


Perspective

The critical role of HRM in AI-driven digital transformation: a paradigm shift to enable firms to move from AI implementation to human-centric adoption

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Abstract

The rapid advancement of Artificial Intelligence (AI) in the business sector has led to a new era of digital transformation. AI is transforming processes, functions, and practices throughout organizations creating system and process efficiencies, performing advanced data analysis, and contributing to the value creation process of the organization. However, the implementation and adoption of AI systems in the organization is not without challenges, ranging from technical issues to human-related barriers, leading to failed AI transformation efforts or lower than expected gains. We argue that while engineers and data scientists excel in handling AI and data-related tasks, they often lack insights into the nuanced human aspects critical for organizational AI success. Thus, Human Resource Management (HRM) emerges as a crucial facilitator, ensuring AI implementation and adoption are aligned with human values and organizational goals. This paper explores the critical role of HRM in harmonizing AI's technological capabilities with human-centric needs within organizations while achieving business objectives. Our positioning paper delves into HRM's multifaceted potential to contribute toward AI organizational success, including enabling digital transformation, humanizing AI usage decisions, providing strategic foresight regarding AI, and facilitating AI adoption by addressing concerns related to fears, ethics, and employee well-being. It reviews key considerations and best practices for operationalizing human-centric AI through culture, leadership, knowledge, policies, and tools. By focusing on what HRM can realistically achieve today, we emphasize its role in reshaping roles, advancing skill sets, and curating workplace dynamics to accommodate human-centric AI implementation. This repositioning involves an active HRM role in ensuring that the aspirations, rights, and needs of individuals are integral to the economic, social, and environmental policies within the organization. This study not only fills a critical gap in existing research but also provides a roadmap for organizations seeking to improve AI implementation and adoption and humanizing their digital transformation journey.

Keywords Humanizing AI · HRM · AI leadership · AI knowledge · AI policies · AI tools · Organizational culture · Behavioral science

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1 Introduction

AI is set to revolutionize the global economy, with projections estimating its contribution to be around \$15.7 trillion by 2030. Nevertheless, today's reality differs from the potential: approximately 70–85% of AI initiatives fail, often due to launch issues or lack of business value creation [1, 2]. This suggests that the operationalization of AI is complex and can be challenging for organizations making investments in AI-fueled transformation. The journey from AI implementation to effective adoption is fraught with challenges, including technical and human-centric barriers, often leading to disappointing results or non-adoption.

Integrating AI into business operations can reshape how companies function and compete [3, 4]. As firms increasingly implement advanced digital AI tools, human resource management (HRM) becomes more complex [5, 6]. While AI technologies such as machine learning, natural language processing, and robotics are enhancing workplace efficiency and productivity [7, 8], the need for HRM to manage this transition often remains underexplored (e.g., [9]). Existing literature is abundant in discussing the use of AI within HRM, yet it overlooks how HRM can significantly influence the successful implementation and adoption of AI systems (e.g., [10, 11]). Also, the strategic involvement of HRM in influencing adoption and aligning AI initiatives with overall business objectives is scarcely explored or emphasized. Böhmer and Schinnenburg [12] discuss the potential of AI-driven HRM to contribute to organizational capabilities and the application of AI in strategic HR, respectively, but do not delve into the specific role of HRM in shaping AI initiatives.

Our paper explores the role of HRM in enhancing the efficacy of AI applications within organizational settings. It explores HRM's role in giving strategic advice on AI use, making AI at the workplace more human-centric, and helping people in the organization adapt to and accept AI. The literature on AI-driven HRM is still in its infancy. While some researchers (e.g., [12]) acknowledge the potential contributions AI-driven HRM departments can make, they do not explore the role of HRM shaping AI digital transformation or how HRM can influence the next generation of AI-HRM technology [13]. Our paper aims to fill this gap by providing a framework on how and where HRM exert their influence in human-centric decision-making within the organization (e.g., [11]). We propose a conceptual framework of how HRM can support AI-based digital transformation and facilitate a paradigm shift to help organizations succeed in their AI efforts by outlining and highlighting the implications of culture, leadership, knowledge, policy, and tools on AI adoption. Our perspective is novel because, traditionally, the emphasis on digital transformation has been rather technocratic, focusing primarily on the technical aspects of development and implementation (e.g., [14]). Our framework shifts this narrative by placing the human component at the forefront, arguing that the success of AI implementation and adoption in organizations is contingent upon the employment of a human-centric approach. Successful AI implementation and adoption will need to be defined by respective internal stakeholder groups and align with overall organizational goals. Success can be co-defined and achieved across various stakeholder groups in collaboration with HRM.

1.1 Definitions

Before explaining how HRM can support AI implementation and adoption in the workplace through a humanizing AI lens, definitions need to be provided to articulate our ideas and discuss how they relate in the context of this research. In this paper, we adopt Boselie's [15] definition of HRM, which views it as a combination of policies and practices shaping employment relationships to achieve specific objectives, including both organizational and employee/societal outcomes.

The function of HRM traditionally covers HR planning, selection and recruitment, talent progression, learning and development, reward, employee relations, and the management of HR systems (e.g., [16–18]). Beyond an administration function, HRM has positioned itself in current times as a business partner to the organization (e.g. [19]). Depending on the size of the organization and the type of industry HRM's function and responsibilities can differ significantly, which affects how far reaching HRM can be within human-centric AI-driven digital transformation.

