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# Understanding Organizational Readiness for Artificial Intelligence in Green Technology

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**ABSTRACT**

**The rapid** development of Artificial Intelligence (AI) has created new opportunities for organizations to improve green technology adoption, resource efficiency, environmental monitoring, and sustainable decision-making, yet organizational readiness remains a critical challenge. **This study aims** to understand how organizations perceive their readiness to adopt and implement AI in green technology and to identify the organizational factors, opportunities, and barriers that influence successful adoption. **A qualitative research** approach was employed using semi-structured interviews with organizational stakeholders involved in technology management, sustainability, and AI-related decision-making. The collected data were analyzed using thematic analysis to identify recurring patterns and meaningful themes related to technological infrastructure, management support, human capabilities, financial resources, organizational culture, and sustainability alignment. **The findings** indicate that organizational readiness is influenced by the availability of technological infrastructure, employee competencies, leadership commitment, financial capacity, data accessibility, and organizational willingness to adapt existing processes. Participants also identified limited AI expertise, implementation costs, data-related challenges, and resistance to organizational change as major barriers to AI adoption in green technology. **The study concludes** that successful AI adoption requires organizations to develop technological and human capabilities simultaneously while strengthening managerial support and aligning AI initiatives with broader sustainability objectives. The findings provide practical insights for organizations seeking to establish stronger readiness for AI-enabled green technology and contribute to more sustainable organizational transformation.

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## 1. INTRODUCTION

The rapid development of Artificial Intelligence (AI) has increasingly transformed how organizations manage resources, make decisions, and develop innovative solutions to address environmental challenges [1]. In the context of green technology, AI offers considerable potential to improve energy efficiency, optimize resource utilization, monitor environmental conditions, manage renewable energy systems, and support data-driven sustainability initiatives. Organizations are therefore increasingly expected to integrate intelligent technologies into their environmental and operational strategies to respond to growing pressures related to climate change, resource scarcity, energy transition, and sustainable development [2]. However, the availability

of AI technology does not automatically guarantee successful implementation. Organizations must possess sufficient technological infrastructure, relevant data capabilities, financial resources, employee competencies, and managerial support before AI can be effectively integrated into green technology initiatives [3]. Organizational readiness consequently becomes an important consideration because organizations differ in their ability to adopt emerging technologies and transform existing processes. An organization with advanced digital infrastructure but limited employee expertise, weak leadership support, or inadequate financial resources may still experience difficulties in implementing AI-based green technology [4]. Similarly, organizations may recognize the environmental benefits of AI but remain hesitant because of implementation complexity, uncertainty regarding investment returns, data governance concerns, and resistance to organizational change. Understanding these conditions is therefore important for determining whether organizations are sufficiently prepared to move from recognizing the potential of AI to implementing it as part of their sustainability strategy [5].

The adoption of AI in green technology also requires organizations to consider technological and human dimensions simultaneously. From a technological perspective, AI implementation depends on reliable digital infrastructure, data availability, computing capabilities, system integration, and appropriate cybersecurity and data management practices [6]. Green technology applications frequently involve large volumes of environmental and operational data, making data quality and accessibility particularly important for generating reliable AI-supported decisions. However, technological readiness alone cannot ensure effective adoption because employees and managers must understand how AI can be applied to organizational and environmental objectives [7]. Human resource capabilities are therefore an important component of organizational readiness, particularly because AI implementation may require new technical skills, analytical competencies, interdisciplinary knowledge, and the ability to interpret AI-generated information. Leadership also plays a central role in establishing organizational willingness to adopt AI by providing strategic direction, allocating resources, encouraging experimentation, and reducing employee concerns regarding technological change [8]. In addition, organizational culture can either facilitate or hinder AI adoption. Organizations that encourage innovation, continuous learning, collaboration, and evidence-based decision-making may be more prepared to integrate AI into green technology initiatives than organizations characterized by rigid structures and resistance to change [9]. Consequently, organizational readiness should be understood as a multidimensional condition involving technological infrastructure, human capabilities, leadership commitment, organizational culture, financial capacity, and strategic alignment with sustainability objectives [10].

