareness of why an understanding of employees' change attitudes towards AI should be achieved and why certain management dimensions should be adopted. Practitioners can use this research to increase their level of AI readiness, primarily in terms of preparing the employees within the organization. Organizations that want to increase their level of AI readiness can use this research to identify

the most critical AI attitudes as well as a motivation and indication on what types of management dimensions can have a major effect on the organization's AI maturity.

### **6.3.3 Social Implications**

Social implications refer to the importance of research results for society. The results provide a guide for organizations to the “what?” and why?” of how they can improve social responsibility. However, the research has not focused on the effects on society. The dimensions presented are linked to the organization and its employees' way of adopting AI. There is an awareness that AI will undoubtedly have a major impact on society as it has raised concerns about ethics, integrity, and unemployment. Due to this, it is believed that by more organizations choosing to include AI in their business, it will have societal effects as people will be forced to adapt to the rapid advancement of the technology. Although, the extent to which the effects affect society is difficult to predict. In this respect, this study can, from a long-term perspective, contribute to cope with the concern's society possess.

## 7 Conclusions

The conclusions for this research will be presented in relation to the purpose of the research. The purpose is presented under sub-heading 1.3, but is repeated for easier reading:

*Investigate how managers can foster organizational AI readiness by understanding distinctive features of employee AI attitudes.*

The main conclusions reached are that there are various features affecting how employees' change attitudes towards AI develop and that there are several dimensions for managers to adopt to manage the attitudes in order to achieve AI readiness. Since these conclusions include numerous considerations, they are presented along with numbering to obtain high clarity (i-ix).

The conclusions from the analysis for the first research question are that employees develop their change attitudes towards AI based on (i) the organizations' AI maturity. The development is also based on (ii) the employee's as well as the organization's level of AI knowledge, and (iii) the employee's own interest and experience of the technology. Something that also affects the development of employees' attitudes is (iv) how they are introduced to the concept in order to gain a reality-based perception. It is therefore important that the organization introduces the concept in a good and understandable way. Consequently, the higher level organizations achieve within these factors, the more positive attitudes employees will develop. With that claimed, a final conclusion for the first research question is that (v) managers' handling of emerging attitudes has a major impact on how employees develop their change attitudes. That is, a solid change management is crucial for organizations that strive to achieve AI readiness.

With regards to the analysis of the second research question, conclusions are drawn that managers should (vi) establish knowledge by AI educate employees adjusted to the organization and tasks to increase individual development and skills. Since AI is difficult to define and grasp, managers should (vii) practice what they preach and lead by example by maintaining transparent AI processes to show the positive as well as the negative outcomes of AI. This can be done by evaluating and showing concrete examples of the results of a completed AI implementation i.e., before and after. A further conclusion is that managers should (viii) communicate AI internally throughout the organization to articulate the value, purpose, and goal of implementation, without overemphasizing it. It appeals that managers should involve everyone, regardless of whether employees are directly or indirectly affected by the implementation. This leads to the final conclusion that managers should (ix) identify and invest in internal power to take advantage of employees who have more positive attitudes and the propensity to engage in AI work.

### 7.1 Limitations and Further Research

In addition to expanding current knowledge, the results of this study have the potential to open up for new research areas. The results of the study are also subject to limitations, which stimulates further research.

The results mainly reflect the perspectives of managers, that is, employees in managing positions within one organization. Future research can explore the limitations in two different ways. One opportunity for future research is to examine participants within one or more organizations with different positions in the one study. It would broaden the perspective and perceptions of both AI readiness and employee attitudes towards AI. Another possible embodiment, to explore organizations' specifications for AI readiness depending on organizational context and adoption purposes, is to conduct in-depth case studies. Studies that examine more in-depth and with a large sample size means a greater opportunity to generalize the results and can therefore be used in a more generalizable manner (Bryman, 2012). Furthermore, the results of the study are limited by the fact that only 4 (5%) respondents represented blue-collar employees as they indicated other attitudes compared with white-collar employees. Thus, a possible future research is to examine the difference in AI attitudes between blue-collar and white-collar employees in more detail.

This study indicates that there are certain dimensions in change management that differentiate AI changes from general changes. With regard to that change management is a well-researched topic and of utmost importance in changes, it can be studied in more detail in the same context with AI. That could validate which dimensions in change management that should be emphasized in AI changes.

The management dimensions this study resulted in can be studied in more detail at several organizations and to a greater extent in future research. How managers should handle employees' AI attitudes depends, as stated, among other things on what AI maturity organizations possess, as employees' attitudes are considered to behave differently depending on the level of AI maturity. Thus, future research can examine what specific management dimensions should be taken at different maturity levels to foster organizational AI readiness.

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**Appendix A: Survey**

Hi,

You have been invited to participate in a data collection for a master thesis. Before you decide to participate or not, it is important for you to understand why the study is done and what it will mean. Take the time to read the following information carefully.

