BSc Thesis in Retail Management

Stockholm School of Economics

Navigating the AI–Sustainability Paradox

A Qualitative Study Exploring How Sustainability Managers Perceive and Navigate the Paradoxical Tension Between AI's Contributions to and Detriments for Environmental Sustainability

Abstract

As artificial intelligence (AI) becomes embedded in business operations, it presents both promise and risks for environmental sustainability. While AI has potential to support sustainability efforts through enhanced efficiency, data optimisation, and resource management, its deployment entails substantial environmental costs, including high energy consumption, electronic waste, and reliance on critical minerals. This paradoxical tension between AI's environmental benefits and harms raises key questions for sustainability management. Despite growing academic attention, empirical insights into how organisations perceive and address this tension remain limited. This qualitative study addresses that gap by exploring how sustainability managers perceive AI's dual environmental role, and how organisations evaluate and measure it. Drawing on semi-structured interviews with sustainability managers across sectors in Sweden the study finds that while some organisations view AI's multifaceted environmental impact as critical, others do not consider it a pressing issue. Organisations do not yet measure or evaluate AI's net impact, though few are beginning to assess aspects of it. Results suggest AI's environmental implications are still emerging on the corporate agenda, requiring more deliberate integration into sustainability strategies. This research advances theory on the paradoxical tension of AI's multifaceted environmental impacts and organisational sustainability strategies, and offers practical recommendations emphasising greater awareness, enhanced evaluation practices, and collaboration both across departments and between organisations.

Keywords: *Artificial Intelligence, AI, Environmental Sustainability, Sustainability Management, Paradox Theory, Sustainable AI, AI for Sustainability*

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1. Introduction

Sustainability has become a strategic priority for organisations in response to escalating environmental concerns and mounting pressure from stakeholders such as customers, governments, and investors (Gualandris & Kalchschmidt, 2014; Shubham et al., 2018; Zhang & Zhu, 2019). Beyond being a matter of compliance, sustainability is increasingly seen as a driver of innovation and long-term value creation (Klettner et al., 2014; Hart & Milstein, 2003). As a result, companies across industries are integrating sustainability more deeply into their core strategies and operational practices.

However, as firms pursue their sustainability goals, the rapidly accelerating adoption of artificial intelligence (AI) introduces new environmental challenges. While AI is recognised for its potential to drive operational transformation and business value (Enholm et al., 2022; Lee et al., 2023), its deployment is associated with a substantial environmental footprint. In particular, AI relies heavily on resource-intensive data infrastructure, including energy-demanding data centres that contribute to electronic waste, water consumption, and dependence on critical minerals (UN Environment Programme, 2024; Vinuesa et al., 2020; United Nations, 2025). Consequently, as firms adopt AI more extensively, potential trade-offs with sustainability efforts emerge, as AI's resource consumption may conflict with initiatives aimed at reducing resource use and waste.

At the same time, academic research acknowledges AI as a potential tool for advancing sustainability strategies, including enhancing efficiency and reducing energy consumption (e.g. Zechiel et al., 2024; Sjödin et al., 2023; Jorzik et al., 2024; Cowls et al., 2023; Vinuesa et al., 2020). This dual perspective has led to studies examining the tension between AI's potential to support environmental goals and its associated ecological burdens (e.g. Zechiel et al., 2024; Cowls et al., 2023; Mancuso et al., 2025), highlighting the need for organisations to assess both the benefits and drawbacks to understand AI's net impact on sustainable development (Mancuso et al., 2025). However, existing literature remains predominantly theoretical, offering limited empirical insights into how the net effect of AI is perceived and managed within organisations. Specifically, little attention has been given to how organisations navigate the tension between AI' environmental costs and contributions to sustainability objectives.

To address this gap, this qualitative study examines organisations' perceptions of the relationship between AI's potential to support sustainability goals and its associated environmental drawbacks, as well as how organisations evaluate and measure AI's environmental impact as a distinct factor. By capturing these insights, the study contributes to a deeper empirical understanding of how organisations perceive and respond to the environmental tensions associated with AI, and how the notion of a net effect is reflected in their evaluation processes.

1.1 Background

The applications of AI have expanded rapidly in recent years. What began as automation of mechanical tasks has evolved into the ability to perform more complex, cognitive functions such as data analysis, decision-making, and customer interaction. This technological evolution allows AI to take on an increasingly broad range of roles, facilitating its adoption across various business operations (Huang et al., 2019; Huang & Rust, 2021). AI's ability to process large data sets, identify patterns, and generate insights is driving organisations across industries to adopt it, thereby enhancing operational efficiency, reducing costs, improving decision-making, and securing competitive advantages (Enholm et al., 2022; Lee et al., 2023).

However, the growing adoption of AI and its enhanced capabilities also give rise to significant environmental concerns. Sustainable development, as framed by the United Nations Sustainable Development Goals (SDGs), seeks to address interconnected challenges across the social, environmental, and economic domains, with environmental concerns particularly relating to climate change and resource scarcity (United Nations, n.d.; Azmat et al., 2023). As AI technologies proliferate, they drive an increased demand for data centers, facilities that consume vast amounts of resources (Vinuesa et al., 2020; Cowls et al., 2023; United Nations, 2025). Consequently, the rapid proliferation of AI technologies presents a tension between its operational advantages and the global sustainability goals aimed at reducing resource consumption, waste, and environmental degradation. Therefore, AI's expansion may inhibit progress toward sustainable development and in achieving the global SDGs, particularly concerning resource conservation and waste reduction (Vinuesa et al., 2020). At the organisational level, this tension between AI's environmental costs and sustainability objectives may manifest as trade-offs, where the resource-intensive demands of AI conflict with firms' sustainability goals.

At the same time, AI holds significant potential to support sustainability efforts. A growing body of research is exploring the technical ways in which AI can contribute to improved environmental outcomes (e.g., Jorzik et al., 2024; Enholm et al., 2022; Lin et al., 2024). In practice, this is exemplified by Microsoft's collaboration with the Pacific Northwest National Laboratory, where AI was used to discover a new type of battery that requires less lithium, a breakthrough that would have taken years without AI (Smith & Nakagawa, 2025). Given these possibilities, AI is increasingly recognised for its potential to advance the global SDGs (Vinuesa et al., 2020), providing companies with a powerful tool to align their strategies with sustainability objectives. Nevertheless, the environmental implications of AI are multifaceted and may not yet be fully understood.

Several studies emphasise the tensions between AI's potential to benefit sustainability and its environmental costs (e.g., Cowls et al., 2023; Zechiel et al., 2024; Mancuso et al., 2025). Zechiel et al. (2024) introduces the distinction between *AI for sustainability* and *sustainable AI*, noting that while firms increasingly leverage AI to advance sustainability objectives, comparatively less attention is given to the environmental impact of AI itself. Cowls et al. (2023) similarly highlight this imbalance, pointing out that discussions around AI often foreground its enabling potential while underplaying the ecological consequences of its deployment. Mancuso et al. (2025), conceptualise the paradoxical tension between the sustainable value creation and sustainable value destruction of AI, highlighting that effective management of AI innovation is essential to navigate the paradox and balance the trade-offs.

1.2 Purpose and Contributions

Despite growing recognition and conceptualisation of AI's multifaceted environmental impact in academic research (e.g., Mancuso et al., 2025; Cowls et al., 2023; Zechiel et al., 2024), there remains a gap in empirical insights into how organisations perceive and manage this tension. Mancuso et al. (2025) explicitly call for further research exploring the consequences of this paradox at the micro, meso, and macro levels. This study contributes to that emerging conversation by providing empirical insight into how organisations perceive and navigate the environmental trade-offs associated with AI adoption. It particularly sheds light on how organisations view the beneficial and detrimental environmental effects of AI, including the concept of a net impact, and how this perspective is incorporated into their evaluation and measurement of AI's environmental impact.

In contributing to both AI and sustainability literature, this research advances the discussion on how organisations navigate the tension between AI's enabling potential and its environmental costs in relation to their sustainability efforts. This overlap is crucial as both AI and sustainability now represent key pillars of corporate strategy. Understanding how organisations interpret and manage this tension is not only vital for corporate sustainability but also holds broader significance in achieving global SDGs and fulfilling long-term environmental commitments. By investigating this relationship, the study offers empirical insights into the current state of alignment between AI and sustainability and explores the organisational factors that influence this alignment.

1.3 Research Questions

To clarify the focus of this study, the following research question has been developed:

1. *How do sustainability managers perceive the paradoxical tension between AI's contributions to and detriments for environmental sustainability?*

To complement this, a secondary question was formulated to examine evaluation and measurement practices specifically within organisations where sustainability managers demonstrate awareness of AI's environmental impacts, acknowledging that such awareness is a prerequisite for assessment.

2. *How do organisations, in which sustainability managers are aware of AI's positive and/or negative environmental impacts, evaluate and measure these effects as a distinct aspect of their sustainability efforts?*

1.4 Delimitations

Due to time constraints, the study specifically focuses on sustainability managers, a deliberate choice given their central role in representing and overseeing organisation's sustainability efforts. The organisations involved vary in size and sector which provides a broad range of perspectives and enhances the study's generalisability. However, this variation may limit the depth of understanding that could be achieved through a more focused exploration of a single industry. Furthermore, the scope is confined to environmental sustainability, allowing for a more detailed exploration of this particular aspect. Finally, while AI encompasses a variety of technologies, the study uses the general term "AI" to capture the interviewees' own perceptions and interpretations of it.

1.5 Structural Overview

This paper is structured into six main chapters, each contributing to the exploration of how organisations perceive and manage the paradoxical tension of AI's multifaceted environmental impact. The first chapter introduces the topic by outlining the background, relevance, and purpose of the study. It presents the research questions and delimitations, thereby framing the scope and direction of the thesis. Chapter two provides the theoretical framework through a review of relevant literature that informs the study. The third chapter details the research methodology employed. In the fourth chapter, results from the interviews are presented and structured around key themes that emerged from the data. These findings are further interpreted in the fifth chapter of analysis, which connects the themes to existing literature and begins to answer the research questions. Lastly, the report concludes with a discussion of the research, including the study's conclusion, theoretical and managerial implications, research limitations, and suggestions for future studies.

