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From Individual Insights to a Shared AI Vision: The Journey of Developing a Shared AI Vision for DIGI-STEEL

Author: Daan ten Dam | S2017245

Graduation Committee Members:

1st supervisor: Dr. Ir. R. Siebelink

2nd supervisor: Dr. J.U. Dahlke

External supervisor: J. Verburg

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University of Twente

Faculty of Behavioral, Management and Social Sciences (BMS)

Master of Science, Business Administration – Entrepreneurship, Innovation and Strategy (EIS)

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Abstract

Artificial Intelligence (AI) is fundamentally reshaping organizational landscapes, driving innovation, and transforming every aspect of business operations. With its rapid evolution, general-purpose applicability, and disruptive potential, AI presents immense opportunities but also significant challenges. Organizations face knowledge gaps, stakeholder misalignment, and uncertainties about AI's long-term impact, making the adoption of AI both complex and critical. These challenges highlight the urgent need for a structured visioning process to align organizational goals and stakeholder perspectives in navigating AI adoption. This study focuses on developing a shared AI vision tailored for DIGI-STEEL to address current and future challenges. Through a qualitative approach involving semi-structured interviews, a workshop, and a validation survey, the research refines traditional visioning process to meet the unique demands of disruptive technologies like AI. It introduces a three-step framework for AI visioning, including contextual and industry environment analysis, desired future organizational position and time horizon for AI, and organizational alignment and consensus. Additionally, this study presents a dynamic model that explains the mechanisms of alignment, emphasizing trust-building, knowledge-sharing, and collaborative deliberation as critical processes for integrating diverse perspectives. The findings demonstrate that adapting traditional visioning frameworks with dynamic mechanisms effectively supports AI adoption, providing DIGI-STEEL with actionable insights and strategic direction. By addressing gaps in understanding collective deliberation and visioning for disruptive technologies, this study offers a framework for organizations navigating rapidly evolving environments. These results highlight the importance of flexibility, collaboration, and strategic alignment in overcoming the complexities of AI adoption.

Table of Contents

1. Introduction

1.1 Context

Organizations, societies and economies are undergoing fundamental transformations through Artificial Intelligence (AI), a digital technology with potential to reshape the business landscape by enhancing efficiency, productivity, and decision-making (Kotter, 1995; Misra et al., 2023). AI refers to the process of human intelligence simulated by machines, so the replacement of humans, take over workplace roles, and reshape existing organizational processes (Brynjolfsson & Mcafee, 2017). With its superiority in speed, accuracy, and cost-efficiency, AI is not only automating tasks but it also shifts the workforce that require the leverage of human creativity and strategic thinking (Lysyakov & Viswanathan, 2023).

In the upcoming decades, a radical transformation is expected as the pace of technological change is increasing rapidly. With machines becoming increasingly capable of performing manual tasks and speculations for future advancements potentially replacing or even exceeding human intelligence, the crucial challenge for organizations will be to successfully adapt AI into their business operations (Doumi et al., 2023). AI is considered as one of the most powerful disruptive technologies, defined as innovations that fundamentally change traditional operations and have the potential to reshape economic sectors and societal behaviors (Pavaloaia & Necula, 2023). AI is a key element of Industry 4.0, the Fourth Industrial Revolution, characterized by industrial automation, digitalization, and the integration of the value chain over the last decade (Calabrese et al., 2023). According to Kraaijenbrink (2022), AI is also considered to be a key driver of the future, seen as Industry 5.0. This approach, representing the Fifth Industrial Revolution, addresses the weaknesses of Industry 4.0 and implements human-centered work systems based on AI-technology (Passalacqua et al., 2022).

Organizations need to understand and focus on this shift towards a rapidly evolving era of automation and AI (Doumi et al., 2023). AI is expected to transform nearly every aspect of business and is a key driver of fundamental innovation, significantly impacting the future for organizations seeking a competitive advantage in highly volatile and changing environments (Fuller et al., 2022). These impacts mark the beginning of a new era where the synergy of smart machines and human creativity opens up great opportunities for organizational development, highlighting the significant game-changing character of AI.

1.2 Problem Description

The integration of AI in organizations presents significant challenges due to its complexity and the lack of comprehensive understanding of its risks and benefits. Consequently, a third of all the AI

projects fail or are abandoned due to these complexities (Herremans, 2021). Unlike traditional IT projects, AI projects are much more iterative, exploratory, and open-ended, necessitating a different approach to problem-solving, data extraction, and experimentation (Hopf et al., 2023). The disruptive nature of AI can lead to profound organizational changes, including the replacement of human roles and the reshaping of processes (Brynjolfsson & Mcafee, 2017).

Organizations adopting AI face specific challenges such as different team skills, legal issues, big data governance, and cultural challenges, complicating the adoption process (Herremans, 2021). Despite these obstacles, AI is considered one of the most powerful disruptive technologies with the potential to reshape economic sectors and societal behaviors (Pavaloaia & Necula, 2023). To fulfil the strategic potential of disruptive innovations like AI and address the challenges it presents, it is crucial for organizations to establish a shared vision aligned with their collective goals and future aspirations (Larwood et al., 1995).

An organizational shared vision is a collective understanding among members of an organization about its current situation and desired future state of the company (Voigt et al., 2024). It provides a unified purpose and direction, essential for the successful adoption of disruptive technologies (Sinkula et al., 1997). Shared vision guides strategic decisions, ensuring that AI initiatives align with the company's overall objectives (Larwood et al., 1995). The need for a shared vision is particularly critical when integrating disruptive technologies within organizations. Disruptive technologies have the potential to significantly change business operations. Therefore, a shared vision with a clear and cohesive strategy is necessary to support and overcome associated complexities and opportunities (Stoiber et al., 2023).

Achieving consensus on vision is vital to align and commit all stakeholders to organization's future development (Doten-Snitker et al., 2020). Consensus, which refers to a general agreement among individuals, is achieved through inclusive dialogue and collaborative decision-making processes (Isaacs, 2002). This involves aligning perspectives and gaining acceptance of a particular course of action by all relevant stakeholders, minimizing dissent, and ensuring cooperative implementation of decisions. By stimulating mutual understanding and accommodating diverse viewpoints, organizations can ensure that AI initiatives are supported and embraced by employees, enhancing the overall effectiveness of the AI adoption. As highlighted by Rogers (2003) in his theory of innovation diffusion, collective acceptance and support of new technologies are essential for successful adoption and integration. This emphasizes the importance of creating a shared vision and achieving consensus to strategically manage AI complexities and fully realize its potential.

Multiple studies have highlighted the significant transformation in the business landscape, primarily attributed to the expanding potential of AI solutions (Herremans, 2021; Reim et al., 2020; Young, 2023). While several studies have explored possibilities of AI and also integration of AI within organizations, scholars have often overlooked critical aspects such as the value AI brings to organizations, employees' trust in AI and their perspectives on its current and future situation. Human trust and engagement with AI are major factors in the success of this technology. If users do not properly engage with AI, it can result in misinformation and its negative consequences (Rafsanjani & Nabizadeh, 2023). According to Huang and Gursoy (2024), AI technology and its effects on employee behaviors need to be investigated. It is crucial to consider employees' perceptions and needs when designing and evaluating AI in a human-centered way (Weitz et al., 2022). Current research primarily consists of laboratory studies, which need improvement to apply findings to real world-applications. Additionally, while extensive research exists on visioning in the context of disruptive technologies, there is a lack of research regarding how a shared vision for AI is developed (Bower & Christensen, 1995; Crockett et al., 2013). AI is set to revolutionize almost every aspect of business, driving essential innovations that can give companies a significant advantage in competitive and rapidly changing markets (Fuller et al., 2022).

Research needs to investigate the impact of AI in organizations, including cognitive biases, user attributes, company requirements for AI design, the effect of AI on cognitive load, AI training, and considering all employee groups in AI research (Weitz et al., 2022). However, the dynamic evolution of AI in organizations and the importance of employees' trust and engagement remain underexplored. To better understand this underexplored theme, a shared AI vision will be developed for DIGI-STEEL, a start-up that introduces the first fully cloud-based software solutions for steel processors. This shared vision will help the organization recognize the value of AI and support its adoption to tackle current and future challenges.

1.3 Research Goal

The primary objective of this research is to develop a shared AI vision for DIGI-STEEL and provide insights into how this vision is formed based on the perspectives of the stakeholders involved. This study aims to highlight the importance and possibilities of AI to address current and future challenges through a case study. This involves achieving consensus among stakeholders and incorporating sustainable competitive advantage for the organization.

DIGI-STEEL, which operates in the steel industry – a highly volatile and ever-changing environments and largest industries globally (Vogele et al., 2020) – stands to benefit significantly from AI's potential for business optimization and improving efficiency (Neumann et al., 2022). By ensuring a shared

vision, this research aims to provide insights into practical challenges and opportunities of AI adoption in the steel industry.

1.4 Research Question

The research question that is central to this study is the following:

"How can a shared AI vision be developed and tailored for DIGI-STEEL to address current and future challenges?"

This paper presents a shared AI vision for DIGI-STEEL and provides insights into how this vision is formed based on the perspectives of involved stakeholders. This shared vision aims to support current and future challenges in their landscape. To address the specific challenges posed by AI, organizations need a successful shared vision of AI in business operations, and this study focuses on developing such a shared vision for DIGI-STEEL.

1.5 Scientific Relevance

The scientific contribution of the research lies in the process of developing a shared AI vision. The creation and execution of this vision will significantly contribute to scientific knowledge by addressing the gaps in existing literature. AI is expected to transform nearly every aspect of businesses. It is a key driver of fundamental innovation that significantly impact the future for organizations seeking a competitive advantage (Fuller et al., 2022). While numerous studies have explored strategizing AI adoption in organizations, there are evident gap in research focusing on how organizations need to strategically leverage AI, employees' trust in AI, their perspectives on AI's possibilities, and the development of a shared vision on AI (Fountaine et al., 2019). Employees are often uncomfortable with the concept of AI enhancing human capabilities, making trust and engagement critical for the successful adoption of AI (Dwivedi et al., 2021). Trust in AI is significant determinant of its acceptance and effective use within organizations (Ransbotham et al., 2018). Trust can be enhanced by involving employees in the AI adoption process and addressing their concerns and expectations (Siau & Wang, 2018).

The development of a shared vision for the possibilities of AI adoption involves creating consensus and a unified direction that aligns with organizational goals and employee aspirations. This shared vision is essential for guiding organizational change and ensuring that AI initiatives are cohesive and strategically aligned (Kotter, 1995). A shared vision provides direction and helps in building a collective commitment among employees, which is crucial for overcoming resistance to change. Achieving consensus among stakeholders is a critical component of this process, overcoming resistance and ensuring cooperative adoption of AI initiatives (Isaacs, 2002).

A shared vision for AI adoption can positively impact organizational outcomes, including innovation, productivity, and employee satisfaction. Organizations that effectively integrate AI are more likely to achieve higher levels of innovation and competitive advantage (Fuller et al., 2022). Additionally, a shared vision can enhance organization agility, enabling firms to adapt more quickly to technological advancements and market changes (de Wit, 2020).

This research aims to fill the scientific gap by providing a robust shared AI vision, built on employees' perspectives, to overcome current and future challenges for organizations. To achieve this shared vision, a co-creation process involving leaders and followers in a sense-making and sense-giving approach will be executed. This visioning process will involve one-on-one interviews followed by a collaborative workshop (Gioia & Chittipeddi, 1991). These methods will ensure that the shared vision is comprehensive and inclusive, addressing the concerns and expectations of all involved stakeholders.

1.6 Practical Relevance

The practical contribution of this research lies in the focus on developing a shared AI vision tailored for DIGI-STEEL. This paper presents a novel approach to guide the organization towards effective AI visioning. By creating a shared AI vision based on employees' input from DIGI-STEEL in both internal and external processes, this research aims to equip the organization with the tools necessary to achieve a sustained competitive advantage and resilience against future challenges in terms of AI adoption. The practical significance of this study is highlighted by its potential to support the organization by supporting the complexities of AI adoption and maximizing its benefits.

1.7 Outline of the paper

This paper is structured as follows. The theoretical framework is elaborated, and all the relevant literature and theories will be discussed. Next, the research design section outlines how the research question will be addressed. This is followed by the findings of the data collection and data analysis will be given. Finally, the conclusion and discussion, with the findings and answer to the research question will be presented.

2. Literature Review

In this section the literature review of this research will be outlined. The search strategy and search keys applied for this literature review are described in Appendix 2.

2.1 Strategic Organizational Vision

In the organizational world, vision are defined in various ways and often refers to a future-oriented declaration of the organization's purpose and aspirations (Baum et al., 1998). Vision is a vivid, picture-like mental representation of a desirable, long-term future state in organizations and serves as the backbone of the organization (Rawolle et al., 2017). An organizational vision represents a clear understanding of the current situation and outline the desired future state of the company. In recent decades, visions have gained significant interest, particularly in the organizational field, where enhanced motivation, performance and readiness for change are essential (Voigt et al., 2024). Kotter (1995) argues that in every successful transformation effort, a sensible vision is essential; without a sensible vision, the effort can easily take the organization in the wrong direction or lead to no progress at all. Organizational vision impacts performance, making the development of an excellent vision crucial for organizations (Carton et al., 2014).

A concept that is often confused with strategic vision is that of corporate mission, which is understood as the basic drivers sending the corporation in its direction. The corporate mission and the strategic vision contribute to 'sending the firm in a particular direction' and motivating individuals by influencing the firm's strategy. In Figure 1 below visualizes the process of corporate mission and strategic vision visualized (de Wit, 2020).

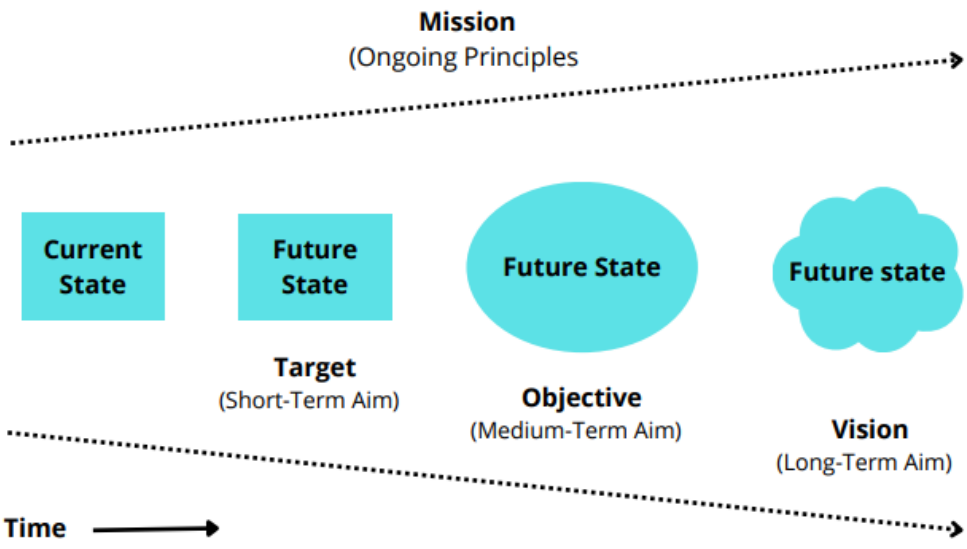

Figure 1. Corporate mission and Strategic Vision (adapted from de Wit, 2020).

2.1.1 Developing Strategic Organizational Vision

The development of organizational vision is a core competence of strategic leadership and change management. Scholars argue that the process of vision development is as important as the vision itself (Kaiser et al., 2013). When a well-defined vision is shared among all members of an organization, it can significantly impact performance (Preston, 2009). Effective vision statements are clear and straightforward, using inspiring but specific language. This ensures that stakeholders can clearly recognize when the vision has been achieved or when it is necessary to better align with the organization's needs (Gurley et al., 2015). According to Kotter (1995), vision statements need to be imaginable, desirable, feasible, focused, flexible, and communicable to be effective. Building a shared vision involves stakeholders taking an active role in addressing various tasks to help members conceptualize and process information about their group, other group members, and their working environment. This collaborative effort in articulating what the stakeholders of an organization want to create together leads to shared vision (Berson et al., 2016). The vision needs to align with the organizational strategy, outlining the features of the desired future state, the reasons the change is needed, and the expected results of this transformation (Smith et al., 2014). Members desire visions of the future that reflect their own aspirations. To achieve high levels of acceptance and integration, large group methods are employed, enabling the entire organization to convene and ensuring each individual has a voice in shaping the vision (O'Connell et al., 2011). For successful change, leaders need to develop a well-defined and accepted vision, establish measurable objectives, and create a strategy that guides to organization towards realizing the benefits of the change (Errida & Lotfi, 2021).

According to de Wit (2020), constructing a strategic vision involves four key components. The first component is the envisioned contextual environment. This involves identifying the various external factors that will influence the company's future, such as socio-cultural, economic, political/regulatory, and technological elements. In developing a strategic vision, the contextual developments are analysed relevant to the company's business, and their future impact, such as that of disruptive technologies, is anticipated.

The second component is the envisioned industry environment. The influence of contextual factors extends to the company's industry environment, affecting suppliers, buyers, competitors, and potential new entrants. Disruptive technologies, in particular, are expected to alter industry structures and production processes. Rice et al. (1998) define disruptive technologies as 'game changers' which have the potential for massive improvement in performance or have new-to-the-

world performance features. A strategic vision must outline these relevant industry developments and forecast the future state of the industry.

The third component focuses on the desired future organizational position. Based on the anticipated contextual and industry environments, the organization defines its aspired future position. This desired position reflects the company's long-term ambitions and is translated into specific objectives. A strategic vision clearly describes the future position and set long-term goals.

Finally, when developing a strategic vision, leaders must determine how many years ahead the future position will be envisioned. The time horizon of company visions differs significantly between industries. For some, a three-year outlook constitutes long-term planning, while others develop visions of thirty years or longer. The appropriate time frame is determined by the specific characteristics of the industry and the company's strategic objectives.

The literature on visioning suggests that it occurs in four different ways. The first approach involves the leader creating the vision individually and communicating it directly to the followers (O'Connell et al., 2011). This approach is central to strategic leadership and planning, where the vision is an image formed in the leader's mind and then shared with the organization. It is particularly effective in organizations with strong, charismatic leaders who have a clear and compelling vision for the future. This approach works well in situations requiring quick, decisive action, as the leader's vision is expected to inspire and motivate followers (Rosing et al., 2011). However, a leader-centric approach has its disadvantages. it often lacks the followers' perspective, and providing a vision by a leader does not necessarily results in better goal achievement by its followers. While visionary leadership is an effective organizational response to the demands of the environment, it often overlooks the importance of followers' thoughts and perceptions. These are crucial for realizing the vision within an organization (Maran et al., 2022).

The second approach involves a key leader and group of top managers creating and communicating the vision to followers (Dvir et al., 2004). According to a case study of O'Brien and Meadows (2003) vision development take often place in small groups of senior figures and the process largely follows a top-down approach. This method can benefit from the expertise and perspectives of top managers, although it misses a lack of broader employee engagement which can impact the employee motivation.

The third approach involves the co-creation of visions by a leader and followers in a sense-making and sense-giving process (Gioia & Chittipeddi, 1991). In this visioning process, the situation is studied collaboratively with stakeholders to create a shared vision. It is argued that affective commitment of followers is higher within organizations when employees are involved in the process of vision

development (Dvir et al., 2004). This approach emphasizes the importance of involving employees to enhance their engagement and commitment to a successful organizational vision.

Finally, vision may be developed when the organization as a whole engages in a large group collaborative process. This approach suggests that an idealized design of a vision is established when it includes input from all stakeholders or their representatives (Ackoff, 1993). Large group methods share four attributes: a variety of stakeholders are involved, including organizational leaders, line workers, customers, or community members; multiple perspectives are encouraged through a variety of interactive exercises; all participants are given a voice in the process of shaping the vision; and common ground is emphasized (Bunker & Alban, 1997).

In conclusion, it is difficult to argue which type of visioning works the best for organizations as it largely depends on the organizational context. However, it is widely argued that involvement of stakeholders can enhance the commitment of employees within organizations. The choice of visioning approach needs to consider the specific needs and dynamics of the organization to ensure effective vision development in the organization.

2.1.2 Strategic Organizational Vision and Technologies

Strategic organizational visioning is crucial for managing the challenges and opportunities brought by disruptive technologies. Disruptive technology, often used interchangeably with disruptive innovation, is a special form of innovation that significantly changes how consumers, organizations, or industries operate (Antonio & Kanbach, 2023). Bower and Christensen (1995) argued that many top companies fail to dominate their industry when technologies undergo changes. A strategic vision guides the organization, outlining long-term goals and the future envisioned state of the organizations and the path in how to achieve this envisioned state (Smith et al., 2014). Visioning of disruptive technologies is often required because there is marked differences between management competencies in the firm's existing business and in its new ventures. Disruptive technologies can fundamentally change markets and industries, requiring organizations to not only anticipate change but also embrace and leverage it effectively (Crockett et al., 2013).

Leaders need to incorporate these technologies into their strategic visions to remain competitive and innovative. This requires a comprehensive understanding of emerging technological trends and their potential impacts on the organization and its environment (Pereira & Romero, 2017). The strategic vision needs to be communicated and created effectively throughout the organization, with the affective commitment of stakeholders (Dvir et al., 2004). A strategic vision that incorporates disruptive technologies emphasizes continuous learning and development. As new technologies emerge, organizations invest in upskilling their workforce to manage the innovations effectively (Li,

2022). There are positive relationships between shared vision, higher degrees of collective efficacy, and strategic performance in disruptive innovations (Crockett et al., 2013). This commitment to learning helps in maintaining a competitive edge and supports the sustainable growth of the organization.