Definitions of AI, like those from Afioni [20] and Lee et al. [21], generally describe it as either mimicking human thinking or solving problems like humans. AI combines "artificial," referring to human-made objects [22], with "intelligence," meaning a computer's ability to learn and reason [23]. However, intelligence in AI is still debated, with concepts like weak and strong AI [24] used to differentiate levels of machine intelligence. For this paper, AI is defined

following Duan et al. [25] as machines' ability to learn from experience and perform human-like tasks. In the paper, our primary focus is weak (or Narrow AI) tools, especially as they relate to workplace usage, but the findings are also relevant to the early appearance of strong AI (or Artificial General Intelligence) tools which aim to reproduce human intelligence capabilities (e.g. [26]). That is, when talking about AI in this paper, we refer primarily to current generation deep learning models such as Artificial Neural Networks (ANN) and Generative AI (GenAI), unless indicated otherwise.

Implementing AI involves the practical steps of integrating AI technologies into existing processes and systems, including technical setup, data integration, and staff training. It focuses on the operational aspects, ensuring AI tools work effectively within an organization's existing infrastructure [27–29]. Adoption of AI, in contrast, is about the 'acceptance' and 'usage' of something new rather than the detailed steps of making it operational [30]. We argue that adoption should be more deliberate and planned integration of AI, aligning its use with the organization's strategic goals to optimize outcomes. It involves assessing how AI impacts various business areas, planning resources, and managing risks. It considers the long-term role of AI in enhancing competitive advantage and aligns it with ethical and societal values. While implementation deals with the 'how' of AI integration, adoption addresses the 'why' and 'what', ensuring AI contributes to the organization's success and is "part of the business DNA" of the firm [1]. Both AI implementation and adoption should be guided through a human-centric lens (hereafter also referred to as humanizing AI) to ensure success in the short-term and in the long-term. In this context, human-centric AI describes the outcome or objective of creating AI systems that prioritize human needs, values, and ethical considerations, ensuring that the technology supports and enhances human well-being and decision-making. That is, human-centric AI emphasizes the integration of AI into frameworks in a way that positively impacts human lives.

It is also important to define what humanizing AI means. If the concept of humanizing AI is not adequately defined, it creates ambiguity and uncertainty regarding its implementation and purpose. Humanizing AI, in a narrow definition, (i) involves developing AI that not only comprehends human emotions and subconscious dynamics but also interacts with humans naturally, (ii) supports and augments human characteristics and skills, (iii) is deployed in a trustworthy manner [31]. Trustworthiness in AI reflects how confident one feels in the decisions that AI makes (e.g., [32, 33]). Trustworthiness is enhanced when employees know that AI is used to enhance their skills and experience at work and that it is used in a responsible manner (e.g., [34, 35]). We acknowledge that different internal stakeholders (e.g., managers, leaders) can view trustworthiness differently. However, addressing each difference in perspective goes beyond the scope of this paper.

The goal is not to make AI human, but to enhance AI's ability to relate to and assist humans in a more personalized and context-aware manner. In this context, AI is an augmentative tool, as opposed to solely focusing on automation. AI's role in complementing and enhancing human skills and decision-making processes, rather than replacing them. Humanizing AI prioritizes enhancing the human experience, making AI more intuitive and empathetic, and aligning with human values and potential [36]. Humanizing AI by itself does not guarantee a harmonious or symbiotic human-AI relationship, but it is essential for building trust with machines. Humanizing AI should occur at various interconnected levels (within the organization) and act as a conduit to addressing many of the ethical and people challenges between humans and machines [31]. As AI matures, it moves toward more advanced cognitive architectures [13], necessitating context-specific interpretations of its use and human-centricity [37]. However, focusing only on creating AI systems that mimic human characteristics is not sufficient. Humanizing AI also needs to address the behavioral concerns and societal consequences (e.g., [38]); therefore, our paper defines humanizing AI in the workplace from a behavioral perspective. The behavioral view of humanizing AI blueprints how to develop and apply AI in the workplace from a multidimensional approach. An approach that promotes not only human performance and well-being but also highlights possible solutions on how to address issues concerning AI explainability, AI ethics, and responsible use of AI. Human-centric AI describes the outcome or objective of creating AI systems that prioritize human needs, values, and ethical considerations.

The paper is structured as follows: this first section sets the stage by exploring the human-centric perspective of AI, and defining key terms. The next section delves into the human-centric, integrated approach necessary for implementing and adopting AI in the workplace, emphasizing the role of HRM in fostering a harmonious relationship between humans and AI. Finally, the paper concludes with discussing HRM's strategic facilitation of AI from implementation to adoption.

2 The critical role of HRM in enabling a more human-centric approach to AI adoption

Despite rapid developments in AI within organizations, its adoption remains challenging due to factors like AI-related fears (e.g., [39]), trust issues [40, 41], knowledge gaps (e.g., [27, 42]), and integration difficulties (e.g., [43]). These barriers are primarily human related, underscoring the importance of a humanizing AI approach in AI implementation and

adoption. Many organizations mainly focus on the efficiency and productivity gains of AI, but do not sufficiently address the human factor (e.g., [44]). HRM's commitment to human-centric approaches to AI is not just about ethical responsibility or a moral imperative; it is also a business and strategic priority for retaining a talented workforce. The failure to prioritize human-centric AI could make it difficult for businesses to attract and retain skilled professionals, undermining their competitive edge. And, similar to diversity and inclusion initiatives today, could make customers less willing to buy from you if your company's AI policies and practices are perceived to be not human-centric. As HRM inherently concerns itself with the human elements within organizations, it would seem logical and a natural evolution of HRM's function to facilitate the move from AI implementation to a more human-centric adoption. Doing so ensures that technological advancements, like AI, are leveraged to complement and enhance the human workforce rather than marginalize it.