2. Theoretical Framework

The following section is organised around key themes from the literature that are essential to addressing the research questions. These themes, outlined below with their descriptions, each provide distinct insights that underpin the study's focus:

Using AI for Sustainability, examines how AI is leveraged to enhance environmental outcomes, contributing to an understanding of its enabling potential within corporate sustainability strategies. This directly relates to both research questions by representing one side of the paradoxical tension. *The Sustainability of AI* addresses the other side of that paradoxical relationship by focusing on the environmental costs of AI technologies, which are crucial for assessing AI's ecological footprint. *The Paradoxical Tension Between AI for Sustainability and the Sustainability of AI* extends this discussion by highlighting the core contradiction that AI can both support and hinder sustainability efforts, and how this tension is currently understood, forming the central paradox explored in the research questions. *External Drivers of Sustainability in Organisations* delve into external factors shaping organisations' sustainability efforts, linking directly to the second research question. Lastly, *AI & Sustainability Regulations* explore the mandatory nature of regulations impacting sustainability efforts and AI, and how compliance influences companies' sustainability strategies and actions.

The literature reviewed was sourced primarily through Scopus, Google Scholar, and the Stockholm School of Economics library. Selection criteria emphasised peer-reviewed journal articles and high-quality publications. Additional materials, such as reports from international organisations (e.g., the United Nations & the European Commission) and articles from McKinsey & Company were included where relevant and assessed for credibility.

2.1 Using AI for Sustainability

Zechiel et al. (2024) introduce the notion of *AI for sustainability*, where AI is considered to promote sustainability through its application. This section explores how AI can be leveraged to enhance sustainability initiatives, particularly in addressing climate-related challenges, highlighting the ways companies could use AI to benefit their sustainability work.

Ongoing advancements in AI are projected to yield lasting benefits for both business and society (Betz et al., 2019; Montes & Goertzel, 2019). Academic research is increasingly recognising its potential for advancing sustainability outcomes. Jorzik et al. (2024) argue that AI can drive business model innovations that contribute to broader efforts to secure a more environmentally sustainable future. By enabling more efficient processes and resource use, AI can help reduce environmental impact (e.g., Gandía et al., 2025; Hernández et al., 2024; Cowls et al., 2023). Specifically, it can help reduce energy consumption and costs, minimise pollution and waste, and facilitate circular economy practices (Enholm et al., 2022). Moreover, AI can foster green innovation in product and process design (Lin et al., 2024), as well as enhance forecasting capabilities, enabling more informed decision-making (Lin et al., 2024; Corbett, 2018). These applications can contribute to improved environmental performance.

AI can be a powerful enabler of sustainability by helping organisations advance the SDGs (Vinuesa et al., 2020; Di Vaio et al., 2020). In the environmental SDG group, comprising climate action, life below water, and life on land (SDGs 13, 14, and 15), AI has the potential to support 93% of the targets by utilising large-scale data analysis to drive environmental preservation efforts (Vinuesa et al., 2020). In essence, companies have the opportunity to adopt AI to capitalise on its potential for enhancing sustainability, including resource efficiency, emissions reduction, and alignment with environmental goals (Vinuesa et al., 2020; Di Vaio et al., 2020; Jorzik et al., 2024; Mckinsey, 2025).

2.2 The Sustainability of AI

Zehiel et al. (2024) also introduce the *sustainable AI perspective*, which concerns the environmental sustainability of AI itself. This section addresses the significant negative implications AI can have on sustainability, highlighting the ways in which its development and use may harm the environment.

The deployment of complex AI models contributes significantly to a substantial carbon footprint and various ecological challenges (Lin et al., 2024; Corbett, 2018; Hernández et al., 2024; Cowls et al., 2023; Dieste et al., 2024). As AI technologies continue to proliferate, the demand for data centres is rapidly increasing, with such facilities heavily reliant on resources (Kopka & Grashof, 2022). These data centers are major consumers of electricity (Vinuesa et al., 2020; Cowls et al., 2023), and generate vast amounts of data that overwhelm computing infrastructures, thereby driving up energy consumption (Dieste et al., 2024). Moreover, data centres require large quantities of water for cooling purposes and depend on critical minerals and rare earth elements, often sources through unsustainable or unethical practices (UN Environment Programme, 2024; Dieste et al., 2024). Additionally, the lifecycle of AI hardware generates substantial electronic waste, further exacerbating its environmental impact (UN Environment Programme, 2024; Dieste et al., 2024).

While many organisations are beginning to address the broader risks of AI adoption, such as inaccuracy and cybersecurity, environmental concerns often remain a lower priority (McKinsey, 2025). Kopka and Grashof (2022) find that in certain regions, energy consumption has increased as a result of AI, highlighting the importance for companies and society to recognise and address this risk. The urgency of this issue has also been underscored by the United Nations (2025).

2.3 The Paradoxical Tension Between AI for Sustainability and the Sustainability of AI

Hahn et al. (2010) assert that in the practice of sustainability, trade-offs are "the rule rather than the exception". This section explores the paradoxical tension between using AI for sustainability and the sustainability of AI.

According to paradox theory, tensions arise when organisations face contradictory yet interdependent demands, requiring ongoing negotiation and management (Smith & Lewis, 2011; Van der Byl & Slawinski, 2015). In the context of AI and sustainability, a paradox is evident in earlier studies, such as Zechiel et al. (2024), who propose a holistic strategy framework that integrates both AI for sustainability and the sustainability of AI. Similarly, Kopka and Grashof (2022) highlight the paradoxical nature of AI's impact on energy usage, where AI adoption can both increase and decrease energy consumption depending on the context, such as the level of expertise in green technologies and the relatedness of AI technologies. Building on this, Mancuso et al. (2025) apply paradox theory to AI in sustainable development, identifying a central paradox: AI can simultaneously contribute to and detract from sustainability goals.

Alosi et al. (2023) extend this thinking within the corporate context, identifying strategies organisations use to manage sustainability-related tensions. These strategies are enabled by individual, organisational, and inter-organisational resources, emphasising the multilevel nature of tension management. Whilst Mancuso et al. (2025) investigate the antecedents of this paradox, pointing to the presence of multiple, conflicting objectives across the environmental, social, and economic dimensions of sustainability. These tensions are further amplified by diverse and conflicting interests of stakeholders involved. This paradox leads to an emphasis on evaluating AI's net sustainability effect, balancing the environmental costs of AI development against its potential benefits (Cowls et al., 2023; Mancuso et al., 2025).

2.4 External Drivers of Sustainability in Organisations

This section examines drivers of corporate sustainability, focusing on external stakeholder pressures from international institutions, governments, customers, and shareholders.

Companies increasingly face expectations to act responsibly toward the environment, driven by rising demands from external stakeholders (Flammer, 2013; Miles & Covin, 2000). Stakeholder theory posits that such pressures can prompt firms to adopt more environmentally sustainable practices (Kassinis & Vafeas, 2006; Sharma & Henriques, 2005). Among global institutional influences, the United Nations' 2015 Agenda 2030 laid the foundation for coordinated sustainability efforts, urging member states to pursue a more sustainable future (United Nations, n.d.). This agenda introduced the SDG’s, which now serve as global guidance for corporate sustainability strategies (van Zanten & van Tulder, 2021; Agrawal et al., 2022). The organisation has raised the urgency of addressing AI’s multifaceted environmental impact, while also acknowledging that there are currently no established standards for what to measure or how to measure it (United Nations, 2025).

The European Union has taken significant steps to hold companies accountable for their environmental impact, notably through the Corporate Sustainability Reporting Directive (CSRD), which mandates more comprehensive sustainability disclosures (European Commission, n.d.-a). Gallego-Alvarez et al. (2017) argue that environmental reporting behavior is heavily shaped by institutional and social contexts, particularly regulatory frameworks. Aureli et al. (2020) further find that EU regulations push firms to formalise their sustainability efforts, using mandatory reporting as both a strategic tool and a guide for communicating their actions to stakeholders.

Simultaneously, consumer expectations for sustainability are on the rise. Reichheld et al. (2023) suggest that we are at the brink of a significant shift in consumer behavior, where genuinely sustainable brands will outpace those that make weak claims or fail to invest adequately in sustainability. As a result, sustainability is quickly becoming a hygiene-factor for purchasing decisions. Customers are increasingly demanding sustainable practices, and companies must adapt to meet these expectations (Vadakkepatt et al., 2021).

Shareholders exert significant pressure on companies to advance sustainability by challenging corporate practices through formal resolutions, influencing industry standards, and engaging with management for greater transparency (Reid & Toffel, 2009). They also highlight the potential for future environmental regulations, motivating firms to proactively disclose climate-related information. Shareholders tend to respond positively to environmentally responsible initiatives and negatively to harmful environmental practices (Flammer, 2013; Wai Kong Cheung, 2011; Ng & Rezaee, 2015). This underscores the importance of pursuing genuine sustainability efforts, as shareholder demand for transparency can expose harmful practices, leading to negative investor reactions. Conversely, transparent genuine sustainability efforts can enhance shareholder value (Hart & Milstein, 2003). Further, shareholders driven by profit may be less inclined to prioritise environmental sustainability, if it conflicts with financial gains (Hahn et al., 2018).

Driven by external pressures, companies are increasingly prioritising sustainability as a strategic focus, ultimately shaping the sustainability efforts they pursue and the information they choose to report.

2.5 AI & Sustainability Regulations

Although regulatory influences are briefly addressed in the previous theme as a form of stakeholder pressure, the mandatory nature and growing specificity of sustainability regulations warrant a separate theme (Campbell, 2007). This section explores how organisations respond to sustainability within the context of regulatory obligations, the role of specific sustainability requirements, and how AI is currently addressed within these frameworks.