2.2 Artificial Intelligence

2.2.1 Definition and Scope

AI is a disruptive innovation technology that has transformed over the years from being a traditional manufacturing aspect into intelligent and sustainable manufacturing (Bag et al., 2021). The development of AI and AI-based systems began as early as the 1950s (Duan et al., 2019), marking the start of numerous decades dedicated to exploring this field. This period has been characterized by diverse theories and concepts aimed at addressing societal challenges and seizing business opportunities (Dwivedi et al., 2021). According to Porter (1985) innovative technologies help with their capabilities to enhance the competitive advantage of organizations. Among digital technologies to constantly force organizations to innovate in the digital age, there is AI which increasingly affecting how firms innovate (Mariani et al., 2023). Over the past decade, there has been a remarkable increase in both scholarly interest and substantial advancements in AI development, demonstrating its escalating influence and relevance in contemporary research and practical applications (Dwivedi et al., 2023). The transformation of AI in manufacturing emphasizes the role of expert systems, big data, blockchain, and Internet of Things (IoT) in the context of Industry 4.0. AI supports organizations at all four stages of innovation, i.e. idea generation, screening idea, experimentation, development and commercialization of an idea (Fredström et al., 2022). AI has emerged as top technological priority of organizations over the past few years, fueled by availability of Big Data and the emergence of various techniques. AI offers numerous advantages across various domains for organizations, key benefits are automation of routinized tasks, data analysis and insights, predictive analytics, and also cost reduction. The characteristics of AI are connectivity between AI components, cognitive ability of AI, imperceptibility which aid users' acceptance of technology (Canhoto & Clear, 2020).

There is big potential for organizations with adoption of AI linked to long-term competitive success, but organizations need to understand how to overcome the challenges of successful integration from AI (Enholm et al., 2021). The economic effects of digital technologies of AI disrupt business models, enhance productivity, reduce waste, and enable firms to become agile to enhance stakeholder experience (Chauhan et al., 2022). Subsequently, AI is evolved over the years from being an decision support system that facilitated data-driven decision-making by leveraging AI-based techniques to analyze vast amounts of business data (Dwivedi et al., 2023). AI is emerging as the most significant

general-purpose technology of our era. It manifests a unique blend of capabilities that mimic human intelligence and behavior, which includes learning from experiences, solving problems, and making decisions (von Krogh et al., 2023). AI is proficient in pattern recognition, decision-making automation, and predictive analytics, which allows it to undertake tasks ranging from basic classification to intricate simulations and strategic planning. AI is distinguished by its ability to improve continuously through learning from data rather than through explicit programming (Brynjolfsson & Mcafee, 2017).

To make clear the definition of AI, first the two concepts are defined: “Artificial” refers to something that is made by humans, and “Intelligence” are the involved mental activities (Mikalef & Gupta, 2021). Combining these two concepts gives the definition that AI is making machines capable of simulating intelligence (Wamba-Taguimdje et al., 2020). There is consensus that AI refers to giving the computer human-like capabilities, which means that computers are capable of performing tasks that normally require human intelligence. The human intelligence that machines simulate include activities such as understanding, learning, reasoning, and problem-solving (Mikalef & Gupta, 2021).

There are two main categories of defining AI. The first group category definitions of AI is that it describes as a tool designed to solve specific tasks that is either impossible or extremely time-consuming for humans to accomplish (Makarius et al., 2020). The second group category definitions views AI as a system that mimics human intelligence and cognitive processes, including interpreting, making inferences, and learning (Mikalef & Gupta, 2021). The common notion in both categories that AI operates as an augmentation agent for performing difficult and time-consuming tasks (Enholm et al., 2021).

This study uses the definition of Mikalef and Gupta (2021) who define AI as:

“AI is the ability of a system to identify, interpret, make inferences, and learn from data to achieve predetermined organizational and societal goals.”

This definition is formulated upon several definitions from scholars, with the goal to provide a comprehensive overview of the AI concept.

2.2.2 AI Technologies

AI is considered as an umbrella term, spanning over different categorizations of the field. In Figure 1 is a visualization of categorizations of AI, Machine Learning (ML), Deep Learning (DL), Generative AI. ML is a division of AI, DL is a division of ML and AI, and Generative AI is a division within DL, ML and AI.

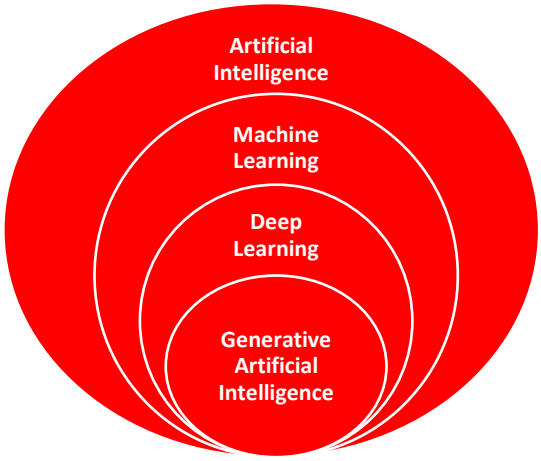

Figure 2. Artificial Intelligence, Machine Learning, Deep Learning, and Generative AI (Zhuhadar & Lytras, 2023).

2.2.2.1 Machine Learning

Machine Learning (ML) is a subset of AI that enables computers to learn and improve data analysis without being explicitly programmed. ML starts with data, which is gathered and prepared to be used as training for the machine learning model (von Krogh et al., 2023). With the possibility to collect and store vast datasets, ML shapes information processing in organizations. Decision-makers in organizations can draw on such processing capabilities to learn and augment their decision-making capacity (Shrestha et al., 2021). ML is part of narrow AI; recognizing patterns, the computers system is able to learn and make predictions (Verganti et al., 2020). ML can support manufacturers with optimization of their planning systems by utilizing historical observations. So, ML will help with the prediction of the throughput times of specific orders, on the other hand, high degrees of product customization make it more challenging because orders may involve unique specifications and high variety (Senoner et al., 2023). AI aims to simulate human-like intelligence to solve tough issues and could potentially enhance it in the future. Conversely, ML aims to learn from data on specific tasks to maximize the performance of a machine. ML may assist in predicting maintenance needs and enhancing efficiency, while AI can analyse massive datasets to uncover trends and inefficiencies (Arun et al., 2024). AI finds the optimal solution and ML is trying to learn new things to the machine from the data (Canhoto & Clear, 2020). In the realm of ML, algorithms fall into categories in table 1, the broad categories are: (1) reinforcement, (2) unsupervised, and (3) supervised (von Krogh et al., 2023).

Type of ML	**Description**
Reinforcement Learning	Is a type of ML that refers to a set of algorithms that enable autonomous systems to learn strategies for achieving objects within a given environment.

Unsupervised Learning	Involves training a model on data without labelled responses, with the goal of discovering hidden patterns or structures in the data.
Supervised Learning	Involves training a model on a labelled dataset, where the model learns to predict outcomes based on historical data.

Table 1. Different categories of Machine Learning (von Krogh et al., 2023)

2.2.2.2 Deep Learning

Deep Learning (DL), a specialized subset of ML and AI, leverages advanced artificial neural networks to tackle complex problems across various domains. DL excels in utilizing vast amounts of unsupervised or unstructured data to autonomously extract sophisticated features and representations (Najafabadi et al., 2015). This ability allows DL algorithms to emulate the hierarchical learning process found in the human brain, enabling machines to observe, analyze, learn, and make decisions for intricate issues (Jin et al., 2021). The origins of DL can be traced back to regression methods in the 19th century. DL models support innovation in various domains (Sundberg & Holmstrom, 2024). Empirical studies highlight DL's superior performance in generating predictions from unstructured datasets, including images, text, and videos. Such capabilities make DL particularly valuable for processing information within organizations, where rapid, precise responses to consumer behavior changes are crucial (Shrestha et al., 2021). As a subset of ML, DL not only matches but often surpasses traditional ML techniques in terms of prediction accuracy and processing complexities of large-scale data.

Modern AI heavily relies on DL to detect non-trivial patterns within the ever-growing volumes of Big Data. These patterns, often intricate and not immediately apparent, can uncover significant insights that are crucial for strategic decision-making (Samtani et al., 2023). The interaction between Big data and DL is synergistic; the availability of large datasets is a foundation for training robust DL models, promoting improvements in recognition capabilities and accuracy (Zhang & Lu, 2021).

2.2.2.3 Generative AI

Generative AI (GenAI), a subset of AI and ML, is proficient at generating new content that simulates human outputs such as speech, music, images video, and code. Grimes et al. (2023) recognizes its potential to enhance the entire value chain of knowledge production – from creation to evaluation to translation. GenAI presents a disruptive innovation for brands and society, with new possibilities of communication, connect, engagement of customers (Ferraro et al., 2024). Despite its promise for improving the quality and efficiency of scholarship, GenAI presents significant challenges. If often

uses vast datasets from varied sources, leading to outputs that reflect general patterns rather than specific insights. This lack of transparency complicates assessing the reliability and validity of its results, which is crucial in academic research (Grimes et al., 2023). Additionally, tools like ChatGPT may produce factually incorrect responses or “AI hallucinations,” posing risks when used in serious research contexts. The research on chatbots ChatGPT-3.5 and ChatGPT-4.0 gave insights of major improvement, but there still remain problems with the so-called “AI hallucinations” or “deep research fakes” (Walters & Wilder, 2023). The capability of generative AI to produce convincing yet fake data poses another threat, potentially leading to manipulated images, graphs, and even fabricated experimental results (Liverpool, 2023). Lastly, the increased reliance on generative AI for summarizing and critiquing scholarly work might lead to biases in academic reviews, further complicating the evaluation process (Grimes et al., 2023). GenAI can be successful when it produces high-quality, relevant and useful content that meets the needs of customers. To be successful as GenAI model, it is critical that the models are trained on large amounts of high-quality data with regularly updating, and provision of the necessary computing power and expertise support. GenAI applications can also be used to make a positive impact on customer satisfaction, to make the processes more efficient and user-friendly (Holmstrom & Carroll, 2024). According to these scholars, organizations can use GenAI as an innovation application to generate new ideas and concepts for their products and services. AI like these presents new opportunities for organizations to redesign business capabilities and understand new connections in the organization (Benbya et al., 2021). Organizations can use prompt engineering in GenAI, which is the art of crafting well-structured and relevant queries or prompts, to exploit AI’s potential for innovation and productivity. GenAI could be used to perform tasks that generally cost lots of human input and effort, and thus automate certain aspects of customer service (Holmstrom & Carroll, 2024).

2.2.3 AI Capabilities

In order to leverage the benefits of AI, it is important for organizations to effectively adopt AI in their processes. Although there is much excitement about the potential business value that AI can deliver, organizations face several challenges with adoption that prevent them from realizing performance gains (Mikalef & Gupta, 2021). The primary challenge is to successfully integrate AI technology into concrete business model applications, which can be leveraged to attain organizational goals (Sjodin et al., 2023). Organizations need to be well-organized to realize the value from AI investments and achieve their objectives.

AI capability is defined as the ability of an organization to use data, methods, processes, and people in a way that creates new possibilities for automation, decision making, collaboration, ultimately enabling value creation (Schmidt et al., 2020). AI-specific resources can be both technological, such as

training data and AI-algorithms, and non-technical, such as employee skills. The notion of AI capability extends beyond technical resources to include organizational resources that are crucial for reaching the full strategic potential of AI (Enholm et al., 2021).

Richey Jr. et al. (2023) proposed a roadmap for AI in logistics and supply chain management and differentiated in AI capabilities on existing business applications. These are differentiated in AI technologies, which are supervised and unsupervised machine Learning, natural language processing and speech recognition, deep learning, and vision processing as visualized in Figure 7.

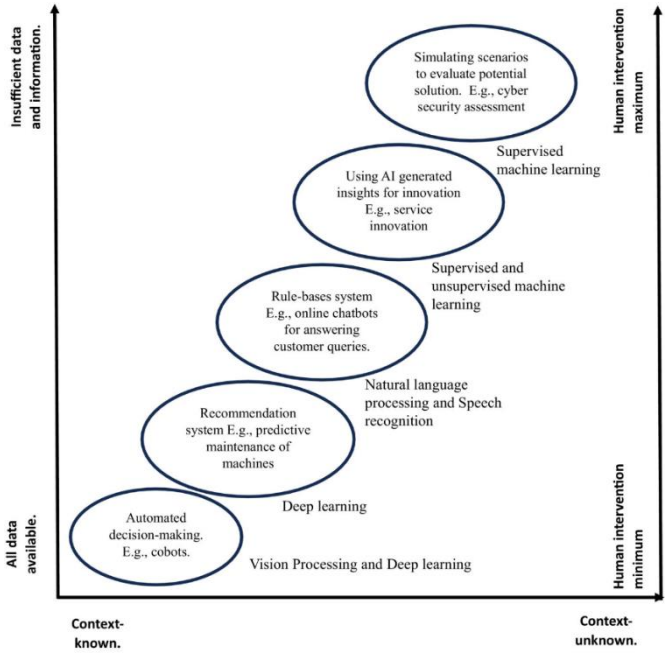

Figure 3. AI capabilities in existing business applications (Richey Jr. et al., 2023)

2.2.4 Future Trends and Developments in AI

The future of AI is set for significant advancements, driven by rapid technological developments and expanding applications across various industries. According to Shao et al. (2022), AI is in the early stages of a new era of AI in its theory, method, research, and applications. The integration of AI with augmented reality (AR) and virtual reality (VR) within the architecture, engineering, and constructing (AEC) industry is rapidly gaining attention. These technologies are expected to revolutionize sectors by providing immersive and interactive experiences (Tan et al., 2022).

Additionally, AI is anticipated to play a huge role in the evolution of autonomous systems, including self-driving vehicles and drones, which will transform transportation and logistics (Bathla et al., 2022). The emergence of explainable AI (XAI) aims to address the opacity of AI decision-making processes, enhancing transparency and trust in AI systems (Arrieta et al., 2020). Furthermore, advancements in Generative AI (GenAI) are expected to facilitate more sophisticated human-computer interactions,

enabling AI to better understand and generate human language, thereby improving applications like virtual assistants and chatbots (Ye et al., 2024).

Although AI is becoming increasingly intelligent, many scientists believe that developing an artificial brain is key to achieving Artificial General Intelligence (AGI). Over the next decade, AI is expected to surpass human cognitive abilities in specific tasks. The current stage represents a critical period transitioning from the second generation of narrow AI to strong AI (Shao et al., 2022). Lastly, ethical AI and bias mitigation will become increasingly important as researchers and organizations strive to develop AI systems that are fair, accountable, and inclusive (Arrieta et al., 2020). These trends indicate that AI will continue to evolve, becoming more integrated, transparent, and human-centric in the coming years.

2.2.5 Data Management for AI

An essential enabler of AI adoption in organizations is the accessibility or production of data. Large data sets are used to train the AI systems, enabling them to make informed decisions (Schmidt et al., 2020). To develop high-quality AI applications, a substantial volume of training data is necessary. A common challenge in utilizing AI is the lack of sufficient training data, with data quality being a critical aspect. Low-quality training data results in low-quality insights, rendering them useless in an organizational context (Baier et al., 2019). Recognizing these quality issues can be challenging; hence, data must be effectively monitored to identify and address any problems. Ensuring data quality involves making sure the data is free from bias and adheres to responsible and trustworthy principles. Bias can be introduced at various stages, including during generation, collection, or processing of data.

2.2.6 Technological Infrastructure for AI

To successfully deploy AI in organizations the right technological infrastructure is also of major importance. According to Wamba-Taguimdje et al. (2020) AI needs three key components in an organization: computing power infrastructure, algorithms, and rich data sets. Organizations need to build an infrastructure that can support massive amounts of computing power. To adopt AI, companies either need access to a cloud-based solution or possess the right computational hardware to facilitate the use of AI (Enholm et al., 2021). The reach the full potential of AI, there is the need of organizations to develop an AI strategy for organizations (Keding, 2021)**.** The actions should align with the company's existing goals and this strategy will adopt AI in order to utilize its benefits.

2.2.7 Ethical and Social Considerations of AI

Ethical considerations in AI are primarily concerned with principles such as fairness, transparency, accountability, and privacy. As with most disruptive technologies, the assessment of and consensus on the possible ethical pitfalls often lag behind their rapid advancement (Safdar et al., 2020). Ethical concerns arise from the swift progression of AI technologies, making this a significant topic of debate. The ethical vision of AI focuses on ensuring that AI development and deployment align with societal values and ethical principles. Despite the numerous advantages AI offers, it can also causes adverse effects on humans (Stahl, 2023). These adverse effects stem from ethical challenges related to data governance, including consent, ownership, and privacy, as well as fairness and accountability.

AI typically requires large volumes of personal data to learn and make decisions, making privacy a crucial issue (Zhou et al., 2020). Additionally, AI systems are expected to significantly impact the economy, raising concerns about unemployment, worker surveillance, and the fairness of economic distribution. These systems can also influence political processes, potentially leading to power concentration and harming democracy. Furthermore, AI can negatively affect the environment, alter the nature of warfare, and broadly shape human actions in undesirable ways. The impact on human actions includes concerns about future developments potentially leading to AI with genuinely human-like capabilities, raising questions about the social and ethical consequences of such rapid advancements (Stahl, 2023).

Given these multifaceted ethical challenges, trust becomes a cornerstone for the successful integration and acceptance of AI systems. Trust is fundamental to the interaction between people and AI. Inappropriate levels of trust can lead to misuse, abuse, or disuse of technology. Therefore, building a relationship of trust with AI and fostering trustworthy AI is crucial (Omrani et al., 2022). To achieve this, a set of best practices must govern the ethical creation and administration of AI. This includes careful alignment with societal norms and values, algorithmic responsibility, adherence to current legislation and policy, and the protection of privacy and personal information. Ethical governance is essential to building public trust in AI. By addressing these ethical issues, industry providers can significantly improve trust in AI (Winfield & Jirotka, 2018).

2.3 AI Vision and Stakeholder Engagement

2.3.1 AI Visioning

AI visioning refers to the strategic process of developing a clear, strategic vision for the adoption and integration of AI within an organization. The integration of AI holds great potential for various applications and industries. However, there are also several open challenges that need to be

addressed to fully realize the benefits of the integration and shape its future directions (Awad et al., 2024). An applicable vision serves as a roadmap, guiding the organization in leveraging AI technologies to achieve its strategic objectives (Fountaine et al., 2019). Creating a robust AI vision is essential for aligning AI initiatives with the broader goals of the organization, fostering innovation, and gaining a competitive advantage.

Organizations need to shift towards AI implementations. Leaders need to create a vision that unites stakeholders around a common goal, and stakeholders need to understand the importance of AI to the business and create a new AI-oriented culture (Fountaine et al., 2019). It is crucial to emphasize that AI will enhance their jobs, not replace them. Most workers need to learn to use AI rather than worry about being replaced by it. According to Fountaine et al. (2019), leaders need to highlight the potential of AI in improving operational efficiency and responsiveness, and inspire employees by showing how AI can augment and elevate their performance and emphasize their performance, ensuring stakeholders see AI as a tool for growth rather than a threat. When leaders show examples of employees using AI tools to improve their performance, it can motivate others and enhance their work.

2.3.2 Stakeholder Engagement and Perspectives

Effective stakeholder engagement is critical for successful adoption of AI within organizations, ensuring alignment of goals, and identifying potential challenges in the process. Research emphasizes the importance of transparent communication channels, regular workshops, and focus groups to facilitate the exchange of ideas and feedback, fostering a collaborative environment (Bovaird, 2007). Proving comprehensive training and continuous feedback mechanisms further enhances stakeholder understanding and support for initiatives (Gray et al., 2022). Studies have shown that proactive stakeholder engagement in AI adoption can lead to improved system performance and higher-quality outputs (Hristov & Appolloni, 2022; Subramanian et al., 2024). These approaches underscore the importance of stakeholder involvement in navigating both the current and future challenges associated with AI integration.

2.3.3 Creating Shared Vision for AI

Creating a shared vision for AI vision involves several critical steps, which are closely related to the general process of constructing a strategic vision as described by de Wit (2020). Achieving consensus within the visioning process is crucial to ensure that everyone in the organization is aligned and committed to the AI vision. As mentioned earlier in section 2.1.1, building a shared vision is not a one-way process. It involves a method known as sense-making and sense-giving (Gioia & Chittipeddi, 1991). Sense-making is when employees interpret and understand what the vision means for them,

while sense-giving is how leaders communicate the vision to help others make sense of it. This interaction allows the vision to be shaped together, making it more relevant and meaningful for everyone involved.

The first component of developing an AI vision is understanding the envisioned contextual environment. This means identifying external factors such as disruptive technologies, market trends, and broader industry developments that will shape the company's future (Nadkarni & Prügl, 2021). By considering these trends and involving stakeholders in the sense-making process, organizations can ensure that their AI vision remains flexible and responsive to changes. Leaders play a key role in sense-giving by framing these external influences within the context of the organization's strategic goals, helping employees understand how these elements impact the AI vision.

The second component concerns the envisioned industry environment. This involves understanding how AI might transform the structure of the industry and impact business models (Fountaine et al., 2019). Creating a strategic AI vision requires a thorough understanding of these dynamics to align the vision with the organization's goals. During this step, sense-making helps employees understand how these changes might unfold, while sense-giving from leaders provides context on what these shifts mean for the organization's competitive position. This ensures that everyone shares a common understanding of the industry landscape.

The third component focuses on the desired future organizational position. Building on insights from the contextual and industry environments, the organization defines its aspirational future position. A well-defined AI vision describes this future state and sets long-term goals, ensuring that AI technologies are harnessed to achieve these objectives. The sense-making process is crucial here, as employees actively reflect on how AI might be integrated into their work and contribute to the organization's future success. At the same time, sense-giving by leaders involves shaping this future position in a way that inspires and motivates employees, creating a shared understanding and commitment to the vision (Davenport, 2018).