Despite the increasing attention given to AI and green technology, an important research gap remains regarding how organizational stakeholders perceive their actual readiness to adopt AI for sustainability-oriented applications [11]. Existing discussions frequently emphasize the technical capabilities of AI, the efficiency of intelligent systems, or the environmental benefits generated by AI applications, while comparatively less attention is given to the organizational conditions required before these technologies can be successfully implemented [12]. This is particularly important because AI adoption is not simply a technological decision but also an organizational transformation process involving changes in employee roles, managerial practices, resource allocation, decision-making processes, and organizational capabilities. Organizations may face barriers such as insufficient AI expertise, high implementation costs, inadequate infrastructure, limited access to quality data, uncertainty regarding AI outcomes, and employee resistance [13]. At the same time, organizations may identify opportunities including improved resource efficiency, better environmental monitoring, optimized energy management, reduced operational waste, and enhanced sustainability decision-making. Understanding how these opportunities and challenges are perceived by organizational stakeholders can provide a deeper explanation of why some organizations are more prepared than others to adopt AI in green technology [14]. Therefore, this study adopts a qualitative perspective to explore organizational readiness through the experiences and perceptions of stakeholders involved in technology management, sustainability, and AI-related decision-making. Rather than measuring readiness only through numerical indicators, the study seeks to understand the underlying organizational conditions, expectations, concerns, and experiences that shape AI adoption [15].

Based on this context, this study aims to understand organizational readiness for Artificial Intelligence in green technology by examining the factors that influence organizations' willingness and capability to adopt AI-enabled sustainability solutions [16]. The study specifically explores how stakeholders perceive technological infrastructure, management support, employee competencies, financial resources, organizational culture, data availability, and sustainability alignment in relation to AI adoption. It also investigates the major barriers that organizations encounter and the opportunities they perceive from integrating AI into green technology initiatives [17]. A qualitative research approach using semi-structured interviews and thematic analysis is em-

ployed to capture detailed perspectives and identify recurring patterns across stakeholder experiences. The study is expected to contribute to the literature by providing an organizational perspective on AI adoption that complements the predominantly technology-oriented discussion of AI and green technology [18]. Practically, the findings can assist managers and organizational decision-makers in identifying areas that require strengthening before implementing AI-based sustainability initiatives, particularly in relation to human resources, technological infrastructure, leadership commitment, and organizational capabilities. By understanding readiness as a multidimensional organizational condition rather than merely the availability of technology, this research provides a more comprehensive basis for organizations seeking to integrate AI into green technology while supporting long-term environmental sustainability and organizational transformation [19].

## 2. LITERATURE REVIEW

Artificial Intelligence has increasingly become an important organizational technology for supporting sustainability-oriented transformation. However, successful AI implementation depends not only on technological availability but also on organizational capabilities, human resources, leadership, financial resources, and strategic alignment [20]. In the context of green technology, these dimensions become particularly important because organizations must ensure that AI adoption contributes to environmental objectives while remaining compatible with their organizational capabilities. Therefore, this literature review focuses on four main areas: AI in green technology, organizational readiness for AI adoption, organizational and human capabilities, and barriers and enabling factors influencing sustainable AI implementation.

### 2.1. Artificial Intelligence in Green Technology

Artificial Intelligence has increasingly been applied to support environmental sustainability through improved resource efficiency, environmental monitoring, energy optimization, and data-driven decision-making. AI enables organizations to process large volumes of environmental and operational data, identify complex patterns, and improve the efficiency of organizational processes [21]. Previous research has highlighted the growing adoption of AI in sustainability-related activities, particularly in operational optimization and the development of sustainable business practices. These applications demonstrate that AI can serve as an integral component of broader organizational sustainability strategies rather than functioning merely as an independent technological solution. This perspective emphasizes that the environmental benefits of AI depend not only on its technical capabilities but also on how effectively organizations integrate intelligent technologies into their existing business operations, organizational processes, and sustainability initiatives [22].

