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From AI Readiness to Human Readiness: A Human-Centered Framework for AI Adoption in SMEs

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Abstract

Artificial intelligence (AI) is transforming organizations across all sectors, yet many AI initiatives fail despite significant technological investments. Existing research has primarily explained AI adoption through technological, organizational, and strategic readiness, while the preparedness of individuals to work with AI remains insufficiently conceptualized. This limitation is particularly relevant for small- and medium-sized enterprises (SMEs), where successful AI adoption depends heavily on employees' willingness and ability to collaborate with intelligent systems. This paper introduces the concept of Human Readiness for AI Adoption as a human-centered perspective on AI implementation in SMEs. Human readiness is conceptualized as the degree to which individuals are cognitively, psychologically, and ethically prepared to understand, evaluate, accept, use, and responsibly collaborate with AI systems. Building on the literature on organizational readiness, AI readiness, and human-centered AI, the paper proposes a conceptual framework that positions human readiness as a prerequisite for trust in AI, successful human–AI collaboration, and sustainable AI adoption. The proposed framework extends existing AI adoption research by shifting the focus from technological capability to human preparedness. It contributes to the emerging discourse on human-centered AI while providing managers with a conceptual foundation for designing AI implementation strategies that foster trust, transparency, employee participation, and continuous learning. Finally, directions for future empirical validation of the proposed framework are discussed.

Keywords: human readiness; AI adoption; human-centered AI; SMEs; trust in AI; responsible AI

1. Introduction

Artificial intelligence (AI) is rapidly reshaping the way organizations operate, make decisions, and create value [1–3]. Advances in machine learning, generative AI, and intelligent decision-support systems enable organizations to automate routine tasks, improve operational efficiency, and support more informed decision-making [2,3]. Consequently, AI has become a strategic priority for organizations seeking to strengthen competitiveness and accelerate digital transformation [2,4].

Small- and medium-sized enterprises (SMEs) increasingly recognize the potential of AI to improve productivity, innovation, and organizational resilience [5–7]. However, despite growing technological maturity and increasing investments in AI solutions, successful AI adoption remains uneven [6,7]. While some organizations successfully integrate AI into their daily operations, others experience low employee acceptance, limited utilization of AI

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systems, or complete failure of implementation initiatives [6,7]. These differences suggest that technological capability alone cannot fully explain successful AI adoption [6,8].

Existing research has proposed several theoretical perspectives to explain technology adoption, including the Technology Acceptance Model (TAM), the Unified Theory of Acceptance and Use of Technology (UTAUT), the Technology–Organization–Environment (TOE) framework, and more recent AI readiness and AI maturity models [9–13]. Although these approaches provide valuable insights into technological, organizational, and environmental determinants of AI adoption, they largely overlook an essential element of successful implementation, the preparedness of people who are expected to interact with AI systems [6,9–13].

At the same time, the growing emphasis on human-centered AI highlights that successful AI implementation is not solely a technological challenge but also a human and organizational one [14–18]. Human-Centered AI advocates designing AI systems that augment rather than replace human capabilities while emphasizing transparency, trust, explainability, fairness, and meaningful human oversight [14–18]. Nevertheless, current research has paid limited attention to what makes individuals genuinely prepared to adopt and collaborate with AI within organizational settings, particularly in SMEs [6,14–18].

This paper argues that existing concepts of AI readiness predominantly assess organizational preparedness for AI implementation rather than the multidimensional preparedness of individuals to understand, trust, adopt, and effectively collaborate with AI [6,8]. To address this gap, we introduce the concept of human readiness for AI Adoption, defined as the degree to which individuals are cognitively, psychologically, organizationally, and ethically prepared to understand, accept, collaborate with, and effectively use AI systems. We argue that this perspective complements existing AI readiness models by placing the human dimension at the center of AI adoption [6,14–18].

Accordingly, this paper addresses the following research question:

RQ: How should human readiness for AI adoption be conceptualized from a human-centered perspective in SMEs?

The aim of this paper is therefore to develop a conceptual framework of Human Readiness for AI Adoption in SMEs. Drawing upon research on organizational readiness, AI readiness, and human-centered AI, the proposed framework identifies the key dimensions of human readiness and explains their role in fostering trust in AI, human–AI collaboration, and successful AI adoption [6,8,14–18]. By introducing human readiness as a distinct conceptual construct, this paper contributes to the growing discussion on human-centered AI and provides a foundation for future empirical research and the development of practical tools for assessing human preparedness for AI implementation.

2. Theoretical Foundations of Human Readiness

2.1. Organizational Readiness: From Organizational Change to Digital Transformation

The concept of readiness originated in the organizational change literature, where it has long been recognized as a prerequisite for successful change implementation. Early research emphasized that organizational change does not depend solely on strategic decisions or technological investments but also on the collective willingness and capability of organizational members to support and enact change. In this context, organizational readiness has been conceptualized as a shared psychological state reflecting employees' commitment to organizational change and their collective belief in their capability to successfully implement it [19,20].

Building upon this foundation, subsequent studies extended the concept of readiness beyond organizational change toward broader organizational transformation. Rafferty et al. [21] argued that readiness for change is a multidimensional construct that incorpo-

rates cognitive, emotional, and intentional components rather than merely representing employees' acceptance of change. Their review further highlighted that organizational readiness operates across multiple organizational levels and evolves throughout the change process, suggesting that readiness should be viewed as a dynamic organizational capability rather than a static organizational characteristic.

As organizations increasingly embraced digital transformation, the concept of readiness gradually evolved toward digital readiness and organizational readiness for digital innovation. Recent studies have demonstrated that organizational readiness is closely associated with digital capabilities, organizational culture, leadership, and knowledge acquisition, all of which significantly influence the success of digital transformation initiatives [22–26]. In the context of SMEs, digital readiness has been recognized as an important determinant of firms' ability to adopt emerging digital technologies and remain competitive in rapidly changing business environments [22]. Consequently, readiness has progressively shifted from being understood solely as preparedness for organizational change toward a broader capability supporting digital transformation.

Despite these conceptual developments, organizational readiness remains predominantly an organizational-level construct. Existing studies primarily assess organizational resources, leadership commitment, digital capabilities, innovation culture, or institutional preparedness for implementing change [19–26]. Even when employees are considered, they are typically viewed as contributors to organizational change rather than as independent actors whose own preparedness may determine the success of technology adoption. Consequently, organizational readiness provides only limited explanation of whether individuals themselves are prepared to understand, trust, collaborate with, and effectively use emerging AI systems.

This limitation becomes particularly important in the context of artificial intelligence. Unlike previous waves of digital transformation, AI requires continuous interaction between humans and intelligent systems, making individual preparedness a central factor of successful implementation. While organizational readiness explains whether organizations are capable of implementing change, it does not adequately explain whether employees are prepared to engage with AI in a meaningful and responsible manner. This limitation has stimulated the emergence of more technology-oriented perspectives on readiness, particularly the concept of AI readiness, which is discussed in the following section.

2.2. AI Readiness: From Organizational Capability to AI Adoption

The rapid development of artificial intelligence has led to the emergence of AI readiness as a distinct research stream extending earlier concepts of organizational and digital readiness. While organizational readiness primarily focuses on an organization's capability to implement change, AI readiness seeks to explain whether organizations possess the necessary conditions for successful AI adoption and value creation [6,27–35].

One of the earliest comprehensive conceptualizations of AI readiness was proposed by Jöhnk et al. [6], who define organizational AI readiness as the extent to which an organization possesses the technological, organizational, and managerial prerequisites required for successful AI implementation. Their framework identifies several critical dimensions, including data availability, technological infrastructure, organizational culture, governance mechanisms, leadership commitment, and employee competencies. Similarly, Holmström [27] argues that AI readiness should be viewed as a strategic organizational capability that enables firms to integrate AI within broader digital transformation initiatives rather than as a purely technological issue. Both studies emphasize that AI adoption requires coordinated changes across technological resources, organizational structures, and managerial processes.

Building upon these conceptual foundations, subsequent studies have proposed AI readiness frameworks for various organizational contexts, including SMEs, manufacturing firms, public organizations, and sector-specific applications [28–33]. These studies consistently demonstrate that successful AI implementation depends on a combination of organizational capabilities, leadership support, data governance, technological infrastructure, digital competencies, and innovation culture. Recent empirical evidence further suggests that AI readiness contributes to organizational resilience, innovation performance, and competitive advantage, reinforcing its importance as a strategic capability supporting digital transformation [29,30,32,33].

Despite these advances, the literature reveals considerable conceptual diversity regarding the meaning of AI readiness. Some studies conceptualize readiness primarily as organizational capability, focusing on AI resources, infrastructure, governance, and managerial competence [6,27,32,33]. Others approach AI readiness through maturity models, assessing the extent to which organizations have progressed in implementing AI technologies [31]. More recently, AI readiness has also been examined at the level of specific professional groups, including teachers, students, healthcare professionals, and public employees, where it is commonly associated with AI literacy, technical knowledge, digital skills, ethical awareness, or professional preparedness [34,35].

