(REVIEW ARTICLE)

The impact of artificial intelligence literacy on employee engagement and trust in organizational AI integration: A systematic review

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Abstract

Despite the growing utilisation of Artificial Intelligence (AI) technologies in the workplace, studies on understanding the human dimensions of these organisations remain surprisingly limited. While initial studies have focused on employee acceptance of AI technologies, there is a need to examine these technologies on employees' perceived usefulness and trust, and engagement and empowerment with new AI tools. Thus, this systematic review examines the role of AI literacy in shaping employees' perceptions of trust, engagement and empowerment and reducing fear and resistance with the use of AI tools in organisations. Following the PRISMA guidelines, I reviewed 76 peer-reviewed articles published between 2015 and 2024, sourced from Web of Science, EBSCOhost, Scopus, and Google Scholar. The results indicated that employees' understanding of AI positively influences their perceptions, trust, engagement and empowerment, while reducing fear and resistance to changes related AI technologies.

Keywords: Artificial Intelligence; AI; Employee Acceptance; Trust; Engagement With AI; Employees' Fear Towards AI; Employees' Resistance to Change

1. Introduction

Artificial Intelligence tools and techniques are transforming how tasks are performed within organisations through automating processes and systems, and reshaping job responsibilities (Makarius et al., 2020). Although organisations are rapidly implementing AI tools and technologies, the extent to which employee acceptance and empowerment towards such tools and technologies still needs to be checked. While technologies offer substantial gains to organisations, they also present some human challenges in the workplace. Particularly, how employees perceive AI, trust levels, engagement levels, and confidence levels. Moreover, most significantly, are employees empowered to work with AI systems?

Recent scholars emphasised that a lack of proper understanding of AI literacy among employees can result in employee fear, reluctance, and mistrust, as employees have lack of understanding of what is AI, how it works and its effects- often referred to as the 'black box issue' (Makarius et al., 2020). If employees are not aware of AI and its role within the organisation, it is very challenging for them to bring significant value to the organisation. The success of AI implementation depends on employee trust in AI applications within organisations (Siau and Wang, 2018). It is argued that when employees feel higher levels of cognitive and emotional trust, it leads to enhanced integration in organisations (Glisson and Woolley, 2000). Previous research has also argued that bias can be reduced when employees perceive AI applications in organisations as fair and transparent (Satell and Sutton, 2019).

Thus, there is a need to further investigate how employees can positively perceive AI to produce the best value for organisations. Hence, this review emphasises that AI literacy can play a crucial role in enhancing employees' positive

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perceptions of AI, creating trust, and, as a result, enhancing their engagement with these AI tools. Additionally, it is essential to explore how AI can foster genuine empowerment for employees, rather than merely accepting those tools.

2. Review of Literature

Many studies have contributed to the AI literature in organizational studies by examining the adoption of AI and its implications from an organizational perspective (Felemban et al., 2024; Dwivedi et al., 2001; Mariani and Borghi, 2019; Ramsbotham et al., 2019). However, there is limited literature on how employees perceive AI, including their views on how it creates both opportunities and challenges for them (Raisch and Krakowski, 2021). A recent study by Dabbous et al. (2002) argued that fostering a supportive organizational culture and habits creates a favorable effect on employees' intention to use AI.

Moreover, recent scholars have focused on learning about AI literacy and its impact on the adoption of new technology, including AI in organizations (Mughrabi et al., 2024). AI literacy refers to the knowledge, awareness, and critical thinking necessary to comprehend and understand how AI works, its applications, and the ethical and social implications it entails (Long and Magaro, 2020). This concept needs to be examined beyond just digital literacy and IT skills; instead, it involves understanding algorithmic decisions and associated biases, as well as being empowered in discussions about AI governance and ethics.