The concept of Green AI further emphasizes the role of organizations in using AI to support environmental objectives. Fecho and Wahl found that institutional pressures and environmental consciousness can influence organizational adoption of Green AI, while top management support plays an important role in facilitating adoption. AI can therefore contribute to green technology through applications such as energy optimization, environmental monitoring, resource management, and sustainable production [23]. However, the availability of AI technology does not automatically produce environmental benefits. Organizations need appropriate infrastructure, data, competencies, and strategic direction to translate AI capabilities into sustainability outcomes. Consequently, understanding organizational readiness is essential for explaining whether AI can be effectively integrated into green technology initiatives [24].

### 2.2. Organizational Readiness for Artificial Intelligence Adoption

Organizational readiness refers to the extent to which an organization possesses the resources, capabilities, structures, and willingness necessary to adopt and implement new technologies. In AI adoption, readiness involves multiple dimensions because organizations must prepare their technological infrastructure, data resources, employees, processes, and management systems simultaneously [25]. Uren and Edwards demonstrated that successful AI adoption requires readiness across people, processes, technology, and data, emphasizing that organizations cannot rely exclusively on technical capabilities. This suggests that AI adoption should be viewed as an organizational transformation process that requires coordination between technological and business functions [26].

The Technology Organization Environment perspective further suggests that AI adoption is shaped by interconnected technological, organizational, and external factors [27]. Previous studies have highlighted the importance of technological characteristics, top management support, financial readiness, and regulatory support in determining an organization's ability to adopt AI. Other research has also emphasized the role of

technological practices, financial resources, organizational characteristics, data management, and data protection in establishing organizational readiness for AI implementation [28]. These perspectives demonstrate that organizational readiness is a multidimensional and context-dependent condition rather than a fixed organizational characteristic. In the context of green technology, readiness should therefore be assessed by examining whether organizations have sufficient technological capabilities, managerial commitment, financial resources, and institutional support to implement AI effectively while ensuring alignment with environmental sustainability objectives [29].

### 2.3. Organizational and Human Capabilities for AI-Enabled Green Technology

The successful implementation of AI in green technology requires organizations to develop technological and human capabilities simultaneously [30]. Technological infrastructure provides the foundation for collecting, processing, storing, and analyzing environmental information, whereas employees determine whether AI systems can be effectively implemented and utilized. Organizations may have access to advanced AI technologies but still face implementation difficulties when employees lack technical knowledge, analytical skills, or an understanding of how AI can contribute to sustainability [31]. Leadership is also important because management determines strategic priorities, allocates resources, encourages innovation, and establishes organizational conditions that support technological transformation. Research on Green AI adoption indicates that top management support can play an important role in translating institutional and environmental pressures into actual organizational adoption [32].

Human resource development is therefore an important component of organizational readiness. Research on AI readiness in Indonesian manufacturing SMEs identified gaps related to strategic alignment, digital infrastructure, human capital development, and leadership commitment, while cultural resistance and limited external support also created challenges for sustainable AI adoption [33]. Similarly, Hossain found that knowledge, leadership, human resources, financial capacity, and organizational engagement are interconnected factors influencing AI and big data analytics adoption. These findings indicate that organizations should not treat employee capability as a secondary consideration. Instead, training, continuous learning, cross-functional collaboration, and leadership support should be developed alongside technological infrastructure to ensure that AI-enabled green technology can be effectively incorporated into organizational activities [34].