Some organisations adopt a broader view of sustainability, recognising it as a means to generate long-term value beyond merely meeting legal requirements (e.g, Klettner et al., 2014; Hart & Milstein, 2003). This perspective, known as the performance-oriented motive, emphasises the competitive advantages gained by engaging in ecologically responsible activities that go beyond legal requirements (Chan et al., 2022). In contrast, other companies approach sustainability from a narrow, compliance-based standpoint, referred to as regulation-driven motives, where environmental efforts are limited to what is legally required (Chan et al., 2022). These firms are generally reluctant to adopt environmentally responsible practices unless driven by regulatory pressure, which constrains broader investment in sustainable initiatives (Kump, 2021; Fairchild, 2008; Bui & De Villiers, 2017). Moreover, uncertainty around future regulations can reinforce a reactive approach, whereby organisations address sustainability issues, such as carbon emissions, only in response to explicit mandates rather than through proactive measures (Bui & De Villiers, 2017).

Currently, the EU's Artificial Intelligence Act does not require companies to disclose environmental impacts related to AI use (European Commission, n.d.-b). Meanwhile, the EU's Energy Efficiency Directive imposes reporting obligations on specific entities, but requirements vary based on sector, company size, and function (European Commission, n.d.-c). However, within this directive, the energy usage of AI would be subsumed under overall energy consumption rather than treated as a distinct category. Additionally, many companies remain exempt from these obligations and are not required to report their energy consumption at all.

Further, the EU's new CSRD aims to strengthen and standardise sustainability reporting across a broader range of organisations in more detail (Odobaša & Marošević, 2023). Companies that meet the reporting thresholds are required to disclose a wide array of environmental impacts, in line with the forthcoming European Sustainability Reporting Standards (ESRS) (European Commission, n.d.-a). The directive introduces a comprehensive set of data points, requiring significant resources to ensure compliance (Odobaša & Marošević, 2023). Companies that develop AI solutions are expected to report more extensively, as AI contributes directly to their emissions and resource consumption. In contrast, companies that purchase AI systems must assess and report on AI's environmental impact only if it is deemed material and relevant to their operations (European Union, 2022). Notably, AI is not treated as a separate reporting category; its impacts are integrated into broader reporting areas. As a result, reporting under the CSRD may still not provide a clear view of AI’s net environmental impact on organisations. Furthermore, not all companies fall within the scope of the CSRD.

In the theoretical framework, key themes and theories are explored around using AI for sustainability, the sustainability of AI, the paradoxical tension between the two, external drivers of sustainability efforts, and AI and sustainability regulations. The literature addresses and theorises the pressing issue of the tension between using AI to promote sustainability and its potential environmental harms, emphasising the need to assess its net impact. While research has begun to explore the antecedents to this tension, connections are drawn to existing theories about corporate sustainability efforts, suggesting that factors influencing sustainability might also shape whether companies consider the net impact of AI. The lack of specific regulatory mandates on AI’s environmental impact, coupled with the possibility of deprioritising such concerns, indicates that organisations may not be fully addressing this issue. However, empirical insights are lacking on how organisations perceive and assess this paradoxical tension. Therefore, building on the literature, this qualitative study explores how organisations perceive and address the paradoxical tension of AI’s multifaceted environmental impact.

3. Methodology

This section outlines the methodological approach adopted to address the research questions.

3.1 Research Design

The research adopted a qualitative design to gain in-depth perspectives on the research questions. The study did not intend to validate or refute hypotheses or test existing theories; instead, it aimed to gather data to foster a deeper understanding of the topic. Data were gathered through interviews in which participants described and explained their perceptions of AI’s environmental impact, its role in their organisations' sustainability strategies, and their sustainability-related evaluation practices for such solutions. This qualitative approach facilitates a deeper exploration of issues resistant to direct observation, enabling the capture of nuanced insights that might not be apparent through other methods (Bell et al., 2019, pp. 457; Malhotra, 2019, p. 154). Additionally, it accommodates a wider variety of viewpoints, offering a more nuanced and comprehensive depiction of diverse, and sometimes conflicting human perspectives (Kvale, 1996, p. 7).

A flexible, open-ended, semi-structured interview format was employed, which allowed to exclude, adapt, or expand questions from the interview guide based on the specific context (Bell et al., 2019, p. 436). This approach encouraged open dialogue and allowed the conversation to evolve naturally based on the interviewee's responses, fostering the emergence of diverse viewpoints (Kvale, 1996, p. 45). The interviewers sought to avoid direct or closed questions and interpretations, and adopted a "talking back" approach (Griffin, 1990) to promote dynamic engagement. This facilitated a two-way dialogue, enabling a more in-depth exploration of topics relating to the research focus. The interviews were conducted over a period of just under four weeks, from March 20th to April 15th.

3.2 Sample Selection

A generic purposive sampling approach was used to identify employees in Sweden who were relevant to the study's objectives. Participants were selected based on their professional roles, with clear criteria developed to align with the research questions (Bell et al., 2019, p. 394; Guest et al., 2013, p. 9). Specifically, individuals who held the role of sustainability manager were prioritised for inclusion, resulting in a sample of 18 participants.

3.3 Interviews

The study gathered data through 13 online interviews conducted via Microsoft Teams and 4 in-person interviews at the interviewees' preferred locations. Conducting the majority of interviews online provided flexibility and convenience for the interviewees and the researchers, saving time and enabling a more geographically diverse sample (Bell et al., 2019, p. 453). The interviewees primarily determined the format, online or in-person, and the appointment for the interview to ensure their convenience and confidence in participating (Guest et al., 2013, pp.

12-13). All online interviews utilised video calls to capture visual aspects, enabling richer contexts for potential interpretations (Kvale, 1996, p. 161).

Potential interviewees were identified through LinkedIn, concentrating on those holding positions related to sustainability management. Additional candidates were found via company websites and personal connections. Suitable candidates were contacted via email. The interview guide included a targeted question to confirm the organisational role (see Appendix A & B, question 1).

The interview guide followed a structured sequence of topics to address the research questions (see Appendix A & B). While the predefined set of questions ensured that key themes were covered, interviewees were given the autonomy to respond openly, allowing new topics to emerge based on their responses (Kvale, 1996, p. 124). The flexible format was essential for tailoring each interview to individual perspectives while ensuring consistency and comparability through a standardised interview guide (Bell et al., 2019, p. 436). The phrasing of questions was adapted in each interview to accommodate the flow of the conversation (Kvale, 1996, p. 166).

The interviews lasted between 18 and 60 minutes. A detailed summary of the interviews and interviewees, including the date, language, format, and duration, is presented in Table 1.

Interview	Interviewee	Date	Language	Setting	Duration
1	Interviewee 1	2025-03-20	Swedish	Online (Microsoft Teams)	23:23
2	Interviewee 2	2025-03-21	Swedish	Online (Microsoft Teams)	22:44
3	Interviewee 3	2025-03-21	Swedish	Online (Microsoft Teams)	31:11
4	Interviewee 4	2025-03-26	Swedish	In-person	24:00
5	Interviewee 5.1 Interviewee 5.2	2025-03-27	Swedish	In-person	56:38
6	Interviewee 6	2025-03-28	Swedish	In-person	46:27
7	Interviewee 7	2025-03-28	Swedish	Online (Microsoft Teams)	27:50
8	Interviewee 8	2025-03-31	Swedish	Online (Microsoft Teams)	25:02
9	Interviewee 9	2025-04-01	Swedish	In-person	23:29
10	Interviewee 10	2025-04-03	English	Online (Microsoft Teams)	28:33
11	Interviewee 11	2025-04-04	Swedish	Online (Microsoft Teams)	25:24
12	Interviewee 12	2025-04-08	Swedish	Online (Microsoft Teams)	52:52
13	Interviewee 13	2025-04-09	Swedish	Online (Microsoft Teams)	26:13
14	Interviewee 14	2025-04-09	Swedish	Online (Microsoft Teams)	26:38
15	Interviewee 15	2025-04-11	Swedish	Online (Microsoft Teams)	18:57
16	Interviewee 16	2025-04-11	Swedish	Online (Microsoft Teams)	28:40
17	Interviewee 17	2025-04-15	Swedish	Online (Microsoft Teams)	20:24
					μ = 29:54

Table 1: Summary of interviews and the interviewees, along with interview date, language, format, and duration (minutes:seconds)

3.4 Analysis

Data from the transcripts were analysed using thematic analysis, with codes and themes developed inductively to identify patterns aligned with Braun & Clarke's (2006) framework. Thematic analysis was conducted using the NVivo15 software, where each author independently reviewed and coded the transcripts, identifying recurring topics related to the research topic (Bell et al., 2019, p. 519; Braun & Clarke, 2006). This process was repeated twice to ensure the thorough identification of all relevant topics. The authors then discussed and compared their findings to resolve any discrepancies. The coding process was considered complete when no new concepts emerged from the data, indicating that further coding was unnecessary (Braun & Clarke, 2006). Codes that had similar relationships were clustered together, creating themes. The inductive approach enabled themes to emerge organically from the data, without being constrained by a predefined coding scheme or framework (Bell et al., 2019, p. 518; Braun & Clarke, 2006).

In the final stage of the analysis, the authors refined the identified themes to ensure logical consistency and alignment with the research focus (Braun & Clarke, 2006). In the forthcoming *findings* section, the interview data is presented according to the key themes identified through the thematic analysis. Relevant quotes are included to illustrate these themes, offering deeper insights into the data. These themes will then be examined in greater depth in the *analysis* section, where connections between them will be explored and linked to relevant literature to enhance the interpretation and contextual understanding of the findings, thereby beginning to address the research questions.

3.5 Reliability, Validity & Generalisability

To strengthen the study's reliability, meticulous procedures were adopted for data collection and transcription verification. All interviews were audio recorded and transcribed using Microsoft Teams features, allowing the interviewers to focus on the conversation (Bell et al., 2019, p. 445). The transcriptions were thoroughly examined and cross-checked against the corresponding audio recordings to ensure the accuracy and proper interpretation of the interviewees' statements, while also eliminating unnecessary filler words (Braun & Clarke, 2006; Alvesson & Sköldberg, 2018;

Bell et al., 2019, p. 445; Kvale, 1996, pp. 27, 163). Some of the quotes in this study, initially in Swedish, were manually translated into English, ensuring that the original meaning and nuances of the expressions were accurately maintained (Bell et al., 2019, p. 450). Both authors cross-checked the transcripts and translations to uphold consistency and accuracy throughout the dataset (Kvale, 1997, pp. 163-164). Additionally, the authors engaged in critical self-reflection, examining their biases, assumptions, and theoretical influences throughout the interpretation process (Alvesson & Sköldberg, 2018).

