

Developing a Stage-Based Capability Framework for Digital Transformation in SMEs: A Longitudinal Multi-Case Study Approach

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Abstract

Digital transformation (DT) has become a critical enabler of competitiveness and sustainability for manufacturing small and medium-sized enterprises (MSMEs) (Kumar et al., 2023; Hernández et al., 2024). However, many MSMEs struggle to implement digital initiatives effectively due to limited resources and an underdeveloped understanding of the capabilities required at different transformation stages (Favoretto et al., 2022; Omrani et al., 2024). Existing research offers fragmented insights into DT frameworks (Konopik et al., 2022; Wang et al., 2024), lacking clarity on the evolution and interaction of operational and managerial capabilities throughout the transformation journey. This study addresses this gap by developing and validating a stage-based implementation framework of digital transformation capabilities for MSMEs.

Drawing on a systematic literature review and longitudinal multi-case study design involving 10–12 MSMEs, the research explores capability configuration and evolution across six transformation stages: initiation, planning, execution, monitoring, closure, and post-implementation. Data will be collected through a combination of semi-structured interviews, roadmaps, surveys, key performance indicators, and archival documents, with repeated interviews conducted at the beginning, middle, and end of each stage. The analysis will employ coding, triangulation, and cross-case synthesis to identify recurring patterns and refine the framework.

The framework integrates three capability perspectives — managerial, organisational, and technological — across core digital transformation dimensions, including project management, change management, and technology adoption. The expected outcome is a practical implementation guide that helps MSMEs identify, develop, and strengthen the critical capabilities necessary for successful digital transformation. The study contributes both theoretical insights into the dynamic nature of digital transformation and actionable guidelines to support SMEs in navigating digital change more effectively.

Keywords: Digital transformation, Manufacturing SME, Capability Framework, Longitudinal Study, Implementation Guidelines.