### 2.4. Barriers and Enablers of AI Adoption for Sustainability

Organizations may encounter various barriers when attempting to adopt AI for green technology. These include limited technological infrastructure, insufficient financial resources, lack of skilled employees, inadequate data availability, organizational resistance, cybersecurity concerns, and uncertainty regarding the benefits of AI investment [35]. A systematic review of AI adoption barriers in smart cities found that implementation challenges occur across technological, organizational, and environmental dimensions, demonstrating that AI adoption cannot be addressed solely through technological improvements [36]. Financial readiness and management support are particularly important because AI implementation can require investment in infrastructure, software, employee training, data management, and system integration. These challenges may become more significant for organizations that have limited resources or lack previous experience with advanced digital technologies [37].

Despite these barriers, several organizational conditions can facilitate AI adoption for sustainability. Strong leadership commitment, employee training, reliable data infrastructure, organizational openness to innovation, cross-functional collaboration, and clear sustainability objectives can strengthen organizational readiness [38]. Research on AI adoption in sustainable businesses indicates that AI can generate sustainability benefits when it is integrated into broader organizational strategies rather than implemented as an isolated technological initiative. Institutional pressure and environmental consciousness can also encourage organizations to consider Green AI as part of their environmental responsibilities [39]. Therefore, organizational readiness should be understood as the interaction between barriers and enabling conditions. This perspective supports the present qualitative study in exploring how organizational stakeholders perceive their technological, human, managerial, financial, and strategic readiness for adopting AI in green technology [40].

## 3. METHODOLOGY

### 3.1. Research Approach

This study employs a qualitative research approach to explore and understand how organizations perceive their readiness to adopt Artificial Intelligence (AI) in green technology. A qualitative approach is appropriate because it enables an in-depth exploration of participants' experiences, perceptions, and interpretations regarding organizational readiness, which cannot be adequately captured through numerical measurements alone. The study seeks to generate rich and contextual insights into the organizational conditions that influence AI adoption rather than producing statistical generalizations [41].

### 3.2. Research Design

A descriptive qualitative research design is adopted to examine the key dimensions of organizational readiness and the factors that facilitate or hinder AI adoption for green technology. This design enables the researcher to capture stakeholder perspectives within their organizational context and identify themes emerging from their experiences. The approach is particularly suitable for examining complex organizational phenomena involving technological capabilities, management support, employee competencies, financial resources, and sustainability objectives.

### 3.3. Research Setting and Participants

The study was conducted across four medium-to-large organizations operating in the renewable energy, sustainable manufacturing, smart logistics, and environmental consultancy sectors in the United Kingdom and Southeast Asia that have actively planned, piloted, or implemented Artificial Intelligence (AI) initiatives for green technology and sustainability operations.Purposive sampling was employed to select information-rich participants with direct experience in AI deployment, digital infrastructure, or organizational sustainability governance. A total of $N = 12$ organizational stakeholders participated in the study, consisting of three Top Management executives (P1–P3), three Middle Management leaders (P4–P6), three Technical/AI Professionals (P7–P9), and three Sustainability Professionals (P10–P12). Selecting three representatives from each functional tier ensured balanced perspectives across strategic, operational, technical, and environmental dimensions.

Table 1. Participant Profile and Selection Criteria

| Participant Group | Position/Role | Selection Criteria | Expected Contribution |
|---|---|---|---|
| Top Management | Director, VP Sustainability, General Manager | Involved in strategic decision-making related to AI and sustainability | Strategic alignment and leadership support |
| Middle Management | Manager, Head of Department | Involved in planning or implementing AI or green technology initiatives | Organizational capabilities and implementation challenges |
| Technical/AI Professionals | AI Specialist, Data Scientist, IT Manager | Responsible for developing or operating AI systems | Technological readiness and data infrastructure |
| Sustainability Professionals | Sustainability Manager, Environmental Analyst | Involved in sustainability planning and environmental management | Environmental objectives and sustainability alignment |

Table 1 presents the participant groups and selection criteria used in the study. The participants are intentionally selected from different organizational positions to capture diverse perspectives regarding AI readiness. Top management provides insights into strategic direction and leadership support, middle management contributes information concerning implementation and organizational resources, technical professionals provide perspectives on technological and data readiness, while sustainability professionals contribute insights regarding environmental objectives and sustainability alignment.