Finally, the organization must determine the time horizon for the AI vision. This involves setting an appropriate time frame that is determined by the specific characteristics of the industry and organization's strategic objectives. The time horizon is crucial for setting realistic and achievable goals for AI integration (de Wit, 2020). By engaging employees in sense-making around what can be achieved within the given timeframe and using sense-giving to set clear expectations, leaders can build a shared and realistic view of the future path for AI adoption.

In conclusion, developing a shared AI vision involves four key steps: understanding the contextual and industry environments, defining the desired future organizational position, and determining the

appropriate time horizon. At each stage, sense-making and sense-giving play a crucial role in creating a shared understanding and building consensus among stakeholders. By engaging employees in sense-making and using sense-giving to provide clear direction, leaders can ensure that the vision is co-created and shaped collectively. This comprehensive approach ensures that AI initiatives are strategically aligned with the organization's broader goals, while also supporting innovation and strengthening competitive advantage.

2.3.4 AI Visioning Model

The model used for AI visioning is based on the traditional visioning process by de Wit (2020). The AI Visioning Model breaks down into four main steps: Envisioned Contextual Environment, Envisioned Industry Environment, Desired Future Organizational Position, and Time Horizon for the AI Vision. Table 2 below provides a detailed description of each component and the expected outcomes, incorporating the sense-making and sense-giving processes to support employee engagement and alignment.

Component	Description	Expected Outcome
1. Envisioned Contextual Environment	Identifying external factors such as disruptive technologies, market trends, and regulatory changes that shape the external environment. Understanding these factors ensures that the AI vision remains adaptable and responsive to changes.	Establishes a foundation for an AI vision that is context-aware and adaptable to external disruptions. Sense-making allows employees to understand these influences, while sense-giving from leaders clarifies their relevance to strategic goals.
2. Envisioned Industry Environment	Analyzing how disruptive technologies like AI will transform the industry structure and business models. Strategic AI visioning should incorporate these industry dynamics to ensure alignment with organizational objectives.	Enables organizations to anticipate to industry shifts and align AI initiatives with potential future changes. Sense-making ensures that employees understand the dynamics, while sense-giving from leaders clarifies the organization's response to industry trends.
3. Desired Future Organizational Position	Defining the organization's future position and long-term goals, leveraging AI to achieve strategic objectives. This step focuses on creating a shared understanding of AI's role in shaping future success.	Provides a clear strategic direction, enhancing focus on AI-driven innovation and long-term planning. Sense-making helps employees interpret how AI fits into their roles,

		while sense-giving explains the vision to inspire collective commitment.
4. Time Horizon for the AI Vision.	Setting an appropriate time frame for achieving the AI vision. This time frame is influenced by the industry pace, organizational readiness, and strategic priorities. A realistic time horizon supports effective AI adoption planning.	Establishes a realistic timeline for AI integration, ensuring achievable goals and proper alignment. Sense-making engages employees in evaluating the time horizon, while sense-giving provides clear expectations and goals for achieving the vision.

Table 2. AI Visioning Model (de Wit, 2020).

3. Research Methodology

The methodology section contains the research design. The unit of observation and analysis, the data collection, and the data analysis will be further elaborated.

3.1 Research Design

This study adopted a qualitative research design to explore employees' vision on AI applications and the strategic adoption of AI within DIGI-STEEL. The aim was to analyze the employees' perspectives to develop a shared vision for AI to address the research question: *"How can a shared AI vision be developed and tailored for DIGI-STEEL to address current and future challenges?"*

DIGI-STEEL is a startup and a member of the Voortman Steel Group. Voortman Steel Group is a family company that manufactures high-quality CNC steel processing machines and provides solid steel solutions. DIGI-STEEL offers fully cloud-based software solutions for steel processors and enhance guidance for customers in steel manufacturing (Appendix A). The steel industry is crucial for modern economies and developing technologies, and steel demand is expected to grow substantially in the coming years. Strategic innovations in AI are critical for the steel industry (Kim et al., 2022). Therefore, the aim is to create a shared vision for AI adoption in both internal and external processes of DIGI-STEEL.

To explore this research question, this study adopted a case study approach. According to Yin (1981), a case study provides an in-depth examination of a single case or multiple cases to clarify the characteristics of a larger population. This research focuses on DIGI-STEEL as a single case study, focusing on one organization to characterize a broader population. Case studies typically combine data collection methods, such as interviews, questionnaires, and observations, to analyze the data (Eisenhardt, 1989). The evidence of the data is qualitative or quantitative, but also a combination of both.

The paper aimed to understand how a shared vision is developed for AI adoption to address current and future challenges faced by organizations in the steel industry. Qualitative research is conducted to collect, analyze, and interpret non-numerical data to gain understanding of individuals' experiences, attitudes, beliefs, and behaviors (Gephart J.R., 2004). In this study this includes semi-structured interviews, a workshop and a small survey to gather the valuable data (Gelo et al., 2008). Qualitative research provides depth and richness in understanding complex strategic issues.

3.2 Data Collection

To study uses a cobination of in-depth semi-structured interviews, a workshop, and a small survey to gather comprehensive insights and validate the findings. These methods were selected to address the

four components of the AI Visioning Model outlined in Section 2.3.4: Envisioned Contextual Environment, Envisioned Industry Environment, Desired Future Organizational Position, and Time Horizon for the AI Vision. Each data collection method served a purpose within the vision development process, ensuring that the model's theoretical framework was fully integrated.

The shared vision creation process in this research was guided by the concepts of sense-making and sense-giving, which are essential for co-creating a strategic vision. Sense-making involves participants interpreting and understanding the vision based on their personal and professional experiences, while sense-giving refers to the leader's role in shaping these interactions to achieve alignment (Gioia & Chittipeddi, 1991).

During the visioning process, the situation was studied separately with stakeholders through interviews, focusing on individual sense-making and interpretations of AI's impact. The workshop provided a setting for sense-giving, where the researcher, in a facilitative role, guided participants through aligning their interpretations and collectively shaping the vision. Involving employees in vision development enhances their engagement and commitment to the organization's vision (Dvir et al., 2004). Thus, the interviews were designed to obtain diverse perspectives and promote individual sense-making of AI's role, while the workshop was structured to consolidate these views through sense-giving.

The survey, conducted after the workshop, served as a validation tool to assess how effectively the sense-giving during the workshop translated into broader organizational alignment. By capturing feedback on the AI visions from a larger audience, the survey ensured that the shared vision reflected a more comprehensive organizational consensus.

3.2.1 Semi-Structured Interviews

In-depth interviewing is a qualitative technique that involves detailed interviews to gain a deep understanding of respondents' perspectives. A semi-structured interview follows a predetermined list of question while allowing for exploration of additional relevant topics (Longhurst, 2003). This approach enabled the researcher to adapt the conversation and explore participants' sense-making processes as they articulated their perceptions of AI and its role in the organization.

The interviews were structured based on the four steps of the AI visioning processes: (1) envisioned contextual environment, (2) envisioned industry environment, (3) desired future organizational position, and (4) time horizon. Each of these stages allowed participants to make sense of the impact of AI within their context and share insights on how AI could shape their future roles and organizational strategy. To further support sense-giving during the interviews, the researcher used

techniques such as clarifying questions and paraphrasing to ensure that participants' inputs were accurately interpreted and aligned with the research goals. This approach also helped direct the converstation while maintaining a focus on the vision development.

The semi-structured interviews were conducted with 10 employees of DIGI-STEEL from different departments and hierarchical levels, providing a comprehensive understanding of different perspectives within DIGI-STEEL. Ensuring diverse perspectives helped identify potential challenges and opportunities across the entire organization. The participants were selected using the Power Interest Matrix of Mendelow (1991), which identifies stakeholders based on their influence and interest in the research topic (Figure 10).

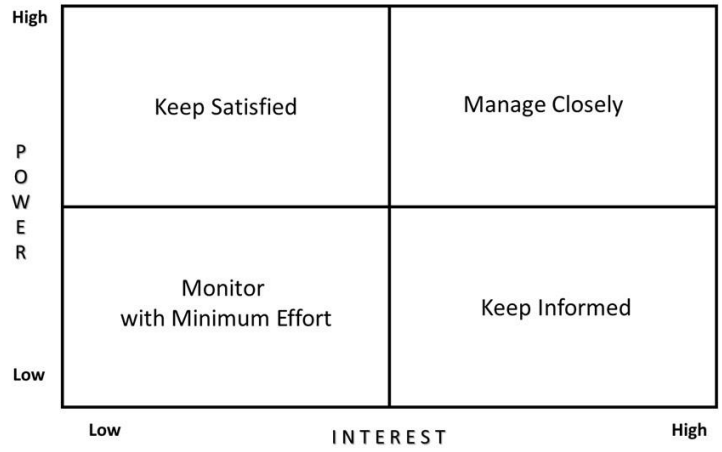

Figure 4. The Power Interest Matrix (Mendelow, 1991).

This matrix identifies stakeholders based on their power and interest in the research topic, subdividing them into four categories: 'Keep Satisfied' (high power and low interest), 'Manage Closely' (high power and high interest), 'Monitor' (low power and low interest), and 'Keep Informed' (high interest and low power).

The interview participants consisted of the 'Manage Closely' category, including three members of the Management Team, the Lead of Business Application, and the Tech Lead. Additionally, participants from 'Keep Informed' category were included, such as the Implementation Consultant, Sales, Business Analyst, Tester/Support employee, and User Experience specialist. The 'Keep Satisfied' and 'Monitor' categories were not directly included, as in the initial focus was on creating a shared vision with highly interested employees. However, the 'Keep Satisfied' category was considered too important to ignore, as these stakeholders hold significant power in the organization. There are two remarks: first, DIGI-STEEL is a software start-up with stakeholders who have a strong interest in disruptive technologies like AI. Second, some employees in the 'Manage Closely' category may also

fall in the ‘Keep Satisfied’ category. This approach ensured that diverse and engaged perspectives of influential stakeholders were included.

The semi-structured interviews were traditional face-to-face interviews, lasting approximately 30 to 45 minutes, depending on the complexity of the responses and the dynamic of the session between the participant and researcher. The interviews were conducted either physical or via Microsoft Teams. While there was a preference for physical interviews due to their more natural communication, logistical constraints made the fact that some online interviews were necessary. Physical interviews are generally preferred because they allow for better observation of non-verbal communication, such as body language and facial expressions, which can lead to a deeper understanding of participants. Additionally, physical interviews can more easily reduce distractions, contributing to a better overall interview experience (Weller, 2017). The interviews with Dutch employees of DIGI-STEEL were conducted in Dutch, while those with UK employees were conducted in English. The interview guides are available in Appendix E (English) and Appendix (Dutch).

To ensure the accuracy and reliability of the data, all interviews were recorded with participants’ consent. Recording interviews is crucial as it allows for accurately capturing all the responses and ensuring that no key information is missed during data analysis. This practice enabled the researcher to focus entirely on the conversation, avoiding the distractions of manual note-taking (Adeoye-Olatunde & Olenik, 2021). Each recording was transcribed to facilitate a thorough analysis.

The interviews covered various topics in the following sequence: Firstly, the background of the participant, current understanding of AI, internal processes and AI potential, employee trust and engagement, external processes and AI potential, future outlooks and risks, vision for AI adoption, and the closing. This alignment ensured that each component of the AI visioning model was addressed systematically, guiding participants through a structured exploration of AI’s potential and implications for DIGI-STEEL. A complete list of the semi-structured interview questions can be found in Appendix E.

3.2.2. Workshop

Following the interviews, a workshop was conducted to facilitate collaborative sense-giving and sense-making among stakeholders, supporting a shared understanding of AI’s potential within DIGI-STEEL. This workshop brought together stakeholders from different departments and hierarchical levels, allowing them to collaboratively discuss and integrate diverse perspectives gathered from the interviews. For workshop protocol see Appendix G. Prior to the workshop, a knowledge-sharing document was distributed to all participants. This document provided a general overview of AI concepts as well as specific applications of AI within the steel industry. The goal was to establish a

common foundation of understanding among participants, thereby reducing potential knowledge gaps that could impact the quality of the discussions.

Workshops are essential for collaborative vision development, as they bring together multiple stakeholders in a structured environment, supporting dialogue and engagement (Phaal & Muller, 2009). The interactive format enabled stakeholders to share their interpretations of AI (sense-making) while the facilitator's role in directing and aligning discussions supported sense-giving, shaping these interpretations into a shared AI vision.

The same employees who participated in the interviews took part in the workshop, ensuring the interactive nature of workshops allows for real-time feedback and discussions, which are essential for building a shared vision. The workshop was conducted virtually, providing a more cost-effective and geographically flexible alternative to physical workshops (Becerra et al., 2021).

Initially, the study adopted a traditional vision creation process that included four key steps:

1. Envisioned contextual environment;
2. Envisioned industry environment;
3. Desired future organizational position;
4. Time horizon for the AI vision.

However, insights from the interviews revealed the need for a slightly modified approach. The original four steps were consolidated into three to create a more aligned and streamlined process, better suited to developing a tailored AI vision for DIGI-STEEL:

1. Contextual and Industry Environment Analysis;
2. Desired Future Organizational Position and Time Horizon for AI;
3. Organizational Alignment and Consensus.

This refinement supports the practical relevance of developing a tailored vision for DIGI-STEEL, but also contributes to the scientific understanding of how vision creation processes can be combined to handle disruptive technologies. By integrating contextual and industry analysis with the organizationan's desired future positioning and consensus-building, the process highlights the importance of flexibility in vision development.

The primary goal of the workshop was to encourage shared understanding among the stakeholders. The workshop lasted three hours, during which the findings from the interviews were presented in a discussion format, with interactive opportunities to reach consensus on the shared AI vision. The researcher facilitated the workshop, taking on responsibilities including planning and preparation,

guiding discussions, encouraging participation, providing structure, informing participants, supporting learning, and documenting outcomes.

The workshop was conducted via Microsoft Teams, and the researcher took minutes throughout the session. This allowed for a detailed record of the discussions, ensuring that all key points could be analyzed later. The minutes were combined with the workshop results to create a comprehensive report for this study. Recording was not used to avoid influencing participants´ openness. This approach ensured that the resulting AI vision reflected the collective insights and agreement of all participants.

The workshop methodology was structured to facilitate the development of a shared AI vision tailored specifically for DIGI-STEEL by focusing on three main steps. The first step, Contextual and Industry Environmental Analysis, aimed to build a shared understanding of DIGI-STEEL's current internal and external environment to AI adoption. Participants were guided through a SWOT analysis, which was developed based on findings from the semi-structured interviews, to evaluate the strengths, weaknesses, opportunities and threats related to AI adoption. Using Miro, an interactive online tool, participants shared their opinions on each SWOT element. Each factor was then discussed in detail to assess whether it accurately represented the organization's context. The second part of this step involved evaluating internal and external statements using Microsoft Forms and collecting responses through a Likert Scale. Each statement was reviewed individually, and any areas of disagreement or significant points were thoroughly examined to reach a shared consensus among participants.

In the second step, the Desired Future Organizational Position and Time Horizon for AI, participants explored and established the desired future state for AI adoption and its implications over time. Scenario-based discussions outlined internal and external paths for AI adoption. Participants provided their opinions using Microsoft Forms, voting using a Likert Scale. The results were discussed to ensure consensus on the organization's strategic direction.

The third step, Organizational Alignment and Consensus, presented the internal and external AI visions developed based on the previous steps. Participants were asked to assess these visions using Microsoft Forms and engaged in a structured debate on various aspects, such as the pace of adoption, quality of implementation, and investments in AI tools. Again, voting via Likert Scale, but this stage also incorporated open text boxes, allowing participants to provide more detailed and individualized feedback. This approach ensured that participants could express their perspectives comprehensively, thereby enriching the discussion.

The facilitator guided these discussions to identify shared goals and align short-term and long-term benefits for DIGI-STEEL. The structured approach ensured that diverse perspectives were both integrated and aligned with the organization's strategic objectives. The workshop was designed to support a collaborative environment where participants could openly share and refine their views, leading to internal and external AI vision specifically tailored to address current and future challenges. The resulting visions were co-created through a combination of active sense-making and guided sense-giving, ensuring that the final shared AI vision accurately reflected the collective insights and agreement of all participants. This process effectively addressed both current and future challenges to strategically leverage AI in support of DIGI-STEEL.

3.2.3 Survey

To complement the qualitative insights gathered from the interviews and workshop, a small survey was conducted with all employees of DIGI-STEEL. The primary aim of the survey was to serve as a final validation tool, measuring how effectively the sense-giving and sense-making processes during the workshop were translated into broaden consensus on the shared AI vision. It also aimed to ensure that all employees, including those who did not participate in the workshop, had the opportunity to provide input. This approach helped capture a more comprehensive and inclusive perspective on AI adoption across the organization.

The survey was distributed via Microsoft Forms, chosen for its ease of use and ability to collect responses anonymously. Ensuring anonymity was essential to encourage honest and unbiased feedback, as participants were more likely to share their true opinions without concern or judgment. A total of 73 employees were invited to participate in the survey, and 23 responses were received, resulting in a response rate of 32 percent. This participation rate indicates somehow low interest and engagement from employees regarding the AI vision for DIGI-STEEL.

The survey was structured around key outcomes from the workshop and consisted of a combination of close-ended and open-ended questions. Participants were asked to indicate their level of agreement or disagreement with the internal and external vision using a Likert scale. Additionally, open-ended questions provided space for participants to share their thoughts and suggestions on how to refine these visions further. An additional question in the survey aimed to assess employee preferences regarding whether AI development should be led by internal teams or external experts.

These mixed methods approach not only reinforced consensus on the shared AI vision but also complemented the qualitative insights gathered during the interviews and workshop by adding a quantitative dimension. This combination of data sources enhanced the validity and reliability of the research and ensured that the AI vision reflected the collective insights of DIGI-STEEL's employees.

3.2.4 Ethical Considerations

Throughout this research, ethical considerations were critically observed. Participants were fully informed about the study's purpose and their involvement, ensuring informed consent. To maintain confidentiality, participants' data is anonymized and securely stored, ensuring individual responses cannot be traced back to specific participants. All research materials were handled with strict confidentiality to protect the privacy and integrity of the participants.

3.3 Data Analysis

This research used a combination of interviews, a workshop, and a survey to capture detailed insights into the experiences and perspectives of stakeholders. The qualitative data gathered from the semi-structured interviews and the workshop were analyzed using the Gioia method. The Gioia method is an inductive, grounded qualitative analysis technique designed to systematically identify patterns and themes within the data (Gioia et al., 2012). This structured approach was particularly valuable for deriving insights and developing a theoretical framework specifically tailored to DIGI-STEEL (Gioia & Chittipeddi, 1991).

The Gioia method involves three key stages. The first stage is the creation of analytic codes and categories, which are then organized into a data structure consisting of first order (informant-centered) codes, second order (theory-centered) themes, and aggregate dimensions. The analysis focused on understanding the dynamics of sense-making and sense-giving as expressed by the participants. During the coding process, sense-making themes were identified through first-order codes that captured participants' initial interpretations and reactions to AI adoption within DIGI-STEEL. The second stage involved developing a grounded theoretical model based on these coded data, exploring relationships between the first-order codes and second-order themes to construct a comprehensive representation of the findings. The second-order codes captured sense-giving processes observed during the interviews and workshop, where the facilitator's interventions guided participants' sense-making towards a shared vision for AI. The goal is to move from raw data to a broader theoretical understanding that accurately reflects participants' perspectives. In the final stage, the research findings were presented using a detailed, data-based narrative that highlights the second-order themes and aggregate dimensions, incorporating direct quotations from informants to support each theme (Magnani & Gioia, 2023). This structured process helped to construct a robust theoretical model that provided valuable insights into the shared AI vision creation process at DIGI-STEEL.

Using the Gioia method, this research uncovered in-depth insights, as the inductive approach allowed unexpected patterns and new themes to emerge. The use of respondents' own words during the

coding process enhanced the validity and reliability of the findings, making the identified themes more representative of the participants' perspectives (Gioia et al., 2012). The structured approach of the Gioia method ensured transparency, linking the data to actionable insights for DIGI-STEEL. The final data structure, which details all codes and themes, can be found in the Findings section.

Based on the findings from the interviews, workshop and survey, two AI visions were developed for DIGI-STEEL: an internal and an external AI vision. The internal AI vision focused on leveraging AI to improve internal processes and optimize operational efficiency, while the external AI vision emphasized using AI to strengthen the company's market position and enhance customer solutions. These visions were carefully created to reflect the collective insights of stakeholders and align strategic goals with practical considerations. By using an inductive coding approach, the visions captured shared perspectives and consensus across the organization, providing a clear direction for DIGI-STEEL to address current and future challenges (Phaal & Muller, 2009).

The structured application of the Gioia method significantly contributed to the findings, ensuring that the internal and external AI visions were both scientifically and practically applicable. This approach supported the scientific relevance of contributing to the process of developing a shared AI vision, while also demonstrating its practical value by tailoring the vision specifically for DIGI-STEEL.

4. Findings

This section presents the study's findings, focusing on the transition from individual perspectives collected during the semi-structured interviews to a collaboratively developed AI vision during the workshop. The goal is to understand how individual insights evolved into a shared vision and were validated through a survey. The findings are structured to highlight how participants' views on AI developed and how the processes of sense-making and sense-giving helped to align diverse perspectives, contributing to a shared AI vision.

4.1 AI Visioning Model

The goal of this study was to investigate how to develop a shared AI vision for DIGI-STEEL to address current and future challenges. There was no specific literature on formulating an AI vision for an organization. The traditional visioning process could be used, and this was slightly changed to the following AI Visioning Model which is visualized in Table 3.