Traditionally, HRM in organizations was considered an administrative function, focusing on compliance and workforce management using rudimentary tools [45]. In the mid twentieth century, HRM evolved into Personnel Management, adopting technology to manage people as a resource, thus enhancing skills and productivity through behavioral understanding [46, 47]. The advent of strategic HRM marked a shift towards a partnership role within organizations, leveraging data through human resources information systems (HRIS) to improve decision-making [48]. Currently HRM is often considered a business partner in organizations, integrating digital strategies which value employees as competitive assets, prioritizing diversity, and aligning technology with human values [49, 50]. With AI's emergence, HRM confronts the challenge of harmonizing technological efficiency with a human-centric approach, addressing AI ethics and value enhancement [51, 52]. This forward-focused AI-driven phase represents a critical inflection point, where human centrality plays a more prominent role in the value creation process of the organization.

Besides humanizing AI, to facilitate the symbiotic relationship between humans and machines, it is also important to "digitize" the human. What we mean by digitizing the human in the organizational context is that HR (i) trains employees to understand what AI is and how it works, (ii) enhances employee skills and capabilities to work with AI, and (iii) creates an environment which is conducive to embracing new ways of doing things. By humanizing AI and digitizing humans, HRM takes an active approach to create a more symbiotic relationship between humans and machines in the workplace.

We argue that successful AI-driven digital transformation in organizations depends on five key elements: culture, leadership, knowledge, policies, and tools. In the next section, we explore these five elements that, if addressed in an integrated and human-centric way, can enable firms to move successfully from AI implementation to adoption. Culture drives innovation and adaptability, and it is often cited as critical for AI integration success [53]. Leadership is important as it drives the strategic vision, ensures alignment of AI initiatives with business goals, and fosters an environment conducive to new technology uptake and experimentation (e.g., [4]). This is underscored in the literature on transformational leadership in the digital age [54]. The knowledge element emphasizes the importance of skill development in the workplace to address the gap between current workforce skills and the requirements for effectively implementing and adopting AI systems [55]. Organizational AI principles, or policies, provide a necessary ethical and governance framework, guiding responsible and sustainable AI use; this aspect is increasingly being highlighted in contemporary research on AI ethics (e.g., [56]). AI tools, including hardware and software, are also essential for the practical implementation and operationalization of AI, enabling businesses to harness AI capabilities for enhanced decision-making and efficiency. As tools continuously evolve, they need to be more adapted and more integrated. HRM plays a critical role in each of these five elements (see Fig. 1). Also indicates that the relationship between these five elements is not of a linear nature.

3 How HRM can address current AI implementation and adoption challenges using a humanizing AI approach

As AI applicability and outcomes evolve in commercial business environments, so do the associated implementation and adoption challenges. We emphasize the need for more human-centric approaches to help address the key barriers currently affecting AI implementation and adoption. We acknowledge the fact that every organization is unique in terms of structure and stage of AI implementation and outline general overarching challenges and recommendations assuming they will be applied according to each individual organization's circumstances. We address each of these challenges in our conceptual framework (Fig. 2), highlighting the critical role HRM plays in facilitating effective AI-driven digital transformation through the support of culture, leadership, knowledge, policy, and tools. Our research and recommendations focus on HRM influencing internal stakeholders throughout organizations yet acknowledge an anticipated flow-on effect beyond organizational boundaries to industry and society.

Fig. 1 The critical role of HRM in culture, leadership, knowledge, policies, and tools