### 3.4. Data Collection

Data are collected through semi-structured interviews, allowing the researcher to maintain consistency across participants while providing sufficient flexibility to explore issues emerging during the interviews. The interview questions are developed based on the research objectives and literature concerning AI adoption, organizational readiness, and green technology. The interviews focus on participants' experiences and perceptions

regarding technological infrastructure, data availability, employee capabilities, leadership support, financial resources, organizational culture, sustainability objectives, and barriers to AI adoption.

Interviews are conducted either online or face-to-face depending on participant availability. Each interview is expected to last approximately 45–75 minutes and is recorded with participant consent. The recordings are subsequently transcribed to facilitate systematic qualitative analysis. Additional notes are maintained during the interview process to document relevant contextual observations and emerging issues.

### 3.5. Data Analysis

The collected data are analyzed using thematic analysis to identify recurring patterns, meanings, and relationships within participants' responses. The analysis follows a systematic process involving familiarization with the data, generation of initial codes, identification of potential themes, review of themes, definition and naming of themes, and development of the final analytical narrative. NVivo or equivalent qualitative analysis software can be used to organize transcripts, codes, and emerging themes.

The analysis begins by repeatedly reviewing interview transcripts to develop an overall understanding of participants' perspectives. Meaningful statements are subsequently assigned initial codes related to organizational readiness and AI adoption. Similar codes are grouped into broader categories and developed into themes. The themes are then reviewed against the interview data to ensure that they accurately represent participants' experiences. This process allows the study to identify the organizational factors that facilitate or constrain AI adoption in green technology.

### 3.6. Research Process

The overall research process consists of six interconnected stages: literature review, research design and planning, data collection, data management, thematic analysis, and reporting and interpretation. The process begins by identifying concepts related to AI, green technology, and organizational readiness through the literature review. The researcher then establishes the research design, participant criteria, and interview protocol before conducting the interviews. The collected data are transcribed and organized before thematic analysis is conducted to identify meaningful patterns and themes.

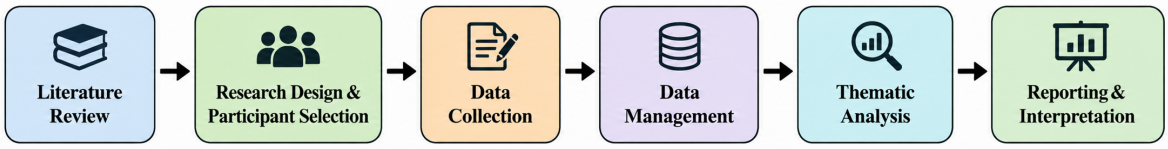



Figure 1. Research Process

Figure 1 illustrates the overall qualitative research process used in this study. The process begins with a literature review to establish the research context, followed by research design and participant selection, semi-structured interviews, data management, thematic analysis, and finally reporting and interpretation. This sequence ensures that the findings are systematically developed from participants' perspectives and directly connected to the research objective of understanding organizational readiness for AI in green technology.

### 3.7. Research Trustworthiness

Because this study uses qualitative data, research quality is evaluated through credibility, transferability, dependability, and confirmability. Credibility is strengthened through prolonged engagement with the interview data and member checking where appropriate. These procedures help ensure that the researcher's interpretations accurately reflect participants' responses and experiences. Transferability is supported by providing sufficient descriptions of the research context and participant characteristics so that readers can determine the applicability of the findings to other organizational settings. Dependability is addressed by maintaining a clear record of the research procedures, coding decisions, and analytical development to ensure consistency throughout the research process.