Component	Description	Expected Outcome
1. Contextual and Industry Environment Analysis	Identifying external factors such as disruptive technologies, market trends, and regulatory changes that shape the external environment. Analyzing how disruptive technologies like AI will transform the industry and business models. Strategic AI visioning should incorporate these dynamics to ensure alignment with organizational goals.	Establishes a foundation for an AI vision that is context-aware and adaptable to industry disruptions. Enables organizations to anticipate industry shifts and align AI initiatives with potential future changes. Sense-making allows employees to understand these influences, while sense-giving from leaders clarifies their relevance to strategic goals.
2. Desired Future Organizational Position and Time Horizon for AI	Defining the organization's future position and long-term goals, leveraging AI to achieve strategic objectives. Focuses on creating a shared understanding of AI's role shaping future success. Setting an appropriate time frame for achieving the AI vision, influenced by industry pace, organizational readiness, and strategic priorities. A realistic time horizon supports effective AI adoption planning.	Provides a clear strategic direction, enhancing focus on AI-driven innovation and long-term planning. Establishes a realistic timeline for AI integration, ensuring achievable goals and alignment. Sense-making helps employees see how AI fits into their roles, while sense-giving gives commitment to this aspect.

3. Organizational Alignment and Consensus	Establishing organizational alignment around the shared AI vision by incorporating diverse perspectives and ensuring mutual understanding. Communicating the AI vision effectively to stakeholders, emphasizing the rationale, expected benefits, and individual roles. Continuously engaging employees and revisiting the vision as the context and industry environment evolve, ensuring that the AI vision remains relevant and dynamic.	Provides a shared commitment to the AI vision and strategic goals, ensuring all stakeholders are aligned and engaged. Sense-making keeps employees informed, while sense-giving helps ongoing alignment and commitment to the vision.

Table 3. Revised AI Visioning Model (de Wit, 2020).

4.2 Case Study: Data Structure of AI Vision Process

The semi-structured interviews provided valuable insights into how employees at different levels and roles within DIGI-STEEL viewed the role of AI. These interviews revealed a mix of expectations, concerns, and varied interpretations of what a strategic AI vision should entail. This input formed the foundation for the workshop, which aimed to create consensus around AI adoption and develop both internal and external AI visions for DIGI-STEEL. The purpose of this section is to analyze how the visioning process unfolded. Using the Gioia method, the data structure was developed to identify emerging patterns in participants' sense-making processes and explore how these shaped the early stages of vision development. The analysis focused on building shared understanding, discussing AI strategies, and aligning perspectives on AI's future role.

Throughout the workshop, the role of sense-making and sense-giving was crucial in resolving differing viewpoints and reaching key consensus points. The data structure in Figure 5 visualizes the findings, including the first-order codes, second-order themes, and aggregate dimensions from the Gioia Method. These findings, combined with the survey results, are the foundation for developing a shared AI vision model based on the aggregate dimensions and themes identified.

First-order codes	Second-order themes	Aggregate dimensions
The data needs to be high quality, or AI gives you bad results.	Mediating Scepticism about Adoption	Identifying Key Challenges and Considerations In AI Visioning
AI can't make decisions independently.		
Implementation needs constant monitoring for errors.		
Humans should remain in control during AI decision-making.	Managing Control and Oversight	
AI as a supportive tool for human decisions.		
Keep a check on how AI makes decisions.		
Quick wins are attractive, but focus should be on long-term strategies.	Collective Commitment to Long-Term Focus	
Adoption should aim for high quality and stability.		
Long-term strategies over short-term gains.		
AI's impact is inevitable.	AI as an Inevitable Change	Managing Uncertainty and Aligning Diverse Perspectives
AI adoption is changing the industry landscape.		
Organizations need to decide their role in this shift.		
Limited understanding of AI's role.	Lack of Awareness and Knowledge Gaps	
Lack of clarity on AI capabilities.		
Misunderstandings on AI's potential and limitations.		
Group discussions were critical to shape vision.	Building Consensus through Group Discussions and Sense-Making	Facilitating Dynamics in AI Vision Formation
Individual views lacked clarity until structured discussion took place.		
Collective sense-giving turned ideas into shared goals.		
Align stakeholders' internal and external perspectives.	Integration of Internal and External Preferences.	
Understanding customer preferences vital for strategy.		
Concerns on AI ethics and fairness.	Navigating Ethical and Practical Considerations	
Intellectual property needs safeguarding.		
AI should be adopted with ethical considerations.		
Initial individual participants' perspectives on AI's role aligned with the group consensus.	Consistency in Individual and Group Visions	Coherence in AI Visioning
No significant changes occured in the fundamental vision concepts from interviews to workshops.		
Integrated individual opinions into collective vision.		
Paraphrasing and structured questioning maintained vision alignment.		

Figure 5. Data structure of DIGI-STEEL according to the Gioia Method (Gioia et al., 2012).

4.2.1 Identifying Key Challenges and Considerations in AI Visioning

The aggregate dimension “Identifying Key Challenges and Considerations in AI Visioning” highlights the difficulties encountered when implementing AI technologies within the organization. This dimension includes the second order themes: “Mediating Scepticism about Adoption”, “Managing Control and Oversight”, and “Collective Commitment to Long-Term Focus”. These themes emerged from the identified first-order concepts during the interviews and in the workshop discussions.

4.2.1.1 Mediating Scepticism about Adoption

During the vision formation process, participants consistently raised concerns about the reliability of AI systems, particularly regarding the quality of the data driving these systems. Several participants in the interviews expressed the fear that AI systems could produce misleading outcomes if built on incorrect or incomplete data. One participant emphasized: *"AI is only as good as the information that you give it and the systems that you teach it on… the bigger the datasets, the better as long as the data is there. It's much like user testing, you want the right data, and you want it to be good quality data."* This early concern about data integrity laid the foundation for more in-depth discussions during the workshop.

The workshop discussions further expanded upon these themes, as participants collectively acknowledge the necessity of high-quality and diverse datasets to minimize biases and errors. They openly debated how an organization's AI initiatives should prioritize data governance. During the SWOT analysis review, participants identified poor data quality as a significant threat to successful AI adoption. This concern was further explored in the scenario analysis, where participants noted that without adequate data, AI's role in strategic decision-making could be compromised, potentially leading to a focus on optimizing current features rather than innovative developments such as AI.

In addition to data quality, participants highlighted the need for continuous evaluation to maintain reliability of AI outcomes. The group discussed how improvements in data collection processes could help address scepticism and ensure that AI outputs remain reliable over time. This concern was not only about initial data input but also about the ongoing management of data throughout AI adoption.

The collective reflection demonstrated that while there was initial scepticism toward AI adoption, a shared understanding emerged: ensuring high data quality would be a foundational step in mitigating concerns. Participants agreed that focusing on data accuracy and diversity would help establish a stronger foundation for AI adoption, making it more reliable.

These insights illustrate that while concerns about AI reliability were prominent in the early discussions, the workshop allowed participants to mediate these worries by emphasizing practical steps, such as improving data quality and governance, which could build confidence in AI systems.

4.2.1.2 Managing Control and Oversight

The theme of "Managing AI Control and Oversight" reflects the participants' consensus on the need for maintaining human oversight over AI systems. This was a recurrent concern during the vision formation process, as participants stressed that AI should primarily serve as a supportive tool, not as an independent decision-maker. Managing this control evolved from initial concerns about ethical

standards and unintended consequences, raised during interviews, to a more comprehensive dialogue about how AI could augment human decision-making, which unfolded during the workshop discussions.

In the interviews, many participants expressed concern that allowing AI systems to operate autonomously could lead to decisions that deviate from the organization. One participant clearly articulated this point, stating: *"AI can't make decisions on its own. Humans should remain in control during AI decision-making."* This laid the foundation for more structured debates in the workshop, where participants deliberated over how best to balance AI's efficiency with the need for human oversight.

The workshop offered a platform to build on these initial concerns, moving from individual perspectives toward a collective understanding of how AI could be integrated without sacrificing control. In the scenario analysis, participants discussed specific organizational contexts where AI could support decision-making while still requiring human validation, such as in support. One participant noted: "*AI should be used as a supportive tool for human decisions",* reinforcing the idea that AI's role should be complementary rather than autonomous. These discussions revealed a shared understanding that AI should enhance, rather than replace, human judgment, especially in critical decision-making processes.

A key outcome for both the interviews and the workshop was the emphasis on constant monitoring of AI outputs. While the initial interviews touched on this need, the workshop discussions brought this point to the forefront, with participants exploring various mechanisms for ensuring continuous oversight. One participant remarked: "*It's critical to keep a check on how AI makes decisions, because quality can sometimes be not the level we want it*." This comment led to an in-depth dialogue during the SWOT analysis review, where participants identified ongoing monitoring as essential for detecting and correcting potential biases or errors that could arise from AI systems. These discussions highlighted the necessity of creating feedback loops that ensure AI systems remain aligned with organizational goals and ethical standards.

As participants collectively reviewed the scenarios and SWOT analysis, it became clear that AI should augment human capabilities, making processes more efficient, while also allowing employees to focus on strategic tasks that require human insight. The participants agreed that while AI can automate repetitive tasks and support data-driven decision-making, it is crucial that humans maintain oversight to prevent unintended consequences. This was particularly important in contexts where AI could influence high-stakes decisions.

By the conclusion of the workshop, participants had reached a collective understanding that integrating AI into the organization should be as a supportive tool. This evolution from the interviews to the workshop discussions demonstrated how this is mediated through open dialogue.

These findings illustrate that participants view AI as a valuable tool that works alongside human decision-makers. Human oversight and constant monitoring were seen as a critical component for ensuring that AI applications remain reliable, ethical, and aligned with the organizational values and goals.

4.2.1.3 Collective Commitment to Long-Term Focus

The theme of "Collective Commitment to Long-Term Focus" emerged as a key aspect of the vision formation process. This commitment evolved from early reflections during the interviews, where participants emphasized that while short-term benefits from AI adoption might seem attractive, achieving sustainable success would require a focus on long-term strategies. These initial insights laid the foundation for more comprehensive discussions during the workshop, particularly in the scenario analysis, where participants evaluated strategic options for implementing AI within the organization.

In the interviews, several participants expressed concern over the appeal of quick wins, cautioning against prioritizing short-term gains at the expense of long-term stability. One participant noted: "*Quick wins are attractive, but focus should be on long-term strategies.*" This feedback highlighted a trade-off between achieving immediate results and building a sustainable foundation for AI adoption. Participants were already aware that focusing on short-term outcomes could threaten the long-term benefits that AI could bring to the organization, setting the stage for further reflection during the workshop.

As these concerns were brought into the workshop, the discussions transitioned from individual reflections to a more collective understanding. Initially, participants assessed organizational readiness for AI adoption through statement evaluations, which provided a baseline for the group's perceptions. Following this, the scenario analysis offered a structured platform for participants to debate the implications of short-term projects versus high-quality, long-term AI investments. One participant captured the group's emerging perspective by saying: "*Adoption should aim for high quality and stability.*" This statement became a central point around which the workshop participants aligned, reflecting their shared commitment to long-term success.

The workshop discussions marked a shift from individual concerns to a collective commitment to long-term strategies. During the scenario analysis, participants explored different timeframes for AI adoption, considering implementation within one year, two years, five years, and ten years. These

scenarios facilitated meaningful debate on the most realistic and sustainable timeline for integrating AI within the organization. Through these discussions, participants reached a consensus that while AI adoption might deliver short-term gains, these should not come at the expense of the stability needed for long-term impact. The discussions also explored how AI adoption should be approached, further deepening the group's collective commitment.

This process, from interviews concerns raised during the interviews to deeper, structured discussions in the workshop, demonstrated the evolution of participants' thinking on AI adoption. Over time, they balanced the appeal of short-term advantages with long-term goals, moving toward a shared vision that AI adoption should be treated as a long-term investment. The scenario analysis played a key role in mediating differing opinions and reinforcing the need to align AI initiatives with the organization's future direction.

By the end of the workshop, there was a broad consensus that AI adoption should not solely focus on immediate wins but rather be viewed as a strategic, long-term commitment. The workshop discussions validated the concerns raised during the interviews, illustrating that these discussions helped clarify the organization's collective vision for AI adoption.

The process of reaching consensus on a long-term focus was incremental and progressive. It required multiple rounds of discussion, weighing the benefits of short-term and long-term approaches, before arriving at a shared vision. The final outcome, shaped through collective dialogue and scenario analysis, demonstrated that participants were able to mediate their initial opinions and commit to an AI adoption strategy that aligned with organization's long-term goals.

4.2.2 Managing Uncertainty and Aligning Diverse Perspectives

The aggregate dimension "Managing Uncertainty Aligning Diverse Perspectives" highlights the critical uncertainties that need to be addressed to achieve a unified vision of AI within the organization. This dimension includes two second order themes: "AI as an Inevitable Change" and "Lack of Awareness and Knowledge Gaps". These themes emerged from the first-order concepts identified during the interviews and workshop discussions, reflecting the process of negotiating diverse perspectives within the organization.

4.2.2.1 AI as an Inevitable Change

Participants consistently perceived AI as an inevitable force that is already reshaping the industry and will continue to transform how organizations operate. During the interviews, many participants expressed that AI's influence cannot be ignored, and that organizations must proactively decide how to respond to this transformation. One participant summarized this by stating: "*AI is coming whether*

we want it or not, right? So, you've got to work out how you can use the tools to benefit from them and make use of it." This statement highlights the perception that AI's impact is unavoidable, and the organization must strategically position itself to leverage AI's potential. This initial recognition of AI as an unstoppable force set the tone for further exploration of how the organization should respond.

The workshop built on these insights, offering a more structured platform for participants to engage in a scenario analysis, where they explored how AI is already transforming the industry landscape. One participant emphasized: "*AI adoption is changing the industry landscape, and we need to decide whether we want to lead or follow."* This statement related strongly with the group, and the discussions focused on determining the best strategic position that aligns with the organization's goals and values. The scenario analysis deepened the conversation by encouraging participants to explore different strategies for positioning the organization in this evolving landscape, ultimately leading to the consensus that proactive engagement with AI is crucial.

Participants also highlighted the importance of defining the organization's strategic role in this transformation, whether to lead the change or risk becoming a passive follower. As one participant noted: *"Organizations need to decide their role in this shift. If we don't take the lead, others will."* This idea, brought forward both in interviews and in the workshop, reflected growing awareness that failing to adopt AI would result in the organization falling behind. Another participant also mentioned this urgency, stating: *"If organizations don't engage with AI in the coming ten years, the changes are high that these organizations won't exist anymore after ten years."* This statement was strongly supported by the rest of the participants and highlighting the urgent need to embrace AI within the organization.

By the end of the workshop, there was consensus among participants that AI was not just an option but a necessity for maintaining competitiveness and relevance in its industry. The group collectively framed AI as an inevitable change that must be strategically managed to ensure the organization's future success. The transition from interviews, where participants acknowledged AI's inevitability, to workshop's scenario analysis, where they explored concrete actions, illustrates the process of aligning on the need for a proactive AI strategy.

4.2.2.2 Lack of Awareness and Knowledge Gaps

The theme "Addressing Knowledge Gaps and Awareness" emerged as a significant challenge in the process of developing a unified AI vision within the organization. In the interviews, participants expressed concerns about the varying levels of awareness regarding AI's capabilities, limitations, and overall value. This lack of knowledge often resulted in participants providing defensive or superficial answers, as they struggled to fully grasp the implications of AI for the organization. One participant

admitted: *"My understanding and familiarity with AI are not extensive. It's hard to give a concrete opinion because it's difficult to fully engage when my knowledge of AI is not strong, but AI is something we need to consider in the organization."* This comment reflects a broader trend observed in the responses, where some of the participants felt unsure and hesitant to engage deeply with the topic.

As participants entered the workshop, this lack of familiarity became a crucial starting point in shaping the discussions. Early on, it became apparent that knowledge gaps needed to be an addressed to facilitate a more constructive dialogue. This was evident in the interviews, where the participants were asked about their general knowledge of AI. One participant mentioned: "*My knowledge on AI is not very developed at this moment, but I think it has a lot of potential if you read about it in the media."* There was consensus that while AI's potential was recognized, participants struggled to translate that potential into practical applications within the organization, reflecting a gap in understanding. This also related to the rapid pace of AI development, which left many participants unsure about how to implement it effectively.

To lay a foundation for the workshop, general information about AI, specifically in the steel industry, along with real-world examples of AI applications, was shared in a knowledge-sharing document. This helped participants engage more meaningfully in the debates. While the initial preparation was useful, it was clear that more depth was needed to fully bridge the knowledge gaps.

During the SWOT analysis review in the workshop, participants identified limited AI knowledge as a significant weakness within the organization. This moment was crucial for the group's reflection on how to move forward with AI adoption. One participant noted: *"We've identified AI as something important, but there's still too little knowledge about it. It's hard to commit to a strategy where the understanding is not fully there, and the actual potential is not known."* This realization set the stage for further discussions on how to bridge these gaps as part of the AI vision formation process.

As the workshop progressed, participants had the opportunity to think critically about the knowledge gaps and the options for addressing them. In the scenario analysis, one of the scenarios focused on building internal AI expertise or relying on external teams. An open dialogue emerged on how to manage this within the organization. This allowed participants to explore different strategies for managing AI adoption.

By the end of the workshop, there was a shared understanding that bridging these knowledge gaps was essential for developing a unified AI vision. Participants acknowledged that without a unified understanding of AI's potential and limitations, the organization would struggle to align on a strategic approach. As one participant concluded in the workshop: *"We need to address knowledge gaps with*

AI to create a common understanding, so investments in this area are crucial. Meetings like this are the first transition towards successful AI adoption." This realization marked the transition from initial uncertainty to a collective agreement on the importance of education in the AI visioning process.

Overall, the workshop discussions highlighted the importance of addressing knowledge gaps as part of the broader process of aligning diverse perspectives. Through interactive discussions, participants moved from expressing uncertainty about AI to recognizing the need for more knowledge within the organization. The process of visioning became one of building collective understanding, enabling the organization to move forward with a more informed and shared AI vision.

4.2.3 Facilitating Dynamics in AI Vision Formation

The aggregate dimension "Facilitating Dynamics in AI Vision Formation" highlights the evolving nature of how the AI vision took place within the organization. The dimension consists of three key second-order themes: "Building Consensus through Group Discussions and Sense-Making," "Integration of Internal and External Preferences," and "Navigating Ethical and Practical Considerations". These themes emerged from the identified first-order concepts during the interviews and in the workshop discussions.

4.2.3.1 Building Consensus through Group Discussions and Sense-Making

The process of building consensus around a shared AI vision within the organization relied heavily on structured group discussions to align individual perspectives that were already largely in agreement. The scientific relevance of this process is rooted in how group discussions and sense-giving mechanisms further solidified these matching opinions into a cohesive strategy. Through these discussions, participants were able to articulate, validate, and fine-tune their viewpoints, transforming individual understandings into a collective AI vision.

During the interviews, participants expressed similar views on the timing and scale of AI adoption, reflecting a broad consensus on the importance of AI for the organization's future. One participant noted: *"We all recognize that AI is going to play a critical role, and the sooner we start investing and planning for it, the better."* This shared sentiment laid a strong foundation or the workshop discussions, where the group moved beyond merely agreeing on the importance of AI. They began to explore the practicalities of its implementation, focusing on whether a gradual or rapid adoption would be more appropriate and how to balance the organization's internal capabilities with external resources.

In the workshop, the scenario analysis provided an opportunity to explore how the organization could best position itself to adopt AI relative to competitors. While there was consensus on the need for AI

adoption, the discussions delved into specific considerations, such as how AI should align with broader organizational goals. One participant mentioned: *"It's clear we're all on the same line about the adoption of AI, but we need discussions like this to figure out what we need to prioritize to make it happen."* This sense-giving process helped participants refine their already aligned perspectives into a more concrete vision.

These discussions also supported a collective understanding that AI was not just an inevitable development, but one that required careful strategic actions. One scenario focused on whether to adopt AI or optimize current features already within the organization. This led to consensus, with one participant emphasizing: *"The real challenge isn't deciding whether we should adopt but figuring out the best way to integrate it."* This reflection illustrates how participants moved from broad agreement on AI adoption to deeper considerations about its integration.

The scientific relevance of this process lies in how structured discussions deepened an already strong alignment among participants. The group's ability to engage in sense-making allowed them to move beyond initial agreement and address more complex issues, such as resource allocation and timing.

By the end of the workshop, participants highlighted the importance of structured facilitation in managing differing interpretations and priorities. By focusing on the process rather than just the outcomes, the group successfully developed a shared AI vision that balances ambition with feasibility. The collective sense-giving efforts enabled participants to move beyond their individual interpretations and achieve a unified vision.

Overall, the process of visioning in the workshop highlighted the importance of structured facilitation, even when participants initially shared similar views. The discussions flowed smoothly, and participants were able to present well-reasoned arguments for how and why AI should be adopted. The workshop allowed participants to transform their individual perspectives into a unified, detailed vision for AI adoption, showing the scientific relevance of group discussions in shaping and refining a collective strategy.

4.2.3.2 Integration of Internal and External Preferences

The theme "Integration of Internal and External Preferences" highlights the challenge of aligning internal priorities with external customer expectations to build a shared AI vision. Throughout the interviews, participants emphasized that balancing these perspectives was essential to ensure that the organization's AI initiatives create value both internally and externally. One participant expressed the need for this alignment by stating: *"Learning what our customers prefer regarding AI is just as important as deciding how we want to use AI internally."* This comment reflects a shared

understanding that a dual focus, addressing both internal efficiencies and external customer needs, is crucial for successful AI adoption.