The study's lack of quantitative data limits its ability to make statistical applications; however, the qualitative approach was deliberately chosen to provide detailed insights into the research topic and to offer meaningful theoretical contributions (Bell et al., 2019, p. 65; Malhotra, 2019, p. 153). The research was not confined to a single industry, aiming instead to generate insights that extend beyond sector-specific contexts. By selecting participants from various industries, the study gathered multiple perspectives, enriching the findings with greater depth and nuance (Bell et al., 2019, p. 37; Kvale, 1996, p. 232). This approach also supported triangulation, ensuring the findings were not unduly influenced by any single perspective or source of information (Kvale, 1996, p. 244).

Given the diverse sample of sustainability managers across multiple industries, a total of 17 interviews were deemed sufficient to capture a range of perspectives necessary for a comprehensive understanding of the research topic. As data collection progressed, the interviews began to repeat previously identified topics, and no new significant concepts emerged. This suggested that enough empirical saturation had been reached, where further interviews were unlikely to provide substantial new insights (Bell et al., 2019, pp. 46-47).

3.6 Ethical Considerations

Ethical considerations were thoroughly incorporated into the design and execution of this study to safeguard participant rights and ensure data integrity. Informed consent was obtained from all interviewees to ensure they fully understood the study's purpose and their rights (Kvale, 1996, p. 112; Malhotra, 2019, p. 183). The study complied with GDPR standards for data management, ensuring confidentiality and allowing interviewees to withdraw at any time. To accommodate potential language preferences, the interview guide was prepared in both Swedish and English beforehand (see Appendix A & B). Prior to each interview, participants were briefed on the overall research focus. For those who expressed uncertainty about contributing due to the study's purpose, the interview guide was provided beforehand, allowing them time to reflect on the topics. This approach aimed to help interviewees develop their perspectives, leading to richer responses and a more nuanced, in-depth discussion (Guest et al., 2013, p. 33). This is not considered a limitation of the study, as the research topic is relatively new, and some participants may not have previously reflected on it.

4. Findings

Although all interviewees acknowledged that AI can have a negative environmental impact, their perceptions of AI's role in sustainability work and how organisations incorporate this into the evaluation of AI varied significantly. This section presents the findings of the interviews, addressing the research questions by organising it into two main parts: *Perceptions of AI's Environmental Impact and Role in Sustainability,* and *The Evaluation and Measurement of AI's Environmental Impact.*

4.1 Perceptions of AI's Environmental Impact and Role in Sustainability: Empirical Findings

Interviewees held a variety of perspectives regarding the paradoxical tension of AI's multifaceted environmental impacts. Their responses regarding AI's role in sustainability work varied, with some emphasising its potential benefits while others focused on its negative effects. This section presents the range of responses given.

4.1.1 Knowledge of the Sustainability of AI

While all participants acknowledged that AI has some negative impact on the environment, most were unable to describe the nature or scale of this impact in any depth.

> *"No, I would say that we are probably aware of it, but the level of knowledge is still quite low"* (Interviewee 1).

"I mean, there is awareness that yes, it has an environmental impact, but not beyond that, not in any deeper sense" (Interviewee 17).

Some reflected that poor awareness of AI's environmental impact was not limited to their organisations, but extended to society at large.

"I think it's really bad. I think it's really bad from the general public overall." (Interviewee 1).

A few suggested that the lack of organisational knowledge may stem from this broader societal deficiency, pointing to the absence of accessible information or critical discussion around the topic.

"But then I think the big question here is also that there's a lack of easily accessible knowledge or problematisation around this, which is why the issue hasn't grown" (Interviewee 14).

In contrast, a small number of participants demonstrated a stronger awareness of AI's environmental impact. Interviewee 15 even suggested that this impact could become an even greater concern in the future:

"[...] what we know about AI is that it's very, very, very energy intensive. And from what I understand, it looks like this will grow exponentially. So it will just require even more energy than we can imagine today. And it also depends on what type of energy we use, whether it's renewable or not."

In addition, a few participants attempted to quantify the environmental footprint of generative AI compared to traditional tools like Google Search, and their estimations varied widely.

"I don't remember exactly, but I think it takes a hundred thousand times more energy to do an AI search compared to a regular old Google search, something like that. I don't have the exact numbers[...]" (Interviewee 2).

"Someone recently gave me some figures showing that, for example, if you compare a Google search to the same search in Copilot or ChatGPT, it uses about six times more energy or something like that, it was quite a big difference" (Interviewee 7).

Meanwhile, others expressed skepticism about the significance of AI's environmental impact, suggesting that its current effect is relatively minor.

> *"When it comes to software, I wouldn't say it's a big problem. [...] well, it's like a drop in the ocean, you could say, in terms of their actual impact right now"* (Interviewee 12).

4.1.2 Perceived Value of AI in Sustainability Work

Sustainability managers expressed varying views on how AI can contribute to their sustainability work. Several interviewees highlighted the potential of AI to enhance efficiency in handling large volumes of information, making comparisons, and supporting sustainability reporting processes.

> *"However, within the sustainability team, we have identified that we believe AI could have very great potential to help us. Because we do a lot of information gathering, we have a lot of data points"* (Interviewee 7).

Others described AI as a strategic enabler for achieving broader sustainability objectives.

> *"We see AI as an enabler. We have a goal to reduce the climate impact, in terms of CO2, of what we sell by 30%. If we're going to achieve that, we need better data and better AI in the background to help us do it. Otherwise, we will never be able to reach that goal, so it's a prerequisite for us to be able to meet our targets"* (Interviewee 2).

Some participants also acknowledged the dual nature of AI's role, seeing it as beneficial for sustainability goals while recognising the paradox.

> *"And then I think that for us, if we look at how our use of AI affects our sustainability agenda, I believe we can find a lot of benefits in terms of making smarter purchases and optimising processes that use less energy. But then, of course, you have to balance that with the energy consumption that it requires"* (Interviewee 11).

At the same time, a few interviewees questioned whether AI had a direct or meaningful link to their sustainability strategies, even if it played a role in other areas of the business.

> *"It is certainly a part of driving the company forward, but it probably doesn't have such a clear connection specifically to the sustainability issue"* (Interviewee 16).

4.1.3 Using AI Sustainably

During the interviews, managers were asked to reflect on how they perceive the relationship between AI and environmental sustainability. When the conversation allowed, this was followed by a more targeted question: *Could AI have a net positive effect?* Many participants initially responded to this question with a thoughtful 'good question,' followed by a moment of reflection or silence.

Some admitted they had not previously considered the relationship between AI and environmental sustainability:

> *"AI implementation and environmental sustainability. How would I describe that? I've barely thought about it"* (Interviewee 4).

Final responses to the question were often speculative, with participants offering tentative guesses rather than well-defined assessments. Nevertheless, some expressed cautious optimism about AI's potential to enable more sustainable operations in complex systems:

> *"But maybe, though I'm really just speculating here, for a company as large as ours, with such a big supply chain. If we use that as an example, with so many products, I mean, we have 26,000 products in our assortment and a large number of producers and growers, it's a lot. So if AI could somehow contribute to actual emission reductions across all of them, then maybe one would hope that the reductions would outweigh the increase caused by using AI"* (Interviewee 7).

There was also recognition that the use of AI should be considered holistically, where benefits in one area should not create negative consequences in another.

> *"The ambition is not to improve in one area at the expense of another"* (Interviewee 11).

In contrast, Interviewee 16 expressed a less holistic stance, emphasising the importance of not hindering potential progress. While acknowledging the need for sensible consideration, they argued that potential benefits in one domain should not be held back solely due to possible negative impacts elsewhere:

> *"Like, yes, be sensible, but don't pull the handbrake on something that could bring you positive effects in other areas."*

Some participants, however, had clearly reflected more deeply on the issue. They stressed that AI should only be used when the overall environmental impact is demonstrably positive.

> *"All tools, such as AI, should be used if the calculation adds up and becomes positive"* (Interviewee 5.2).

They further emphasised that AI should be applied selectively, targeting use cases where its benefits clearly outweigh its environmental costs.

> *"And there, you really need to take a grip and perhaps continue as I mentioned earlier, by working with those cases, focusing on the situations where we can have the greatest impact, where the benefits of AI can actually outweigh the downsides that will come with all the computing power required"* (Interviewee 12).

4.1.4 Concerns of AI Beyond Environmental Impact

Several sustainability managers emphasised the importance of considering other sustainability concerns related to AI, beyond just its environmental impact. This became especially apparent during interviews, as participants frequently raised additional issues unprompted. While some interviewees viewed these other concerns as more pressing, others used them to expand on their reflections on AI's environmental implications. Cybersecurity, in particular, emerged as a recurring concern, with participants expressing worries about the potential for AI systems to expose confidential or sensitive information.

> *"We see some risks with AI, because we don't want to spread knowledge improperly. So, primarily, we see privacy risks with AI"* (Interviewee 9).

In addition to data-related risks, several participants highlighted social sustainability concerns. These included fears of job displacement and the reinforcement of societal biases embedded in training data.

> *"This can also be transferred to the social side. Because I also believe that AI has a social impact, of course. Many people are worried about losing their jobs and so on"* (Interviewee 5.2).

> *"Well, from a sustainability perspective, especially social sustainability, we do see this as a concern as AI is used more extensively, particularly in business contexts. AI has a certain*

> *inherent bias and is trained on data that we may not always be able to control, and these structures get reinforced in various environments. I think that feels like a real concern and a cloud hanging over us"* (Interviewee 16).

Some interviewees pointed to more severe human rights concerns, particularly the exploitation of labor in global AI supply chains.

> *"[...]there are server halls in India, for example, where they lock people in. They're not allowed to leave, they're not paid, they live in slave-like conditions... And these are the kinds of issues that need to be looked at as well, so it's not just, you know, climate"* (Interviewee 6).