Confirmability is supported through reflexive documentation and transparent coding procedures to reduce the influence of researcher assumptions on the interpretation of participant responses. The researcher maintains an audit trail containing interview materials, coding decisions, theme development, and analytical notes. In addition, the relationship between the collected data and the identified themes is carefully examined

to ensure that the interpretations are grounded in participants' perspectives. These strategies help ensure that the findings represent participants' experiences rather than being based solely on researcher interpretation.

Table 2. Trustworthiness Criteria and Strategies

| **Criteria** | **Strategy Applied** |
|---|---|
| Credibility | Prolonged engagement and member checking |
| Transferability | Thick description of context and participants |
| Dependability | Audit trail of research processes and decisions |
| Confirmability | Reflexive journal and transparent coding process |

Table 2 summarizes the strategies used to establish trustworthiness in the qualitative research process. The four criteria provide complementary mechanisms for ensuring that the findings are credible, contextually meaningful, systematically developed, and grounded in participant perspectives. Together, these procedures strengthen the methodological rigor of the study and support the reliability of the qualitative interpretation.

## 4. RESULTS AND DISCUSSION

### 4.1. Overview of the Qualitative Findings

The thematic analysis was conducted to understand organizational readiness for Artificial Intelligence adoption in green technology. The analysis focused on participants' perceptions regarding the organizational conditions required to adopt AI, including technological infrastructure, management support, human capabilities, financial resources, organizational culture, and alignment with sustainability objectives. Based on the research framework, the analysis is structured around the recurring dimensions of organizational readiness and the challenges that may influence the implementation of AI-enabled green technology.

The findings are organized into five major themes: technological readiness, organizational and leadership support, human resource capability, financial and infrastructure readiness, and sustainability alignment. These themes provide a structured interpretation of the factors that organizations need to consider before implementing AI for green technology. The thematic structure also enables the study to address its main objective of understanding how organizational stakeholders perceive their readiness, opportunities, and barriers related to AI adoption.

### 4.2. Technological Readiness for AI Adoption

The first theme concerns the technological conditions required to support AI implementation. Participants' perspectives should be examined in relation to the availability of digital infrastructure, data accessibility, system integration, computing resources, and data management capabilities. These factors are important because AI-enabled green technology depends on the organization's ability to collect, store, process, and utilize environmental and operational data effectively. Organizations with established digital systems and accessible data are expected to have stronger foundations for implementing AI than organizations that still rely heavily on fragmented or manually managed information systems.

Data quality and system compatibility also represent important considerations within this theme. AI applications for green technology may require information from different organizational systems, such as energy consumption, environmental monitoring, production, transportation, or resource management systems. Therefore, technological readiness involves not only possessing AI tools but also ensuring that existing systems can support their implementation. The findings should consequently demonstrate whether participants perceive their organizations as technologically prepared and identify specific technological limitations that may delay or restrict AI adoption.

### 4.3. Organizational and Leadership Support

The second theme focuses on the role of organizational leadership and management support in AI adoption. Participants' perspectives are expected to highlight the importance of leadership commitment in establishing strategic priorities, allocating resources, encouraging innovation, and creating organizational acceptance of AI-based transformation. Management support is particularly important because AI adoption may require changes to existing workflows, responsibilities, decision-making processes, and investment priorities.

Without clear leadership direction, AI initiatives may remain limited to experimental projects rather than becoming integrated into organizational strategies.

Organizational culture also forms an important part of this theme. A culture that supports innovation, learning, experimentation, and evidence-based decision-making can facilitate AI implementation, whereas resistance to technological change may create difficulties during adoption. The findings should therefore examine whether organizational stakeholders perceive their current culture as supportive of AI-enabled green technology. Particular attention should be given to how management communicates the purpose of AI adoption and how employees are involved in the organizational transformation process.