In the interviews, this dual focus initially introduced some complexity, as participants had to balance the differing priorities of optimizing internal operations while also addressing customer-facing goals. Remarkable was that participants from different departments tended to focus on either the internal or external aspects of AI adoption, depending on their roles within the organization. For instance, a participant from the Sales department concentrated on how AI could improve sales and meet customer needs, while a participant from the Testing and Support team focused on how AI could optimize internal processes. This division in focus reflected how the participants' specific responsibilities influenced their perspectives.

To address this in the workshop, the structured discussions and scenario analysis were divided into internal and external components. By clearly separating these two areas, the participants could explore each perspective more thoroughly without losing sight of the organization's broader goals. This approach also led to the development of both an internal and external AI vision for the organization. These structured discussions validated the importance of balancing internal and external preferences as participants engaged in debates during the statement evaluations and scenario analysis. While some emphasized the need to streamline internal operations, others focused on how AI could enhance customer experience and meet evolving market expectations. This dual focus led to more nuanced discussions, illustrating how AI could simultaneously address operational efficiency and customer satisfaction.

As the discussions progressed, participants reached a consensus that the organization must integrate both perspectives to create a balanced AI vision. In the workshop this was summarized: *"AI solutions need to be streamlining our internal operations, but also create value for our customers."* This statement highlights the importance of building an AI strategy that supports internal goals while also addressing external customer expectations.

By the end of the workshop, participants had developed a shared understanding that aligning internal and external preferences was not just desirable but essential for the organization's strategic positioning. They agreed that integrating customer insights into AI initiatives would provide a competitive advantage and help position the organization as a leader in customer-centric innovation.

Overall, the workshop discussions illustrated that while the dual focus on internal and external priorities introduced complexity, it also improved the conversation and helped participants see the connection between both perspectives. This balance enabled the group to develop more comprehensive AI vision that supports both operational efficiency and customer satisfaction.

4.2.3.3 Navigating Ethical and Practical Considerations

The theme “Navigating Ethical and Practical Considerations” captures the tension between ethical concerns and practical implementation when adopting AI. During the interviews, participants frequently discussed the ethical dimensions of AI, emphasizing the need to consider fairness, transparency, and responsibility in all AI-related decisions. One participant stated: *“I think ethics within technology and within AI is also super relevant, comes back down to basically what I was saying earlier about how we choose to use technology.”* This comment reflects the shared belief that AI adoption should align with ethical values and responsible innovation, rather than being driven purely by technological capabilities.

Participants also expressed concerns about the potential misuse of intellectual property and the need to safeguard data security and confidentiality. One participant emphasized: “*We have to make sure that our data and Intellectual Property are protected. If AI learns from our systems, we need to be confident it’s not giving away our secrets.”* This highlighted that ensuring data integrity and intellectual property security is crucial for building trust in AI, both within the organization and externally.

The workshop discussions further explored how these ethical considerations could be balanced with practical needs. Although the discussions did not present any major disagreements or clashes, participants collectively recognized the importance of integrating ethical standards with practical AI implementation. One participant remarked: *“AI can help us become more efficient, but we need to make sure that doesn’t come at the cost of our ethical integrity.”* This sentiment, which others agreed with, demonstrated a shared understanding of the need for responsible AI adoption. The discussion was smooth, and viewpoints were aligned, with participants focused on finding ways to balance ethics and practicality.

While there was consensus on the importance of ethical considerations, participants also acknowledged the practical benefits AI offers, such as increased efficiency and better decision-making. During the SWOT analysis review, participants debated whether ethical standards should be considered a strength or potential limitation. Some participants viewed strong ethical principles as enhancing the organization’s reputation, while others pointed out that strict ethical guidelines might slow down AI implementation or limit the organization’s ability to explore new capabilities. However, this discussion did not lead to significant differences in opinion, as participants generally agreed that ethical standards were essential for long-term success.

By the end of the workshop, participants had reached a consensus: AI must be adopted in a manner that balances practical benefits with ethical considerations. They agreed that the organization should

establish clear guidelines to safeguard intellectual property, adhere to ethical norms, and ensure fairness and transparency. This shared understanding reflected the group's commitment to responsible AI adoption, ensuring that the organization remains competitive while upholding its core values.

4.2.4 Coherence in AI Visioning

The aggregate dimension "Coherence in AI Visioning" highlights how the AI vision within the organization evolved through a continuous process of shared understanding and meaning making. This dimension is built on one main second-order themes: "Consistency in Individual and Group Visions". This theme emerged from the identified first-order concepts during the interviews and in the workshop discussions.

4.2.4.1 Consistency in Individual and Group Visions

The individual perspectives shared during the interviews closely aligned with the group consensus that emerged during the workshop. From the outset, participants consistently viewed AI as a critical component that the organization must integrate strategically. For example, one participant emphasized, "*Within two years, we have to ensure that the strategy for AI adoption in our systems is clear and integrated into our strategies."* This forward-looking sentiment was reflected throughout the workshop, where participants agreed that AI's role in enhancing both internal efficiency and customer-facing solutions was crucial for the organization's long-term success.

One notable aspect of the visioning process was the consistency in views across both the interviews and the workshop. This consistency could be attributed to the participants' interest in AI, despite their acknowledged lack of knowledge, and the innovative mindset that focused on continuously improving the organization. The alignment in perspectives may have stemmed from a shared mindset in the organization, where digital transformation and innovation are deeply embedded in the organization's culture.

While the participants were aware of AI's importance from the beginning, there were some uncertainties related to knowledge gaps and lack of awareness about specific applications of AI. However, the knowledge-sharing document distributed before the workshop and the structured group discussions helped bridge these gaps. This allowed participants to refine their understanding of AI's potential and how it could be integrated into the organization's broader strategies.

Throughout the process, there were no major shifts in the core vision from the interviews to the workshop. Although participants emphasized different aspects, some prioritizing internal automation, while others focused on enhancing customer engagement, the central belief that AI is a

transformative and essential tool for future growth remained consistent. As one participant remarked: *"Productivity, efficiency, and reliability are the key, both from an internal and external perspective".* This viewpoint was strongly aligned with others during the workshop, strengthening the alignment of perspectives.

The consistency in vision from the interviews to the workshop shows that many participants entered the discussions with a clear and unified understanding of AI's role. The facilitation process, using structured questioning and paraphrasing techniques, ensured that all participants' perspectives were heard and incorporated. By rephrasing key points and asking targeted questions, the facilitator helped refine individual viewpoints and align them into a cohesive group vision.

This alignment was strengthened by the workshop's focus on balancing discussion and consensus-building. The use of facilitation methods kept the ground focus on the main vision while allowing space for exploration and clarification of differing priorities. As a result, initial uncertainties or varied priorities were explored, clarified, and ultimately integrated into a unified AI vision.

In conclusion, the process revealed a strong consistency in the core ideas around AI, with minimal differences in views throughout the visioning process. This consistency reflects both the organization's existing innovative culture and the effectiveness of the structured discussions in supporting a shared understanding of AI's strategic importance. By the end of the workshop, the group had reached consensus on both an internal and external AI vision, incorporating diverse perspectives to address the organization's internal efficiency and external customer needs.

4.2.5 Validation with the Survey

To further ensure organizational consensus and validate the AI visions developed during the interviews and workshop, an organization-wide survey was conducted. This survey, completed anonymously by one-third of the employees, aimed to assess how well the internal and external AI visions could be generalized across the entire workforce of DIGI-STEEL.

Initially, the interviews revealed individual perspectives marked by uncertainty and knowledge gaps regarding AI, particularly its role and potential within the organization. However, during the workshop discussions, participants gradually moved toward a group consensus, aligning their views into a cohesive AI vision. The survey results provided a final validation of this process, demonstrating that the AI visions developed in the workshop were not only shared among participants but also representative of the organization.

The results demonstrated a strong alignment across the organization. Seventy-four percent of the participants identified with the provided internal AI vision, while the remaining respondents were

neutral. Similarly, seventy-nine percent supported the external AI vision, with the rest expressing neutrality. These findings reflect a high level of organizational identification, indicating that the visioning process successfully captured both employee expectations and the strategic direction for AI adoption.

This strong consensus highlights not only the practical relevance of the visioning process but also its scientific significance. The successful progression from individual uncertainty and lack of knowledge to group consensus, and ultimately to a vision that represents the company as a whole, offers valuable insights for other organizations facing similar challenges. The approach developed in this study demonstrates the potential for guiding organizations through AI adoption by supporting a shared vision that aligns diverse perspectives and long-term strategies.

4.2.6 Dynamic Model of AI Visioning Process

Based on the findings of this study, a dynamic model emerged that visualizes the process of developing a shared AI vision. The model illustrates how an organization transitions from diverse individual perspectives to a unified collective vision through structured facilitation and collaborative deliberation. By addressing foundational uncertainties and aligning perspectives, the process enables participants to more progressively toward a cohesive, shared vision. This progression is captured in two interrelated phases: “Managing Uncertainty and Aligning Diverse Perspectives” and “Coherence in AI Visioning”. These phases reflect the mechanisms that facilitated alignment and the dynamic nature of building consensus through collective deliberation.

Collective deliberation is central to understanding how diverse perspectives were synthesized into a shared vision. Defined as a dynamic process of dialogue and alignment, collective deliberation involves participants engaging collaboratively to interpret uncertainties, align priorities, and address differing perspectives (Geels, 2010). Drawing on sense-making and sense-giving frameworks (Gioia & Chittipeddi, 1991), this process combines the individual interpretation of complex topics with structured facilitation that reframes insights into a shared understanding. This interaction between individual sense-making and collective sense-giving ensures that perspectives are continuously refined and aligned as the group progresses toward consensus.

The first phase, “Managing Uncertainty and Aligning Diverse Perspectives”, aimed to resolve key challenges, creating a foundation for trust and shared understanding. Through reflective engagement, three primary challenges emerged as critical to this phase: mediating scepticism about AI adoption, managing control and oversight, and encouraging a collective commitment to a long-term focus. These themes were foundational themes that needed to be addressed before participants could effectively engage in more strategic discussions. Participants entered this phase with varying levels of

knowledge and acceptance of AI, leading to diverse perceptions of its risks and opportunities. This lack of familiarity often resulted in defensive responses, as participants hesitated to fully engage with the topic due to uncertainties about its implications.

Managing control and oversight was closely linked to scepticism, as participants emphasized the need for human oversight to ensure ethical and transparent AI adoption. Discussions about governance structures helped participants address their concerns about control, reinforcing trust and reducing hesitancy. These conversations dynamically interacted with the broader theme of encouraging a commitment to long-term focus. As participants began to see AI adoption as a more than short-term adjustment, their perspectives shifted toward considering its strategic potential for the organization's future.

To address these uncertainties, the process began with individual sense-making, enabling participants to reflect on their own perceptions and interpretations. Recognizing the central role of knowledge gaps in shaping defensive responses, a knowledge-sharing intervention was introduced at the end of this phase. This intervention provided participants with a shared baseline of understanding, bridging their varying levels of familiarity with AI and equipping them to engage more constructively in collaborative discussions. This step provided participants with foundational insights into AI's relevance and applications, equipping them with a shared understanding of AI. By alleviating uncertainties and creating a more informed environment, the intervention prepared participants for the deeper, more collaborative discussions of the next phase. This illustrates how the mechanism of this phase, trust-building, open dialogue, and knowledge-sharing, progressively resolved uncertainties and set the stage for alignment.

The second phase, "Coherence in AI Visioning," focused on refining individual perspectives into a cohesive collective vision through collaborative and dynamic interactions. Building on the trust and foundational understanding established in the first phase, this phase introduced collective deliberation as the central mechanism. Through structured facilitation and dynamic group discussions, participants were guided to explore diverse perspectives, address competing priorities, and align their insights. Activities such as scenario analysis and reflective dialogue allowed participants to balance internal priorities with external considerations, such as ethical and practical implications of AI.

Building consensus was a critical mechanism in this phase, enabling participants to align their individual insights into a unified framework. Structured discussions provided a framework for participants to identify synergies and address tensions, enabling them to create a shared understanding of AI's strategic potential. For instance, scenario analysis helped participants evaluate

competing priorities, offering a practical way to balance internal efficiencies with customer-facing objectives. These interactions revealed the dynamic nature of the process, where insights from one focus area informed and reinforced alignment in others.

Navigating ethical and practical considerations emerged as a crucial step in this phase, reflecting participants' commitment to ensuring that AI adoption aligned with organizational values and societal expectations. Collaborative discussions allowed participants to address potential trade-offs between efficiency-driven goals and broader responsibilities, such as ethical AI implementation and social impact. These deliberations highlighted how the process dynamically revisited earlier insights, such as the importance of oversight and long-term focus, to refine and adapt the shared vision.

The placement of themes within the two phases reflects their interconnected roles in the visioning process. The foundational themes of the first phase, such as mediating scepticism and managing oversight, created the conditions for deeper alignment by building trust and reducing uncertainty. These efforts directly supported the more strategic deliberations of the second phase, where participants addressed complex challenges, such as integrating diverse priorities and navigating ethical considerations. For example, addressing scepticism in the first phase not only built on trust but also encouraged participants to engage openly in more complex discussions about balancing internal efficiencies with external customer needs in the second phase. Similarly, bridging knowledge gaps early on laid the groundwork for participants to confidently contribute to nuanced deliberations on long-term strategies and ethical considerations.

The process was driven by dynamic and adaptive collaboration, where mechanisms such as trust-building, open dialogue, and dynamic alignment enabled participants to revisit and refine their perspectives. These mechanisms were essential in navigating the uncertainties and diverse viewpoints that characterize AI visioning. Early uncertainties were progressively resolved through trust-building and knowledge-sharing, creating a foundation for more integrative discussions. Collaborative frameworks, such as scenario analysis, further supported alignment by guiding participants through structured and reflective dialogues. These mechanisms reflect the dynamic and non-linear nature of the visioning process, where themes interacted and evolved to support a shared outcome.

This process-based model highlights how structured facilitation and collaborative mechanisms enable organizations to align diverse perspectives in the context of AI's complexity. The adaptive nature of the process the unique challenges posed by AI, such as its rapid evolution, spillover effects, and broad applicability. These are characteristics of a general-purpose technology, creating high levels of uncertainty and complexity in organizational decision-making (Crafts, 2021). Furthermore, as

Ruokonen and Ritala (2023) argue, an AI-first strategy, defined as persistent intent to achieve competitive advantage through data, algorithms, and execution, encourages organizations to align their vision with AI's transformative potential. By encouraging trust, dynamic discussions, and leveraging structured tools, this process supported participants in navigating uncertainties and adopting a forward-thinking approach to their shared vision.

By emphasizing dynamic alignment and the interactions between themes, the model offers a framework for navigating the complexities of AI visioning. It demonstrates how organizations can collaboratively deliberate and align perspectives within dynamic ecosystems and innovation systems. Through mechanism such as structured facilitation and sense-making, the process addresses uncertainties for AI adoption, guiding diverse perspectives toward a shared and cohesive vision. This approach provides both theoretical insights into collective AI visioning and practical tools for application. This process is visually represented in Figure 6, which illustrates the interconnected phases, themes, and dynamic interactions that guide participants from diverse perspectives to a unified vision.

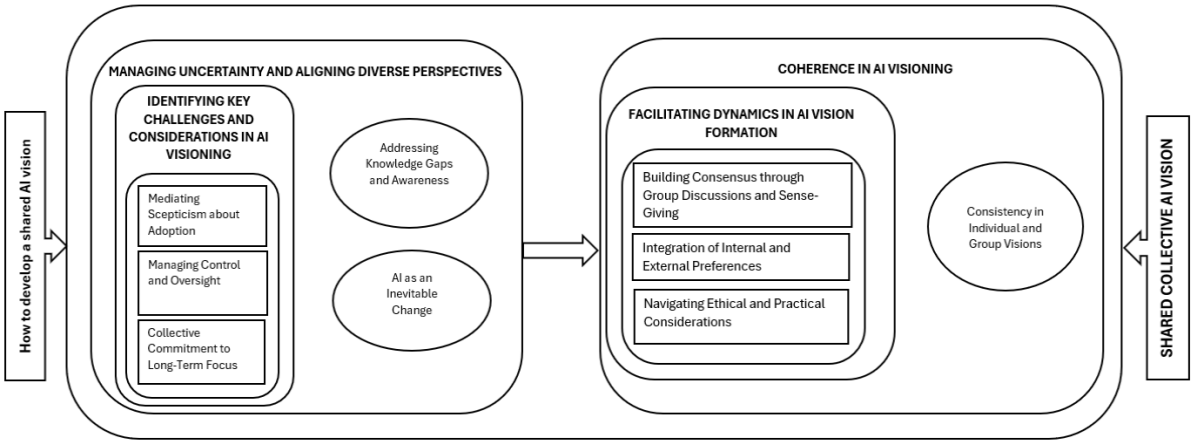

Figure 6. Dynamic Model of AI Visioning Process.

5. Discussion and conclusion

This section evaluates and analyses the results of the study, addressing its contributions, limitations, future research, and practical implications. Furthermore, it includes a conclusion that discusses the results of this study and their contributions.

5.1 Discussion

5.1.1 Contributions

This study contributes significantly to both the scientific literature and practical applications by addressing the complexities of visioning in the context of disruptive technologies, particularly AI. Existing research highlights gaps in understanding how organizations can strategically leverage AI while fostering trust and engagement among employees (Fountaine et al., 2019; Dwivedi et al., 2021). This study bridges these gaps by introducing a dynamic, tailored model for AI visioning, demonstrating how trust-building, knowledge-sharing, and structured facilitation can enable alignment during uncertainty. By integrating perspectives from employees and leaders in a co-creation process, the research expands on the sense-making and sense-giving theories of Gioia & Chittepeddi (1991), illustrating how collaborative alignment processes contribute to successful AI adoption.

AI's unique characteristics, its general-purpose nature, rapid evolution, and broad applicability, pose challenges that traditional visioning frameworks are not fully equipped to address (Crafts, 2021). This research demonstrates how a dynamic, tailored model can address these complexities, providing organizations with actionable tools to navigate the uncertainties of AI adoption effectively.

From a scientific perspective, the study introduces a dynamic model for AI visioning that advances theoretical understanding of vision creation in dynamic and uncertain environments. Traditional visioning frameworks, such as the one provided by de Wit (2020), often emphasize stable and predictable environments. This research extends these frameworks by highlighting the role of adaptive mechanisms such as trust-building, knowledge-sharing, and structured facilitation, in aligning diverse perspectives during periods of uncertainty and rapid change. For instance, trust-building reduced scepticism, enabling participants to engage openly in discussions, while knowledge-sharing bridged gaps in understanding to ensure meaningful contributions. These findings align with Ruokonen and Ritala 's (2023) argument that general-purpose technologies like AI demand strategic intent and flexible processes to unlock their full potential. By showing how these mechanisms dynamically interact, this study sheds light on how organizations can come together to create a shared vision while addressing the complexities of disruptive technologies. Additionally, the study

emphasizes the role of collective deliberation as a critical process for navigating uncertainties and integrating diverse perspectives, extending existing theories on collaborative alignment during technological transitions (Gioia & Chittipeddi, 1991; Geels, 2010).

This study also contributes to sense-making and sense-giving theories (Gioia & Chittipeddi, 1991) by illustrating how these processes enable alignment during technological transitions. It emphasizes the importance of addressing uncertainties, such as ethical concerns and knowledge gaps, to build trust and encourage shared understanding among stakeholders. The dynamic process highlights how organizations can integrate diverse viewpoints and navigate the complexity of AI adoption through collaboration and adaptation, adding depth to existing theories of collective visioning and extending their applicability to disruptive technologies. Furthermore, the study provides insights into how ethical concerns and governance challenges can be addressed through collaborative mechanisms, ensuring alignment with organizational values and expectations. By using mechanisms such as trust-building, structured facilitation, and open dialogue, organizations can navigate the ethical complexities of AI adoption while maintaining transparency and encouraging stakeholder trust.

From a practical perspective, the dynamic model offers DIGI-STEEL a structured and actionable framework for developing shared internal and external AI visions. By refining de Wit's (2020) traditional four-step visioning frameworks into a tailored three-step process, the study emphasizes adaptability, stakeholder engagement, and long-term strategic thinking. The model ensures that AI adoption aligns with both internal capabilities and external opportunities, creating a vision that is both actionable and reflective of diverse stakeholder priorities. Mechanisms such as trust-building and structured facilitation were essential in addressing scepticism, ethical concerns, and governance challenges, enabling DIGI-STEEL to create a unified vision that balances AI's transformative potential with organizational values and strategic objectives. Additionally, this dynamic provides a framework for organizations facing similar challenges, offering structured tools to align internal and external visions in contexts characterized by uncertainty and rapid technological change.

Finally, this research contributes to the broader literature on visioning disruptive technologies. By showing how traditional frameworks can be adapted to accommodate AI's unique demands, the study provides a foundation for exploring similar approaches for general-purpose technologies, which also operate in dynamic ecosystems (Ruokonen & Ritala, 2023). By situating these findings within the broader environment of innovation systems, the study highlights the relevance of collaborative visioning in enabling organizations to remain strategically aligned in rapidly changing environments. These insights emphasize that navigating disruptive technologies requires visioning processes that are

not only strategic but also dynamic and inclusive, ensuring that diverse stakeholder perspectives are integrated into a cohesive strategy.

5.1.2 Limitations

Despite its contributions, this study has several limitations that should be considered. First, the research was conducted as a single-case study within a specific industry, namely DIGI-STEEL in the steel sector. While the findings offer valuable insights into this context, the generalizability of the results may be limited to organizations with similar innovation-driven cultures (Yin, 1981). DIGI-STEEL operates in an environment that is highly receptive to digital transformation, which may not be representative of more traditional industries with different operational models (Misra et al., 2023), Future research could explore the applicability of the model across diverse contexts to validate its broader relevance.