Although these perspectives significantly advance our understanding of AI implementation, they also reveal an important theoretical limitation. Existing AI readiness models primarily evaluate whether organizations possess the necessary technological and organizational capabilities for AI adoption or whether specific professional groups have sufficient knowledge to work with AI. Consequently, readiness is predominantly conceptualized either as an organizational capability or as a domain-specific competence. Considerably less attention has been devoted to understanding whether individuals are holistically prepared to understand, trust, accept, and collaborate with AI systems within their everyday work environments.

This limitation becomes particularly relevant in SMEs, where successful AI implementation depends not only on technological resources but also on employees' willingness and ability to integrate AI into their daily activities. Two organizations with comparable technological capabilities may therefore experience substantially different AI adoption outcomes because of differences in employees' preparedness, trust, attitudes, and perceptions toward AI. These aspects remain only partially addressed by existing AI readiness models.

Consequently, while AI readiness substantially extends earlier concepts of organizational readiness, it continues to focus predominantly on organizational capability rather than on the broader preparedness of individuals who ultimately determine the success of AI adoption. This observation suggests the need for a complementary perspective that explicitly considers the human dimension of AI implementation. Such a perspective has gradually emerged through the growing body of research on Human-Centered AI, which is discussed in the following section.

2.3. Human-Centered Perspectives on AI

The rapid advancement of artificial intelligence has stimulated the emergence of Human-Centered AI (HCAI) as a multidisciplinary research paradigm that seeks to place humans at the center of AI design, development, deployment, and governance [36–38]. Unlike traditional technology-driven approaches, Human-Centered AI emphasizes that AI should augment rather than replace human capabilities while supporting meaningful human control, transparency, trust, and collaboration [36–38].

One of the most influential contributions to this field was provided by Shneiderman [38], who argues that successful AI systems should enhance human performance

and decision-making instead of pursuing full autonomy. Accordingly, Human-Centered AI promotes AI systems that are understandable, controllable, reliable, and aligned with human values. Subsequent research has further expanded this perspective by emphasizing participatory design, user-centered development, explainability, and continuous human oversight throughout the AI lifecycle [37,38].

Closely related to Human-Centered AI is the growing body of research on responsible AI and Trustworthy AI. Responsible AI focuses on ensuring that AI systems operate ethically, fairly, transparently, and accountably while respecting human rights and societal values [32,39,40]. Similarly, Trustworthy AI has emerged as a comprehensive framework integrating ethical, legal, technical, and social requirements for AI deployment. Across these studies, transparency, explainability, robustness, fairness, accountability, privacy protection, and human oversight consistently appear as fundamental principles of trustworthy AI [32,39,40].

The increasing importance of Explainable AI (XAI) further strengthens this human-oriented perspective. Explainability aims to reduce the opacity of AI systems by making AI-generated decisions understandable to end users, thereby improving trust, acceptance, and appropriate reliance on AI [41–44]. However, recent research also demonstrates that explainability alone is insufficient to ensure effective AI adoption because users' perceptions, prior knowledge, and trust substantially influence how explanations are interpreted and utilized [43,44].

Another important research stream concerns human–AI collaboration, which shifts attention from AI as an autonomous decision-maker toward AI as a collaborative partner. Rather than replacing human expertise, AI is increasingly viewed as augmenting human cognition and supporting joint decision-making [45–49]. Research on human–AI collaboration highlights that effective collaboration depends on appropriate task allocation, calibrated trust, shared understanding, transparency, explainability, and continuous interaction between humans and intelligent systems [48–52]. Consequently, successful AI implementation is increasingly understood as a socio-technical process requiring the complementary strengths of both humans and AI rather than the substitution of one by the other.

Despite these significant advances, the existing literature shares a common limitation. Human-Centered AI primarily defines how AI systems should be designed [36–38], Responsible AI specifies how AI systems should behave [32,39,40], Trustworthy AI identifies which characteristics AI systems should possess [32,39,40], Explainable AI focuses on making AI decisions understandable [41–44], and human–AI collaboration explains how humans and AI should interact [45–49]. However, considerably less attention has been devoted to the preparedness of the individuals who are expected to collaborate with AI in organizational settings.

This limitation is particularly relevant for SMEs, where AI implementation depends heavily on employees' willingness and ability to understand, trust, and effectively integrate AI into their everyday work. Consequently, although Human-Centered AI and related research streams substantially advance our understanding of responsible AI adoption, the literature still lacks a comprehensive conceptualization of human readiness for AI adoption. Addressing this theoretical gap provides the foundation for the conceptual framework proposed in the following section.

2.4. Adjacent Individual-Level Constructs and the Distinctiveness of Human Readiness for AI Adoption

The limited occurrence of the exact term "human readiness" does not, by itself, demonstrate the absence of research addressing individual preparedness for technology or AI adoption. Several adjacent constructs—including technology readiness, readiness for

change, AI literacy, AI self-efficacy, and individual AI readiness—already explain specific aspects of employees' preparedness. Therefore, the conceptual contribution of Human Readiness for AI Adoption (HRAA) must be established through its theoretical scope, level of analysis, and boundaries rather than through terminology alone. Technology readiness refers to an individual's general propensity to embrace and use new technologies and is commonly reflected in optimism, innovativeness, discomfort, and insecurity. Although it captures relatively stable beliefs about technology, it is technology-general and does not specifically address the distinctive characteristics of AI, such as algorithmic opacity, probabilistic outputs, human oversight, bias, or responsibility for AI-assisted decisions. Readiness for change, in contrast, concerns employees' beliefs about the appropriateness of a proposed organizational change, their capability to implement it, management support, and its personal benefits. It explains whether employees are prepared to participate in organizational transformation, but it does not directly assess the knowledge and responsible-use competencies required for working with AI systems.

AI literacy and AI self-efficacy address more specific elements of individual preparedness. AI literacy concerns the competencies required to understand, use, evaluate, and critically assess AI, whereas AI self-efficacy reflects an individual's confidence in performing AI-related tasks. Both constructs are important foundations of HRAA; however, each captures only part of the broader readiness domain. AI literacy primarily emphasizes knowledge and competence, while AI self-efficacy represents a specific psychological belief rather than an overall state of preparedness. Existing individual AI-readiness measures also tend to be developed for particular professional or educational contexts, such as medical education, and therefore may not provide a general organizational framework applicable across employee roles and SME settings.

HRAA is not proposed as a replacement for these established constructs, nor does it assume that its individual components are entirely new. Its contribution lies in their theoretically structured integration within an AI-specific, individual-level, and organizationally situated framework. HRAA conceptualizes the extent to which employees are cognitively, psychologically, and ethically prepared to understand, evaluate, accept, use, and responsibly collaborate with AI in their work. Organizational support is positioned as a contextual antecedent that facilitates the development of HRAA, while calibrated trust, AI adoption, and human–AI collaboration are treated as theoretically distinct downstream outcomes. This positioning distinguishes HRAA from narrower competence-, confidence-, attitude-, and change-oriented constructs and clarifies its added value within the AI-adoption literature.

2.5. Synthesis and Identification of the Conceptual Gap

The review of the existing literature reveals a clear evolution in the conceptualization of readiness for technology adoption. Early studies introduced organizational readiness as a collective organizational capability explaining whether organizations possess the commitment, resources, and conditions necessary to implement change successfully [19–26]. More recent research extended this perspective through AI readiness, emphasizing technological infrastructure, organizational capabilities, leadership, governance, and employee competencies required for successful AI implementation [6,27–56]. Although these models substantially improve our understanding of organizational preparedness, they continue to conceptualize readiness primarily at the organizational level rather than at the level of the individual.

At the same time, the emergence of Human-Centered AI, Responsible AI, Trustworthy AI, Explainable AI, and human–AI collaboration has shifted scholarly attention toward the role of humans in AI-enabled organizations [32,36–49]. These research streams consistently

argue that AI systems should augment human capabilities, remain transparent and explainable, respect ethical principles, and support meaningful human oversight. Furthermore, they recognize that trust, collaboration, and human agency are essential prerequisites for successful AI deployment [32,39–49].

Despite these important advances, the existing literature remains conceptually fragmented. Organizational readiness focuses on organizational capability, AI readiness emphasizes organizational preparedness for AI implementation, while Human-Centered AI and related approaches primarily define the desirable characteristics of AI systems and principles for human–AI interaction. However, none of these perspectives explicitly conceptualizes the preparedness of individuals who are expected to adopt, trust, and effectively collaborate with AI within organizational environments. As a result, the human dimension of AI adoption remains dispersed across multiple constructs, including AI literacy, trust, explainability, ethical awareness, digital competencies, and human–AI collaboration, without being integrated into a coherent theoretical framework.

