Agile in Action: Evaluating Agile Practices for Global Civil Infrastructure Projects

- **Module Code**: MOD009372
- **Module Title**: Postgraduate Study Skills, Research Methods and Ethics
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Discipline and Subject Area

DISCIPLINE: INTERNATIONAL PROJECT MANAGEMENT
SUBJECT AREA: AGILE PROJECT MANAGEMENT IN GLOBAL CIVIL ENGINEERING

KEY POINTS:

CIVIL ENGINEERING PROJECTS ARE TYPICALLY LARGE-SCALE, MULTI-STAKEHOLDER, AND CROSS-NATIONAL.

TRADITIONAL PM MODELS LIKE WATERFALL AND CPM DOMINATE BUT STRUGGLE IN DYNAMIC ENVIRONMENTS.

AGILE PRACTICES ARE GAINING INTEREST FOR THEIR ADAPTABILITY, COLLABORATION, AND CONTINUOUS FEEDBACK.

INFRASTRUCTURE DELIVERY IS BECOMING INCREASINGLY DIGITAL, COMPLEX, AND GLOBALLY INTERLINKED—DEMANDING NEW METHODS.

Research Focus and Rationale

RESEARCH FOCUS: EFFECTIVENESS OF AGILE AND HYBRID FRAMEWORKS (E.G., HAL) IN GLOBAL CIVIL INFRASTRUCTURE MANAGEMENT

RATIONALE:

AGILE OFFERS FLEXIBILITY, CONTINUOUS IMPROVEMENT, AND STAKEHOLDER INTEGRATION.

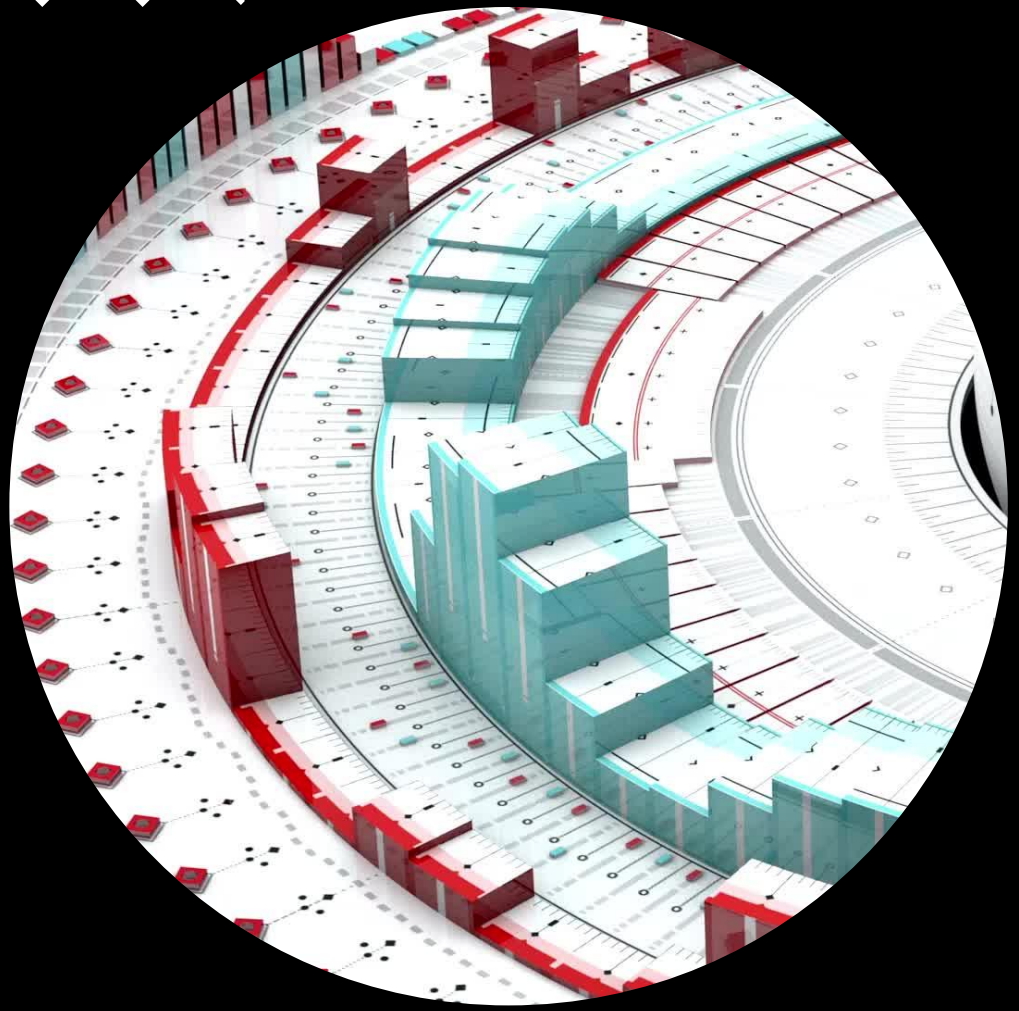
LIMITED RESEARCH EXISTS ON ITS ROLE IN CIVIL ENGINEERING, PARTICULARLY IN LARGE, REGULATED PROJECTS.

