Construction Workforce Perceptions of Rebar Placement Automation

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The construction industry has traditionally relied on manual labour for reinforcement work, making it a prime candidate for automation as the sector seeks improvements in productivity, safety, and quality. However, the adoption of such technologies presents significant implications for the skilled operatives, especially those in physically demanding roles like steel fixing. This dissertation explores the potential impact of introducing automation in rebar placement on the construction workforce, focusing on perceptions, challenges, and opportunities associated with this technological shift.

The study addresses a key issue: how automation in reinforcement placement is perceived by the very workforce it stands to affect, and what role that workforce might play in shaping its implementation. This investigation is critical given the increasing pressure on the industry to modernise, alongside growing concerns about job security, skills obsolescence, and the readiness of the existing labour force to adapt to technological change.

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A mixed-methods approach was employed, combining a structured questionnaire and a series of semi-structured interviews with steel fixers working on a major UK infrastructure project. The methodology was informed by a pragmatic research philosophy, allowing for both the quantification of general attitudes and the qualitative exploration of individual experiences and opinions. Data collection focused on workforce familiarity with automation, perceived risks and benefits, openness to upskilling, and concerns about future employment and safety.

The findings reveal a workforce that is generally aware of automation and its potential to transform construction practices. While there are clear concerns, particularly around job displacement, safety when working alongside machines, and the diminishing of traditional roles, many workers also expressed a willingness to engage with automation if supported by appropriate training and communication. The results suggest that workforce involvement, trust-building, and inclusive implementation strategies will be crucial to the successful adoption of automation in this context. This study concludes that automation in rebar placement is neither an outright threat nor an unqualified benefit; rather, its success depends on how it is introduced and managed. To ensure a positive transition, industry stakeholders must recognise the value of the workforce as partners in innovation.

Recommendations include structured retraining programmes, workforce consultation during implementation, and further research into the broader cultural and economic impacts of robotics and automation in construction. Such steps are essential to achieving a balance between technological advancement and workforce sustainability.