This limitation is particularly significant for SMEs, where successful AI implementation depends not only on technological investments but also on employees' ability and willingness to understand AI, trust its recommendations, critically evaluate its outputs, and collaborate effectively with intelligent systems. In such organizational contexts, technological readiness alone cannot fully explain differences in AI adoption outcomes.

Therefore, the evolution of the literature suggests that existing theories successfully address several important questions concerning AI adoption. Organizational readiness explains whether an organization is prepared to implement change, AI readiness examines whether an organization possesses the capabilities required for AI adoption, and Human-Centered AI together with Responsible and Trustworthy AI defines how AI systems should be designed, governed, and deployed. However, one fundamental question remains largely unanswered:

Are individuals prepared to understand, evaluate, adopt, and responsibly collaborate with AI?

To summarize the evolution of the existing literature and highlight this conceptual gap, Table 1 compares the principal readiness perspectives according to their primary objective, unit of analysis, typical dimensions, and remaining gap.

Table 1 demonstrates that existing perspectives provide complementary explanations of AI adoption but primarily focus on organizations, AI systems, or human–AI interaction. None explicitly conceptualizes the multidimensional preparedness of individuals for successful AI adoption and collaboration.

Table 1. Comparison of existing readiness perspectives and the identified conceptual gap.

Perspective	Primary Objective	Unit of Analysis	Typical Dimensions	Conceptual Gap
Organizational readiness	Assess organizational preparedness for change and transformation	Organization	Leadership, resources, commitment, organizational culture, change capability	Does not explain whether individuals are prepared to work with AI
Readiness for change	Assess preparedness to support and implement organizational change	Individual, group, or organization	Appropriateness, change efficacy, management support, personal valence	Does not directly address AI-specific knowledge, competencies, or responsible use

Table 1. *Cont.*

Perspective	Primary Objective	Unit of Analysis	Typical Dimensions	Conceptual Gap
Technology readiness	Assess an individual's general propensity to embrace and use new technologies	Individual	Optimism, innovativeness, discomfort, insecurity	Technology-general; does not address the distinctive characteristics and ethical implications of AI
AI readiness	Assess organizational preparedness for AI implementation	Organization	Data, infrastructure, governance, AI competencies, leadership, digital capability	Focuses primarily on organizational and technological capability
Individual AI readiness	Assess preparedness for AI use within a particular professional or educational context	Individual	Cognition, ability, professional application, attitudes, vision, ethics	Frequently domain-specific and not designed as a general framework for employees across organizational settings
AI literacy	Assess the ability to understand, use, evaluate, and critically assess AI	Individual	AI knowledge, application, evaluation, critical awareness, ethics	Primarily competence-oriented; does not fully capture psychological preparedness for workplace AI adoption
AI self-efficacy	Assess confidence in performing AI-related tasks	Individual	Confidence in learning, using, evaluating, or applying AI	Represents a specific psychological belief rather than multidimensional preparedness for AI adoption
Human-centered AI	Design AI systems that augment human capabilities	Human–AI system	Human control, usability, transparency, participation	Focuses on AI design rather than human preparedness
Responsible and trustworthy AI	Ensure ethical, transparent and accountable AI	AI system	Fairness, explainability, accountability, privacy, robustness	Defines characteristics of AI systems rather than characteristics of AI users
Human-AI collaboration	Improve interaction between humans and AI	Human–AI team	Trust, shared decision-making, complementarity, collaboration	Explains collaboration but does not conceptualize individual readiness
Human readiness (this manuscript)	Conceptualize individual preparedness for successful AI adoption	Individual	Cognitive, psychological, organizational, ethical readiness	Proposed conceptual framework integrating cognitive, psychological, and ethical readiness

As illustrated in Figure 1, the literature has progressively evolved from organizational readiness through AI readiness toward human-centered perspectives on AI. While each perspective contributes to explaining successful AI adoption, the preparedness of individuals remains insufficiently conceptualized. This observation provides the theoretical foundation for introducing Human Readiness for AI Adoption as a distinct conceptual construct. Accordingly, the following section introduces Human Readiness for AI Adoption as a distinct conceptual construct and develops its theoretical definition before identifying its core dimensions.

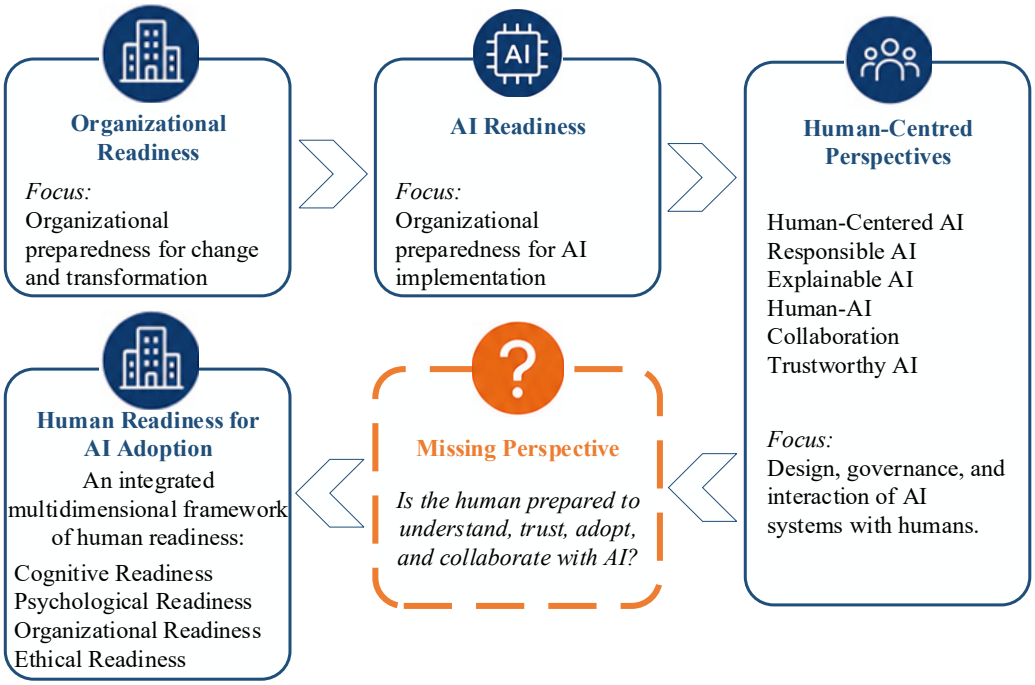


Figure 1. Evolution of theoretical perspectives leading to the proposed Human Readiness framework from existing literature.

3. Methodology

3.1. Research Design

This study employed a structured integrative literature review and a theory-building approach to develop the Human Readiness for AI Adoption framework. An integrative approach was considered appropriate because the concept of human readiness for AI adoption has not yet been established as a coherent theoretical construct and the relevant knowledge is distributed across several research streams, including organizational readiness, technology readiness, AI readiness, AI literacy, readiness for change, Human-Centered AI, Responsible AI, and human–AI collaboration.

The purpose of the review was not to provide an exhaustive systematic review or meta-analysis. Instead, it aimed to identify relevant concepts, clarify their levels of analysis, synthesize their complementary contributions, and develop a theoretically consistent framework explaining individual preparedness for AI adoption in organizational environments.

3.2. Literature Identification and Screening

The literature analysis was conducted in two complementary stages. The first stage focused on the theoretical foundations of the proposed framework. Relevant studies were identified using targeted combinations of keywords related to "organizational readiness", "readiness for change", "technology readiness", "individual AI readiness", "AI literacy", "AI self-efficacy", "AI adoption", "Human-Centered AI", "Responsible AI", "Trustworthy AI", and "human–AI collaboration". Foundational publications and recent studies directly addressing these concepts were retained based on their relevance to individual or organizational preparedness for AI adoption. Backward and forward citation tracking was also used to identify additional influential publications.

The second stage examined the existing use of the specific term "human readiness". A search was conducted in the Web of Science Core Collection on 10 July 2026 using the Topic search query TS = ("Human Readiness"). The search returned 43 publications. Titles, abstracts, keywords, and, where necessary, full texts were screened to determine their relevance to human preparedness in organizational or technology-related contexts. Seven

records addressing unrelated medical, biological, or other context-specific meanings of human readiness were excluded. The final dataset therefore consisted of 36 publications.

An additional search was conducted using the query TS = ("Human Readiness") AND TS = ("Artificial Intelligence" OR "AI") to determine whether the concept had already been developed specifically for AI adoption. This search identified three publications. These studies were examined in full, but none presented a comprehensive multidimensional framework of individual preparedness for AI adoption in organizational settings or SMEs.

