

DEVELOPING A HALAL MANUFACTURING SYSTEM FOR SMES IN REMOTE ARCHIPELAGIC REGIONS: A SYSTEMS ENGINEERING APPROACH

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Background: Halal manufacturing has seen significant growth, yet its implementation in remote archipelagic regions remains underexplored. These areas, characterized by geographical isolation, limited supply chain access, and diverse cultural landscapes, present unique challenges to establishing robust halal manufacturing systems. This study addresses this gap by employing a systems engineering approach to design and analyze halal manufacturing systems specifically tailored for small and medium-sized enterprises (SMEs) in the Papua archipelago.

Method: The research utilizes system mapping and stakeholder analysis to comprehensively understand the multifaceted issues at play. This includes identifying key barriers to seamless supply chain integration, navigating complex certification processes, and addressing infrastructural limitations. Data was gathered through field research, interviews with SME owners, halal certification bodies, and community representatives. The analysis focuses on the intricate interplay between technological, logistical, and socio-cultural factors.

Results and Discussion: The findings reveal that a resilient halal manufacturing system in this context necessitates a multi-pronged strategy. Digital traceability systems are crucial for ensuring halal compliance and building consumer trust. Adaptive logistics solutions are essential to overcome the challenges of remote transportation and storage. Perhaps most importantly, the study underscores the need for inclusive stakeholder collaboration, fostering understanding and shared responsibility across both Muslim and non-Muslim communities. This collaboration is key to building a system that is not only halal-compliant but also culturally sensitive and economically sustainable.

Conclusion: This research contributes a novel framework for resilient halal manufacturing that is specifically adapted to the unique challenges of remote island contexts. It provides both theoretical insights and practical recommendations for policymakers, industry practitioners, and community leaders seeking to promote halal manufacturing in similar regions.

Keywords: Halal manufacturing, systems engineering, SMEs, archipelagic regions, supply chain resilience