

Project proposal

➤ Project name:

Integrating AI and automation: Examining the Impact on Work Environments and Psychosocial Well-Being of Workers

➤ Supervisor:

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➤ Abstract

Advances in artificial intelligence (AI) and digital technologies can potentially revolutionise industries worldwide by significantly boosting productivity and efficiency. However, these advancements entail disruptions, making it imperative for the future workplace and workforce to adapt and evolve away from traditional approaches. This study seeks to delve deeply into the emerging landscape of advanced automation, focusing on a comprehensive understanding of both the technological advancements and their broader implications. While AI and automation are revolutionising operational processes, their impact extends far beyond mere efficiency gains. This research aims to unpack these complex layers, examining how these technologies reshape the work environment and the psychosocial well-being of the workforce.

Integrating AI and automation: Examining the Impact on Work Environments and Psychosocial Well-Being of Workers

Aim

Whether it's artificial intelligence or new levels of automation, this study aims to explore the technology, the psychosocial risks, and the opportunities that could arise from their adoption. This study seeks to delve deeply into the emerging landscape of artificial intelligence (AI) and advanced automation, focusing on a comprehensive understanding of both the technological advancements and their broader implications. While AI and automation are revolutionising operational processes, their impact extends far beyond mere efficiency gains. This research aims to unpack these complex layers, examining how these technologies reshape the work environment and the psychosocial well-being of the workforce.

Background and Project description

While the introduction of advanced technology and automation offers benefits, its effect on workplace psychosocial risks is a double-edged sword. Take the mining industry as an example, on the one hand, automation and AI can make the mining workplace safer- for instance, unmanned vehicles such as drones and remotely piloted aircraft could replace human jobs and reduce injuries in dangerous mining sites. On the other hand, the adoption of new technologies can also amplify psychosocial risks, manifesting as heightened job insecurity, escalated work intensity, information overload, and increasing concerns over safety and privacy. That is, digital transformation and new ways of working can both increase and decrease psychosocial risks at work. Emergent technology is shaping changes in the future mining industry. Whether it's artificial intelligence or new levels of automation, this study aims to explore the technology, the psychosocial risks, and the opportunities that could arise from their adoption. While the integration of advanced technology and automation has numerous benefits in the mining industry, its impact on psychosocial risks in the workplace is multifaceted (Bérestégui, 2021, Pereira et al. 2023). The underlying dynamics of this relationship remain not fully explored (Derdowski and Mathisen, 2023; Khogali and Mekid, 2023). Insufficient understanding of the psychosocial impact of technologies hinders the development of best practices to address ongoing health and safety risks in the mining industry.

Innovation theories (such as dynamic capabilities theory, sociotechnical systems) suggest the importance of human agency in adapting to emerging technologies and optimising

its benefits at work (Sahin, 2006; Marangunić and Granić, 2015; Parker and Grote, 2022). The recent Industry 5.0 initiative also emphasises a human-centric approach to industrial transformation. Workers are empowered through good-quality jobs, trustworthy technologies, and skills nurturing, thus leading to greater productivity and human flourishing through meaningful interaction of humans and machines (ESIR, 2023). Industries worldwide are poised on the brink of a technological revolution, with the integration of automation and cutting-edge technologies heralding a new era of efficiency and safety across various sectors. However, the profound impact of this transformation on psychosocial risks in workplaces is still a matter of ambiguity. The importance of this study lies in its timely investigation into these subtle effects, illuminating both the advantages and potential drawbacks of technological integration. These advancements are pivotal not just in enhancing hazard detection but also in substantially improving the health, safety, and overall well-being of employees in these sectors. This research aims to set the stage for a resilient and sustainable future in the broad spectrum of global industries. The following research questions can guide the project toward achieving its goals:

- While efficiency gains are evident, how do these technologies impact the demand for human skills and expertise in the workplace?
- How has the integration of advanced technology and automation transformed job roles, responsibilities, and work intensity? How do these changes correlate with psychosocial risks?
- What are the most effective strategies for reskilling the workforce to adapt to AI and automation? How do these strategies impact workers' psychosocial risks?
- How can the principles of Industry 5.0, focusing on a human-centric approach, be applied to mitigate psychosocial risks while integrating AI and automation?

References and further reading

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