Studies were included when they provided conceptual or empirical insights into individual or organizational preparedness for AI or technology adoption, including relevant definitions, dimensions, antecedents, or outcomes. Records were excluded when human readiness referred exclusively to medical, biological, or technical-system contexts without relevance to individual preparedness, or when they did not provide sufficient conceptual information for the analysis.

3.3. Data Extraction and Qualitative Analysis

The bibliographic information for the identified human-readiness publications was exported from the Web of Science Core Collection. The extracted information included publication year, research area, title, abstract, keywords, citation count, research context, and conceptual interpretation of human readiness. Annual publication counts were calculated according to the publication year recorded in Web of Science. Citation counts represent the cumulative number of citations reported by Web of Science on the search date and should therefore be interpreted as time-dependent values.

The research areas presented in Table 2 were derived from the Web of Science research categories assigned to the publications. Because one publication may be assigned to more than one research area, the categories were not treated as mutually exclusive and their total may exceed the number of publications included in the dataset.

Table 2. Categorization of publications based on research area.

Research Area	The Number of Publications	Research Area	The Number of Publications
Engineering	20	Psychology	3
Operations research and management science	5	Behavioral sciences	2
Business economics	4	Information science and library science	2
Computer science	4	Philosophy	2
Education and educational research	3	Science and technology and other topics	2

A qualitative content analysis was subsequently performed. Each publication was examined according to four analytical questions:

What does human readiness represent in the study?

What is the primary unit of analysis?

Which factors are used to characterize readiness?

Is the concept connected to artificial intelligence or organizational technology adoption?

The analysis combined deductive and inductive coding. Initial categories were informed by the research question and the theoretical distinction among individual, organizational, technological, and system-level readiness. These categories were subsequently refined based on recurring interpretations identified in the reviewed publications. The resulting conceptual groups included human readiness levels in systems engineering, readi-

ness for organizational change, healthcare-related readiness, educational readiness, and context-specific AI readiness.

As this is a single-author conceptual study, the coding was conducted by the author. To improve consistency, the publications were reviewed in two stages. An initial coding pass was used to identify recurring concepts and preliminary categories, followed by a second pass in which the classifications were checked against the definitions and units of analysis used in the individual studies.

3.4. Development of the Conceptual Framework

The conceptual framework was developed through a structured synthesis of the reviewed research streams. The overall methodological procedure, from literature identification and screening to qualitative analysis and framework development, is summarized in Figure 2.

First, the definitions, objectives, units of analysis, and principal components of organizational readiness, technology readiness, AI readiness, AI literacy, readiness for change, Human-Centered AI, Responsible AI, and human–AI collaboration were compared.

Second, the identified factors were classified according to their level of analysis. Factors describing employees' knowledge, beliefs, confidence, attitudes, ethical awareness, and ability to work responsibly with AI were treated as potential components of individual human readiness. Factors such as leadership support, organizational communication, employee participation, learning opportunities, governance, and organizational culture were classified as contextual antecedents rather than individual readiness components. Similarly, characteristics of AI systems, including technical transparency, explainability, robustness, and fairness, were distinguished from employees' awareness and competence in recognizing and responding to these issues.

Third, overlapping individual-level factors were consolidated into broader conceptual dimensions. Each dimension was retained only when it represented a distinct aspect of individual preparedness, was supported by more than one relevant research stream, and contributed directly to employees' ability to understand, accept, use, or responsibly collaborate with AI.

This categorization resulted in three individual-level dimensions. Cognitive readiness consolidated AI literacy, digital skills, and understanding of AI capabilities and limitations. Psychological readiness integrated AI self-efficacy, perceived usefulness, openness to AI, willingness to learn, and reduced anxiety or resistance. Ethical readiness combined ethical awareness, recognition of bias and risks, responsibility for AI-assisted decisions, and responsible-use competence. Organizational factors were excluded from these dimensions and retained as contextual antecedents.

Finally, the relationships among organizational context, Human Readiness for AI Adoption, trust in AI, AI adoption, human–AI collaboration, and organizational outcomes were specified based on the theoretical synthesis. Trust in AI was treated as a separate downstream construct rather than as a component of readiness, while organizational conditions were positioned as antecedents supporting the development of individual human readiness. The resulting framework and conceptual propositions provide a theoretical foundation for future empirical testing and scale development.

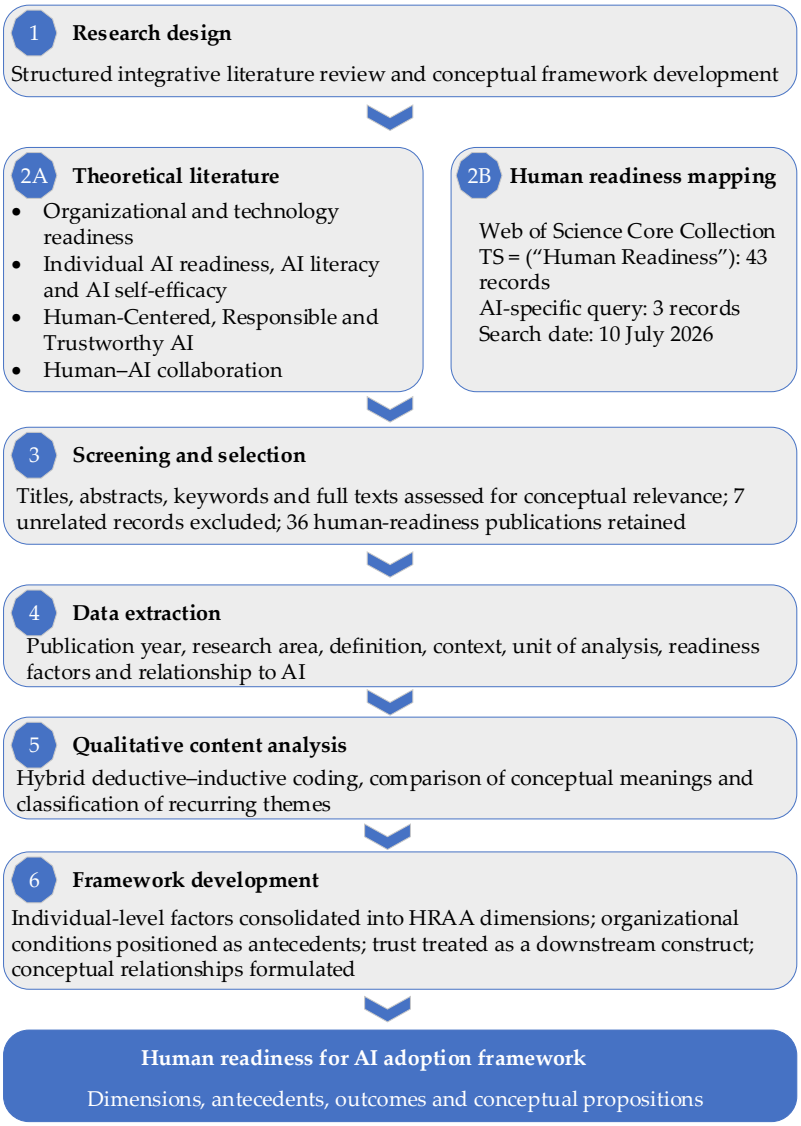


Figure 2. Methodological procedure used to develop the Human Readiness for AI Adoption framework.

4. Conceptualizing Human Readiness

4.1. Existing Use of the Human Readiness Concept

Although the concept of human readiness appears in the scientific literature, it has not yet evolved into a coherent theoretical construct explaining individual preparedness for AI adoption in organizational settings. The screening procedure described in Section 3.2 resulted in a final dataset of 36 publications, which were subjected to qualitative content analysis. Their categorization according to research areas is presented in Table 2.

Table 2 shows that human readiness has been investigated across multiple research domains, indicating that the concept has gradually expanded beyond its original engineering context. Figure 3 illustrates the publication trend of human readiness studies.

Although interest in the topic has increased in recent years, the literature remains relatively limited and dispersed across different disciplines.

The qualitative content analysis revealed that the concept of human readiness is interpreted differently across the identified research streams. The largest body of literature conceptualizes human readiness as human readiness levels (HRLs) within systems engineering and human systems integration, where readiness refers to the maturity of technological systems for safe and effective human use [49–54]. Other studies [55–58] employ the concept

in the context of organizational change, healthcare, education, or digital transformation, typically describing preparedness for a specific intervention or technology [59–63]. Only a very limited number of publications explicitly relate human readiness to artificial intelligence, and these studies do not propose a comprehensive conceptualization of individual preparedness for AI adoption in organizations. Consequently, Human Readiness currently represents an umbrella term whose meaning varies according to disciplinary context rather than a unified theoretical construct.

