Is the construction industry's progress toward Net Zero being hindered by insufficient training and knowledge in sustainable practices?

Robyn Lewis | Student Number: 2309827



Introduction

The UK Government has set a target to reach net zero carbon emissions by 2050, and the construction industry plays a crucial role in this goal as it currently accounts for nearly 40% of global greenhouse gas emissions.
Progress has been slow, with a key challenge identified as a widespread lack of training and knowledge among professionals in sustainable practices.

This research proposal aims to investigate whether the lack of knowledge, insufficient training, education, and awareness of sustainable construction practices is a significant barrier preventing the construction industry from meeting net zero emissions targets.

Literature Review

The construction industry is responsible for 40% of global carbon emissions (World Green Building Council, 2019), with significant impacts from material production and transportation. Achieving net-zero requires integrating low-carbon materials and renewable energy (Madeline Weir, 2023; Sante, 2025).
Higher upfront costs and long payback periods further challenge sustainable practices (Zichao Zhang, 2024). Frameworks like BREEAM and Passive House support sustainability (Jonathan Jones, 2025), while BIM and digital technologies enhance efficiency and reduce waste (Ahsan Waqar, 2023).
However, a lack of education and training hinders adoption, with a shortage of green-skilled workers, especially in SMEs (Lechley, 2025).

Methodology

Exploratory research will be conducted using a mixed-methods approach utilising both Qualitative and Quantitative methods o investigate sustainability training and knowledge gaps in the construction industry.

Data Collection

- Survey (Quantitative):
  - Targeting industry professionals across different sectors and experience levels.
  - Advantages: Larger sample size, quicker data collection, and easier comparison of results (Pronto, 2015).
  - Statistical analysis via SPSS software and T-Test to compare groups (e.g., trained vs. untrained professionals).
- Interviews (Qualitative):
  - Semi-structured interviews with industry professionals (e.g., architects, project managers, engineers) to gain in-depth insights into sustainability challenges and training gaps.
  - Allows for flexibility and follow-up questions based on interviewee responses (Jamshed, 2014; Karen Dunwoodie, 2022).

Data Analysis

- Qualitative Data: Identifying recurring themes from literature and interviews.
- Quantitative Data: Analyzing survey responses to identify correlations or patterns related to training and knowledge gaps in sustainability.

Aims and Objectives

Aim: To research whether lack of knowledge and inadequate training in sustainable construction practices are barriers to the industry's progress in reaching net-zero emissions by 2050.

Objectives:

- To determine the current level of knowledge, training, and engagement in sustainable practices.
- To compare industry standards of best practices.
- Explore barriers in decision-making related to sustainable practices.
- To propose possible solutions for improving sustainability education and training in the UK construction industry.



Timeline

The research will be conducted within an academic year as part of a university dissertation. A Gantt chart has been produced to outline the structred research plan from September to May, divided into five categories. The chart ensures a systematic approach to completing the research efficiently.

Research Design & Planning → Literature Review → Data Collection → Data Review → Writing Up

Expected Outcomes

This study aims to determine whether a lack of training and sustainable knowledge is significantly delaying progress toward net-zero targets in UK construction. It is anticipated that:

- SMEs face greater barriers due to a lack of training opportunities.
- Larger firms benefit from in-house sustainability expertise but may only engage in superficial efforts.
- A significant portion of the workforce lacks green upskilling.
- The industry would benefit from regulated training, regulatory support, and incentive schemes.

Conclusion

By looking at the different challenges faced by small and large companies, and understanding where green skills are missing, the research will highlight key problem areas. The goal is to suggest clear, practical steps—like better training options, government support, and incentives—that can help the industry build a more sustainable future.



References

Ahsan Waqar, I. O. N. S. M. A. A. M. K., 2023. BIM in green building: Enhancing sustainability in the small construction project. Cleaner Environmental Systems, Volume 11, pp. 100-149.

Jamshed, S., 2014. Qualitative research method-interviewing and observation. Journal of Basic and Clinical Pharmacy, 5(4), p. 88.

Jonathan Jones, A. S. A., 2025. Exploring the Values of Sustainability and the Cost of Going Green: A Case of Building Research Establishment Environmental Assessment Method (BREEAM). Ecological Civilization, 2(1).

Karen Dunwoodie, L. M. A. N., 2022. Qualitative interviewing in the field of work and organisational psychology: Benefits, challenges and guidelines for researchers and reviewers. Applied Psychology, 72(2), pp. 863-889.

Lechley, S., 2025. Addressing the UK Construction Skills Shortage: Pathways to Sustainable Growth and Innovation. [Online]
Available at: https://www.linkedin.com/pulse/addressing-uk-construction-skills-shortage-pathways-growth-lechley-rgpaf?utm_source=chatgpt.com
[Accessed 26 March 2025].

Madeline Weir, A. R. R. E., 2023. Embodied Carbon 101: Building Materials. [Online]
Available at: https://rmi.org/embodied-carbon-101/#:~:text=By%20reducing%20the%20embodied%20carbon,in%20reducing%20greenhouse%20gas%20emissions.
[Accessed 3 April 2025].

Pronto, J., 2015. Understanding and Evaluating Survey Research. Translating research into practice, 6(2), p. 168–171.

Sante, M. v., 2025. Pathway to net zero: Tackling emissions in construction. [Online]
Available at: https://think.ing.com/articles/pathway-to-net-zero-tackling-emissions-in-construction/
[Accessed 3 April 2025].

World Green Building Council, 2019. Bringing Embodied Carbon Upfront: Coordinated action for the building and construction sector to tackle embodied carbom, London: s.n.

Zichao Zhang, Z. W. S. C. L. Y. S. W. A. T. a. Y. Z., 2024. A Review of Digital Twin Technologies for Enhanced Sustainability in the Construction Industry. Buildings, 14(4).