We are two master's students who are currently writing our master thesis in artificial intelligence (AI). The essay is written in collaboration with Jönköping University's research initiative in AI, called AFAIR. Your company is one of the key companies that will collaborate with JU during the 8 years the research will be ongoing. This study is conducted in collaboration with your company and will examine attitudes and perceptions towards AI. In order for us to receive reality-based answers, we ask you who participate to take a stand on the question based on your own opinion and to answer honestly in all questions.

It is entirely up to you to decide if you want to participate. By participating, you give your consent. All information we collect from you in the survey will be completely anonymous and kept strictly confidential. None of the answers you provide will be directed to you. You will not be able to be identified by us or your employer in any reports or publications.

Thank you for reading this information and for considering participating in this study. We appreciate your time and commitment.

Contact information for more information:

Lina Ek  
[ekli1796@student.ju.se](mailto:ekli1796@student.ju.se)

Sanna Ström  
[stsa1708@student.ju.se](mailto:stsa1708@student.ju.se)

**1. Gender?**

- Female
- Male
- Non-binary

**2. Age?**

- 18-30
- 31-40
- 41-50
- 51-65
- 65 +

**3. Work role?**

	Manager	Not manager
Blue-collar employee	<input type="radio"/>	<input type="radio"/>
White-collar employee	<input type="radio"/>	<input type="radio"/>

As mentioned, the study concerns Artificial Intelligence (AI). If you feel that you do not know the concept, a short description can be found below.

Artificial Intelligence (AI), or machine intelligence, is the ability of computer programs and robots to mimic human natural intelligence, primarily functions such as the ability to learn things from past experiences, solve problems, plan a sequence of actions, and generalize. AI is likely to change the world we live in. The question is just how much and how fast.

**4. Did you know the concept of Artificial Intelligence (AI) before reading the description?**

- Yes
- No
- Do not know

Comment:

**5. If so, where have you come in contact with the concept before? (check the boxes you think are right for you)**

- Magazine / Journal
- Movie / Series
- News
- Social association
- Family
- Employer
- Colleagues

Other:

**6. Imagine that AI is implemented to a large extent in your organization, to what extent do you think the following statements are true with regard to your work role?**

**(1 = not true at all, 5 = completely true)**

**I think it would ...**

	1	2	3	4	5
... make me lose control of my work.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
... have great potential.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
... increase my performance.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
... require new knowledge.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
... generate better results.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
... generate big time savings.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
... require new ways of working.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
... be easy to use.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
... involve a risk of my work role being replaced.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
... involve a risk of losing my job.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Other:

**7. Imagine that AI is implemented to a large extent in your organization, to what extent do you think the following statements are true with regard to your organization?**

**(1 = not true at all, 5 = completely true)**

**I think it would ...**

	1	2	3	4	5
... entail great competitive advantages.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
... be a valuable investment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
... mean financial savings.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
... lead to lost jobs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
... lead to a negative effect on employees.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
... involve threats from employees about dismissal.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
... generate more time for value-creating activities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
... evoke negative attitudes in employees.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Other:

**8. Imagine that AI is implemented to a large extent in your organization, to what extent are these feelings evoked in you?**

**(1 = does not evoke at all, 5 = largely evoke)**

	1	2	3	4	5
Fear	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Expectancy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Concern	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Exhilaration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Excitement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Positivity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Curiosity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Anger	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Discomfort	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bad gut feeling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reliability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Despair	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Irritation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Stress	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Other:

**9. Imagine that AI is to be implemented to a large extent in your organization, to what extent do you think you are willing to actively engage in the implementation work?**

**(1 = not at all willing, 5 = largely willing)**



**Appendix B:** Mail sent to the participants of the focus group regarding preparations

Hi,

To begin with, we would like to thank you for wanting to participate in the focus group meeting which will be held on Monday 10/5. We will send out a separate zoom link with an invitation.

To those of you who have not had any contact with us before, we are two students who are currently writing our master's thesis in collaboration with Jönköping University's research initiative AFAIR and your company. As you have probably understood, the research is done in the field of artificial intelligence. We examine what attitudes employees possess towards AI and how leaders meet these. At an earlier stage, employees at your company had the opportunity to participate in a survey conducted to enable a mapping of how employees view the concept of AI. Next in line in the process is the focus group whose purpose is to elevate leaders' perspectives, experiences and management of employees' AI attitudes.

The results and conclusions of the study will be published. The information we collect will be kept confidential, which means that none of the answers you provide will be able to be linked to you.

Preparation instructions:

We attach a file with preparatory material. The material contains a short description of the framework used as a basis for mapping the employees' attitudes towards AI. The framework is developed by Zhu et al. (2020) and consists of a matrix with four AI profiles. We think it can be good that you read up on the profiles briefly to facilitate the discussion during the meeting. We will start the focus group by briefly introducing the profiles to refresh the memory.

The focus group is held to provide answers to our second research question which reads:

*How should leaders act to deal with AI attitudes from employees?*

Thus, we have chosen to start from the following issues at the meeting:

- 1. Looking at the four profiles in the matrix by Zhu et al. (2020), what do you think the distribution of your employees looks like?**
- 2. Until today, if you have been faced in a situation where you have had to deal with AI attitudes from employees, positive as negative, how have you proceeded?**
- 3. Based on the fact that your goal is to implement AI to a greater extent in your organization in the future, how do you think you will need to deal with attitudes towards AI from employees?**
- 4. Do you feel that attitudes towards AI are similar or different from attitudes towards change in general?**

Based on the statistics that emerged from the survey and depending on which direction the discussion leads us, we will add follow-up questions over time.