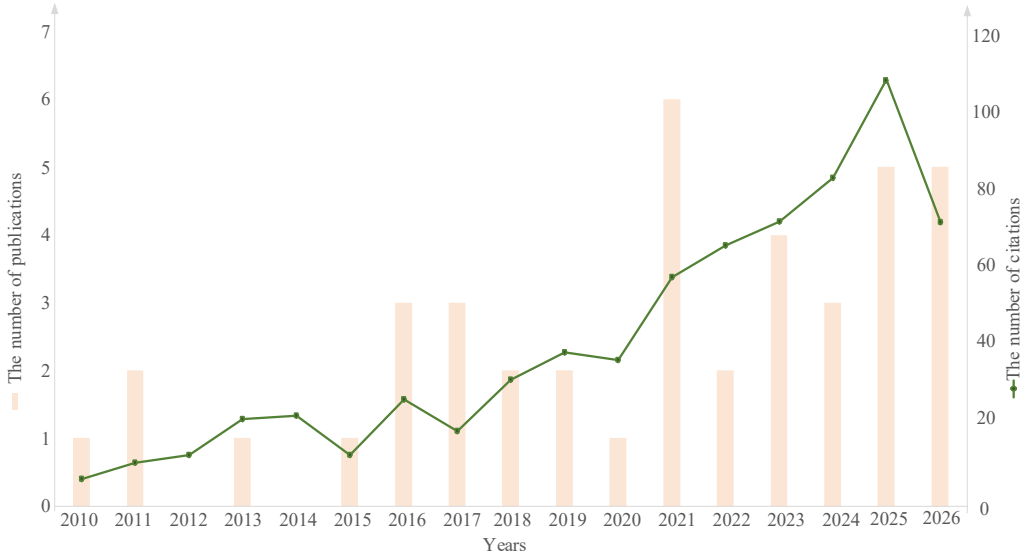


Figure 3. Citation and publication trends of human readiness studies.

To better understand how human readiness has been conceptualized, the retrieved publications were further examined according to their primary theoretical focus (see Table 3).

Table 3. Main conceptualizations of human readiness in the literature.

Literature Steam	Interpretation	Representative Studies
Human readiness levels	Readiness of systems for human use	[49–54]
Organizational change	Readiness for change	[55–58]
Healthcare	Readiness for interventions	[59,60]
Education	Readiness for digital learning	[61–63]
AI	Context-specific AI readiness	[64–66]

As shown in Table 3, the largest body of literature conceptualizes human readiness through the HRLs framework developed within systems engineering and human systems integration, where readiness primarily refers to the maturity of technological systems for safe and effective human use rather than to the preparedness of individuals [49–54]. Other studies interpret human readiness as employees' readiness for organizational change [55–58], preparedness for digital transformation, or readiness within healthcare and educational contexts [59–63]. Although these perspectives share an interest in preparing humans for technological or organizational change, they remain domain-specific and do not provide a comprehensive theoretical explanation of individual preparedness for AI adoption.

The AI-specific search described in Section 3.2 identified only three publications. None proposed a comprehensive multidimensional framework explaining individual preparedness for AI adoption within organizations or SMEs [64–66].

These findings provide strong empirical support for the conceptual gap identified in Section 2. While the term human readiness already exists in the literature, it remains fragmented across disciplines and has not been established as a coherent theoretical construct explaining AI adoption from a human-centered perspective. Building upon this gap, the following section develops the concept of Human Readiness for AI Adoption (HRAA) as a multidimensional framework integrating cognitive, psychological, organizational, and ethical preparedness.

4.2. Defining Human Readiness for AI Adoption

Building upon the theoretical foundations presented in Section 2 and the identified conceptual gap, Human Readiness for AI Adoption is defined as:

Human Readiness for AI Adoption represents the multidimensional preparedness of individuals to understand, evaluate, accept, effectively use, and responsibly collaborate with artificial intelligence systems within organizational environments.

Unlike organizational readiness, which evaluates the preparedness of organizations, or AI readiness, which focuses on technological and organizational capabilities, human readiness emphasizes the preparedness of individuals. It reflects the extent to which employees possess the knowledge, attitudes, psychological confidence, and ethical awareness necessary for successful human–AI collaboration.

Human readiness is therefore conceptualized as an individual-level construct that complements rather than replaces existing organizational AI readiness models. Human readiness for AI adoption within the broader landscape of existing readiness concepts is shown in Figure 4.

While Organizational Readiness and AI Readiness provide the organizational and technological foundations required for AI implementation, They do not sufficiently explain whether individuals are prepared to understand, evaluate, accept, effectively use, and responsibly collaborate with AI systems. Human readiness complements these existing perspectives by introducing the individual as the central unit of analysis. In this conceptualization, human readiness serves as a prerequisite for developing trust in AI, facilitating effective human–AI collaboration, and ultimately contributing to successful AI adoption within organizations. This positioning highlights human readiness as the missing link connecting organizational and technological preparedness with successful AI-enabled work practices.

Human readiness is particularly consequential in SMEs because these organizations often operate with limited financial resources, insufficient specialist AI expertise, informal organizational structures, and less formalized training and governance mechanisms. Employees may therefore be required to perform multiple roles and make AI-assisted decisions without extensive technical or ethical support. Moreover, owner-managers frequently exert a direct influence on technology-related decisions, organizational communication, and employees' attitudes toward change. Consequently, successful AI adoption in SMEs depends not only on technological and organizational capabilities but also strongly on whether individual employees possess the cognitive, psychological, and ethical readiness required to understand, accept, and responsibly use AI. Although HRAA may also apply to larger organizations, these SME-specific conditions make individual readiness particularly consequential because specialized AI roles and formal support mechanisms are often less available.

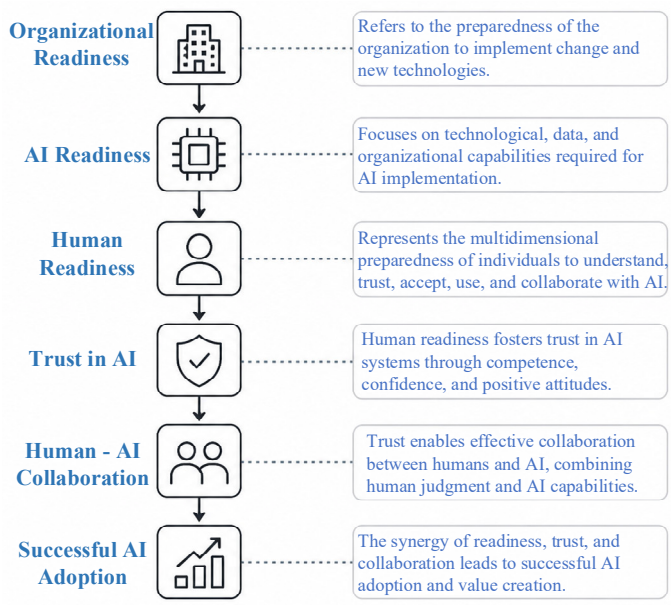


Figure 4. Relationship between existing readiness concepts.

4.3. Synthesis Underpinning Human Readiness for AI Adoption

The proposed concept integrates insights from three complementary research streams identified in the preceding sections.

First, Organizational Readiness emphasizes organizational support, leadership, communication, and learning as prerequisites for successful change implementation.

Second, AI Readiness extends these perspectives by highlighting technological capability, AI competencies, governance, and digital infrastructure required for AI implementation.

Third, Human-Centered AI together with Responsible AI, Trustworthy AI, Explainable AI, and human–AI collaboration emphasizes transparency, trust, human oversight, explainability, and ethical responsibility.

Synthesizing these perspectives suggests that successful AI adoption depends not solely on organizational preparedness or technological maturity but also on the multidimensional preparedness of individuals. Human readiness therefore integrates cognitive, psychological, and ethical dimensions into a single individual-level construct, while organizational conditions are positioned as contextual antecedents. The theoretical foundations of human readiness for AI adoption by integrating the three principal research streams identified throughout this paper are summarized in Figure 5.

Organizational Readiness contributes the organizational conditions that enable change, including leadership, communication, learning, and organizational support. AI Readiness extends these foundations by emphasizing technological capabilities, AI competencies, governance, and digital infrastructure. Human-Centered AI and its related perspectives further enrich the concept by introducing trust, transparency, explainability, ethical responsibility, and effective human–AI collaboration. Rather than treating these perspectives as independent, the proposed framework draws on these research streams while distinguishing individual readiness dimensions from organizational antecedents focused on individual preparedness for AI adoption. This synthesis suggests that human readiness emerges from the interaction between organizational, technological, and human-centered factors, providing the theoretical basis for the multidimensional framework proposed in this study.

Based on these theoretical foundations, Human Readiness for AI Adoption is conceptualized as a multidimensional construct consisting of three interrelated dimensions:

cognitive, psychological, and ethical readiness. The following section introduces these dimensions and explains their role in preparing individuals for successful AI adoption.

