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A descriptive statistical analysis of enablers for integrated sustainable-green-lean-six sigma-agile manufacturing system (ISGLSAMS) in Indian manufacturing industries

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Abstract

Purpose

The purposes of this paper are (1) to identify and rank the various enablers for an integrated sustainable-green-lean-six sigma-agile manufacturing system (ISGLSAMS), and (2) to study their correlations and their impact on organizational performance.

Design/methodology/approach

Three tiers methodology is used to analyze the enablers for the successful adoption of ISGLSAMS. First, a total of 32 ISGLSAMS enablers are identified through a comprehensive literature review. Then, data are collected with a structured questionnaire from 108 Indian manufacturing industries. Then, an analytic approach is used to analyze (1) the relevance and significance of enablers and (2) their correlations (1) with each other, and (2) with the organizational performance outcomes, to strengthen the understanding of ISGLSAMS.

Findings

The findings suggest that top management commitment, sustainable reconfigurable manufacturing system, organization resources for 6 Rs, customers' and stakeholders' involvement, corporate social responsibility (CSR), customers and stakeholders-focused strategic alliances, dynamic manufacturing strategies, use of information and communication technology, concurrent engineering, standardized tasks for continuous improvement, virtual network of supply chain partners, real-time monitoring and control, training and education, employees' involvement and

empowerment enablers are the higher level enablers for the adoption of ISGLSAMS. Findings also suggest that there is a scope for research in the incorporation of lot size reduction, Keiretsu-Kraljic supply chain relationship strategy, external collaborations with the stakeholders other than supply chain members, matrix flatter organization structure, employees' career development, justified employees' wages, government support for research fund and subsidies and vendor-managed inventory practices for ISGLSAMS. Top management commitment, sustainable reconfigurable manufacturing system, organization resources for 6 Rs, corporate social responsibility (CSR), dynamic manufacturing strategies, use of information and communication technology, concurrent engineering, virtual network of supply chain partners, real-time monitoring and control, training and education, employees' involvement and empowerment have a significant effect on (1) sustainable product design, (2) sustainable production system, (3) improvement in the sale, (4) improvement in market responsiveness, (5) improvement in the competitive position and (6) improvement in the global market image.

Practical implications

Through this study of ISGLSAMS enablers and their interdependence, and their impact on ISGLSAMS performance outcomes government, organizations, stakeholders, policymakers and supply chain partners may plan the policy, roadmap and strategies for the successful adoption of (1) ISGLSAMS in the organizational value chain, and (2) Industrial ecology and industrial symbiosis in India. The study also contributes to the industrial managers, and value chain partners a better understanding of ISGLSAMS.

Originality/value

This study is the first attempt to understand (1) the ISGLSAMS enablers and their correlations, and (2) the effect of ISGLSAMS enablers on ISGLSAMS performance outcomes to get the competitive and sustainability advantage. The study contributes to the practitioners, policymakers, organizations, government, researchers and academicians a better understanding of ISGLSAMS enablers and its performance outcomes.

Keywords

Integrated sustainable-green-lean-six sigma-agile manufacturing system (ISGLSAMS)

ISGLSAMS enablers

Industrial ecology and industrial symbiosis

ISGLSAMS performance Outcomes

Corporate social responsibility

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