Interviewee 16 even argued that the social and ethical issues, specifically tied to its hardware requirements, may in fact be more pressing than its environmental impact:

> *"Then the climate aspect isn't really that significant, or not the main issue. The problem is rather all the hardware you need to create, build, and have in data centers, and the metals that need to be mined, often in countries with a lot of conflict where traceability is difficult, many areas with war. We know that children are working to mine cobalt in Congo, and things like that. I think that's a bigger, more serious problem than the energy consumption of AI, really."*

4.1.5 AI Is Only a Fraction of the Problem

Several interviewees emphasised that the environmental impact of AI should not be considered in isolation. Instead, they stressed that AI is just one part of a much broader digital ecosystem with significant environmental implications.

> *"It's not only the AI, it's the whole kind of IT and digital environment where we should start measuring. So not only AI, but of course AI is probably creating a lot of their footprint in the future. But I think overall they would also need to understand the whole kind of footprint of the digital services in total"* (Interviewee 10).

Participants also pointed out that the broader environmental footprint of the IT sector is often underestimated or overlooked within organisations. Basic practices such as digital housekeeping and IT resource management are rarely prioritised, despite their cumulative impact.

"Just think, within an organisation, we don't even have a culture where people delete emails or files, that doesn't even exist. So really, it could be a profession in itself to work with sustainability within a company's entire IT department. It has a huge impact that we're not even aware of, and that we're essentially obscuring, because we don't have access to those figures" (Interviewee 1).

4.2 The Evaluation and Measurement of AI's Environmental Impact: Empirical Findings

Despite interviewees' general awareness of AI's environmental impact, both the measurement and evaluation of its negative and positive effects remain limited, leaving the net impact largely unassessed. However, the extent to which different AI systems are evaluated varies across organisations. This section presents the factors that interviewees described as shaping their sustainability efforts and ultimately influencing how the environmental impact of AI is considered.

4.2.1 Knowledge of Measuring and Evaluating AI's Environmental Impact

Interviewees described varying levels of knowledge about AI and its environmental impact, which appeared to shape how organisations engage with the issue. Although the interviews suggest that organisations are aware that AI has a negative environmental impact, they lack the knowledge on how to measure it. Interviewee 5.2 even expressed that the environmental impact of AI may not be quantifiable at all:

"It is almost a saying that it also has a negative effect. But no one can really quantify that and calculate how many kilos of carbon dioxide such an AI initiative entails and so on."

Other participants further acknowledged the difficulty in measuring AI's environmental impact, though they believe that certain aspects should be measurable.

"I don't know, you should at least be able to get a number on AI's impact, I think. But it's harder, it's more speculative what it could lead to in terms of reductions or improvements in reality" (Interviewee 7).

Moreover, many interviewees admitted that they do not fully understand AI's supply chain, making it difficult to determine where its environmental impact occurs. This lack of detailed understanding often led to responses based on assumptions or general impressions.

> *"And now I don't know this whole value chain, but I assume that those emissions come a lot from, like, the servers and all the materials and raw materials that are needed for these servers that are in place and in server space and stuff. So I assume that that's where the biggest impact comes from"* (Interviewee 1).

Although, when discussing future possibilities, many participants were open to the idea that AI's net environmental impact could be measurable and should be pursued.

> *"Yes, I think so. Yes, yes, then you could really get some evidence of what could help reduce the impact [...]"* (Interviewee 1).

Some interviewees described early-stage discussions or evaluation efforts aimed at understanding how to measure and assess AI's environmental impact within their organisations. For example, Interviewee 2, who noted that their company is actively discussing AI's environmental impact, states:

> *"We are looking at our IT strategy and doing an analysis around how much energy do these processes consume? [...] And trying to analyse how we should do it in the best way as well."*

Whereas Interviewee 13, who noted that the overall organisational knowledge might be low but that the sustainability team is concerned about the issue, states:

> *"Because like OpenAI and Microsoft, ChatGPT, they have different self-strategies for how they handle the energy issue, and the awareness is different and low with different suppliers. Some of them have high awareness and they envision reporting on CO2 emissions, like, but it might be a startup from a year ago that doesn't have that yet, because they're extremely young and new companies even there. So I want us to follow up on those to ensure; do they have a climate transition plan or do they have a strategy or do they report their CO2 emissions so that we can use them, because we calculate CO2 in our operations."*

Furthermore, even general awareness of AI's environmental impact can prompt proactive measures, such as limiting its use to necessary cases or pursuing more sustainable development approaches.

> *"So it's very much about, well, this conscious choice around whether AI is needed for something. Or if it's not needed. Like today, for example, people might use Co-pilot for something they could*

have googled. So it's really about awareness and the level of knowledge around it. It's like everything is new and fun, so people want to try it. But then we have a responsibility to include that in the overall calculation, that well, you don't need AI for this" (Interviewee 15).

"What people talk a lot about is also connected to, like, how do you build these kinds of models? Instead of using a big generic model that might be really large, you kind of build smaller agents that are more specialised, to keep energy consumption down and so on. [...] I kind of see big potential going forward to really work smarter" (Interviewee 11).

4.2.2 Stakeholder Impact

The interviews reveal a consensus that stakeholders significantly impact the sustainability efforts organisations pursue and what they report on. Firstly, the influence of customers was brought up repeatedly, with some interviewees considering them the most important stakeholder.

"We see that our customers will increasingly demand that we work sustainably and that we can provide them with data, that we can provide them with support and information about what we are doing as their supplier" (Interviewee 9).

"We probably collect, to summarise it, what the stakeholders demand. And in that, we also view the legislator as a stakeholder. But the most important stakeholders for us are our customers" (Interviewee 5.2).

Investors also emerged as an important influence on sustainability efforts, particularly due to their growing interest in non-financial performance metrics.

"And we see that clearly among investors. It is rare that they only look at the financial and legal aspects, they also look at the sustainability aspect. They've understood that this will cost us money if we don't get it right" (Interviewee 5.1).

Further, interviewees noted that regulations play a key role in driving sustainability efforts and often form the basis of their work.

"So yes, the EU has been involved, and then it also becomes a legal requirement, but I would say that they form the basis for much of the sustainability work" (Interviewee 1).

However, many also recognise the value of going beyond mere regulatory compliance to create business value.

> *"The foundation is, of course, legislation, like, we have to do this to comply with the law. We know there are various laws coming that point ahead and so on, so that's the base. But we can never really create added value from that, like a reason for choosing our products and such. So on top of that, we have sustainability initiatives or different projects"* (Interviewee 17).

Lastly, several participants described how all these stakeholder pressures interact to shape their sustainability priorities over time.

> *"Yes, but it's a bit of these balances that we talk about, that what you choose to set the different goals for and the fulfillment of those goals varies a bit over time and there can be trends in that, and so the expectations on us can change based on legislation, certification, what customers expect, and society in general, and investors, so that varies a bit"* (Interviewee 8).

Notably, none of the participants mentioned that stakeholders are pushing them to provide information on their environmental impacts from AI.

4.2.3 Prioritising Other Areas

Most interviewees explained that their sustainability strategies focus on areas where they can have the greatest impact. Consequently, they tend to measure only what they consider most relevant or significant. As a result, AI's environmental impact is often deprioritised.

> *"[...] what we focus on, we try to look at, what are our big categories? And put the focus on what will make the most impact. And right now, I'd say we're not there yet with AI and energy consumption"* (Interviewee 11).

Some interviewees expressed that this makes it more relevant for IT companies to evaluate, rather than their own.

> *"[...] I would say that IT is creating most of the emissions and they need to do it. But for us it's because we are not even measuring other important categories because we are concentrating on the most important"* (Interviewee 10).

Regulations were again mentioned as influencing prioritisation. Many interviewees noted that new legislation demands substantial time and resources, which limits the capacity to focus on other areas of sustainability work.

> *"[...] but now there's a big legislative package coming that will basically take over all sustainability work for a few years and implement the new sustainability reporting law. I mean, a lot is coming at once. So the sustainability work will probably focus on handling the legislation now for at least the next 1, 2, 3 years."* (Interviewee 8).

Some also noted that economic incentives play a larger role than sustainability goals in shaping their decisions.

> *"But we do a lot of things, and what we do is usually driven by economic incentives – not by sustainability"* (Interviewee 9).

4.2.4 Collaboration Between Sustainability and IT

Another recurring theme was that the degree of collaboration between sustainability and IT teams influences progress on the issue. In many cases, there is a clear lack of collaboration between these teams, collaboration that is necessary to effectively raise knowledge and address the problem.

> *"I wouldn't say that anyone has really thought about it; different people work with AI and sustainability"* (Interviewee 9).

Responsibilities seem to be pushed around, with sustainability managers often unsure of their company's AI strategies and assuming that IT is aware of the environmental concerns. This handoff becomes problematic when IT staff may not have sufficient knowledge or interest in AI's environmental impact, since their focus tends to lie elsewhere. Interviewee 9 further highlights this disconnect:

> *"Not at all. I don't think that's of interest to those working with AI."*

Others highlight that they believe IT should be the ones with the knowledge, but are unsure.

> *"Those working in IT might have better knowledge, but it's also because they are interested in it and take the time to understand it. They have better control or understanding and insight into the climate impact"* (Interviewee 13).

Interviewee 10 discusses the potential benefits of collaboration between the two departments, emphasising their mutual dependency on the issue and noting that the sustainability team cannot address the issue alone.

> *"There is cooperation, but it is two fold. It's like how could AI and IT help us in gathering information, and how would we develop the system so it would enhance the information and data we have about our environmental footprint or other issues. But then again the other discussion is that how much does the AI or using IT or different programmes, how much that creates the environmental footprint."*

Further, there were a few examples where collaboration between sustainability and IT teams suggested better opportunities for addressing such issues.

> *"I would say it is knowledgeable for the reason that, since I think last year, we've had something like a task force. [...] And then my manager, who is the chief sustainability officer, has been part of that group. Precisely for that reason, to contribute the sustainability perspective in this implementation and development"* (Interviewee 15).

4.2.5 Data Transparency

A recurring challenge mentioned by several interviewees was the lack of data transparency across supply chains. In particular, organisations face difficulties in measuring the environmental impact of their AI use because service providers do not disclose information about key environmental factors associated with their data centres and AI services. This opacity makes it nearly impossible for companies further down the value chain to assess or take responsibility for their own indirect environmental impact.

> *"I am dependent on data from suppliers and customers in order to make any calculations and set a strategy for some form of reduction, basically"* (Interviewee 13).