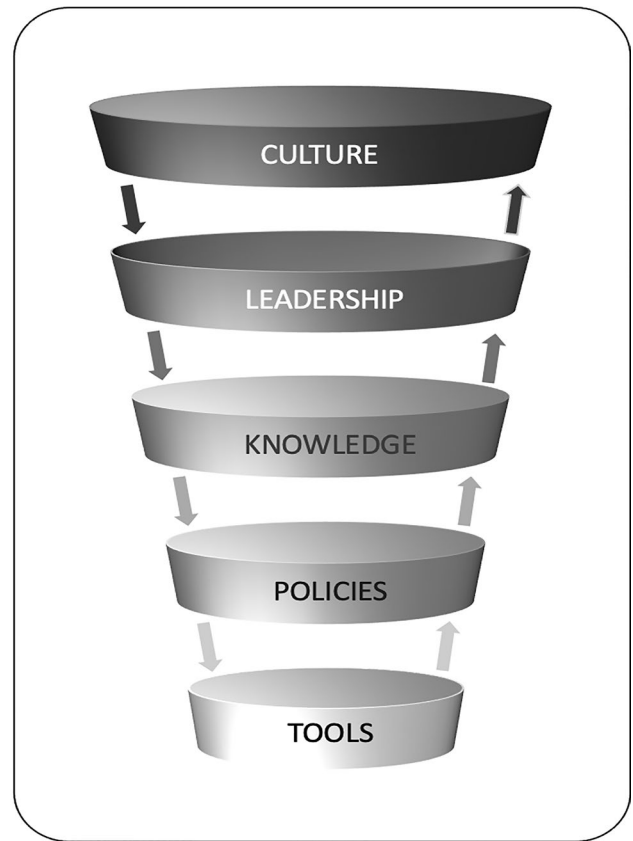
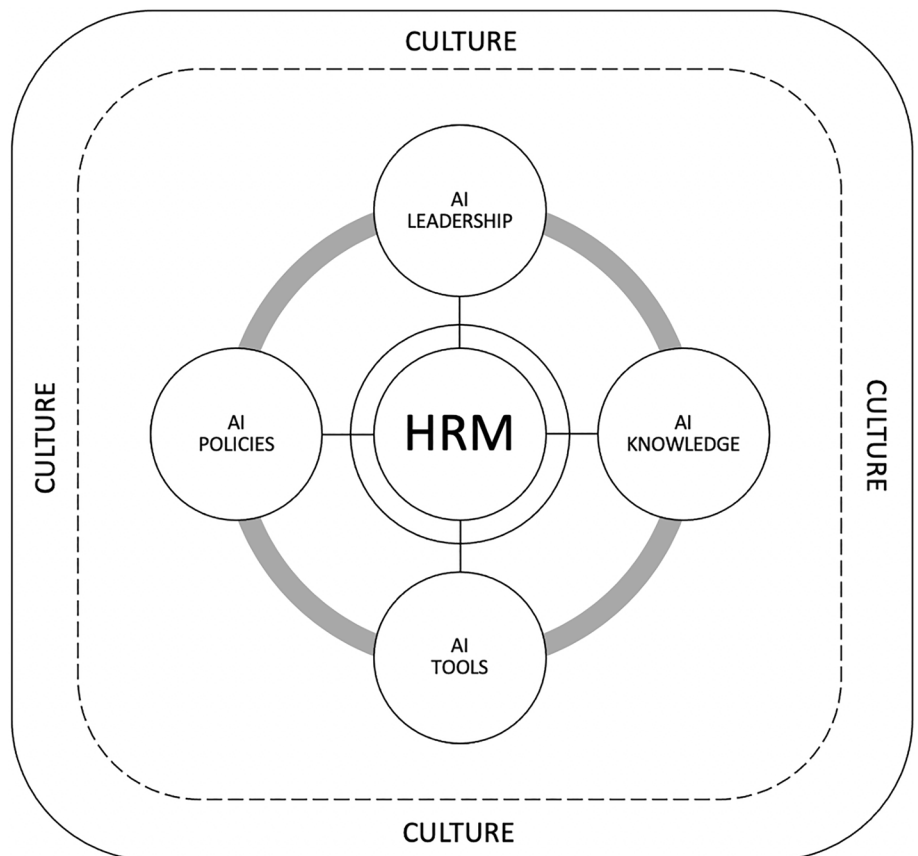


Fig. 2 HRM facilitating human-centric AI implementation and adoption enabled leadership, tools, and policy guided through an organizational cultural framework



3.1 Culture: bringing and binding humans and machines together in the workplace

Culture plays an important role in adopting new technologies, such as AI (e.g., [57]). Organizational culture has been defined in many ways but converges to the invisible glue that keeps the people together and provides a shared understanding of norms, rituals, and unspoken assumptions about how things function in the organization (e.g., [58]). The culture of the organization is mainly shaped by the leaders of the organization (e.g., [59]), and impacts how the operational strategy is executed and the policies are designed. For example, efficiency-based leadership approaches versus transformational leadership approaches will affect the choices made on how to run the organization and which emphasis it places on resource management and optimization differently using AI (e.g., [60, 61]).

3.1.1 Culture: key challenges

Organizational culture is necessary to innovate, compete, and thrive in the long-term (e.g., [62]). In recent years, culture has been cited as a key enabler of AI adoption (e.g., [63–65]). Various attributes of organizational culture such as innovation drive, trust, learning orientation, risk appetite, and decision-making transparency (e.g., [66–69]) amongst others can affect AI implementation and adoption. When talking about AI transparency it's important to differentiate between transparent AI and transparency in AI use. Transparent AI (or explainable AI as it is often referred to) refers to explainability of AI models. Employees need to know that AI models are explainable when deemed important to understand how AI-tools have made decisions (such as during hiring or firing decisions). Transparency in AI usage is also vital to the organization as it needs to be clear how AI is being used in the organization. Employees will be less willing to use AI or even work for an organization if it is not clear how AI is being used in the workplace (such as for surveillance purposes). The issue arises because higher explainability often results in reduced accuracy. As AI tools become more proficient, it becomes harder to understand how they reach their decisions, making it challenging to trust, debug, or fully leverage in sensitive or critical applications.

3.1.2 Culture: HRM's active role in creating an AI friendly environment

HRM plays an integral role in developing and guiding organizational culture (e.g., [70, 71]). Not only in ensuring that the organization is willing to work with AI, but also to ensure that AI is implemented and deployed in a human-centric manner. This role involves building an environment where employees trust AI systems and are motivated to incorporate AI into their workflows. To achieve this, HRM has to advocate for a culture of transparency and open communication regarding the use of AI tools. HRM must encourage leaders to set examples by using AI tools transparently in their decision-making processes, demonstrating trust in these systems. HRM should facilitate regular feedback loops (e.g., [72]) where employees can share their experiences and concerns with AI, ensuring their voices are acknowledged, considered, and acted upon appropriately. Additionally, it is important to challenge and reshape inappropriate AI initiatives. Actionable behaviors that promote AI adoption should be embedded into the organization's culture. This can be achieved through recognition and reward systems that incentivize innovative uses of AI and performance metrics that reflect the effective integration of AI in work processes [73]. By aligning AI adoption with personal and team objectives, employees are more likely to embrace AI as a tool for success rather than a threat to their job security [74]. By shaping the culture this way, HRM can create a psychologically safe environment where experimentation and risk-taking are encouraged, and employees feel excited to work with AI tools without fear of repercussions or losing one's job.