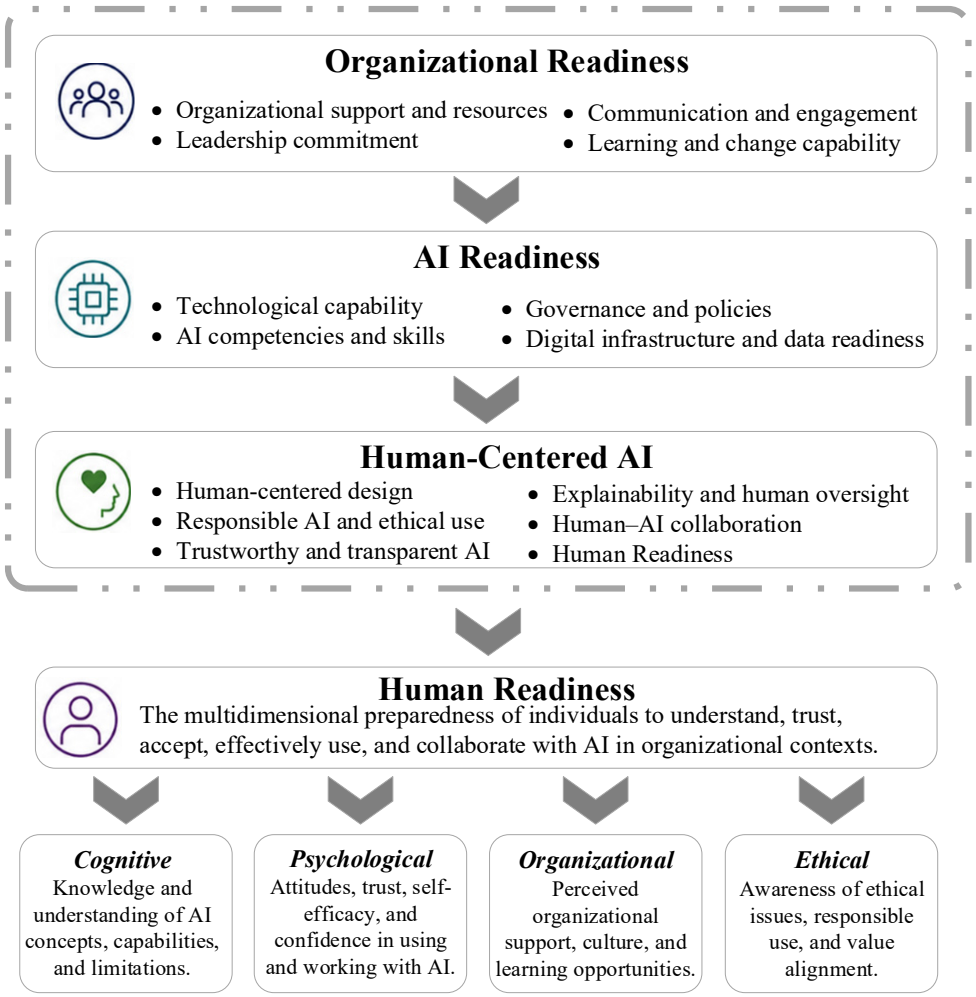


Figure 5. Sources of human readiness.

4.4. Structure of the Human Readiness for AI Adoption Framework

Building upon the theoretical foundations discussed in the previous sections, Human Readiness for AI Adoption is conceptualized as a multidimensional individual-level construct consisting of three interrelated dimensions: cognitive, psychological, and ethical readiness. These dimensions collectively represent the knowledge, attitudes, psychological resources, and value-based considerations required for individuals to successfully adopt and collaborate with artificial intelligence in organizational environments.

Rather than functioning as independent components, the three dimensions are mutually reinforcing and together determine an individual's overall preparedness to work with AI. Cognitive readiness provides the knowledge and understanding necessary to interact with AI systems, psychological readiness reflects confidence and willingness to engage with AI, while ethical readiness reflects employees' awareness of the ethical implications and risks of AI use, their ability to recognize potential bias, and their competence to use AI responsibly.

The proposed multidimensional structure of human readiness for AI adoption is illustrated in Figure 6. The subsequent section examines each dimension in detail and discusses its theoretical foundations and relevance for successful AI adoption within SMEs.

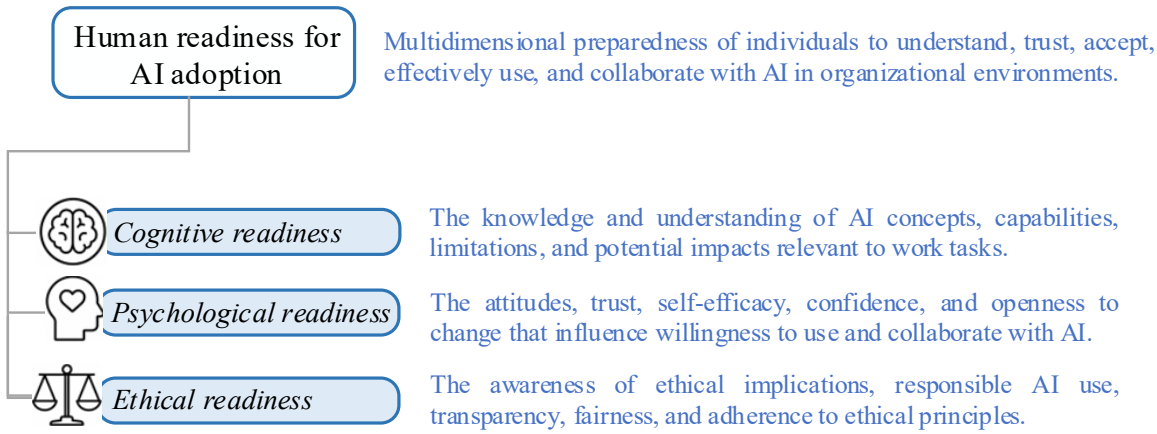


Figure 6. Multidimensional structure of Human Readiness for AI Adoption.

As illustrated in Figure 6, Human Readiness for AI Adoption emerges from the inter-action of three complementary dimensions that collectively determine an individual's preparedness to work with artificial intelligence. These dimensions should not be viewed as isolated factors but as mutually reinforcing components of a single conceptual construct. Cognitive readiness provides the necessary understanding of AI technologies, psychological readiness shapes individuals' confidence and willingness to engage with AI, organizational readiness reflects the supportive conditions created by the organization, and ethical readiness ensures that AI adoption is aligned with principles of responsibility, transparency, and fairness.

The proposed multidimensional structure emphasizes that successful AI adoption requires a balanced development of all three dimensions. Deficiencies in one dimension may reduce the effectiveness of the others, thereby limiting employees' overall readiness to adopt and collaborate with AI. Consequently, organizations seeking to achieve sustainable AI implementation should address human readiness through integrated strategies that simultaneously develop knowledge, strengthen psychological preparedness, foster supportive organizational environments, and promote ethical awareness.

The following section examines each dimension in detail by discussing its theoretical foundations, principal components, and relevance for successful AI adoption within SMEs.

5. Individual Dimensions of Human Readiness

Building upon the conceptualization developed in the previous section, Human Readiness for AI Adoption is proposed as a multidimensional construct comprising three interrelated dimensions: cognitive, psychological, and ethical readiness. These dimensions collectively explain the extent to which Individuals are prepared to understand, evaluate, accept, effectively use, and responsibly collaborate with artificial intelligence within organizational environments.

The proposed dimensions and contextual antecedents are derived from the integration of organizational readiness, AI readiness, and human-centered AI literature [6,19–49]. While each dimension captures a distinct aspect of individual preparedness, they should not be viewed as independent constructs. Rather, they interact to shape employees' overall readiness to engage with AI technologies responsibly and effectively. Figure 5 presents the multidimensional structure of Human Readiness for AI Adoption.

5.1. Cognitive Readiness

Cognitive readiness represents the knowledge-based dimension of Human Readiness and refers to an individual's understanding of artificial intelligence, its capabilities,

limitations, and practical applications within organizational contexts. As AI systems increasingly support managerial and operational decision-making, employees require more than general digital competence; they need AI-specific knowledge enabling them to interpret AI outputs, recognize appropriate use cases, and critically evaluate algorithmic recommendations [6,27–35].

This dimension builds upon the AI literacy and digital competence perspectives frequently discussed in AI readiness research [6,27–35]. Individuals with high cognitive readiness are better equipped to understand how AI generates recommendations, identify situations in which AI should support rather than replace human judgment, and recognize the limitations associated with algorithmic decision-making.

Accordingly, cognitive readiness encompasses four principal components:

- AI literacy;
- digital competencies;
- understanding of AI capabilities;
- awareness of AI limitations and risks.

Together, these competencies provide the intellectual foundation for effective and informed human–AI collaboration.