TRADITIONAL METHODS ARE OFTEN RIGID, BUREAUCRATIC, AND LACK RESPONSIVENESS TO CHANGE.

AGILE COULD IMPROVE PROJECT SPEED, STAKEHOLDER ALIGNMENT, AND ADAPTABILITY IN UNCERTAIN ENVIRONMENTS.

IMPORTANCE:

INFORMS POLICYMAKERS, ENGINEERS, AND PROJECT MANAGERS ON WHETHER AGILE IS TRULY SCALABLE IN CIVIL PROJECTS.



Key Data Source

- **Source Chosen**:
  Power & Sinnott (2025) – Study on **Hybrid Agile Lean (HAL)** framework in Irish infrastructure projects.
- **Details**:

Analyzed 9 infrastructure projects using Agile-Lean combinations.

HAL framework allows Agile flexibility with Lean efficiency in real-world construction scenarios.

- **Relevance**:

Applies directly to the context of large, regulated civil engineering works.

Offers insights into how hybrid methods overcome strict compliance and rigid timelines.

- **Why It's Important**:

Provides both qualitative feedback and quantitative performance metrics.

Supports the case for adapting Agile for specific phases of infrastructure projects like design and procurement.

Critical Analysis of Data

- **Qualitative Insights**:
- Thematic analysis revealed patterns such as:
  - *Collaborative agility* – cross-functional teams benefit from iterative feedback.
  - *Technological integration* – Agile works well with digital tools like BIM.
  - *Institutional resistance* – adoption is slowed by culture, regulation, and training gaps.
- **Quantitative Insights**:
- Reported benefits included:
  - ~25% improvement in scheduling with Agile-BIM models (Ahmed & Altaie, 2021)
  - Enhanced stakeholder collaboration (Moreno et al., 2024)
  - Faster delivery and reduced rework through iterative planning
- **Application**:
- Validates Agile's value in early project stages (design/pre-construction).
- Hybrid models are most effective in bridging rigid processes with Agile flexibility.

Validity and Reliability of Source

- **Validity**:
- Peer-reviewed, discipline-relevant, and recent (2025).
- Draws from real-world infrastructure projects with varied stakeholder environments.
- **Reliability**:
- Combines multiple case studies = consistent themes across contexts.
- Includes both qualitative (thematic) and quantitative (performance) data.
- **Limitations**:
- Publication bias possible—unsuccessful Agile implementations often underreported.
- Generalizability may be limited across different regulatory or cultural contexts.
- **Conclusion**:
- Strong academic and practical value.
- Provides a solid foundation for evaluating Agile's real-world viability in infrastructure settings.

References (Use ARU Harvard Style)

- Ahmed, A. and Altaie, M. (2021). *Integrating BIM and Agile in Construction Projects*.
- Chathuranga, T. et al. (2023). *Agile in Civil Engineering: Scope and Limits*.
- Conforto, E. et al. (2016). *Agile Management for Project Teams*.
- Dong, Y. et al. (2024). *Global Infrastructure and Agile Project Planning*.
- Moreno, C. et al. (2024). *Scrum in Pre-Construction Planning*.
- Power, T. and Sinnott, R. (2025). *Evaluating the HAL Framework in Infrastructure Projects*.
- Thornhill, A., Saunders, M. and Lewis, P. (2015). *Research Methods for Business Students*. Pearson.