### 4.4. Human Resource Capability and AI Skills

The third theme concerns the availability of human resources and competencies required to implement AI in green technology. AI adoption requires employees who possess sufficient technical knowledge, data literacy, analytical capabilities, and understanding of AI applications. Participants' perspectives should therefore identify whether organizations currently possess adequate internal expertise or remain dependent on external consultants and technology providers. The findings can also reveal whether employees require additional training to understand, operate, interpret, and manage AI-enabled systems.

In addition to technical skills, interdisciplinary capabilities are important because green technology requires the integration of technological and environmental knowledge. Employees involved in AI implementation may need to understand both organizational processes and sustainability objectives. Training programs, knowledge sharing, cross-functional collaboration, and continuous learning may therefore emerge as important mechanisms for strengthening organizational readiness. This theme directly addresses whether organizations are sufficiently prepared from a human-capability perspective to transform AI technologies into practical sustainability applications.

### 4.5. Financial Resources and Infrastructure Constraints

The fourth theme addresses financial and resource-related readiness. AI implementation can require considerable investment in technological infrastructure, software, data management systems, employee training, cybersecurity, and system maintenance. Participants' perspectives should therefore be examined regarding whether financial resources are sufficient to support AI implementation beyond the initial adoption stage. Organizations may recognize the potential benefits of AI for energy efficiency and environmental management but remain hesitant when the required investment is perceived as high or the expected return is uncertain.

Infrastructure limitations may further interact with financial constraints. Organizations with limited resources may experience difficulties upgrading existing systems, acquiring specialized AI technologies, or recruiting qualified professionals. The findings should therefore explore how financial considerations influence organizational willingness to adopt AI for green technology. This theme is important because organizational readiness is not determined solely by recognizing the potential benefits of AI but also by the organization's capacity to provide the resources required for sustainable implementation.

### 4.6. Sustainability Alignment and Strategic Readiness

The fifth theme focuses on the alignment between AI adoption and organizational sustainability objectives. AI implementation is more strategically meaningful when organizations clearly understand how AI can contribute to environmental goals such as energy efficiency, resource conservation, emission reduction, waste management, and improved environmental monitoring. Participants' perceptions should therefore be examined to determine whether AI is viewed primarily as a technological investment or as an instrument for achieving broader sustainability objectives.

Strategic alignment also requires organizations to establish clear objectives for AI-enabled green technology. Without measurable sustainability goals, organizations may find it difficult to evaluate whether AI implementation generates meaningful environmental benefits. The findings should therefore identify how participants connect AI adoption with organizational sustainability strategies and whether environmental considerations influence investment and implementation decisions. This theme provides an important connection between organizational readiness and the broader objective of green technology development.

### 4.7. Barriers to Organizational Readiness

Across the identified themes, several potential barriers may influence organizational readiness for AI adoption. These barriers include limited technological infrastructure, insufficient data quality, lack of

AI-related skills, inadequate financial resources, limited management support, organizational resistance, and uncertainty regarding the practical benefits of AI. Rather than representing isolated problems, these barriers are interconnected. For example, insufficient financial resources may prevent organizations from upgrading infrastructure or providing employee training, while limited employee capabilities may reduce management confidence in investing in AI.

The thematic analysis should therefore examine how participants describe the relationship between these barriers. Understanding these relationships is important because organizational readiness cannot be strengthened through a single intervention. Organizations may require simultaneous improvements in technological infrastructure, employee capabilities, leadership support, financial planning, and strategic sustainability alignment. The resulting themes can provide a more comprehensive understanding of why organizations may be prepared in some dimensions but remain unprepared in others.

## 5. MANAGERIAL IMPLICATIONS

Managers should view organizational readiness for Artificial Intelligence as a multidimensional process rather than simply acquiring new AI technologies. The findings suggest that organizations need to strengthen technological infrastructure, data management capabilities, and system integration before implementing AI-based green technology solutions. Management should therefore conduct regular readiness assessments to identify technological gaps and prioritize investments according to organizational sustainability objectives. Establishing clear implementation strategies can help organizations reduce technological uncertainty and ensure that AI initiatives are connected to practical environmental and operational needs.