5.2. Psychological Readiness

Psychological readiness reflects individuals' attitudes, beliefs, and motivational factors influencing their willingness to adopt and collaborate with AI. Previous technology adoption research consistently demonstrates that trust, perceived usefulness, and self-efficacy are among the strongest predictors of technology acceptance [9,10]. Similarly, human-centered AI and explainable AI literature emphasize that trust constitutes a fundamental prerequisite for successful human–AI collaboration [32,36–44].

Employees who perceive AI as trustworthy and useful are more likely to integrate intelligent systems into their everyday work. Conversely, fear of job displacement, uncertainty regarding AI-generated decisions, or low confidence in one's ability to use AI may significantly reduce adoption.

Psychological readiness therefore consists primarily of:

- openness to AI;
- perceived usefulness;
- AI self-efficacy;
- willingness to learn;
- reduced fear and resistance toward AI.

These factors create the psychological conditions that may subsequently contribute to the development of appropriately calibrated trust in AI.

5.3. Ethical Readiness

Ethical readiness represents an individual's awareness of the ethical implications and risks associated with AI use and the competence to act responsibly when using AI-supported systems. At the individual level, it includes the ability to recognize potential bias and risks, critically evaluate AI outputs, and maintain responsibility for decisions supported by AI. Transparency, explainability, fairness, and accountability are therefore treated as characteristics of AI systems and governance arrangements rather than as components of individual readiness [32,36–44].

Within the proposed framework, ethical readiness includes:

- ethical awareness;
- recognition of bias and risks;

- responsibility for AI-assisted decisions;
- responsible-use competence.

By strengthening responsible AI use, ethical readiness reinforces trust and promotes sustainable human–AI collaboration within organizations.

As illustrated in Figure 5, the three dimensions jointly constitute Human Readiness for AI Adoption. They should be understood as complementary rather than sequential dimensions, each contributing to an individual's overall preparedness to work effectively with AI. Deficiencies in one dimension may reduce the effectiveness of the others, highlighting the need for organizations to develop human readiness through integrated competence-development, psychological-support, and responsible-use interventions facilitated by a supportive organizational context. The following section synthesizes these dimensions into an integrated conceptual framework explaining their relationship with AI adoption and organizational outcomes.

6. An Integrated Human Readiness Framework for AI Adoption

Building upon the multidimensional conceptualization presented in the previous section, this paper proposes an integrated human readiness framework for AI adoption that explains how individual preparedness contributes to successful AI implementation within organizations. The framework extends existing AI readiness models by explicitly positioning human readiness as the mechanism linking organizational preparedness with successful human–AI collaboration (see Figure 7).

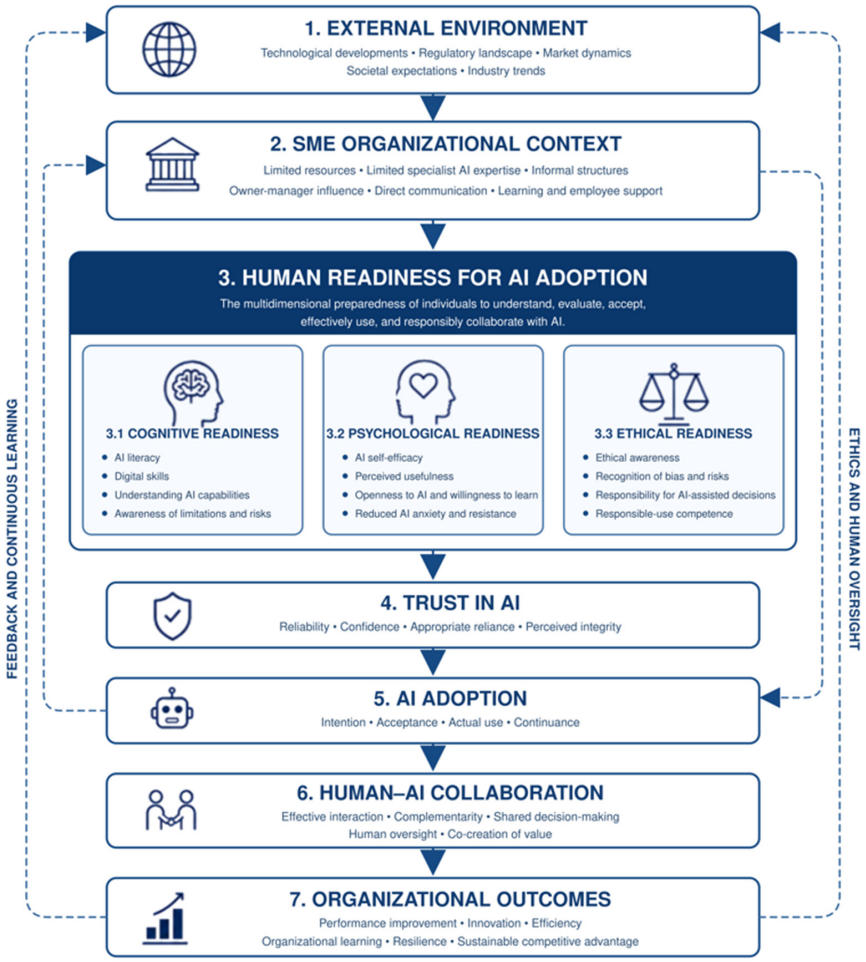


Figure 7. Integrated Human Readiness Framework for AI Adoption—HRAA.

As illustrated in Figure 7, AI adoption is influenced by multiple contextual layers. At the macro level, the external environment—including technological developments, regulatory requirements, market dynamics, and societal expectations—shapes the organizational context within which AI implementation occurs. Organizations respond by developing strategies, governance structures, digital infrastructure, leadership practices, and learning environments that support AI adoption [6,27–33].

6.1. Supportive Organizational Context as an Antecedent of HRAA

Although human readiness is conceptualized at the individual level, its development depends strongly on organizational conditions. A supportive organizational context represents an antecedent that can facilitate or constrain the development of Human Readiness for AI Adoption [6,19–33].

Previous research demonstrates that leadership commitment, employee participation, transparent communication, organizational learning, and knowledge sharing significantly influence employees' acceptance of technological change [19–26]. Likewise, AI readiness research emphasizes governance, organizational capabilities, and managerial support as critical enablers of successful AI implementation [6,27–33].

Within the proposed framework, a supportive organizational context includes:

- leadership commitment and managerial support;
- employee participation;
- transparent communication and change management;
- learning opportunities and knowledge sharing;
- a supportive organizational culture; and
- appropriate AI governance.

Rather than constituting a dimension of HRAA, these organizational factors facilitate the development of employees' cognitive, psychological, and ethical readiness for AI adoption. This separation preserves HRAA as an individual-level construct while recognizing that individual preparedness develops within an organizational environment.

6.2. HRAA and Its Proposed Outcomes

Within this organizational context, human readiness emerges as the central individual-level construct comprising cognitive, psychological, and ethical readiness. Organizational conditions are positioned outside HRAA as contextual antecedents supporting the development of these three dimensions. These three dimensions collectively determine employees' preparedness to understand AI technologies, develop confidence in their use, and apply AI responsibly in accordance with ethical principles.

The framework further proposes that human readiness positively influences trust in AI. Employees who understand AI systems, possess confidence in their own abilities, receive organizational support, and recognize the ethical implications of AI are more likely to develop calibrated trust in intelligent technologies. This trust encourages employees to integrate AI into their daily work activities rather than perceive it as a threat or a substitute for human expertise [32,36–49].

Higher levels of trust subsequently facilitate AI adoption, reflected in employees' willingness to accept, use, and rely on AI-supported systems. Successful adoption creates the conditions necessary for effective human–AI collaboration, where humans and AI complement one another by combining human judgment, creativity, contextual understanding, and ethical reasoning with AI's computational capabilities and analytical performance.

Ultimately, effective human–AI collaboration contributes to improved organizational outcomes, including enhanced decision quality, higher productivity, innovation, organizational learning, and sustainable competitive advantage. Unlike traditional AI readiness

models, which primarily emphasize technological capability, the proposed framework highlights that these outcomes depend fundamentally on the preparedness of the individuals who interact with AI.

An important characteristic of the proposed framework is its dynamic nature. Experiences gained through AI implementation continuously influence organizational learning, employee competencies, leadership practices, and ethical governance. Consequently, human readiness should not be viewed as a static state, but as a dynamic capability that evolves through continuous interaction between employees, organizations, and intelligent technologies.

The proposed framework contributes to existing research in three principal ways. First, it extends Organizational Readiness and AI Readiness literature by explicitly introducing the individual as the primary unit of analysis. Second, it integrates cognitive, psychological, and ethical readiness into a multidimensional individual-level construct while positioning organizational conditions as contextual antecedents that explains preparedness for AI adoption. Third, it provides a theoretical foundation for future empirical research aimed at developing measurement instruments, validating the proposed dimensions, and examining the relationships between human readiness, trust in AI, AI adoption, human–AI collaboration, and organizational performance. Conceptual propositions of the human readiness framework are listed in Table 4.

