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Safeguarding the Construction Industry: Interrogating and Mitigating Emerging Risks from AI in Construction

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Abstract : This empirical study investigates the observed risks associated with adopting Artificial Intelligence (AI) technologies in the construction industry and proposes potential mitigation strategies. While AI has transformed several industries, the construction industry is slowly adopting advanced technologies like AI, introducing new risks that lack critical analysis in the current literature. A comprehensive literature review identified a research gap, highlighting the lack of critical analysis of risks and the need for a framework to measure and mitigate the risks of AI implementation in the construction industry. Consequently, an online survey was conducted with 24 project managers and construction professionals, possessing experience ranging from 1 to 30 years (with an average of 6.38 years), to gather industry perspectives and concerns relating to AI integration. The survey results yielded several significant findings. Firstly, respondents exhibited a moderate level of familiarity (66.67%) with AI technologies, while the industry's readiness for AI deployment and current usage rates remained low at 2.72 out of 5. Secondly, the top-ranked barriers to AI adoption were identified as lack of awareness, insufficient knowledge and skills, data quality concerns, high implementation costs, absence of prior case studies, and the uncertainty of outcomes. Thirdly, the most significant risks associated with AI use in construction were perceived to be a lack of human control (decision-making), accountability, algorithm bias, data security/privacy, and lack of legislation and regulations. Additionally, the participants acknowledged the value of factors such as education, training, organizational support, and communication in facilitating AI integration within the industry. These findings emphasize the necessity for tailored risk assessment frameworks, guidelines, and governance principles to address the identified risks and promote the responsible adoption of AI technologies in the construction sector.

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