Human resources and leadership should also receive significant managerial attention. Managers need to provide continuous training and professional development to improve employees' AI-related knowledge, data literacy, and ability to work with intelligent systems. Strong leadership commitment is equally important for creating an organizational culture that supports innovation and reduces resistance to technological change. Management can encourage cross-functional collaboration between IT specialists, sustainability professionals, and operational teams so that AI implementation reflects both technological requirements and environmental priorities. Such collaboration can improve employee acceptance while strengthening the organization's internal capability to implement AI effectively.

Finally, managers should ensure that AI adoption is strategically aligned with long-term green technology and sustainability objectives. Investment decisions should consider not only the technological benefits of AI but also potential improvements in energy efficiency, resource utilization, environmental monitoring, and operational sustainability. Organizations should establish clear sustainability targets and evaluation mechanisms to assess whether AI initiatives generate meaningful environmental and organizational value. By combining financial planning, leadership support, employee capability development, and sustainability-oriented strategic planning, managers can create stronger organizational readiness and facilitate more responsible adoption of AI in green technology.

## 6. CONCLUSION

This study concludes that organizational readiness is a critical foundation for the successful adoption of Artificial Intelligence in green technology. The discussion indicates that readiness extends beyond the availability of AI technologies and involves technological infrastructure, data capabilities, management support, employee competencies, financial resources, organizational culture, and alignment with sustainability objectives. Organizations that develop these dimensions simultaneously are better positioned to integrate AI into green technology initiatives and translate its capabilities into improvements in resource efficiency, environmental management, and sustainable decision-making. Therefore, AI adoption should be approached as an organizational transformation process that requires coordinated preparation across technological, managerial, and human dimensions.

The study addresses the research objective by demonstrating that organizational readiness for AI in green technology is multidimensional and influenced by both internal capabilities and implementation barriers. Key considerations include technological preparedness, leadership commitment, human resource capabilities, financial capacity, and the ability to align AI initiatives with organizational sustainability strategies. However, the study has limitations because it adopts a qualitative perspective and focuses on understanding organizational readiness rather than quantitatively measuring the strength of relationships between readiness factors. In

addition, the findings may be influenced by organizational context and stakeholder perspectives, which may limit their generalizability to organizations with different technological, financial, or institutional conditions. These limitations indicate the need for caution when applying the findings across different organizational environments.

Future research should expand the investigation by examining organizational readiness across different industries and organizational sizes to provide broader insights into AI adoption for green technology. Comparative studies could investigate how readiness differs between organizations with different levels of digital maturity, financial capacity, and sustainability orientation. Future researchers may also combine qualitative insights with quantitative assessment frameworks to develop measurable indicators of AI readiness without losing the contextual understanding provided by qualitative research. Further studies should examine the long-term outcomes of AI adoption, particularly its contribution to energy efficiency, resource optimization, environmental performance, and sustainable organizational transformation. Such research could provide stronger evidence for developing practical readiness frameworks and strategies for responsible AI adoption in green technology.

## 7. DECLARATIONS

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### Author Contributions

Conceptualization: AD; Methodology: IK; Software: NA; Validation: IK and NA; Formal Analysis: AD and NA; Investigation: IK; Resources: NA; Data Curation: AD; Writing Original Draft Preparation: IK and AD; Writing Review and Editing: NA and AD; Visualization: NA, IK and AD. All authors have read and agreed to the published version of the manuscript.

### Data Availability Statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request. Nevertheless, owing to privacy considerations and institutional data protection policies, the dataset cannot be made publicly accessible. Researchers may obtain access for academic and non-commercial purposes, provided that the required ethical permissions have been secured.

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### Declaration of Conflicting Interest

The authors declare that there are no competing interests, financial or otherwise, or personal relationships that could have influenced the research process, data interpretation, or conclusions reported in this article.

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