Key to adopting AI is the culture's ability to foster a willingness to work with new technologies. Often the behavioral literature is considered when trying to identify reasons why professionals don't trust working with AI. Interestingly, the automation-augmentation literature provides pathways to increase both trust in, and willingness to adopt AI. For example, Henkel et al. [75] explain that automation of tasks can help free up needed time and other resources performed on mundane jobs. This free time can be spent on more important and engaging tasks such as creativity and customer interaction. The augmentation literature (e.g., [75–77]) shows that when AI is used to augment people's skills, professionals are more likely to use AI at work.

Conversely, AI deployment also affects organizational culture. Algorithms and AI tools can change employee behaviors, decision-making processes, and collaboration dynamics [78]. For instance, AI can influence what information employees receive, shaping beliefs and interactions [78]. Generative AI, with its programming, can also affect attitudes and behaviors, particularly when it's designed to understand language and emotions (e.g., [79]). In this context, culture development is

reinforced through technical output and engagement with AI. It is therefore important that HRM monitor the effect AI has on cultural formation in the organization. As AI becomes more integrated, organizational culture evolves to include both humans and machines. Strategically leveraging culture through leadership, knowledge, policy, and AI tools is key for successful AI implementation and adoption. If the current culture hinders AI adoption, a cultural shift may be necessary to foster a more technology-friendly environment.

3.2 AI Leadership: evolving leadership requirements

Leadership plays an influential role in how open employees are to change, effectively implementing new technologies, and successfully accepting these technologies (e.g., [80, 81]). Organizational leaders increasingly integrate AI tools into the workplace, promoting a data-driven culture, encouraging experimentation, and providing resources and expertise [82]. Their role is crucial in deploying AI effectively and fostering human-centered AI usage across all employee groups [83]. By setting a clear AI vision, focusing on innovation, addressing ethical concerns, and prioritizing AI training and upskilling, leaders enable organizations to harness AI's potential fully [4, 84, 85]. They also cultivate an environment open to new technology, which is essential for AI's long term optimization success [86].

3.2.1 Leadership: key challenges

The literature highlights the vital role of leadership in new technology acceptance and adoption by assessing organizational readiness (e.g., [30, 60]) and reducing employee resistance toward new technology, including AI (e.g., [60, 77]). However, there is limited evidence on how leaders can effectively adapt and lead in an AI-driven environment (e.g., 60, 88). This lack of understanding is further perpetuated by literature focusing only on suggesting AI implementation frameworks and strategies on the technical aspects of this exercise and less on the human element [88]. Common challenges for leaders when dealing with AI implementation and adoption include a lack of digital skills (e.g., [87]), which leads to a lack of understanding and awareness, lack of AI regulatory and governance experience e.g., [89], and not being able to deal effectively with lowering employee resistance to change and motivating AI adoption (e.g., [90]).

3.2.2 Leadership: HRM aligns and facilitates technocratic and human-centric needs for AI success

The strategic facilitation of human-centric AI by HRM in organizations begins at the highest level, working collaboratively with leadership teams to set clear implementation and adoption criteria. This work involves HRM professionals liaising between the domain experts and the executive leadership to map complex AI concepts to strategic business objectives. In this process, HRM must assist leadership in identifying key areas where AI can have the most significant impact, thereby prioritizing AI initiatives that promise high returns and long-term benefits to the organization. To facilitate this, HRM must play an active role in educating the leadership team to understand the potential of AI to enhance productivity, decision-making, and overall business outcomes. This goes beyond the technical aspects of AI, encompassing its ethical implications, risks, and potential biases. By equipping leaders with this knowledge, HRM enables leadership to make informed decisions about AI implementation and required skills and competencies within the organization. A critical aspect of HRM's role is to ensure that leadership approaches AI adoption with a human-centric perspective. HRM must advocate for AI solutions that augment human capabilities and emphasize the importance of employee well-being and ethical considerations in AI deployment. HRM should encourage leaders to communicate transparently with employees about AI initiatives, addressing fears or misconceptions and highlighting the benefits of AI in improving work processes and personal development.

From the behavioral perspective, we focus on the engagement aspects of leadership in lowering resistance to change and AI adoption [90], as well as the psychological aspect of resistance, such as the threat AI posed on one's job identity (e.g., [91]). Leadership engagement as a pathway to lower employee resistance to AI emphasizes the importance of interpersonal qualities of leader–follower engagement, such as the involvement of employees in the decision-making and implementation process [92], addressing employee concerns about AI through transparent and empathetic dialogue [93], and collaborating with various stakeholders across the organization to build a culture for AI acceptance (e.g., [4, 94]). HRM can play a key part in facilitating this engagement through town hall meetings and organizing regular meetings to better understand how people believe AI will affect their jobs and how the organization can support in alleviating fears. The active role of leadership in creating the vision, creating the right environment, and engaging employees in

the AI implementation and adoption process is vital, and HRM plays a critical role in enabling leaders to win the hearts and minds of its followers.