Table 4. Conceptual Propositions of the human readiness framework.

Proposition	Statement
P1	Human readiness positively influences Trust in AI
P2	Trust in AI positively influences AI adoption
P3	AI adoption positively influences human–AI collaboration
P4	Human–AI collaboration positively influences organizational outcomes
P5	A supportive organizational context positively influences the development of human readiness for AI adoption

7. Discussion

The proposed Human Readiness for AI Adoption framework addresses an important limitation in the existing AI adoption literature. Previous approaches, including TAM, UTAUT, TOE, organizational readiness, and AI readiness, explain technology acceptance and organizational preparedness but provide only a fragmented understanding of whether employees themselves are prepared to work with AI [6,9–13]. HRAA complements these approaches by positioning individual preparedness as the mechanism connecting organizational conditions with successful AI adoption.

HRAA is related to, but distinct from, technology readiness, readiness for change, AI literacy, and AI self-efficacy. These concepts usually focus on an individual's general openness to technology, willingness to participate in change, understanding of AI, or confidence in performing AI-related tasks. HRAA integrates these elements into a broader AI-specific construct that also considers employees' psychological preparedness and their ability to recognize and respond to ethical risks. Its contribution therefore lies in combining previously fragmented factors into a coherent explanation of individual preparedness for responsible AI adoption.

The revised framework clearly separates individual readiness from organizational context. Leadership support, communication, employee participation, learning opportunities, and organizational culture are treated as antecedents that can support or constrain the development of HRAA rather than as its internal components. This distinction maintains

the individual level of the construct while recognizing that employees' readiness develops within an organizational environment [6,19–33].

Trust in AI is also positioned as a separate downstream construct. Psychological readiness concerns AI self-efficacy, perceived usefulness, openness to AI, willingness to learn, and reduced anxiety or resistance. Together with cognitive and ethical readiness, these factors may contribute to calibrated trust in AI. Calibrated trust is particularly important because insufficient trust may prevent the use of valuable AI applications, whereas excessive trust may result in uncritical reliance on AI-generated recommendations [32,36–44].

Ethical readiness is conceptualized as an individual capability rather than as a characteristic of an AI system. It includes awareness of ethical risks, the ability to recognize potential bias, responsibility for AI-assisted decisions, and understanding of the need for human oversight. Employees with greater ethical readiness should be better able to question inappropriate AI outputs and use AI as decision support rather than as an unquestionable authority.

The importance of HRAA is particularly evident in SMEs. These organizations frequently operate with limited specialist expertise, smaller training budgets, less formalized governance structures, and strong owner-manager influence [5–7,27–33]. Because employees often perform several roles and AI implementation may depend on a small number of individuals, insufficient human readiness can significantly limit adoption. At the same time, the informal and flexible structures of SMEs may support rapid learning, direct communication, and employee participation when AI implementation is managed appropriately.

The framework proposes that a supportive organizational context facilitates the development of HRAA, which subsequently contributes to trust in AI, AI adoption, and human–AI collaboration. Effective collaboration may then support decision quality, productivity, innovation, and organizational learning. However, these relationships remain conceptual and should not be interpreted as empirically established causal effects. They may also become reciprocal over time, as experience with AI can strengthen or weaken employee readiness and trust.

8. Theoretical Contributions and Practical Implications

The proposed Human Readiness for AI Adoption framework contributes to existing research by introducing a new conceptual perspective for understanding successful AI adoption from a human-centered viewpoint.

First, this study introduces HRAA framework as a distinct theoretical construct that complements existing organizational readiness and AI readiness models. While previous readiness frameworks have primarily examined organizations or technologies, the proposed framework explicitly positions individuals as the central unit of analysis. In doing so, it addresses an important conceptual gap within the AI-adoption literature by explaining employees' preparedness to understand, evaluate, accept, effectively use, and responsibly collaborate with AI systems.

Second, the study integrates several previously fragmented research streams into a coherent multidimensional framework. The revised framework combines AI-specific knowledge, psychological preparedness, and responsible-use capabilities into three complementary individual-level dimensions: cognitive, psychological, and ethical readiness. Organizational conditions are treated as contextual antecedents, while trust in AI is positioned as a theoretically distinct downstream construct. This integration provides a more comprehensive explanation of AI adoption by acknowledging that technological implementation and human preparedness are inseparable components of successful AI transformation.

Third, the proposed framework extends human-centered AI research by shifting the analytical focus beyond AI system design toward the preparedness of those expected to interact with AI in everyday organizational practice. Consequently, human readiness provides a theoretical bridge connecting organizational readiness, AI readiness, and human-centered AI within a single conceptual model.

Beyond its theoretical contribution, the proposed framework offers several practical implications for managers, organizational leaders, and policymakers responsible for AI implementation. The findings suggest that successful AI adoption should not be approached solely as a technological investment but as a comprehensive organizational transformation centered on people.

Organizations should therefore complement investments in AI technologies with initiatives aimed at strengthening employees' human readiness. These initiatives include developing AI literacy through continuous education and training, promoting transparent communication regarding AI implementation, involving employees in AI-related decision-making, and creating organizational cultures that encourage learning, experimentation, and collaboration.

Managers also play a critical role in reducing uncertainty surrounding AI adoption. By fostering trust, supporting employee participation, and openly communicating both the opportunities and limitations of AI, organizations can reduce resistance while strengthening employees' confidence in AI-enabled work practices.

Furthermore, organizations should incorporate ethical principles into everyday AI implementation by promoting transparency, explainability, fairness, accountability, and human oversight. Such practices not only support responsible AI governance but also contribute to employees' confidence in AI systems and encourage sustainable human–AI collaboration.

Overall, the proposed framework highlights that organizations seeking long-term benefits from AI should invest not only in technological capabilities but equally in developing employee human readiness as an individual capability supported by appropriate organizational conditions.

9. Limitations

This study has several limitations. First, the proposed HRAA framework is conceptual, and its dimensions and relationships have not yet been empirically validated. The proposed relationships should therefore be understood as theoretical propositions rather than confirmed causal effects.

Second, the analysis of the existing use of the term "human readiness" was based on the Web of Science Core Collection. Although this database provides broad coverage of relevant scientific literature, publications indexed exclusively in other databases may have been omitted. Moreover, the use of the exact phrase "human readiness" may not have identified studies examining similar concepts under different terminology.

Third, the selection, coding, and synthesis of the literature were conducted by a single author. Despite the use of a structured analytical procedure and repeated review of the included publications, interpretative bias cannot be completely excluded.

Finally, although the framework was developed with SMEs in mind, its relevance and applicability may vary across industries, organizational sizes, national contexts, employee groups, and levels of AI maturity. Empirical research is therefore required before the framework can be generalized or applied as an assessment instrument.

10. Conclusions

This paper introduced HRAA as a new multidimensional conceptual framework explaining individual preparedness for successful AI adoption within organizational environments. Through a synthesis of organizational readiness, AI readiness, and human-centered AI literature, the study identified a significant conceptual gap concerning the preparedness of individuals and proposed human readiness as a complementary construct addressing this limitation.

The proposed framework conceptualizes human readiness through three interrelated dimensions-cognitive, psychological, and ethical readiness which collectively influence trust in AI, AI adoption, effective human–AI collaboration, and ultimately organizational outcomes. By integrating technological, psychological, and ethical perspectives, the framework provides a more comprehensive explanation of AI adoption than existing readiness models.

Although conceptual in nature, the framework establishes a foundation for future empirical research. A primary research priority is the development and validation of a Human Readiness for AI Adoption Scale (HRAAS) capable of measuring the three proposed dimensions. Such an instrument would enable researchers to empirically examine human readiness across different organizational settings and levels of AI maturity.

Future studies should also validate the proposed framework using structural equation modeling (SEM) to investigate the relationships among human readiness, trust in AI, AI adoption, human–AI collaboration, and organizational performance. Additional research may explore differences across industries, organizational sizes, national cultures, and varying stages of digital transformation.

As artificial intelligence continues to reshape organizational work, understanding the preparedness of individuals becomes increasingly important. The human readiness framework proposed in this study provides both a theoretical foundation for future research and practical guidance for organizations seeking to implement AI in a manner that is technologically effective, ethically responsible, and genuinely human-centered.

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Conflicts of Interest: The author declares no conflicts of interest.

Abbreviations

The following abbreviations are used in this manuscript:

AI	Artificial Intelligence
SMEs	Small- and Medium-sized Enterprises
TAM	Technology Acceptance Model
UTAUT	Unified Theory of Acceptance and Use of Technology
TOE	Technology–Organization–Environment
HRAA	Human Readiness Framework for AI Adoption

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