A limitation of this study is the survey response rate, with only one-third of employees participating, which may limit the generalizability of the findings. Non-respondents may have had differing views on AI adoption, potentially introducing bias by skewing the results towards those who are more engaged or interested in AI (Herremans, 2021). Future studies should aim for higher response rates to ensure more comprehensive representation across the workforce, as higher participation may offer a fuller picture of organizational perspectives on AI (Weitz et al., 2022).

Additionally, the findings are closely tied to DIGI-STEEL's innovative-centric environment. The organization's strong focus on digital transformation likely influenced participants' engagement with the visioning process, resulting in high levels of alignment (Doumi et al., 2023). In organizations with lower technological maturity or different cultural contexts, the visioning model might need to be adjusted to reflect lower levels of enthusiasm or readiness for AI adoption (Larwood et al., 1995).

5.1.3 Future research

Future research could build upon the dynamic model developed in this study by testing its applicability across various industries and organizational contexts. This model offers a structured approach to navigating the complexity of AI adoption, but its robustness and adaptability need validation beyond the innovation-driven culture of DIGI-STEEL. Applying the model in traditional industries or sectors with lower technological readiness could reveal whether the mechanisms identified in this research – such as trust-building, knowledge-sharing, and structured facilitation, are universally effective or require adjustments to fit different organizational dynamics (Brynjolfsson & Mcafee, 2017).

Additionally, exploring how the dynamic model functions in organizations with varying innovation profiles could reveal whether similar challenges arise when aligning internal and external AI visions (Misra et al., 2023). This could help identify industry-specific adaptations needed for the model to effectively address sector-specific challenges, further enhancing its use for a broader range of organizations.

Longitudinal studies represent another promising opportunity for future research. Tracking the evolution of AI visioning processes over time would shed light on how organizations adapt their shared visions in response to ongoing technological advancements and changing external conditions. This would also reveal whether the shared AI vision remains relevant or requires revision as technology evolves (Larwood et al., 1995). Longitudinal research could provide deeper understanding of the long-term impact of AI adoption on organizational performance, helping identify the elements that lead to sustained success (Fuller et al., 2022). These insights would provide a deeper understanding of the long-term impact of the dynamic model.

Additionally, future research could integrate quantitative methods to measure the progress of AI adoption and effectiveness of AI visioning. Developing metrics to evaluate stakeholder engagement, adaptability to changes, and the degree of alignment between internal capabilities and external opportunities would complete qualitative findings (Enholm et al., 2021).

By prioritizing the testing and refinement of the dynamic model, expanding its application across industries, and integrating longitudinal and quantitative approaches, future research can further validate and extend the contributions of this study. These efforts could also enhance actionable insights for organizations navigating the challenges of disruptive technologies, ensuring that the dynamic model remains relevant in dynamic ecosystems and innovation systems.

5.1.4 Practical implications

This study offers several practical insights for organizations aiming to develop a shared AI vision. The three-step model, which includes contextual and industry environment analysis, desired future organizational position and time horizon, and organizational alignment, provides a structured framework that organizations can adopt to guide AI adoption (de Wit, 2020). By adopting this model, organizations can ensure that their AI vision is strategically aligned, reflects stakeholder consensus, and is grounded in a comprehensive understanding of both internal capabilities and external opportunities (Doten-Snitker et al., 2020).

Furthermore, the importance of ongoing feedback loops cannot be overstated. As AI technologies evolve rapidly, organizations must continuously review and adapt their AI vision to stay responsive to

technological changes (Doumi et al., 2023). Engaging stakeholders through interviews and workshops, as demonstrated in this study, encourages collaboration and promotes shared ownership of AI initiatives, thereby enhancing the likelihood of successful AI adoption and long-term strategic alignment (Phaal & Muller, 2009).

By focusing on mechanisms such as trust-building and structured facilitation, organizations can address scepticism, ethical concerns, and governance challenges effectively. These mechanisms ensure that AI's transformative potential is balanced with organizational values, laying the foundation for a unified and actionable vision.

5.2 Conclusion

This study sets out to investigate how a shared AI vision can be developed and tailored specifically for DIGI-STEEL, resulting in the following research question:

"How can a shared AI vision be developed and tailored for DIGI-STEEL to address current and future challenges?"

By combining a literature review, stakeholder interviews, and a workshop, this research demonstrated that traditional visioning process, originally designed for stable environments, can be effectively adapted to address the unique challenges posed by AI. Two key outcomes emerged from the study: the refinement of the three-step visioning framework for application in the AI context, and the development of a dynamic model that explains the mechanisms for alignment during the visioning process. The refinement of the three-step visioning framework is structured as follows:

1. Contextual and Industry Environment Analysis;
2. Desired Future Organizational Position and Time Horizon for AI;
3. Organizational Alignment and Consensus.

This three-step framework served as the foundation for DIGI-STEEL's AI visioning process, enabling stakeholders to address internal capabilities and external opportunities. The high degree of alignment observed in the post-workshop survey validated the framework's effectiveness and highlighted the critical role of structured stakeholder engagement in ensuring actionable outcomes.

Beyond the framework, the study introduced a dynamic model that explains the alignment mechanisms necessary for navigating AI visioning in complex environments. The model comprises two interrelated phases:

1. Managing Uncertainty and Aligning Diverse Perspectives, focusing on identifying challenges and considerations, bridging knowledge gaps and awareness, and recognizing AI as an inevitable change.
2. Coherence in AI Visioning, where individual perspectives are synthesized into a shared vision through facilitating dynamics in AI visioning with mechanisms like trust-building, structured facilitation, and dynamic collaboration.

The dynamic model illustrates how mechanisms like trust-building and knowledge-sharing interact dynamically, allowing organizations to navigate uncertainties and diverse stakeholder perspectives associated with AI adoption.

From a scientific perspective, this study makes several contributions to the field. First, it extends traditional visioning frameworks by demonstrating how they can be adapted for disruptive technologies like AI. Second, it highlights the theoretical importance of adaptive mechanisms and shows how they enable alignment during technological transitions. Finally, the dynamic model enriches the literature on collective deliberation, addressing gaps in understanding how organizations navigate visioning for general-purpose technologies like AI in dynamic ecosystems.

For DIGI-STEEL and other organizations, these findings provide practical guidance for developing actionable AI visions. The research demonstrates that structured processes combined with dynamic collaboration can enable organizations to create cohesive visions that align internal resources with external opportunities. The emphasis on adaptability and stakeholder engagement ensures that the resulting vision is not only actionable but also reflective of diverse perspectives.

In conclusion, this study provides DIGI-STEEL with a robust, actionable framework for navigating its AI adoption journey. It emphasizes the urgent need for the organization to embrace AI and align its strategies to leverage its transformative potential. While traditional frameworks provide a strong foundational, this research demonstrates that their relevance in rapidly evolving technological landscapes is significantly enhanced through the integration of dynamic mechanisms. By addressing a critical gap in the literature on visioning for general-purpose technologies, this study offers a structured and adaptive model tailored for dynamic ecosystems. These findings highlight the importance of flexibility, collaboration, and strategic alignment in visioning processes, presenting a valuable model for organizations adopting disruptive technologies like AI.

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Appendices

Appendix A – Company Info

Voortman Steel Group is a family company that deals with the manufacturing of high-quality CNC steel processing machines and creator of solid steel solutions. The passion of the company is building success and creating products that provide real solutions for the Steel Processing industries. The company was founded in 1968 and has 650 employees with ten different locations all over the world. Voortman headquarters is located in Rijssen, the Netherlands.

DIGI-STEEL is a start-up and member of the Voortman Steel Group. DIGI-STEEL introduces the first fully cloud-based software solution for steel processors. It is the next-generation steel workshop management software guiding customers' factories into the smart industry 4.0 era. DIGI-STEEL builds enterprise software for the steel industry, specifically focused on the production processes. A lot of the work we support is characterized by being relatively low volume and having a high variety. For example, one of our larger customer segments is steel fabricators. They build steel structures for construction projects that are often one-of-a-kind using different profiles, sizes, and connections every time.

Appendix B – Search Strategy and Search Keys

To gather relevant literature on Artificial Intelligence and the development of shared AI visions, the Web of Science database was primarily used. The goal was to identify high-quality academic sources that would inform the study on shared AI visioning and its application in organizational contexts. The search focused on literature reviews, empirical studies, and theoretical frameworks related to AI adoption, vision development, and strategic management. Web of Science was chosen due to its extensive coverage of peer-reviewed journals and high-impact publications across multiple disciplines. This ensured to credible, high-quality literature on AI, organizational visioning, and strategy.

The search was filtered to prioritize articles from ABS 3 or higher-rated journals. These journals are known for their high academic standards, and the selection aimed to include well-cited articles that reflect significant contributions to the field. By focusing on widely recognized research, the search aimed to gather the most relevant sources.

The search strategy combined snowballing techniques and targeted keyword searches. Snowballing involved exploring the reference lists of key articles to identify additional relevant studies, allowing for a broader and more comprehensive literature review. In parallel, direct keyword searches were conducted with a focus on filtering results based on citation counts, relevance, and journal quality.

The key search terms were chosen to capture a wide range of topics related to AI adoption and the process of vision development within organizations. Primary search terms included: “Artificial Intelligence”, “Vision”, “Shared Vision”, “AI Strategy”, “Organizational Alignment”, “Sensemaking AND AI”, “AI adoption”, “Strategic Vision and AI”. These keywords ensured a thorough exploration of AI’s role in both technical and strategic contexts, with a particular focus on how organizations align around a shared vision for AI.

Overall, the search strategy ensured that the literature reviewed was both relevant and comprehensive, providing a solid foundation for understanding the development of a shared AI vision and its broader strategic implications for DIGI-STEEL.

Appendix C – Text sends to respondents before interviews for extra clarity

I'm reaching out because I'm working on my master's Thesis in Business Administration at DIGI-STEEL. As part of my thesis, I am exploring the opportunities for implementing Artificial Intelligence (AI) within DIGI-STEEL. This research aims to develop a shared vision for AI implementation to address current and future challenges within our organization.

AI, characterized by its ability to simulate human intelligence, is revolutionizing various industries by automating tasks and shifting the workforce towards roles that require creativity and strategic thinking. AI presents remarkable opportunities for business optimization and operational efficiency, which is why we are researching the opportunities within DIGI-STEEL.

To gather valuable and relevant data, I plan to conduct interviews with employees from various departments and hierarchical levels. After discussing this with Jochem, my thesis supervisor, I would like to invite you to participate in an interview. The interview can be conducted via Microsoft Teams, or in person at our office in Rijssen. The purpose of the interview is to gather your perspective on AI and its potential impact on our organization, both internally and externally.

The interview will take approximately 30 minutes and will be recorded for data analysis purposes. After conducting all the interviews, I will organize a workshop, in a small group, to create even more consensus in the AI vision and develop a roadmap for a shared AI vision that aligns with our organizational goals.

Appendix D – Written Consent for Participating in the Interview

Written consent for participating in the interview.

I have read and understood the total reach out which is provided by the researcher.

I consent to participate in the study and consent that the interview will be used in the data analysis, and the interview will be recorded, transcribed, coded, and stored at the researchers' personal OneDrive of the organization till the defense of the Thesis is conducted.

Name of participant:

Function at DIGI-STEEL:

Date:

Signature of participants:

Appendix E – Interview Guide English

Interviewguide DIGI-STEEL – By Daan ten Dam

Research question: *"How will a shared vision for AI adoption guide DIGI-STEEL in addressing current and future challenges?"*

Introduction:

Thank you for agreeing to participate in this interview and for taking the time to speak with me.

The purpose of this interview is to gather your insights into AI adoption within DIGI-STEEL, to develop a shared AI vision that addresses current and future challenges.

Your responses will be kept confidential, and your identity will not be disclosed in my thesis.

The interview will take approximately 30 minutes and will be recorded for data analysis purposes.

Feel free to skip any questions that you find uncomfortable.

Before we start, do you have any questions?

Questions:

Background information:

1. Can you tell me a bit about your background?
2. What is your current role at DIGI-STEEL?
3. How long have you been working at DIGI-STEEL, and what are your main responsibilities?

Topic 1: Current understanding of AI

4. How familiar are you with AI and its applications in the workplace?
5. What do you think are the main benefits of AI for DIGI-STEEL?
6. What concerns or challenges do you associate with AI adoption in DIGI-STEEL?

Topic 2: Internal processes and AI potential

7. What are some of the current internal challenges DIGI-STEEL is facing that AI could help address?
8. Can you provide examples of internal tasks/processes that could be improved by AI adoption?
9. Are there any internal areas where you think AI might not be beneficial or could potentially create problems?

Topic 3: Employee trust and engagement

10. How comfortable do you feel with the idea of AI enhancing human capabilities within DIGI-STEEL?
11. What are your main concerns regarding trust in AI, and how do you think this can be addressed?

Topic 4: External processes and AI potential

12. How do you think AI could enhance the solutions we offer to our customers?
13. Can you provide examples of how DIGI-STEEL could help customers optimize their processes through AI?
14. Are there any external areas or customer-facing processes where you think AI might not be beneficial or could potentially create problems?

Topic 5: Future outlook and risks

15. What do you see as the biggest opportunities for DIGI-STEEL with AI adoption in the coming 5-10 years?
16. Are there any risks or potential downsides that DIGI-STEEL needs to be aware of in AI adoption?
17. Do you think that there are scenarios where AI should not be adopted in DIGI-STEEL? And if so, why?

Topic 6: Vision for AI adoption

18. What should in your opinion be the primary goal of AI adoption within DIGI-STEEL?
19. What key elements do you believe should be included in a shared vision for adoption of AI at DIGI-STEEL?
20. How do you think AI could change the way we work internally and the way we serve our customers in the future?

Closing:

Do you have any final thoughts or additional information about AI adoption and its potential impact on DIGI-STEEL or on our customers?

After conducting all the interviews, I will organize a workshop to create a consensus on the AI vision with the goal to create shared AI vision for DIGI-STEEL.

Thank you for participating in this interview!

Appendix F – Interview Guide Dutch

Interviewguide DIGI-STEEL – By Daan ten Dam

Research question: *"Hoe zal een gedeelde visie voor AI-adoptie DIGI-STEEL begeleiden bij het aanpakken van huidige en toekomstige uitdagingen?"*

Introductie:

Dankjewel allereerst voor de bereidheid om deel te nemen aan dit interview en voor vrijmaken van uw tijd om met mij te spreken.

Het doel van dit interview is om jouw inzichten te verzamelen over AI-adoptie binnen DIGI-STEEL, om een gedeelde AI-visie te ontwikkelen die huidige en toekomstige uitdagingen aanpakt.

Antwoorden zullen vertrouwelijk worden behandeld en jouw identiteit zal niet worden onthuld in mijn scriptie.

Het interview zal ongeveer 30 minuten duren en zal worden opgenomen voor gegevensanalyse.

Voel je vrij om vragen over te slaan die je ongemakkelijk vindt.

Voordat we beginnen, heb je nog vragen?

Vragen:

Achtergrond informatie

1. Kunt je iets vertellen over uw achtergrond?
2. Wat is je huidige functie bij DIGI-STEEL?
3. Hoe lang werkt je al bij DIGI-STEEL en wat zijn jouw belangrijkste verantwoordelijkheden?

Hoofdonderwerpen

Onderwerp 1: Huidig begrip van AI

4. Hoe bekend bent u met AI en de toepassingen ervan op de werkvloer?
5. Wat denkt u dat de belangrijkste voordelen van AI zijn voor DIGI-STEEL?
6. Welke zorgen of uitdagingen associeert u met de adoptie van AI binnen DIGI-STEEL?

Onderwerp 2: Interne processen en AI-potentieel

7. Wat zijn enkele van de huidige interne uitdagingen waar DIGI-STEEL mee te maken heeft die AI zou kunnen helpen oplossen?

8. Kun je voorbeelden geven van interne taken/processen die verbeterd zouden kunnen worden door AI-adoptie?
9. Zijn er interne gebieden waar je denkt dat AI niet nuttig zou zijn of mogelijk problemen zou kunnen veroorzaken

Onderwerp 3: Vertrouwen en betrokkenheid van werknemers

10. Hoe comfortabel voel je je bij het idee van AI ter verbetering van menselijke capaciteiten binnen DIGI-STEEL?
11. Wat zijn je belangrijkste zorgen met betrekking tot vertrouwen in AI en hoe denk je dat deze kunnen worden aangepakt?

Onderwerp 4: Externe processen en AI-potentieel

12. Hoe denk je dat AI de oplossingen die we onze klanten bieden zou kunnen verbeteren?
13. Kun je voorbeelden geven van hoe DIGI-STEEL klanten zou kunnen helpen hun processen te optimaliseren door middel van AI?
14. Zijn er externe gebieden of klantgerichte processen waar je denkt dat AI niet nuttig zou zijn of mogelijk problemen zou kunnen veroorzaken?

Onderwerp 5: Toekomstperspectief en risico's

15. Wat zie je als de grootste kansen voor DIGI-STEEL met AI-adoptie in de komende 5-10 jaar?
16. Zijn er risico's of mogelijke nadelen waarvan DIGI-STEEL zich bewust moet zijn bij de adoptie van AI?
17. Denk je dat er scenario's zijn waarin AI niet zo moeten worden geadopteerd bij DIGI-STEEL? En zo ja, waarom?

Onderwerp 6: Visie voor AI-adoptie

18. Wat zou volgens jou het primaire doel van AI-adoptie binnen DIGI-STEEL moeten zijn?
19. Welke belangrijke elementen denk je dat opgenomen zouden moeten worden in een gedeelde visie voor AI-adoptie bij DIGI-STEEL?
20. Hoe denkt u dat AI de manier waarop we intern werken en de manier waarop we onze klanten in de toekomst bedienen zou kunnen veranderen?

Einde:

Heb je nog aanvullende gedachten of informaties over AI implementatie/adoptie en de potentiële impact binnen DIGI-STEEL of op onze klanten?

Nadat alle interviews afgenomen zijn, ga ik een workshop organiseren om meer consensus te krijgen over AI-visie met het doel om een gezamenlijke AI-visie voor DIGI-STEEL te gaan realiseren.

Dank voor deelnemen aan dit interview!

Appendix G – Workshop Protocol

Some general announcements:

- The workshop will be held online via Microsoft Teams.
- The goal of the workshop is to discuss AI adoption and create an internal and external AI vision for DIGI-STEEL.
- I interviewed all participants about their thoughts on AI adoption at DIGI-STEEL.
- Vision development in my study is based on three key components:
    - *Contextual and Industry Environment Analysis*
    - *Desired Future Organizational Position*
    - *Time Horizon for AI Vision*
    - *Organizational Alignment and Consensus*

Planning

Time	**Action**	**Description**
14:00-14:15	Short introduction	Short introduction by Daan (max. 15 minutes). • Explain the purpose of this workshop. • Explain about the four components and how these will contribute to DIGI-STEEL's internal and external AI vision. • Briefly explain the planning. • Questions beforehand the workshop.
14:15-15:00	Workshop: step 1	Step 1: Contextual and Industry Environment analysis (max. 45 minutes). • Explain the purpose of this step and how this will contribute to the AI vision. • Briefly explain the SWOT-Analysis. • Statements about internal environment. • Statements about external environment. • Discuss the results of the statements.
15:00-15:10	Small break	Small break to freshen up the brains of the participants (max. 10 minutes).
15:10-15:55	Workshop: step 2	Step 2: Desired Future Organizational Position and Time Horizon for AI Vision (max. 45 minutes).

		• Explain the purpose of this and how this will contribute to the AI vision. • Individually assess the scenarios for the visioning. • Discuss remarkable/confusing results.
15:55-16:15	Small break	Small break to freshen up the brains of the participants (max. 20 minutes).
16:15-16:45	Workshop: step 3 / conclusion of the workshop	Step 3: Organizational Alignment and Consensus (max. 30 minutes). • Communicate Internal and External AI vision for DIGI-STEEL. • Discuss about the quality/validity of the internal and external vision. • Discuss about the for all departments/functions. • Discuss about the individual interest in participating in the research on the use of AI.
16:45-17:00	End of the workshop	End of the workshop with room for questions (max. 15 minutes).

The development of a shared AI vision for DIGI-STEEL

Purpose of the AI-vision for DIGI-STEEL:

- **Strategic position:** the development of a clear and feasible AI vision for DIGI-STEEL that helps to effectively adopt AI possibilities within the steel industry.
- **Time Horizon:** Short- and long-term objectives for the integration of AI within DIGI-STEEL.
- **Alignment and consensus:** Creating organizational alignment by involving key stakeholders and ensuring broad support for the vision.