3.3 AI knowledge

The rapid advancement of AI has created a significant demand for specialized AI knowledge and skills in the workforce [95]. This demand spans various sectors and industries, impacting technology-focused roles and extending to other areas such as healthcare, finance, marketing, and more [96]. The complexity and novelty of AI technologies equate to a growing gap between the skills available in the current workforce and the skills required to implement and manage AI systems effectively [55]. The role of HRM is to facilitate human-centric AI digital transformation within organizations. Therefore, its focus is primarily internal. Though HRM doesn't have a direct impact on society, if more organizations take a similar approach to implementing AI within organizations, then this could generate more trust in AI by the general public. Not taking a human-centric approach to AI usage within HRM not only prevents transformation efforts within organizations and more data-driven decision-making, but also jeopardizes advancements toward safe artificial general intelligence (e.g., [97]).

3.3.1 Knowledge: key challenges

A key challenge in bridging the knowledge and skills gap is the need for comprehensive AI education and training. Traditional educational systems have been slow to integrate AI and machine learning curricula, leading to a shortage of qualified AI training and development professionals [98]. Even in technology-forward companies, employees often lack the necessary skills to work alongside AI systems effectively [99]. This shortage of AI talent can slow down the adoption of AI technologies, limit innovation, and increase reliance on a small pool of experts, which often includes costly external advisors. Moreover, the evolving nature of AI technology means that continuous learning and skill development are essential. Machine learning and AI-embedded technical solutions are fast-paced fields where new advancements and techniques emerge regularly. Professionals in the field must continually update their knowledge to stay relevant and valued. As AI advances, this necessity will flow on throughout the organization to all employee populations. This requires a commitment to lifelong learning and adaptability, which can be a significant challenge for individuals and organizations. In addition to technical skills, there's a growing need for interdisciplinary knowledge that combines AI expertise with domain-specific insights [100]. For instance, in healthcare, professionals need to understand both AI algorithms and medical practices to develop effective AI solutions [101]. The requirement for interdisciplinary knowledge further complicates the skill gap issue, as it necessitates a blend of diverse expertise that is rare in the current job market [102]. Another dimension of this challenge is ethical considerations and AI literacy. As AI systems become more integrated into everyday life, there's a need for a broader understanding of AI among the general public, including ethical implications, privacy concerns, and the potential for bias in AI systems. This understanding is crucial for informed decision-making and responsible use of AI technologies. The role of HRM in organizations in upskilling workforces is critical. This investment is not only technical training but also fostering an AI-ready culture that encourages experimentation, innovation, human-centricity, and continuous learning.

3.3.2 Organizational knowledge and upskilling: HRM advances AI knowledge and skills

When it comes to AI knowledge and skill development, HRM is best positioned to manage this responsibility. HRM is the custodian of the organization's data and plays an important part in overseeing the correct usage of data within AI-driven applications. This is important to ensure data quality and to minimize the impact of bias in AI decision-making. Not doing so would undermine the success of AI implementation in the workplace for all stakeholders. HRM also takes an active role in upskilling and reskilling initiatives, preparing the workforce for the AI-enabled future [103]. This task involves anticipating and identifying skill gaps and developing training programs that are tailored to the needs of different employee segments based on the AI solution deployed [55]. By fostering a culture of continuous learning, HRM can ensure that employees are equipped to work with and alongside AI and are empowered to leverage AI tools to enhance their work. One of the biggest causes of resistance to AI in organizations is the lack of awareness and skills [104]. Addressing this issue will not only improve organizational capabilities, but also address some of the psychological barriers employees have about AI and consequently improve AI adoption [105]. Understanding how people respond to AI learning opportunities provides HRM insights to improve future training initiatives and inform talent management

strategies, policy and AI tool design (e.g., [106]). Though upskilling and reskilling of the workforce is second nature to HRM, a more integrated perspective to knowledge management and skills development is required in AI environments which can help the organization learn faster and hire more effectively as the organization transitions toward an AI-ready environment. HRM plays an important role in balancing between the technical needs of the organization and the human talent required for AI implementation and adoption (e.g., [107]).

3.4 AI policies

AI policies play an important role in shaping a productive AI environment in organizations. Company policies are needed to ensure that AI is developed and used ethically, equitably, and transparently in the workplace and to help employees feel safe and more willing to adopt AI tools at work (e.g., [108, 109]). In recent years, various ethical concerns have emerged related to AI development and usage such as lack of explainability in AI decision-making e.g., [110], bias and discrimination (e.g., [111]), online manipulation by AI e.g., [112], data privacy scandals (e.g., [113]), amongst others. Moreover, employees don't fully trust AI yet and need to feel safe knowing that AI systems won't be used in a way which will harm them (e.g., [114]). It is naive to continue to think that human beings are aware of how algorithms affect decision-making and have the abilities to control themselves in the face of increasingly sophisticated manipulation techniques [31]. The EU AI Act [115], is the world's first comprehensive set of rules to protect humans from harm by AI, which will come into effect in 2025, considers AI systems which affect how employees are treated 'high risk' AI systems—alongside those used in border control and law enforcement. Having human-centric and ethical AI policies in place at an institutional level which respect and enhance human properties is becoming increasingly important which consequently foster trust and support AI adoption in the workplace.