> *"The big giants don't want to release figures on how much energy consumption goes into training a model, for example. We just know that it is high. But we don't know, for instance, at the data*

centers where our data is stored with the big giants, what the actual impact is in different locations because they don't want to share that information" (Interviewee 16).

5. Analysis

This section presents an in-depth analysis and interpretation of the findings discussed in the previous section, with a particular focus on their relevance to the research questions and the theoretical framework guiding this study. The aim is to move beyond the descriptive presentation of data, providing a nuanced understanding of the patterns that emerged during the interviews. By connecting these themes to one another, as well as to existing literature, this section will explore the underlying reasons for the observed trends and variations in participant responses, addressing the research questions by organising the analysis into two main parts: *Perceptions of the Paradoxical Tension Between Between AI's Environmental Contributions and Detriments* and *How Organisations Measure and Evaluate the Environmental Impacts of AI.*

5.1 Perceptions of the Paradoxical Tension Between AI's Environmental Contributions and Detriments

The findings reveal a spectrum of perceptions, presented below, ranging from viewing the relationship as highly significant to seeing it as almost irrelevant (see Appendix D). Rather than presenting a unified perception, the findings highlight the diversity and complexity in how managers interpret AI's environmental implications.

5.1.1 The Paradoxical Tension Is Important to Consider

The paradoxical tension between AI's potential to both benefit and harm the environment was widely acknowledged by interviewees. 12 of the interviewees recognised the necessity of critically examining both the positive and negative environmental impacts of AI to inform more effective decision-making. This perspective resonates with Van der Byl and Slawinski (2015), who advocate for a paradoxical approach that embraces inherent tensions as a means of evaluating complex sustainability challenges. Interviewees who held this view emphasised the importance of selectively applying AI, prioritising use cases where environmental benefits

3outweigh the associated costs. In these contexts, most participants believed AI could generate a net positive environmental impact, facilitating greater sustainability gains than would be achievable without its deployment. This is supported by Kopka and Grashof (2022), who find that AI can reduce energy consumption in certain contexts. However, this belief amongst participants is currently based on assumptions rather than empirical measurements of the net impact.

While many participants viewed AI as a strategic enabler of sustainability, those who highlighted the paradoxical relationship paid particular attention to the severity and future trajectory of AI's environmental costs. Some interviewees even perceived the issue as extending beyond AI alone, seeing it as a fraction of broader sustainability challenges posed by the largely unaddressed IT sector. These individuals further expressed a strong sense of urgency, suggesting that the environmental impact of AI will grow significantly. This concern is echoed in Kopka and Grashof (2022), who argue that AI's energy intensity and related environmental consequences are highly context-dependent and may lead to increased ecological harm. Despite these concerns, most maintained a belief in AI's potential for a net positive impact, provided its use is carefully managed, and expressed the need to measure this impact in the future to be certain. This is supported by Cowls et al. (2023), who emphasise that although AI must be carefully evaluated for its environmental drawbacks, it also presents significant opportunities for advancing sustainability.

While participants acknowledged the paradoxical relationship between the sustainable value creation and the sustainable value destruction of AI, they also emphasised other pressing concerns, particularly data security, as well as ethical and social implications of AI. Participants who raised these concerns perceived AI not only as an environmental paradox but as part of a broader sustainability paradox, one that generates tensions across multiple sustainability domains simultaneously. This broader framing aligns with Van der Byl and Slawinski (2015), who caution against treating sustainability dimensions in isolation or prioritising one concern over others, as it can lead to negative consequences and constrain long-term sustainability outcomes.

Participants who viewed the paradoxical tension as important to consider demonstrated a more reflective and future-oriented understanding of AI's role in sustainability. Their recognition of both AI's potential benefits and its growing environmental costs highlights a willingness to engage with complexity rather than reduce sustainability to a single metric. This approach is grounded in both optimism and caution: while there is strong belief in AI's capacity to support sustainability, it is accompanied by a clear call for more careful, context-sensitive deployment.

5.1.2 The Paradoxical Tension Is a Low Priority

While some managers see this paradox as central to their sustainability strategy, two interviewees were found to perceive the paradoxical relationship as a low-priority issue. This was evident in how several interviewees, despite being aware of AI's potential negative environmental effects, did not see it as important to look at, even in the absence of concrete data. These participants particularly indicated that AI's environmental impact remains a low organisational priority, with only a basic level of awareness and little to no discussion or integration into sustainability strategies.

Furthermore, despite being explicitly asked about AI's environmental impact, some participants responded by focusing only on social or cybersecurity concerns. This suggests that they perceive these dimensions as more pressing than the environmental implications of AI. Such prioritisation aligns with McKinsey's (2025) findings, which show that environmental concerns often remain a lower priority in the context of AI.

Moreover, some participants pointed to the broader, largely unaddressed environmental impact of the IT sector, emphasising the need for more attention in this area. This aligns with Dieste et al. (2024), who find that the entire industry 4.0 has a multitude of unintended negative effects on the environment. However, participants did not indicate that concrete action is currently being taken, implying that AI is subsumed within a wider pattern of neglect. Additionally, some participants noted that AI is currently only a small part of their organisation and perceived the environmental impact of AI as currently too small to warrant immediate attention. This reflects Epstein's (2018) argument that sustainability initiatives are more likely to be prioritised when they are clearly aligned with an organisation's strategic objectives and operational focus.

Lastly, the low prioritisation of the paradoxical tension can be partly attributed to the broader societal knowledge gap. Since the findings highlight that many organisations' sustainability strategies are driven by external pressures, greater public awareness and more active discussions around AI's environmental consequences could prompt performance-oriented organisations to better understand this emerging issue and begin prioritising it in order to proactively address the tension. This aligns with Chan et al. (2022), who argue that such organisations are more likely to act when they perceive clear strategic value beyond mere compliance. However, in absence of public awareness, even performance-driven organisations may fail to recognise the tension as a significant issue, resulting in the paradox being deprioritised.

The perception that the paradoxical relationship between AI's positive and negative environmental impacts is a low-priority concern could hence be attributed to a combination of factors, including the perceived insignificance of AI's current environmental footprint within organisations, a broader societal knowledge gap regarding AI's ecological consequences, the overshadowing of environmental concerns by more immediate social and cybersecurity issues, and the lack of clear external pressures or strategic incentives to prioritise this paradox within sustainability agendas.

5.1.3 The Paradoxical Tension Is Irrelevant

3 of the participants perceived the paradoxical tension as having no relevance. These participants acknowledged that AI has an environmental impact but expressed skepticism about its significance, suggesting that its effects are minor compared to other concerns. They argued that AI should not be slowed down solely because it may have negative consequences elsewhere, especially if it offers clear benefits in specific areas. Others saw no clear connection between AI's environmental impact and their organisation's sustainability strategies. These participants struggled to identify how AI could meaningfully contribute to sustainability goals. When AI was mentioned in the context of sustainability, it was primarily associated with compliance or reporting, rather than as a transformative tool for enhancing sustainability performance. This perspective may reflect a broader lack of knowledge or awareness regarding the environmental implications of AI, which can make the paradoxical relationship appear abstract or irrelevant to current organisational concerns.

Additionally, some participants noted that when faced with two options, one cheaper and financially advantageous and the other more expensive but environmentally preferable, they tended to choose the more cost-effective alternative. This decision-making pattern aligns with what Hahn et al. (2015) describe as an *instrumental logic*, where organisations prioritise aspects of sustainability that are visible, measurable, or economically beneficial. Under this logic, environmental and social concerns are typically addressed only when they coincide with financial returns. Consequently, instrumental logic discourages acknowledging tensions and contradictions, promoting a narrow, profit-focused perspective that risks overlooking complex sustainability challenges such as AI's environmental impact. This view further aligns with Alosi et al.'s (2023) concept of a defensive approach to paradoxical tensions, whereby organisations respond to competing objectives by prioritising certain dimensions, most often economic, while downplaying or ignoring others, like environmental or social concerns.

Another reason this paradox was perceived as irrelevant by some participants was that AI was not seen as part of their organisation's core business operations or sustainability agenda. Without strategic integration, AI's environmental implications are more easily overlooked or dismissed. This reflects what Epstein (2018) argues: that sustainability initiatives are often deprioritised or fail to take root when they are not clearly aligned with an organisation's strategic goals or operational priorities. The lack of such alignment may help explain why the paradoxical relationship between AI and sustainability was perceived as irrelevant.

The perception that the paradoxical relationship between AI's environmental benefits and harms is irrelevant appears to stem from a combination of factors: skepticism about AI's ecological significance, limited knowledge or awareness of its environmental implications, the dominance of instrumental logic in sustainability decision-making, and the marginal role AI currently plays in some organisations' core strategies. Together, these factors contribute to a context in which the paradox is not just deprioritised but dismissed altogether as outside the scope of meaningful sustainability concern.

5.2 How Organisations Measure and Evaluate the Environmental Impacts of AI

Although all sustainability managers were aware of AI's negative environmental impact, there is a clear lack of measurement and evaluation of both the positive and negative environmental impacts of AI as a distinct factor, with few interviewees able to describe specific ways their organisations are measuring or evaluating parts of these effects. Building on this, this section examines the factors that contribute to why many firms do not measure or evaluate AI's environmental impact, and how few are attempting it.

5.2.1 Why Firms are Not Measuring or Evaluating the Environmental Impact of AI

Firstly, organisations *lack sufficient knowledge* about the specific positive and negative environmental impacts of AI, leading to uncertainty about which factors should be measured. Limited understanding of harmful factors and potential sustainability benefits means organisations struggle to identify relevant metrics. Supporting this, Neto et al. (2017) and Jaramillo et al. (2019), identify the lack of technical knowledge and expertise as key barriers to adopting sustainable practices and initiatives. The findings also indicate that some firms follow a compliance-based sustainability strategy, doing only what is required by regulators. Since *regulators are not currently pressuring organisations* to assess AI's environmental impact, there is little incentive to address this knowledge gap. This reflects Chan et al. (2022), who show that firms with compliance-based strategies rarely pursue proactive environmental efforts. Without external pressure, organisations lacking expertise are unlikely to invest in evaluating AI's environmental effects, reinforcing a cycle of inaction.