It is also argued that digital literacy plays a crucial role in helping people fully utilize the promise of AI technology and confidently navigate the changing job environment (Akash et al., 2024). Moreover, Glisson and Wolley (2000) argued that designing the AI tools and techniques with transparency, reliability, and flexibility plays a crucial role in forming employees' trust in AI adoption at the workplace. Moreover, when employees possess a strong AI literacy, it leads to an increase in employees' trust and collaboration with AI, an understanding of the ethical use of AI, and the creation of an empowered and innovative organizational culture (Wirtz et al., 2021; Tricin et al., 2023).

Thus, this systematic review aims to present how AI literacy impacts employee perception, trust, fear, resistance and engagement. Additionally, it aims to shift the conversation from passive technology acceptance to proactive empowerment of AI technology in organizations. Using a systematic methodology and PRISMA framework, I reviewed 76 peer-reviewed studies from 2015 to 2024 that examine the role of AI literacy in an organizational context.

2.1. Research Question

This systematic review aims to gather and synthesize current empirical studies related to AI Literacy and its effects on employees' perceptions, engagement, and empowerment in an organizational context. Adopting the Preferred Reporting Items for Systematic Reviews and Meta Analyses (PRISMA), the main research question for this review is 'how do AIs influence employees' perceptions of adaptation of AI in organizations?'. Further, the following specific questions are presented.

- How does AI literacy impact employees' Perceived Usefulness and Trust of AI systems?
- How does AI literacy reduces fear and resistance?
- In what ways does AI literacy shape employee engagement and empowerment when using AI?

3. Research Methodology

The systematic literature review follows the PRISMA approach, which is an accepted standard for presenting systematic reviews (Page et al., 2021). It comprehensively covers the literature on search terms related to AI literacy, employees' perceptions, trust, engagement, and work contexts. Four databases were used for this purpose, including Web of Science, EBSCOhost, Scopus, and Google Scholar. Only peer-reviewed articles published between 2015 and 2024 were considered for this review.

The Boolean search string was used to identify the appropriate articles, as shown below.

- "AI literacy" OR "artificial intelligence education" OR "AI knowledge"
- AND "employee" OR "workplace" OR "organizational"
- AND "trust" OR "perception" OR "resistance" OR "engagement" OR "empowerment"

Thus, the inclusion criteria used for the review are a) empirical studies (quantitative, qualitative, or mixed-methods), b) focused on AI literacy or closely related concepts c) Peer-reviewed articles published in English, d) between January 2015 and December 2024 and   e) studies focused on workplace or organizational settings. Moreover, the exclusion criteria are a) non-empirical papers, b) AI technical development research with no human component, and c) studies focused on children, general consumers, or students.

Thus, based on the PRISMA approach, 1308 articles were initially identified. After removing 284 duplicates, 1024 articles remained. After that, Titles and abstracts were screened for relevance. As a result, 920 articles were excluded due to a lack of AI literacy or employee interactions with AI, or because they were editorial papers. A total of 104 full-text articles were then assessed for eligibility. And 28 studies were excluded for reasons including non-workplace context due to no empirical data, vague constructs and non-organizational context.

4. Findings

The review, which utilizes 76 empirical papers, presents four themes related to the role of AI literacy in shaping employees' perceptions, trust, engagement, and empowerment towards AI technologies in organizations.

4.1. Theme 1: AI Literacy enhances employee trust and perceived usefulness

From the review, it was revealed that AI literacy is an important antecedent of employee trust in organizations. AI literacy plays an important role in shaping individual trust and perceptions of AI (Shin, 2021). Trust in organizational new technologies predicts the acceptance and usage of those technologies (Gefen et al., 2003). The degree to which an organization provides transparent reasoning leads to enhanced employee trust, only when employees have enough AI literacy to perceive those interpretations meaningfully. Numerous studies found a favorable link between AI literacy and employees' trust. Although AI can lead to an increase in employee trust, empirical findings argue that overconfidence without any critical literacy may lead to misuse or blind trust in organizations (Rahwan et al., 2019). When employees provide positive framing and employee involvement in AI implementation, it improves the acceptance levels of employees (Schneider and Leyer, 2019). Thus, providing accurate AI literacy enhances employee trust and perceived utility of AI, ultimately leading to improved effective human-AI collaboration.