3.4.1 Policies: key challenges

To implement and adopt AI, firms need to deal with many challenges, foremost being the translation of broad, high-level ethical guidelines into concrete corporate policies. These abstract principles lack specificity, leaving companies to navigate a patchwork of legal frameworks without a prescriptive regulatory approach [116]. The disparity between the rapid innovation in AI and the sluggish development of legal structures creates a regulatory void, making consistent policy application difficult. Complicating this landscape is the absence of common aims and fiduciary duties in AI, often leading firms to prioritize efficiency and profitability over ethical considerations and public interest [90]. It is also a problem that AI is used in many different areas and domains, each needing its own rules. Firms also face a challenge in aligning AI policies with the divergent regulatory landscapes across the globe (e.g., [117]). The interplay of national, international, and professional policy guidelines is outside of the scope of this paper. However, we can determine that the absence of international consensus amplifies non-compliance risk, as companies must interpret and apply a spectrum of high-level guidelines to their specific operations [118]. As global companies work to implement AI, they must navigate a labyrinth of international regulations that lack a cohesive framework, leading to conflicting approaches in different jurisdictions [119]. This dissonance creates a significant hurdle for global firms aiming to maintain ethical standards while ensuring legal compliance in various markets. The result is often a fragmented strategy that can hinder the coherent adoption and scaling of AI technologies. Data protection and privacy regulations, varying significantly across jurisdictions, also add complexity for multinational entities [120].

3.4.2 AI Policies: HRM shapes and monitors human-centric AI implementation and usage

It is important to acknowledge that the ethical framework guiding AI use varies significantly across organizations, often influenced by strategic interests or marketing purposes rather than a genuine commitment to ethical development. This disparity can be amplified by the absence of stringent AI regulations in various jurisdictions, leading to ethical declarations that serve more as corporate virtue signaling than substantive ethical engagement [121]. To mitigate these risks, it is essential for organizations to advocate for and adhere to robust regulatory standards that ensure AI ethics are deeply integrated into every aspect of technology development and deployment, moving beyond mere compliance to genuinely ethical practices. HRM plays an important role in developing and enforcing AI policy. Taking a human-centric approach to AI policy design, company policies should, from implementation to enforcement, prioritize the protection and well-being of employees while ensuring responsible use of AI. During the initial stages of AI deployment, human-centric AI policies can provide guidelines and mechanisms that safeguard employees' rights, privacy, and job security

throughout the AI implementation process. This includes transparent communication about the purpose and effect of AI tools, clear policies regarding data collection and usage, and mechanisms to address any potential biases related to how AI makes decisions in mission critical operations. By actively engaging employees in the initial implementation process, and addressing employee fears and concerns, companies can foster a supportive and inclusive work environment that values employee contributions and ensures fair treatment while adapting to AI work processes and tools. In addition, corporate policies should outline stringent measures to prevent the misuse of technology. Companies should be committed to responsible AI practices, ensuring that the technology is not employed in ways that violate ethical principles or infringe upon individuals' rights. Responsible AI should start during the design process [122] and continue throughout the implementation and solution/system adoption phases. Regular audits and assessments should be conducted to evaluate the effect of AI on employees and the wider society, identifying and addressing any unintended consequences or risks. By implementing comprehensive AI policies that prioritize employee protection, well-being, and responsible usage, organizations can strike a balance between leveraging the (financial) benefits of AI and ensuring the technology is utilized in a manner that aligns with ethical standards and societal values. HRM plays a crucial role in advocating policies that protect employee privacy and data security, addressing concerns around AI and automation potentially leading to job displacement or unfair treatment. These policies should be crafted to promote ethical AI usage, ensuring transparency, fairness, and accountability in AI systems.

3.5 AI tools

AI tools and solutions are constantly evolving. HRM must be at the forefront of understanding and disseminating the value of company-specific AI applications and employee implications (e.g., [11]). Most AI development for organizational use focuses on automation, smart solutions, and helping employees make better decisions with the aim to work faster, more efficiently, and gain a competitive advantage (e.g., [123–125]). With the recent rise of generative AI (e.g., advanced language models and cognitive tools), AI usage in knowledge-based white-collar professions (e.g., accounting, doctors, lawyers) has grown significantly. More recently, application development, graphic, and video AI-powered design tools are now also available, making it possible for employees with limited to no graphic design or coding experience to create digital content and mobile platforms. As AI tools continue to become more accessible and understandable to organizations, HRM will continue to bridge technical specifics and human acceptance at firm-level.

3.5.1 AI tools: key challenges

To humanize AI from an application perspective, HRM needs to focus on asserting human agency through its usage. If cognitive tools support decision-making, then this is considered a human-centered approach. However, if AI tools limit human beings' ability to use their brains effectively (e.g., creative and critical thinking), these tools are not considered human empowering. When people work together, synergies are created through dynamic interactions that cannot be achieved by oneself and that benefit work processes and outputs [126, 127]. When knowledge and practice are integrated for automation purposes, it makes work easier and faster to do. However, what gets lost in the automation of workflows and practices are the synergies that naturally occur in collaboration and the benefits that arise from group dynamics [128]. There is a risk that the drive for productivity based on efficiency and speed alone actually diminishes the benefits of collaborative work done by humans and can harm human potential in the long term. Another concern with AI tools is the fear many workers have when working with AI and the effect AI tools have on one's professional identity. Not addressing these concerns will prevent the adoption of AI systems in the workplace. Finally, humans need to understand how AI tools make decisions (especially when there is a human in the loop). Feeling confident that (integrated) AI systems are 'competent' co-pilots is still a major concern many employees have, especially today.