We look forward to a pleasant conversation with you!

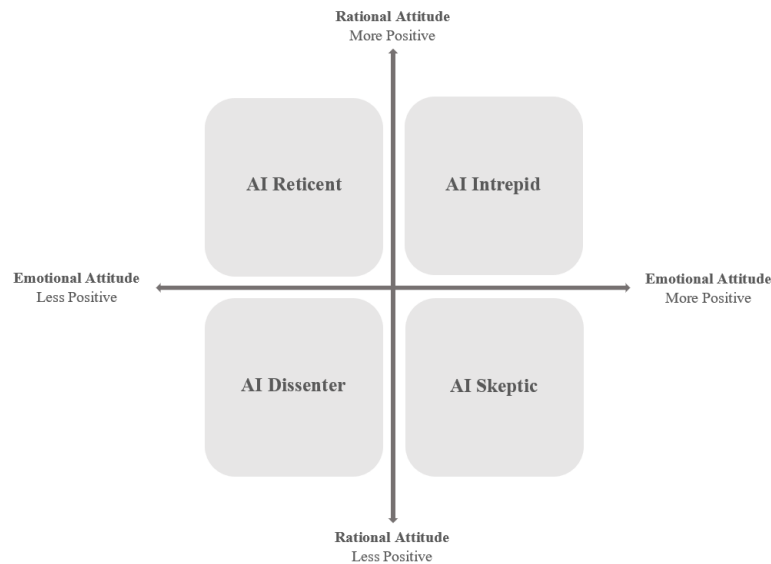
Sincerely,  
Sanna Ström and Lina Ek

**Appendix C:** Preparation material for the focus group

In recent years, artificial intelligence (AI) has increased significantly in adoption for organizations around the world. Utilizing AI is seen by many as a necessity for organizations to be able to increase their performance and create a competitive advantage. Although many large organizations have started working with AI, the majority are still in the adoption phase. This phase is crucial as it sets the stage for future implementation efforts. As many organizations are at an early stage, employees, from top management to frontline staff, still have limited direct work experience with AI. This means that the impressions of AI that are created in humans largely tend to come from what they read or hear through magazines, mass media, movies, and personal social networks. If strong negative attitudes are formed among employees during this period, it is difficult to change. Attitudes have both a rational (what I think) and an emotional part (what I feel). In rational evaluations, employees reflect on the potential cost-benefit balance that follows from AI in their organization. In emotional responses, employees go through different emotions related to AI. Perceived threats and challenges result in anxiety and stress while perceived opportunities lead to interest and curiosity (Zhu et al., 2020).

Cognitive attitudes vary between rational and emotional dimensions, ranging from positive to negative. Positive rational attitudes are formed when employees believe that AI has the capacity to, among other things, improve productivity or reduce routine activities. For example, when employees believe that AI will reduce work performance or disrupt work routines, their rational attitudes will be less positive (Davenport, 2019). Emotions are complex, psychological states that naturally arise in response to different situations. Positive emotions related to AI are linked to an optimism about the future of technology while negative emotions related to AI are linked to a concern about how AI will develop in the future (Zhu et al., 2020).

The researchers Zhu et al. (2020) has developed four profiles based on employees' attitudes to AI. We have used these four profiles to map your employees' attitudes to AI. The profiles are: (i) AI Reticent, (ii) AI Intrepid, (iii) AI Dissenter and (iv) AI Skeptic.



(i) AI Reticent are people who on a rational level see AI as a beneficial, wise, and valuable investment for their organization. However, reticent are emotionally less positive, sometimes negative to the technology. This means that when discussing implementation, they may recognize the potential benefits but are reluctant to embrace it due to feelings such as anxiety, fear and a bad “gut feeling”.

(ii) AI Intrepid means people who are both rationally and emotionally positive about the technology. They welcome AI with both their mind and heart. These people see the value and potential benefits of AI and are emotionally optimistic. They express emotions such as elation, excited, energetic towards the technology. Due to their “all in” to AI, Intrepid is most likely to lead the charge in implementing AI.

(iii) AI Skeptics, like Intrepid, are emotionally positive about AI, but they do not see the practical value to their organization. For Skeptics, the less positive is often rationally driven by the strategic or operational environment. They evaluate, for example, the costs of implementing AI being too high compared to the operating savings and that AI would not provide significant competitive advantages. They probably express optimism and interest in AI but nevertheless argue against an implementation until its dividends and benefits are clearer.

(iv) AI Dissenters are the people who are less positive, both rationally and emotionally. These are people whose attitudes are least positive towards AI. They have strong negative feelings and reactions to the technology and believe that AI has very little or no meaningful business value at all. Some Dissenters may show great concern and resistance to AI, while some are more discreet and passive opponents.