Further, *the lack of knowledge in society* leads to a lack of pressure from external stakeholders to measure and evaluate organisations' net environmental impact of AI. There is a consensus among interviewees that there is a general lack of knowledge about the issue. As the findings indicate, many organisations are strongly influenced by stakeholder demands when shaping their sustainability strategies. This is supported by Shubham et al. (2018), who found that primary stakeholders are a key driver of the adoption of proactive sustainability practices. Consequently, when stakeholders themselves are unaware of or do not prioritise the environmental implications of AI, they do not push organisations to evaluate or measure their net environmental impact. This observation aligns with research done by Delmas & Toffel (2008) indicating that public awareness and discourse significantly shape stakeholder expectations and, consequently, organisational responses. This results in a lack of motivation for organisations to take action.

Moreover, the *prioritisation of other factors* means that organisations do not allocate sufficient resources to evaluating AI's environmental impact. Even among companies that pursue sustainability initiatives beyond mere compliance, many interviewees emphasised that their strategies focus on areas where they believe they have the greatest impact, leaving AI as a low priority. This aligns with current regulations, as many interviewees mentioned the CSRD which requires companies to conduct materiality assessments to determine which sustainability issues they should prioritise in their reporting (European Union, 2022). Furthermore, interviewees noted that complying with these regulations also consumes significant time and resources, limiting their capacity to address additional sustainability concerns. This is corroborated by Odobaša and Marošević (2023), who highlight that the CSRD will demand substantial organisational resources. Additionally, when asked about measuring environmental factors related to AI, some interviewees indicated that other concerns, such as social consequences or data security, are perceived as equally or more important. This perspective aligns with Hahn et al. (2010), who suggest that trade-offs inevitably arise between different sustainability dimensions in organisational decision-making. Overall, companies are prioritising other areas within sustainability, leading to limited focus on measuring or evaluating the environmental impact of AI as a separate aspect.

Furthermore, *the lack of data transparency within supply chains* is a major obstacle to measuring the environmental impact of AI solutions. When purchasing AI tools, organisations depend on their suppliers to provide relevant data, but interviewees consistently noted that such data is currently inaccessible as suppliers are not disclosing it. This supports the view of Mårtensson and Westerberg (2016), who emphasise that external relationships and cooperation within supply chains are central to an effective environmental strategy. As a result, some organisations are unable to evaluate or measure the environmental impact of AI, even if they wanted to.

Lastly, the *lack of collaboration between IT and sustainability departments* poses a significant challenge. It was found that sustainability teams heavily rely on IT departments to measure AI's environmental impact. Even if sustainability managers are aware of the issue, they often lack the technical expertise to fully understand how AI functions and its associated impacts. Conversely, it is assumed that IT professionals, who have the technical knowledge of AI, are also aware of its environmental consequences. This dynamic creates a risk that responsibility falls between departments, with neither fully owning the issue. Wong (2013) supports this view, highlighting that knowledge sharing between departments is crucial for successful sustainability-related innovation and performance. Consequently, effective collaboration between IT and sustainability teams is essential to accurately measure the environmental impact of AI systems.

5.2.2 How Organisations are Attempting to Measure and Evaluate Parts of the Environmental Impact of AI

Firms with varying levels of knowledge are beginning to evaluate or measure aspects of AI's environmental impact because they recognise that such an impact exists and feel a responsibility to act. Since the findings show limited external stakeholder pressure in this area, this development aligns with Klettner et al. (2014), who suggest that some firms increasingly see the value of going beyond minimum sustainability expectations. Although none of the interviewed organisations are explicitly assessing the full net environmental impact of AI, the findings provide examples of how certain elements of these impacts are beginning to be considered.

Firstly, Interviewee 2 described how their organisation analyses the energy consumption of AI-related processes to determine the most efficient approach. As the energy aspect of the environmental impact represents only one part of AI's entire impact, this evaluation captures just a portion of the negative impact, though it provides a basis for more informed decision-making. However, as the findings also suggest, a prerequisite for such assessments is access to relevant data. In this case, the organisation was developing its own AI solutions and therefore had direct access to the necessary figures, something not all firms possess.

Further, some interviewees described supplier assessments and follow-up evaluations as indirect ways of assessing AI's environmental impact. These involved questioning suppliers about environmental practices, such as data centre operations, and evaluating whether they measure their own impacts and plan for improvements. This suggests that organisations are embedding AI-related concerns into existing supplier evaluation frameworks rather than treating AI as a distinct issue. As Gimenez and Tachizawa (2012) note, while supplier evaluation can enhance environmental performance, it must be paired with collaboration to drive sustainability improvements. Although these practices do not directly assess AI's net environmental impact, they reflect an emerging commitment to responsible procurement by favouring suppliers engaged with sustainability challenges.

Additionally, Interviewee 15 shared an example of better collaboration between IT and sustainability departments, where the chief sustainability officer is part of the AI team. Although this does not provide any detail about how the organisation is measuring or evaluating the environmental impact of AI, as supported by Wong (2013), this type of knowledge sharing between departments is a step toward innovation within sustainability, showing that they have started making the connection between AI and sustainability.

Lastly, proactive measures were also emphasised. For instance, Interviewee 15 noted that their organisation assesses whether AI is truly needed before implementation, an effort to avoid unnecessary emissions. While this decision-making is not based on quantified impact assessment, it shows that even without detailed knowledge, organisations can still take preventive action based on the known environmental downsides of AI. However, while such avoidance strategies may reduce negative impacts, it remains important to evaluate the net environmental effect, given AI's potential to also contribute positively to sustainability objectives. Similarly, Interviewee 11 pointed out that the way AI models are built can affect their environmental footprint, suggesting that technical awareness can support more informed and sustainable choices. This also illustrates a degree of impact evaluation, as such knowledge can guide organisations toward better choices. These proactive approaches align with Chan et al. (2022), who find that firms adopting sustainability as a value-creating strategy are more likely to drive proactive environmental strategies.

While there is a general consensus among interviewees that assessing the net environmental impact of AI will be necessary in the future, no organisations currently perform this type of comprehensive evaluation.

6. Discussion

6.1 Conclusion

This study set out to explore how organisations perceive and respond to the paradoxical tension between AI's contributions to and detriments for environmental sustainability. Using qualitative methods, it examined sustainability managers' perceptions of this tension and investigated how organisations currently measure or evaluate AI's environmental impact. The study identifies three key findings: (1) organisations hold divergent perceptions of the paradoxical tension, (2) firms are not measuring or evaluating AI's net impact, and (3) a few firms are beginning to address specific aspects of its impact.

Firstly, the empirical findings of this study reveal that organisations vary in how important they consider the paradoxical tension. These views can be grouped into three categories: those who see it as a critical issue requiring investigation, those who assign it low priority, and those who consider it irrelevant. While many participants acknowledged the future necessity of assessing AI's net environmental impact, others expressed less urgency. This divergence is partly due to AI's limited current role within some organisations, and partly based on the belief that its environmental footprint is minimal, yet such assumptions are not grounded in empirical data. These varied perceptions reflect a broader lack of awareness or certainty regarding the magnitude of AI's environmental impact, highlighting the need for more evidence-based assessment within organisations.

Secondly, the findings demonstrate that organisations are not yet measuring or evaluating the net environmental impact of their AI usage. Even among those that recognise the paradoxical tension as a serious concern, concrete action is limited. As discussed in the analysis, several structural and organisational barriers, such as knowledge gaps and competing priorities, prevent firms from addressing the issue more comprehensively. In many cases, sustainability managers acknowledge the importance of the issue but are constrained by factors beyond their control. Lastly, in response to these challenges, some organisations have begun to evaluate or measure specific aspects of AI's environmental impact. While these efforts do not yet amount to full net impact assessments, they represent emerging efforts aimed at informing more responsible and sustainable AI-related decisions.

Overall, organisations demonstrate varying levels of awareness regarding both the negative and positive environmental impacts of AI. However, the issue has not yet gained sufficient prominence within the corporate sustainability agenda. Despite the presence of detailed sustainability strategies, the findings suggest that these may not fully capture the breadth of environmental impacts associated with emerging technologies such as AI, pointing to possible gaps in how sustainability is currently conceptualised and operationalised within organisations. This highlights the need for increased external pressure, particularly from stakeholders, to elevate the issue and drive more comprehensive organisational responses.

6.2 Theoretical Implications

This study provides two significant theoretical contributions: how organisations address the paradoxical tension between AI's positive and negative environmental impacts, and factors influencing decision-making within sustainability strategies. The first important implication is that the paradoxical tension between AI's positive and negative environmental impacts is insufficiently addressed by organisations. Responding to Mancuso et al. 's (2025) call to explore the consequences of this paradox, we investigate it at the organisational level, demonstrating that its impacts are largely unmeasured. Our findings highlight the need to both educate and pressure firms to address this tension, as well as the importance of expert support in doing so. We build on literature emphasising the need for organisations to assess and effectively manage the net environmental impact of AI (Mancuso et al., 2025; Cowls et al., 2023), and respond with findings that this is not currently being prioritised by organisations. Furthermore, we extend existing theory on this paradoxical tension by expanding the focus to the broader environmental impacts of IT as a whole, which to date have largely been overlooked.

The second key implication from this study targets sustainability strategy literature by examining what drives organisations to pursue certain environmental efforts. Building on the distinction between performance-oriented and regulation-driven motives (Chan et al., 2022), we show that even firms motivated by performance are not adequately assessing AI's net environmental impact, due to factors such as the prioritisation of other concerns and lack of cross-departmental collaboration. This suggests that a performance-based approach may overlook critical aspects of sustainability evaluation, indicating a potential need for regulatory interventions or external pressures in such cases. We extend the literature on knowledge sharing for green innovation (Wong, 2013) by identifying a critical need for knowledge sharing and collaboration specifically between IT and sustainability departments to effectively address IT-related sustainability challenges.