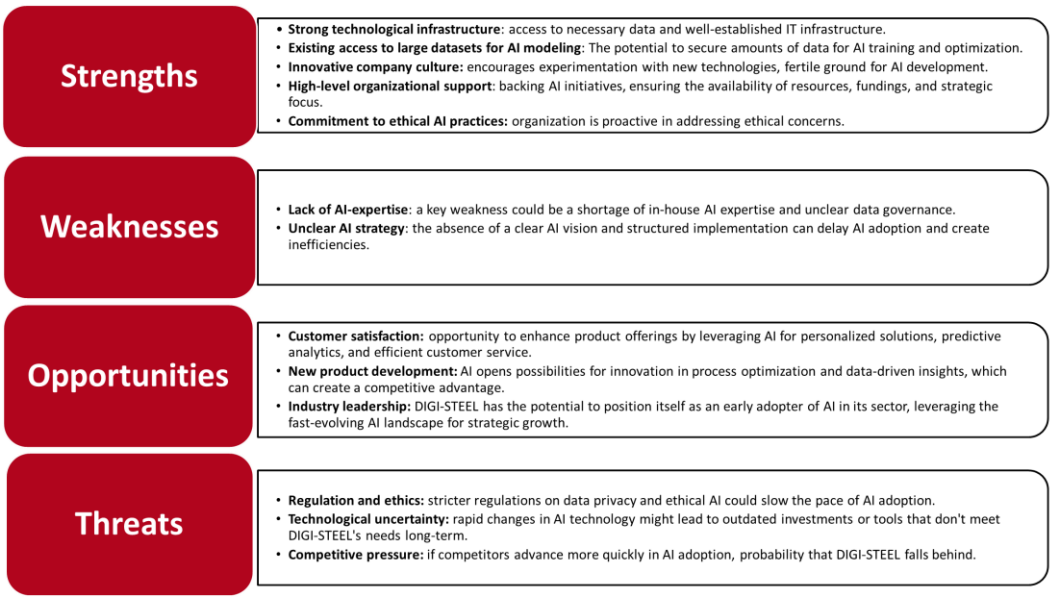
Prior knowledge sharing and preparation about the planning during the workshop.

- A brief presentation with knowledge sharing in which the basic principles of AI are explained, but also specifically for the environment of DIGI-STEEL. This ensures that the application of AI is easier to understand for our market.
- Template with a complete SWOT Analysis based on the results of the interviews that I've conducted at the participants of this workshop.
    - Strengths: What are the technological advantages that support AI adoption?

    - Weaknesses: What are the internal limitations that may slow down AI adoption?
    - Opportunities: Which market trends can we leverage with AI?
    - Threats: What external risks, such as competition or regulations, may cause obstacles?
- During the workshop, the four components of vision development will be briefly explained, along with how the AI vision will be developed for DIGI-STEEL.

STEP 1: Contextual and Industry Environment Analysis

- In this step, the internal and external environment of the organization is described so that the vision can be formulated.
- This will be done by reviewing the SWOT Analysis and the assessment of statements.
- By the end of step 1, participants will have a detailed understanding of how AI affects both the internal and external environment of DIGI-STEEL and will have assessed opportunities and challenges.



SWOT Analysis Review

- Briefly introduce the SWOT Analysis of DIGI-STEEL, covering internal strengths/weaknesses and external opportunities/threats.
- Engage participants: ask for the input of the participants – whether they agree or have remarks. Miro for 5/10 minutes -> digital post-its; and discuss remarkable results.

Statements Assessment

- For each internal and external statement, participants need to rate the statements using the scale (1=Completely disagree; 10=Completely agree).

- Assess the necessity plus the risks of it with time and financial investment.
- Collaboratively review the results of the statements; discuss remarkable outcomes.

*Statements about the **internal environment** of DIGI-STEEL.*

Statement 1) "If DIGI-STEEL effectively implements AI internally to make software production more efficient and better, to what extent will the company be ahead of the competition in the coming years?"

- Assess for the next 2 years (rate on a scale of 1-10).
- Assess for the next 5 years (rate on a scale of 1-10).
- Assess for the next 10 years (rate on a scale of 1-10).

Statement 2) "AI has the potential to improve internal communication, decision-making, and planning with DIGI-STEEL."

- Improvements in communication, decision-making, and planning over 2 years (rate on a scale of 1-10).
- Improvements in communication, decision-making, and planning over 5 years (rate on a scale of 1-10).
- Improvements in communication, decision-making, and planning over 10 years (rate on a scale of 1-10).

Statement 3) "AI will help us respond faster to internal change and unexpected challenges." (rate on a scale of 1-10).

Statement 4) "Does DIGI-STEEL have the right foundation internally to quickly and effectively adopt AI." (rate on a scale of 1-10).

Statement 5) "How significant is the impact of ethical considerations (such as data privacy) on AI implementation within DIGI-STEEL." (rate on a scale of 1-10).

*Statements about the **external environment** of DIGI-STEEL.*

Statement 1) "The steel industry is ready for large-scale adoption of AI solutions." (rate on a scale of 1-10).

Statement 2) "How does DIGI-STEEL's current readiness for AI adoption compare to that of competitors in the steel industry?" (rate on a scale of 1-10).

Statement 3) "Assess the feasibility of DIGI-STEEL reaching industry-leading AI adoption levels compared to competitors over the next 2, 5, and 10 years."

What is the position of DIGI-STEEL compared to competitors in the steel industry in terms of readiness for AI adoption."

- Assess feasibility for the next 2 years (rate on a scale of 1-10).
- Assess feasibility for the next 5 years (rate on a scale of 1-10).
- Assess feasibility for the next 10 years (rate on a scale of 1-10).

Statement 4) "The use of AI in our software product would allow us to offer proactive maintenance and adjustments, leading to better reliability, efficiency, and overall customer satisfaction."

- Assess for the next 2 years (rate on a scale of 1-10).
- Assess for the next 5 years (rate on a scale of 1-10).
- Assess for the next 10 years (rate on a scale of 1-10).

Statement 5) "To what extent will the implementation of AI increase the competitive advantage of DIGI-STEEL."

- Assess for the next 2 years (rate on a scale of 1-10).
- Assess for the next 5 years (rate on a scale of 1-10).
- Assess for the next 10 years (rate on a scale of 1-10).

STEP 2: Desired Future Organizational Position and Time Horizon for AI

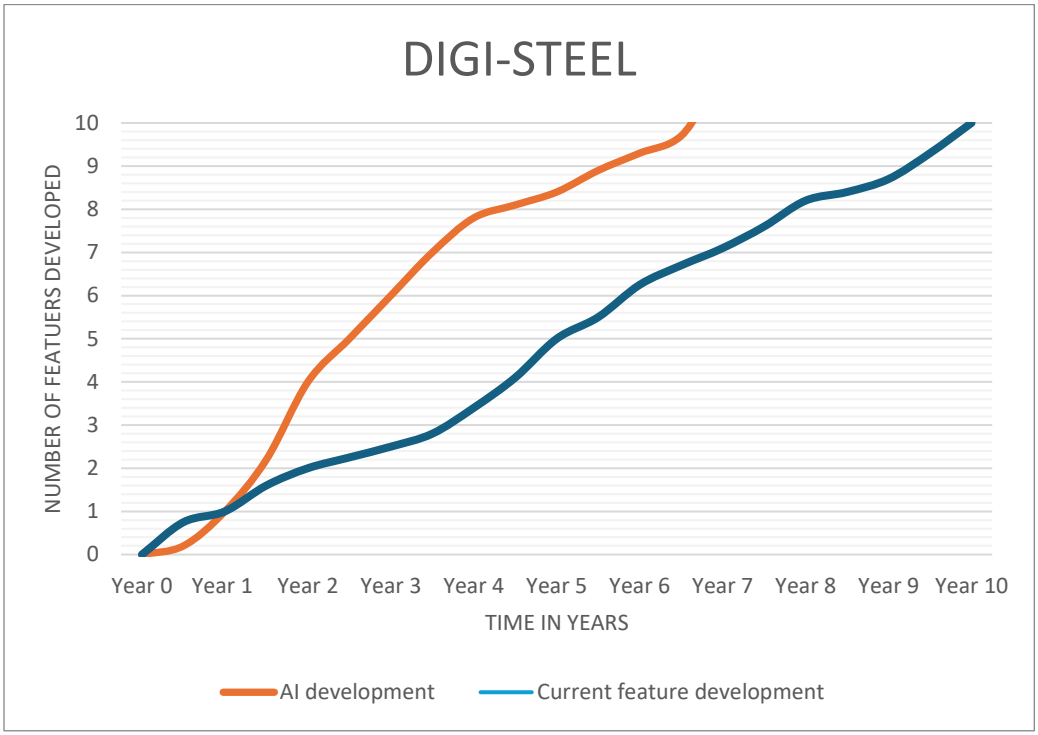
- Using the results from step 1, there will now be presented similarity scenarios for the internal environment and external environment of DIGI-STEEL. The scenarios will be based on timeframes, which are the following:
    - Short-term objectives (2 years): what are the immediate goals needed to start integrating AI into DIGI-STEEL's processes?
    - Medium-term objectives (5 years): What systems and processes need to be in place to ensure AI growth?
    - Long-term objectives (10 years): What is the end vision for AI in the organization? How will AI fully transform the organization's internal operations and external environment.
- Present two internal, two external scenario's and one overall scenario for DIGI-STEEL to acquire an internal AI vision and external AI vision for the organization (short, medium, and long-term objectives).

- Outcome**:** clear and actionable strategic steps that provide inputs for the internal AI vision and external AI vision for DIGI-STEEL's, based on short-, medium-, and long-term objectives.

Internal scenarios for DIGI-STEEL**:**

Scenario 1 till 4: same context but different approaches

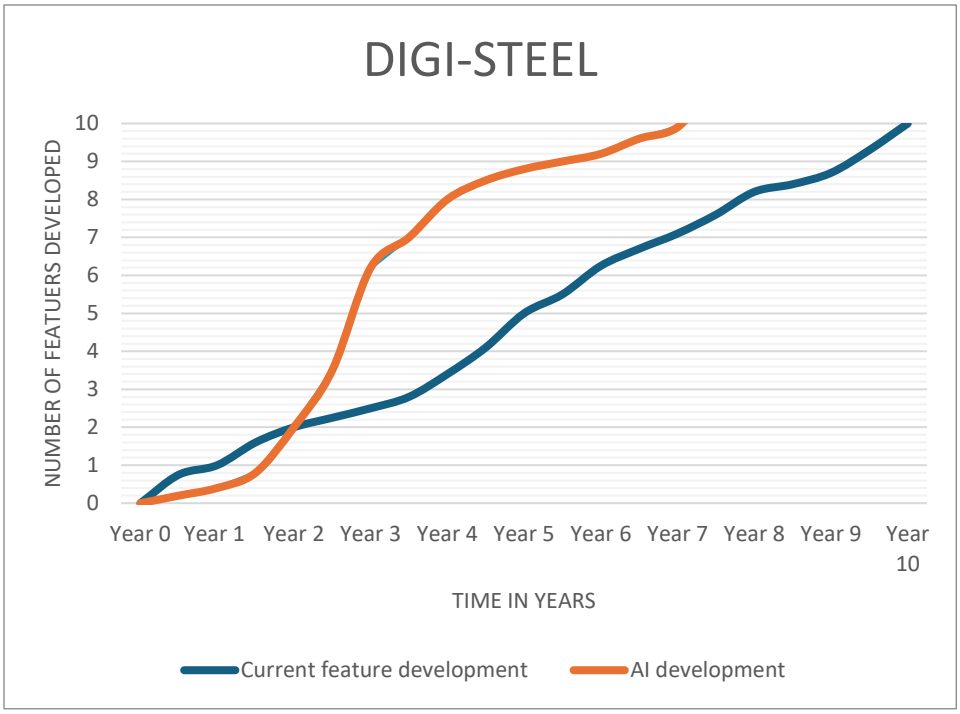
Scenario 1: "In this scenario; DIGI-STEEL can choose for development of the current features or invest in the development of AI for internal organization of DIGI-STEEL.



What would you choose in this scenario?

A) AI development
B) Current feature development

Scenario 2: In this scenario; DIGI-STEEL can choose for development of the current features or invest in the development of AI for internal organization of DIGI-STEEL.

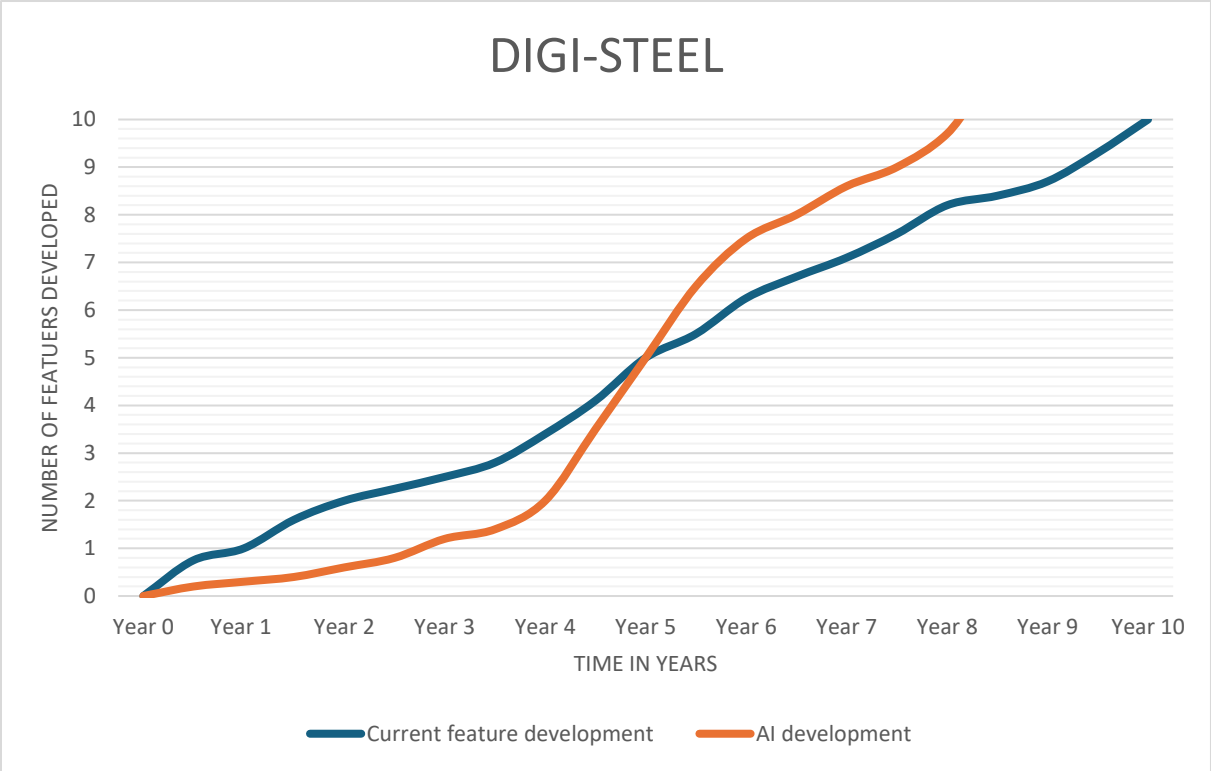


What would you choose in this scenario?

A) AI development

B) Current feature development

Scenario 3: In this scenario; DIGI-STEEL can choose for development of the current features or invest in the development of AI for internal organization of DIGI-STEEL.

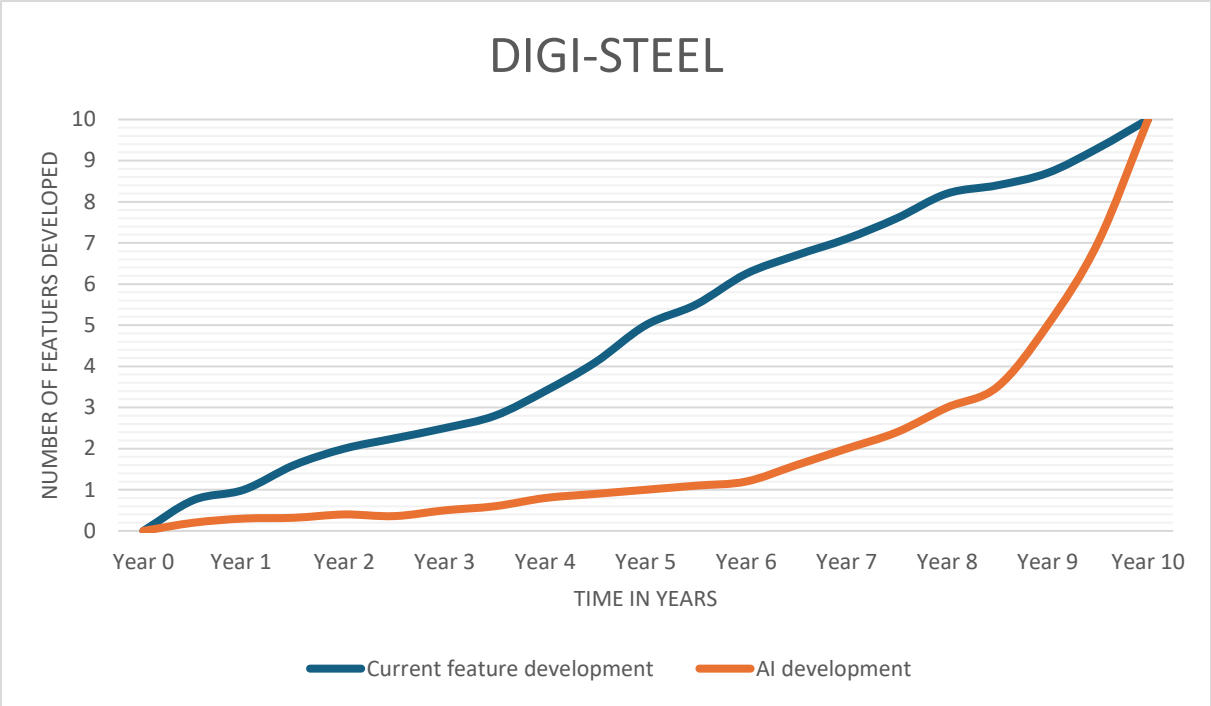


What would you choose in this scenario?

A) AI development

B) Current feature development

Scenario 4: In this scenario; DIGI-STEEL can choose for development of the current features or invest in the development of AI for internal organization of DIGI-STEEL.



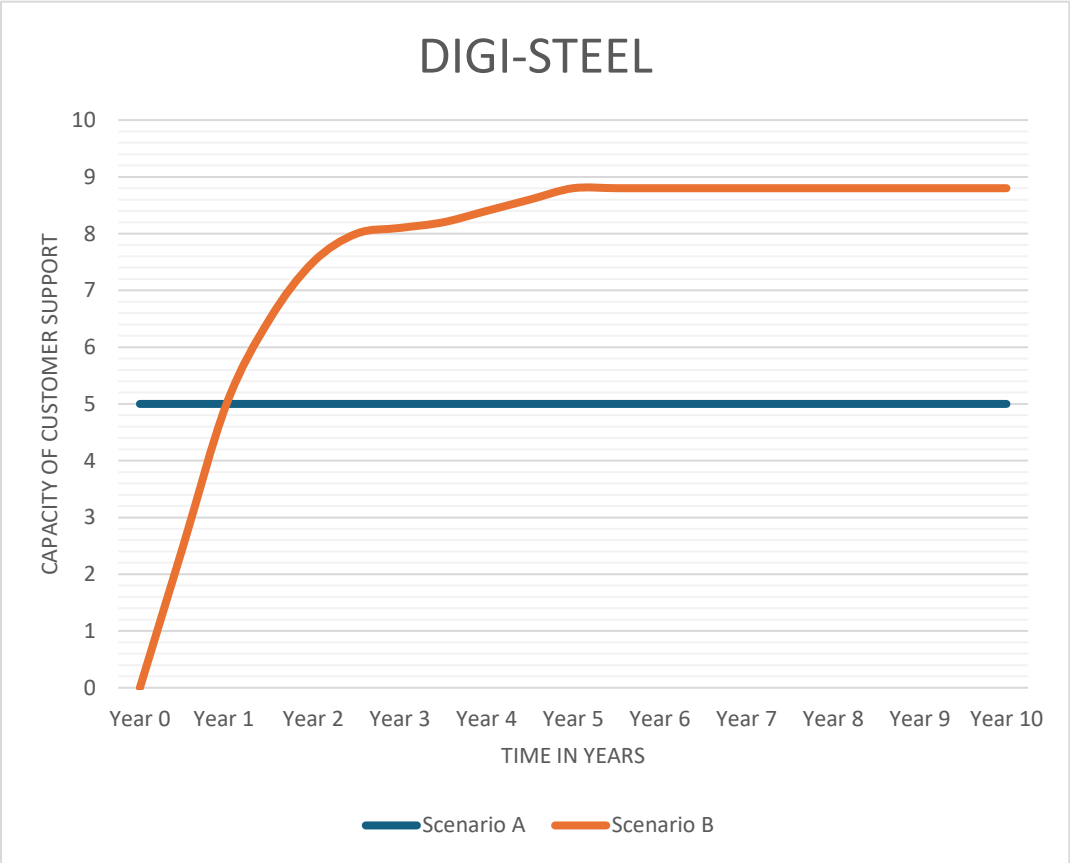
What would you choose in this scenario?