4.2. Theme 2: AI Literacy reduces fear and resistance

Additionally, analyzed research indicates that resistance to AI adaptation poses a significant challenge for organizations to implement new technologies at work (Venkatesh and Bala, 2008; Zhang and Dafoe, 2021). This is because employees' fear of losing their jobs, surveillance, and loss of control and autonomy is often driven by a lack of understanding or a misunderstanding about AI (Makarius et al., 2020). This review highlights that AI literacy can play a crucial role in reducing employee fear and resistance to the adoption of AI technologies in organizations. Employees with higher AI literacy are more likely to demonstrate more adaptive attitudes towards automation (Zhang and Dafoe, 2021). It is argued that providing AI training programmed that explain AI's roles as augmentations rather than replacements of employees (Makarius et al., 2020; Rai et al., 2020).

Some qualitative studies also highlighted the importance of psychological safety, as employees can clarify questions and express concerns about AI. It highlights the need to develop AI literacy through open communication and participatory training (Wirtz et al., 2021).

Some studies argue that employees experience knowledge gaps that induce fear, particularly when an organization brings rapid AI transformations. Thus, to reduce employee fear and resistance, AI literacy can become a primary instrument for smoother transitions.

4.3. Theme 3: AI Literacy Drives Empowered Engagement

The review also finds that AI literacy can drive empowered engagement, where employees are not just passive users; instead, they can act as collaborators with AI (Wirtz et al., 2021). Employee empowerment can align with sociotechnical systems theory, which emphasizes the need to collaborate on technology and social elements for ultimate organizational success (Baxter and Sommerville, 2011).   When employees understand both the potential and drawbacks of AI, they feel more in control of their work and experience it as more meaningful (Trittin-Ulbrich and Eckhardt, 2022). Thus, AI literacy transforms from acceptance to empowerment and engagement with AI tools and techniques in organizations.

5. Contribution and Limitations

This systematic review makes some contributions both theoretically and practically. Firstly, in terms of theoretical contribution, this review supports further refining the existing classical models (Technology Acceptance Models) by integrating AI literacy and empowerment components. Existing literature supports that AI literacy shapes more nuanced social and behavioral outcomes, including employee trust and ethical engagement. Moreover, sociotechnical systems theory offers an understanding of how AI enables employees to strike a balance between machine automation and human engagement. Thus, this systematic review contributes to emphasizing the importance of AI literacy in building trust, engagement and empowerment, while alleviating fear and resistance.

5.1. Implications

This systematic review also offers some practical implications. Organizations must priorities AI literacy development as a key tool for implementing AI successfully in the workplace. For this purpose, organizations can design ongoing and role-specific AI literacy training programs, promoting a safe culture of psychological safety and ensuring inclusion by tailoring programs. For policymakers, investing in AI literacy is essential to foster employee trust, as employees are equipped to engage with AI tools in informed and ethical ways (Trittin-Ulbrich and Eckhardt, 2022; Zhang and Dafoe, 2021; Glisson and Woolley, 2020).

5.2. Limitations

Although this research offers both theoretical and practical value, it also presents some limitations. Firstly, this study focuses solely on employee trust, engagement, empowerment, employee fear and resistance to change when examining the impact of artificial intelligence literacy in an organizational setting. Moreover, this review only considers empirical studies conducted within an organizational setting. This review also only included articles in peer-reviewed journals, written entirely in English, published between 2015 and 2024.

6. Conclusion

This systematic literature review confirms that AI literacy plays a key role in enhancing employees' perception of trust, engagement and reducing fear and resistance to change. The results indicated that employees' understanding of AI positively influences their perceptions, trust, engagement and empowerment, while reducing fear and resistance to changes related to AI technologies. Moreover, AI literacy evolves from acceptance to active empowerment and engagement with AI tools and techniques in organisations.

This study highlights the importance of policymakers and practitioners to incorporate AI literacy into workplace strategies, leadership, and training. Future research may consider conducting longitudinal impacts of AI literature on employees' various outcomes, such as emotional intelligence, across various sectors.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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