3.5.2 AI tools: HRM enabling tools to augment human values and capabilities

HRM plays a critical role in driving human-centric AI adoption. It does this by guiding tool selection and formulating organizational policies for AI use (e.g., [13]). HRM must be actively involved in the selection process of AI tools to ensure they align with the organization's values, culture, and workforce skills. This role thoroughly assesses various AI tools to determine their suitability for ease of use, integration with existing systems, and their potential to enhance employee performance and engagement. Moreover, with the ongoing integration of AI in the workplace and human to machine interaction, future AI applications will become more integrated (e.g., [36]), assisting workers in their job as co-pilots and

Table 1 HRM roadmap for human-centric AI implementation and adoption

The critical role of HRM in Culture, Leadership, Knowledge, Policies, and Tools	
CULTURE	
The Critical role of HRM in Culture: HRM helps the organization develop an innovative mindset and build more trust toward AI systems; emphasizing the importance of human-centricity from the onset in every AI decision across the entire employee base and creating an environment which is willing to accept new technologies.	
Implementation: - Innovative mindset - Risk and reward appetite - Willingness to experiment	Adoption: - Transparency - Psychological safety - Human-centric approaches to AI
LEADERSHIP	
The Critical role of HRM in Leadership: HRM encourages leaders to communicate a clear AI vision and to speak transparently with employees about AI initiatives, addressing fears or misconceptions and highlighting the benefits of AI in improving work processes and career and personal development.	
Implementation: - Strategic foresight - Foster collaborative environment - Engaging employees in the implementation process	Adoption: - Setting human-centric adoption criteria - Lower AI resistance through engagement
KNOWLEDGE	
The Critical role of HRM in Knowledge: HRM guides the organization through a robust existing employee skills analysis, anticipating future skill needs, and designs a long-term optimal training and development plan to support the organization's AI roadmap.	
Implementation: - Critical evaluation of current skills and competencies (e.g., skills gap analysis) - Tailored reskilling and upskilling schema	Adoption: - Skill development and training plan execution - Continuous learning approach
POLICIES	
The Critical role of HRM in Policies: HRM focuses on designing, communicating, and enforcing policies while maintaining documentation and building feedback mechanisms. To facilitate adoption, HRM plays an active role in cultural shifts, proactively engages employees, and reinforces policies through continuous adoption and recognition.	
Implementation: - Ensure policies comply with legal requirements and industry standards - Design human-centric AI policies that centers and protects all employees - Establish mechanisms to record, monitor and enforce policy compliance	Adoption: - Monitor, enforce, and revise AI policies according to changing or new rules and regulations - Tailor specifics of the policies to align with the culture and values of the organization - Continuously gather employee input to refine policies to make them more relevant and embedded into the organization
TOOLS	
The Critical role of HRM in Tools: HRM plays a pivotal role in how AI tools are implemented, used, and adapted to ensure uptake and responsible usage. HRM guides tool selection informed through AI policies and organizational needs. HRM also plays a critical role in how AI tools are further developed allowing for more human-centric usage and human-machine integration and collaboration.	
Implementation: - Human agency - Synergies identified and leveraged - Balance AI outcomes with human well-being	Adoption: - Integrated AI technology solutions – balanced approach to leveraging human and technical talent - Human and machine symbiosis

augmenting existing skills in co-decision-making and the emergence of collaborative human-machine teams (e.g., [129]). Being able to translate policies and human needs to AI developers will aid in the development of more human-centric

AI tools and systems. HRM plays a pivotal role in how AI tools should be implemented, used, and adapted to ensure uptake and responsible usage.

4 HRM—strategic facilitation of human-centric AI

HRM can effectively navigate the complexities of AI human-centric adoption and engage in multidimensional activities, from collaborating with leadership to setting clear adoption criteria to developing policies and practices prioritizing ethical AI usage and employee well-being (Table 1).

5 Conclusion

This paper highlights the multifaceted contributions of HRM in enabling digital transformation, emphasizing the importance of aligning AI initiatives with organizational goals and human values. Through a comprehensive review of organizational culture, leadership, knowledge, policies, and tools, we identified critical strategies for operationalizing human-centric AI, underscoring the need for a holistic approach encompassing technological proficiency and ethical sensitivity. We found that a human-centric paradigm shift is essential for firms to transition from mere AI implementation to strategic adoption.

Our research fills a gap in the existing literature by focusing on the critical role of HRM in AI strategic adoption rather than its application to HR tasks. Our findings suggest that HRM must take an active role in facilitating AI integration, ensuring that the technology enhances rather than replaces human capabilities. This involves prioritizing employee well-being, advocating for ethical AI usage, and fostering a culture of trust and transparency.

While this paper provides a conceptual framework for the role of HRM in AI strategic adoption, empirical studies are needed to validate and refine the framework. Future research could involve case studies or longitudinal research in diverse organizational contexts to observe how the framework operates in real-world settings. In addition, quantitative research could be conducted to statistically analyze the effect of various HRM strategies on the successful strategic adoption of AI in organizations. This could include surveys and data analysis to understand the correlation between HRM practices and AI implementation success rates.

The future of AI in the workplace is not just about technological advancement but also about reshaping organizational culture and leadership approaches. HRM's role in this transformation is critical, requiring a balance between technical expertise and a deep understanding of human psychology and organizational behavior. It can facilitate a more harmonious and productive relationship between humans and machines by advocating for AI solutions that augment human potential and addressing concerns related to fears, ethics, and employee well-being.

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Declarations

Competing interests The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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