6.3 Managerial Implications

To support managers in navigating the paradoxical tension between AI's positive and negative environmental impacts, and in striving toward a net positive outcome, this study offers four strategic recommendations:

1. **Educate in AI's positive and negative environmental impacts**. Due to the complex nature of the issue and the current fragmentation of knowledge surrounding both the negative and positive effects of AI on the environment, there is a critical need to educate both sustainability and IT professionals about which specific environmental factors are impacted. This knowledge is essential not only for identifying what should be measured to eventually assess net impact, but also for supporting better-informed decisions when it comes to AI and sustainability, such as selecting more sustainable models or choosing AI suppliers with clear environmental strategies.
2. **Measure what you can.** Given the current lack of clarity around the magnitude of the environmental impact of AI, it is premature to assume that its benefits will outweigh its drawbacks. Even if organisations cannot yet measure the entire net impact, tracking specific indicators, such as energy consumption and energy-saving effects, can provide valuable insights for making more informed and responsible choices about AI use. Importantly, even when AI is implemented for non-sustainability purposes, understanding and accounting for its environmental costs is crucial for aligning with broader sustainability strategies and goals.
3. **Foster collaborations between IT and sustainability departments.** It is not enough for sustainability managers to be aware of, and want to act upon, the paradoxical tension of

AI's multifaceted impact on the environment. They alone cannot face this issue because it is not always within their power to get access to the numbers or make the decision to start measuring it. Meanwhile, IT departments, who do not work as closely with sustainability, might not feel the urgency to engage with this issue. To prevent the issue from being overlooked, close collaboration between IT and sustainability teams is essential. Such collaboration will not only help address the environmental impact of AI, but also support a broader organisational response to the environmental consequences of IT.

4. **Work closely with AI-related suppliers.** It is important to place clear demands on AI suppliers, both in terms of how they integrate sustainability into their operations and in their transparency around environmental data. Actively evaluating and selecting suppliers based on their environmental performance can influence the overall impact of AI use. Additionally, by fostering close collaboration with these suppliers, organisations can gain insights into how AI can be used to support sustainability goals, while also gaining a better understanding of its potential negative environmental effects.

6.4 Future Research & Limitations

This study encountered limitations that may influence the generalisability of the findings. All data was collected from organisations operating in the Swedish market, which may limit the applicability of the results to a broader international context. Given that the maturity of sustainability practices and AI adoption varies significantly across countries and regions, perceptions of and approaches to evaluating AI's environmental impact may differ elsewhere. Further, there was variation in interview lengths, ranging from approximately 18 to 57 minutes. While all interviews contributed valuable insights, the shorter sessions may have offered less depth or nuance, potentially affecting the richness and balance of the thematic findings. This variation was largely due to differences in the participants' engagement with the topic, some had more to share while others offered briefer responses or were constrained by time. Additionally, the study focused solely on sustainability managers, which may limit the organisational perspective captured.

We encourage future researchers to build on this study by exploring the perspectives of other roles within organisations regarding AI's multifaceted environmental impact. This study suggests that interviewing additional stakeholders, such as IT managers, could provide a more holistic understanding of how the paradox is perceived and offer deeper insight into the technical aspects. Expanding the scope to include executive leadership could also reveal perspectives from a higher decision-making level and shed light on long-term strategic planning. Another valuable avenue for future research would be sector-specific investigations, which could clarify what environmental factors are most relevant to particular industries, how AI can be leveraged for sustainability in those contexts, and which aspects of AI's negative impact should be measured.

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8. Appendix

Appendix A: Interview Guide in English

Interview Guide (English)

1. Could you talk a bit about your current position at the company?
    a. What are your main tasks and responsibilities?
    b. What previous experience do you have?
2. What industry does your company operate in, and what is its role within that industry?

Sustainability

3. How would you describe the company culture within your organisation?
    a. Particularly in relation to environmental sustainability?
4. Tell me about your company's sustainability strategy, particularly regarding the environment?
    a. What are your company's key environmental sustainability goals?
5. Could you talk about how your sustainability agenda influences decision making in the company?
6. How do regulations vs. own initiatives shape your company's sustainability work?
7. How knowledgeable do you consider your organisation to be in environmental sustainability?

Artificial Intelligence

8. Has your company implemented AI in any part of your business?
    a. If yes, in what ways?
        i. And what are your company's AI plans for the future?
    b. If not, what factors are influencing this decision?
        i. And how are you considering its potential future implementation?
9. What is your company's perspective on the potential impact of AI on your industry?
10. How knowledgeable do you consider your organisation to be about the environmental impact of AI?
11. How is AI part of your sustainability strategy?
    a. If it is not part of it, how could AI be part of your sustainability strategy in the future?
12. How does your company evaluate the environmental impact of new AI initiatives?
13. How would you describe the relationship between AI adoption and environmental sustainability?

Appendix B: Interview Guide in Swedish

Intervjuguide (Svenska)

1. Kan du berätta lite om din nuvarande position på företaget?
    a. Vilka är dina huvudsakliga arbetsuppgifter och ansvarsområden?
    b. Vilken tidigare erfarenhet har du?

2. Inom vilken bransch verkar företaget, och vilken roll har det inom branschen?

Hållbarhet

3. Hur skulle du beskriva företagskulturen inom din organisation?
    a. Särskilt i relation till hållbarhet?

4. Kan du berätta om företagets hållbarhetsstrategi, särskilt när det gäller miljön?
    a. Vilka är företagets viktigaste mål för miljömässig hållbarhet?

5. Kan du berätta om hur er hållbarhetsagenda påverkar beslutsfattandet inom företaget?

6. Hur drivs ert hållbarhetsarbete av lagstiftning jämfört med egna initiativ?

7. Hur kunnig anser du att företaget är inom miljömässig hållbarhet?

Artificiell intelligence

8. Har ert företag implementerat AI i någon del av verksamheten?
    a. Om ja, på vilket sätt?
        i. Och vilka är företagets framtidsplaner för AI?
    b. Om inte, vilka faktorer påverkar detta beslut?
        i. Och hur överväger ni en eventuell framtida implementering?

9. Vad är företagets syn på AI:s potentiella påverkan på er bransch?

10. Hur kunnig anser du att din organisation är om AI:s miljöpåverkan?

11. Hur är AI en del av er hållbarhetsstrategi?
    a. Om det inte är en del av den, hur skulle AI kunna integreras i hållbarhetsstrategin i framtiden?

12. Hur utvärderar ert företag den miljömässiga påverkan av nya AI-initiativ?

13. Hur skulle du beskriva relationen mellan AI-implementering och miljömässig hållbarhet?

Appendix C: AI Transparency Note

ChatGPT was used to enhance both the quality and efficiency of the work. Specifically, the tool was employed for text refinement, with a focus on improving grammar, conciseness, and clarity. It was solely used to refine content already written by the authors. Potential risks, such as model hallucinations and misinterpretations of prompts, were recognised. To address these risks, the process involved ongoing critical thinking, fact-checking, and comparisons between the original content and the model's output.

Appendix D: Example Answers of the Differing Perceptions

1. Important to consider:

Interviewee 11:

Q: How would you describe the relationship between an AI implementation and environmental sustainability?

A: Tricky question, the relationship between AI implementation and sustainability.
Well, like I touched on earlier, I think you have to look at what potential an AI project has, what the output from it is. You can probably evaluate the sustainability aspects related to the output you want to achieve, and then you have to weigh that against the negatives. That way, you get some kind of difference, where hopefully you create more positive impact than negative.

I believe there are a lot of things we can accomplish with the help of AI, but not all AI initiatives will have a positive sustainability output either. So if you look at AI broadly, it's not just one thing. That's why it's difficult to say anything general about sustainability and AI, I think. You have to look at it from the perspective of what it's trying to achieve, what problems it's supposed to solve.

2. Low priority:

Interviewee 17:

Q: And how would you describe the company's view on AI's environmental impact?

A: We haven't really discussed that yet; we haven't gotten that far yet.

Q: Do you think there is some knowledge about it, or is that also something you're unsure about?

A: No, but… I mean, there is knowledge that, yes, it has an environmental impact, but not more than that, not in any deeper detail.

Q: And would you see AI becoming either a part of your sustainability strategy or being used in some way for sustainability work in the future? Or is that something your sustainability team doesn't really talk much about either?

A: We're not talking about it now, but that doesn't mean we wouldn't do so in the future. However, I'm not sufficiently knowledgeable about it.

Q: So there's no way that the company evaluates the environmental impact of potential AI tools and such either?

A: No

3. Irrelevant:

Interviewee 16:

Q: And how knowledgeable would you say the organisation is about AI's environmental impact?

A: This is a very interesting question, because it has received, I think, a lot of attention for being so bad for the climate, and absolutely, it consumes a lot of energy, especially when training AI models. But then, running them once they are trained and asking questions doesn't actually have that much impact. There are many other things in society that have a much worse impact than us running a few AI queries.

But you also have to look at the underlying factors, it depends a lot on what type of energy you use. If you use fossil-free energy and have a data center in Sweden where you train and run your AI services, then you're running on 99% fossil-free energy, because that's the energy mix we have in Sweden. And fossil-free energy can be wind, nuclear, solar, or so on, but they only emit a few grams of CO_2 per kilowatt-hour, which is extremely low. So technically, you could run as much as you want without it being a major problem. The problem arises because there is competition for that fossil-free electricity. Worldwide, we simply have too little of it.

Q: So, would you say that the net effect, if we think specifically about AI, could be a positive net effect right now? That the benefits AI provides outweigh the negatives?

A: Well, it almost becomes a philosophical question, because it's impossible to measure that precisely. Since so much is happening everywhere all the time. So, yeah, I think it's good that there's focus and awareness that this is something that consumes a lot of energy. But I don't think you can just get stuck on the idea that we shouldn't use it simply because it uses a lot of energy. I find it fascinating how this has become such a 'truth' that so much revolves around, and how much of the dialogue is focused on that, I think it's fascinating.

I think the issue is sometimes a bit exaggerated, and I get asked that question a lot since I work with sustainability and AI, or rather, IT, and AI is a part of that. So, yeah, it's a bit like, 'Should we really use it that much? It's not that good.' But it's like everything else, you don't leave the tap running at home just because you can. I mean, I don't waste water just because there's plenty of it, since I happen to live in Sweden, where we have access to clean, good water. It's kind of the same idea: be sensible, but don't slam on the brakes on something that could have positive effects in other areas.