

Validating the Effective Application of a Corporate Sustainability and Business Process Management Conceptual Framework for Specialist Engineering Projects: Insights from UK Industry Practice

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Abstract

Whilst conceptual frameworks can support the integration of sustainability within project delivery, evidence of their practical applicability and effectiveness within specialist engineering projects remains limited. Following the development of an Input–Process–Output–Outcome–Impact (IPOOI)-based conceptual framework for integrating Corporate Sustainability (CS) and Business Process Management (BPM), this study evaluates its validity and practical application within specialist engineering project delivery.

Validation was undertaken through semi-structured interviews with experienced UK industry professionals, including directors and recognised sector leaders. The framework was subsequently applied to four UK case studies involving retaining wall and bearing pile projects across both design and operational delivery phases to assess its effectiveness in supporting sustainable project decision-making and delivery processes. Findings demonstrate strong professional support for the conceptual framework as a practical mechanism for aligning organisational sustainability objectives with project-level activities and decision-making. Application within design-focused case studies showed how the framework guides consideration of sustainability objectives and alternative solutions, providing greater confidence that opportunities for improved project outcomes have been explored. Application within operational case studies identified opportunities to improve planning and delivery efficiency, contributing to reduced plant utilisation, fuel consumption, programme duration, and project costs. Collectively, the findings demonstrate the validity and practical effectiveness of the conceptual framework and provide a transferable mechanism for supporting sustainable project delivery through improved alignment between corporate sustainability objectives and project-level decision-making and execution.

Keywords: Corporate Sustainability, Business Process Management, Sustainable Project Delivery, Specialist Engineering Projects, Sustainability Integration