A) AI development

B) Current feature development

Scenario 5 till 8: same context but different approaches

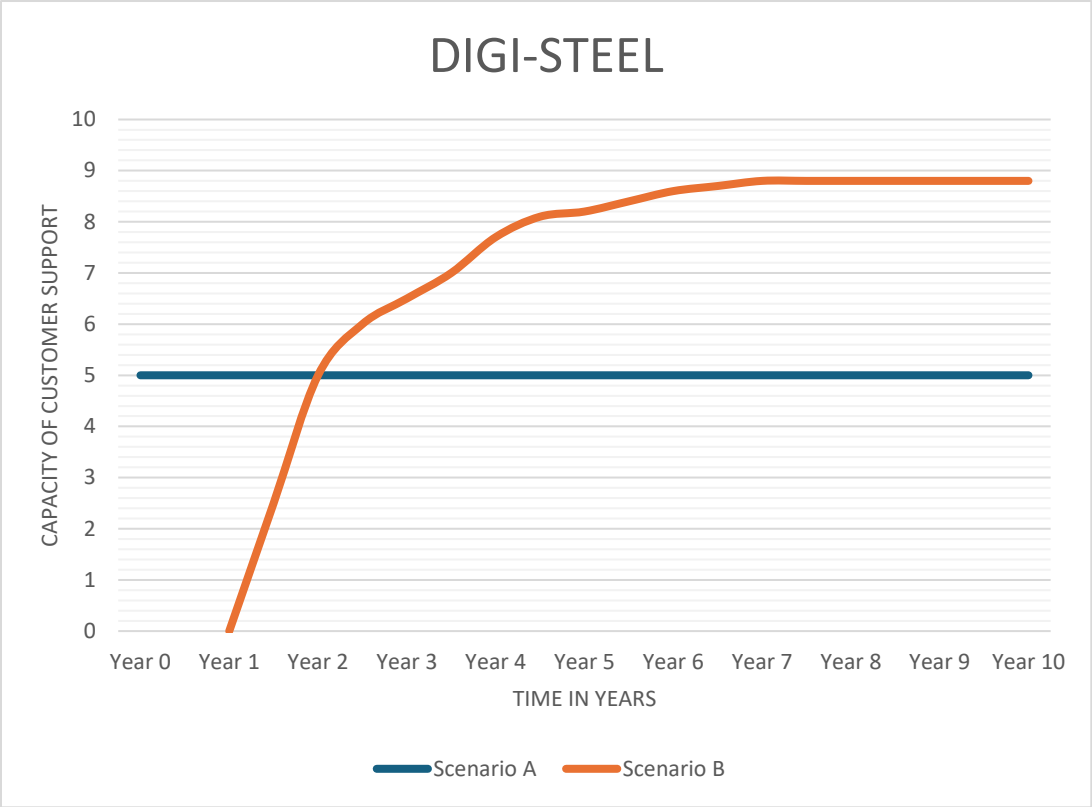
Scenario 5: "In this scenario; there is a scenario how many customers can you on board in the normal situation, and how many after the investment in AI."



Scenario A = the regular customer support

Scenario B = the customer support with AI investment

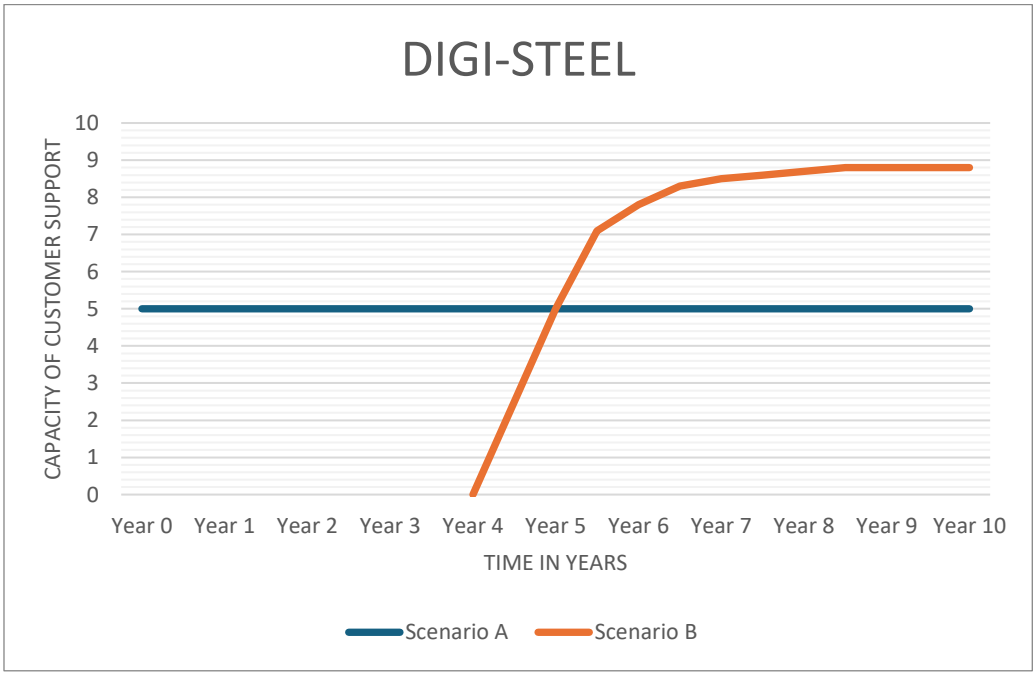
Scenario 6: "In this scenario; there is a scenario how many customers can you on board in the normal situation, and how many after the investment in AI."



Scenario A = the regular customer support

Scenario B = the customer support with AI investment

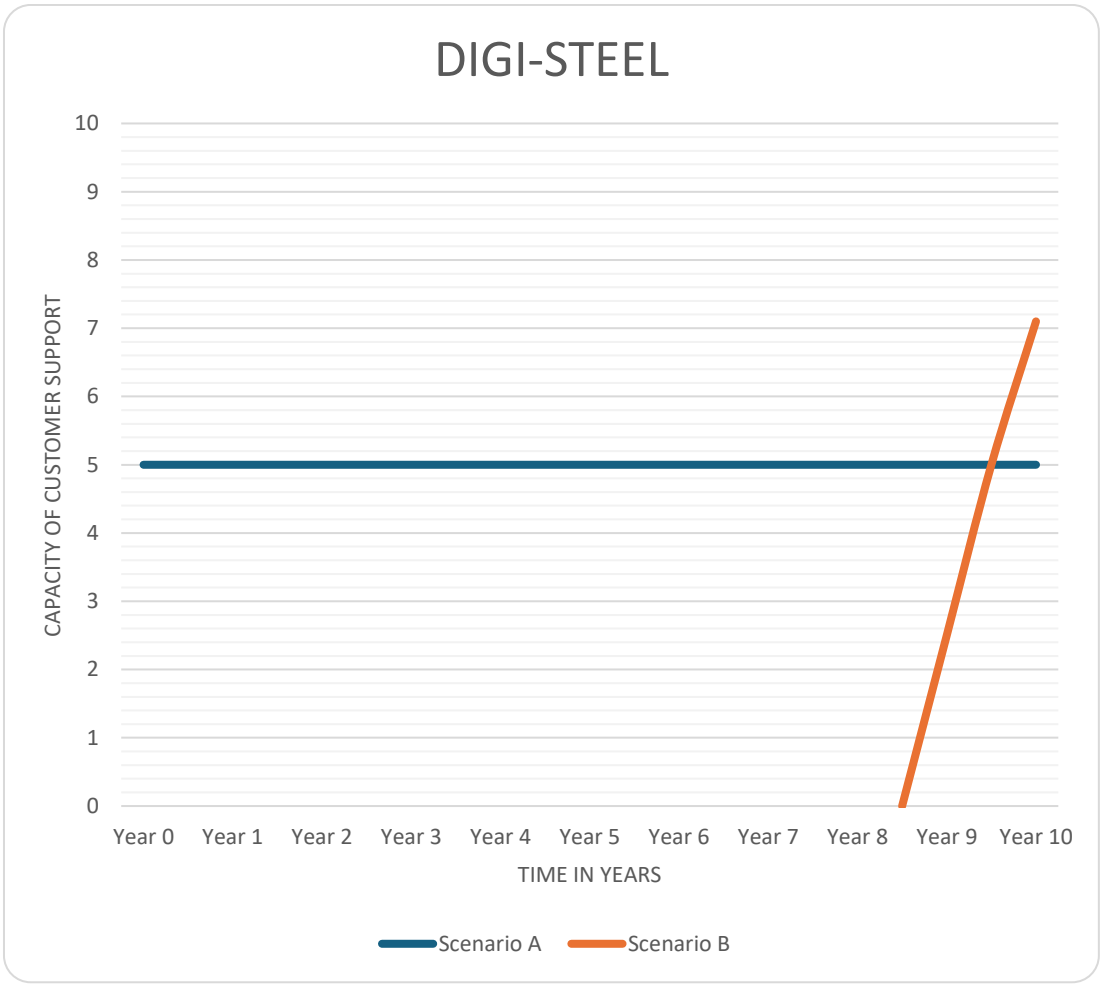
Scenario 7: "In this scenario; there is a scenario how many customers can you on board in the normal situation, and how many after the investment in AI."



Scenario A = the regular customer support

Scenario B = the customer support with AI investment

Scenario 8: "In this scenario; there is a scenario how many customers can you on board in the normal situation, and how many after the investment in AI."

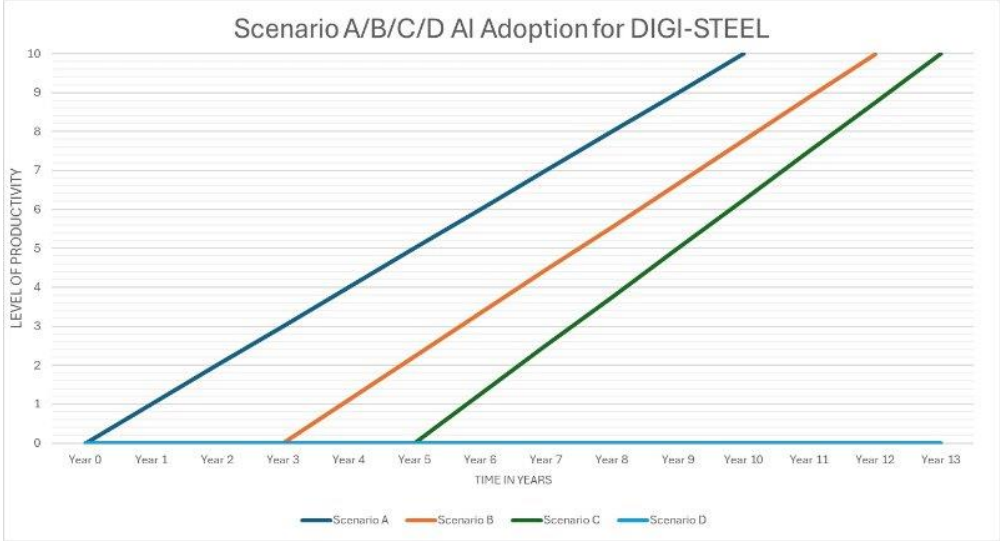


Scenario A = the regular customer support

Scenario B = the customer support with AI investment

External scenarios for DIGI-STEEL:

Scenario 1: "Given the following scenarios, how should DIGI-STEEL approach be adopting AI externally?"



Scenario A = DIGI-STEEL adopts AI immediately and develops a good AI tool within 10 years

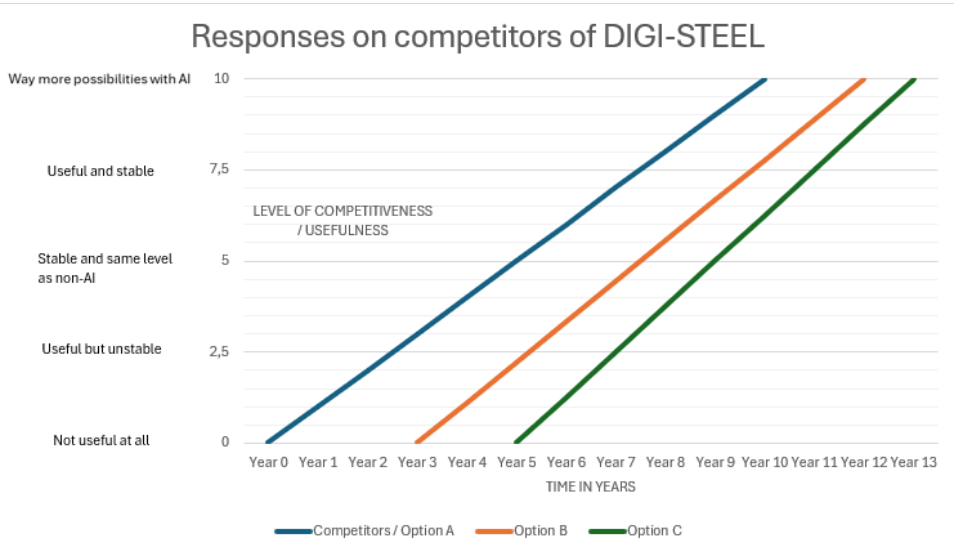
Scenario B = DIGI-STEEL adopts AI after 3 years and develops a good AI tool within 12 years.

Scenario C = DIGI-STEEL adopts AI after 5 years and develops a good AI tool within 13 years.

Scenario D = DIGI-STEEL chooses not to invest in external AI adoption at this time, given the current knowledge.

Scenario 2 till 5: same context, but different approaches.

Scenario 2: "In this scenario; competitors of DIGI-STEEL chose to adapt AI as soon as possible and have a good tool within 10 years. What option do you chose in this scenario for DIGI-STEEL?"



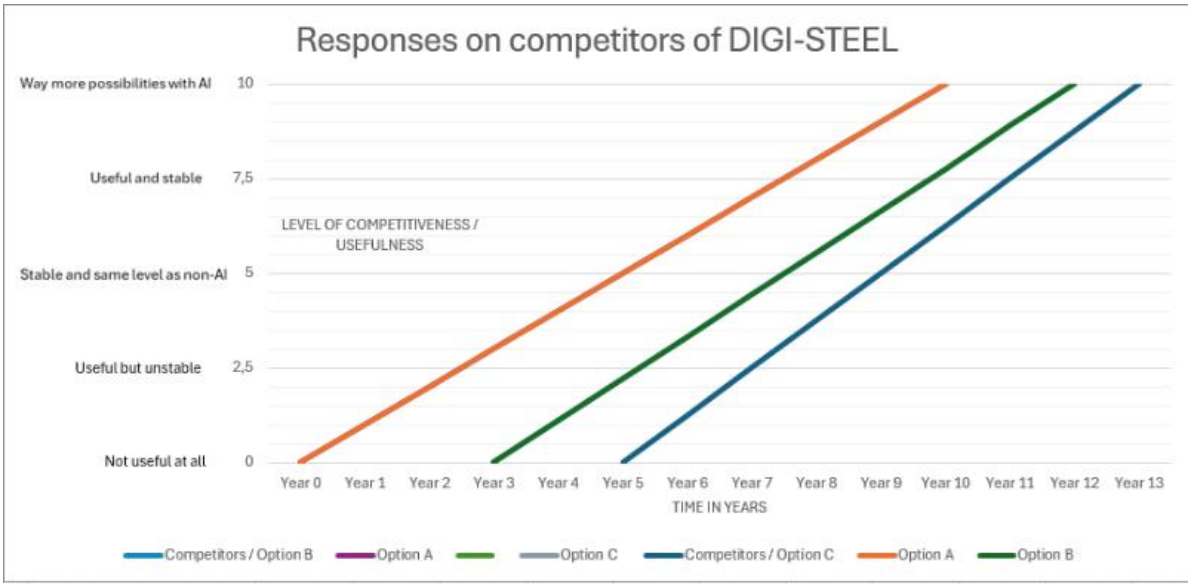
Option A = Start together with the competitors to have a good AI tool internally in 10 years.

Option B = Start 3 years later than the competitors to have a good AI tool in 12 years.

Option C = Start 5 years later than the competitors to have a good AI tool in 13 years.

Option D = Do not invest in AI tools externally.

Scenario 3: "In this scenario; Competitors of DIGI-STEEL chose to adopt AI in 3 years and have a good AI tool within 12 years. What option do you chose in this scenario for DIGI-STEEL?"



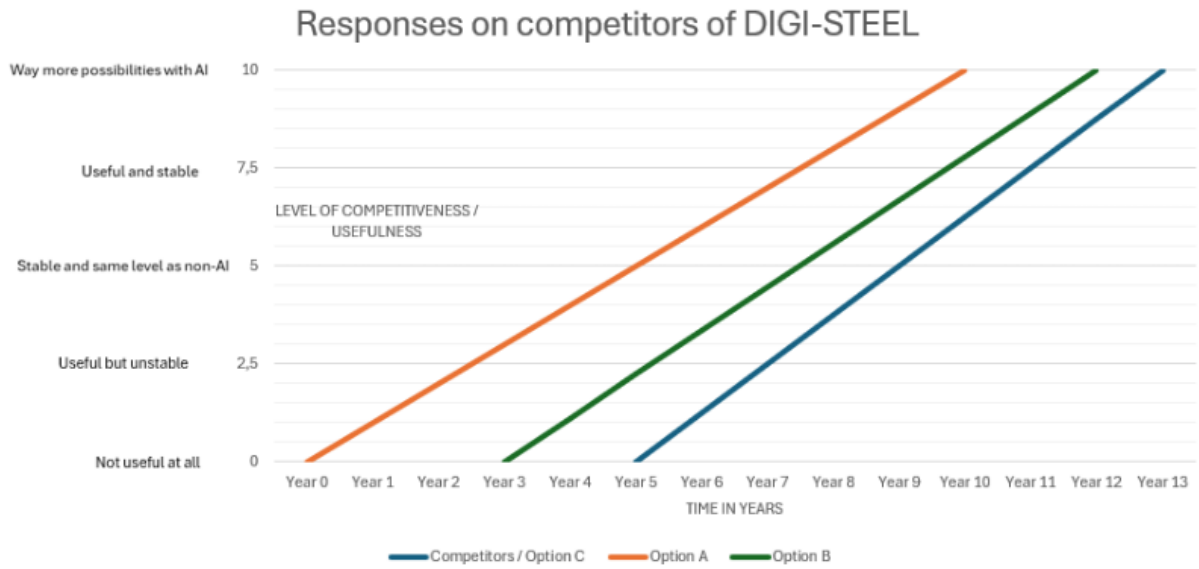
Option A = Start earlier than competitors and start directly with the adoption of AI and have a good AI tool in 10 years.

Option B = Start together with the competitors after 3 years and have a good AI tool within 12 years.

Option C = Start 5 years later than the competitors to have a good AI tool in 13 years.

Option D = Do not invest in AI tools externally.

Scenario 4: "In this scenario; Competitors of DIGI-STEEL chose to adopt AI in 5 years and have a good AI tool within 13 years. What option do you chose in this scenario for DIGI-STEEL?"



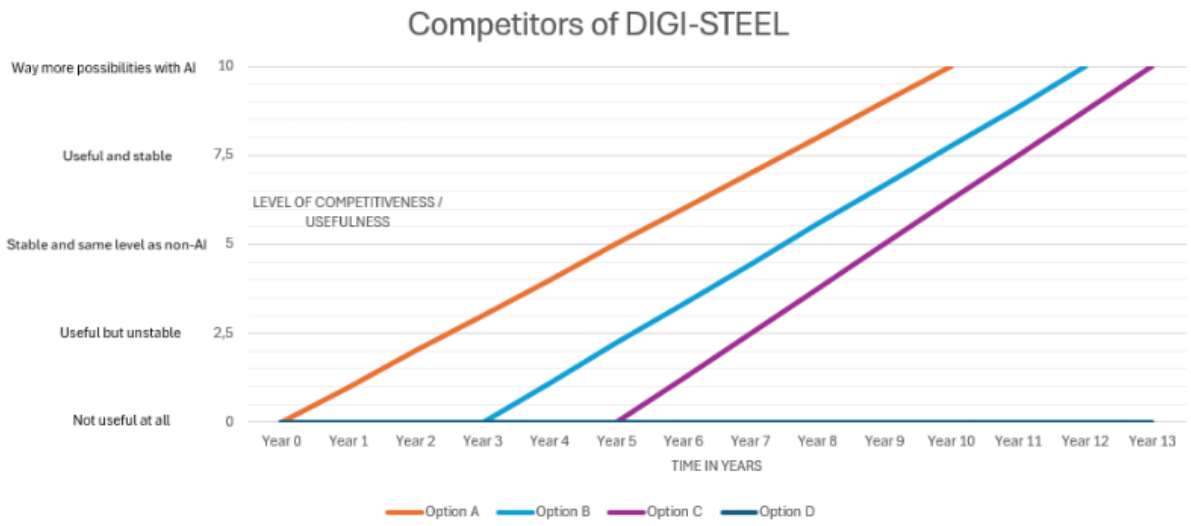
Option A = Start earlier than competitors and start directly with the adoption of AI and have a good AI tool in 10 years.

Option B = Start earlier than competitors and start after 3 years with the adoption of AI and have a good AI tool in 12 years.

Option C = Start together with the competitors after 5 years and have good AI within 13 years.

Option D = Do not invest in AI tools externally.

Scenario 5: "What do you think the competitors of DIGI-STEEL will do in terms of AI adoption?"



Option A = Start directly and have a good AI tool in 10 years.

Option B = Start after 3 years and have a good AI tool in 12 years.

Option C = Start after 5 years and have a good AI tool in 13 years.

Option D = Competitors will not invest in an AI tool.

Option E = I don't know.

Scenario for scientific relevance of AI visioning:

“To what extent will the adoption of AI lead to a future where processes are still human-based or become fully machine-based?”

Human based = with humans playing a central role in decision-making and operations

Machine-based = where AI takes over most functions with minimal human intervention

1=representing a fully human based future

10 = representing a fully machine-based future

STEP 3: Organizational Alignment and Consensus / Conclusion

Alignment and Consensus Discussion

- In this step:
    - The internal AI vision and external AI vision of DIGI-STEEL will be communicated.
    - The visions will be developed by the facilitator based on results of the workshop and there are pre-developed visions which will be tweaked to make the internal and external AI vision.
    - There will be asked for the opinion of the participants in an interactive environment on the AI visions → Microsoft Forms.
    - Bridge the gap to how the AI visions will impact the departments/functions in the organization. Ask whether the participants agree with the visions and if they are interested in working on it or should DIGI-STEEL seek experts outside the organization.
    - Describe the post-workshop plans with the AI visions – small questionnaire to all employees of DIGI-STEEL.
    - Summarize the outcomes of the workshop.
    - End with a Q&A for any final thoughts or clarifications.

Post-workshop

After the workshop, a small questionnaire will be sent to all employees of DIGI-STEEL to quantitatively validate the results.

- The consensus regarding the internal and external AI vision for DIGI-STEEL.
- Measuring the urgency to start working on this and to invest in AI for DIGI-STEEL.
- Investigating whether people want to work on AI within their department or prefer to outsource it to newly hired personnel.