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AGILE MANUFACTURING READINESS IN SMEs OF DEVELOPING COUNTRIES: AN EXPLORATORY STUDY OF ENABLERS, BARRIERS AND DRIVERS



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Abstract:

This empirical study investigates how domestically operated SMEs acknowledge the agile manufacturing methodology. Five agility drivers, twenty-five enablers and eighteen agile manufacturing barriers were examined. One hundred and ninety-nine companies were studied with the help of questionnaire to explore agile paradigm. Results revealed that CNC machines, enterprise resource planning, flexible manufacturing system, computer aided design, computer aided process planning, rapid prototyping, and electronic data interchange were perceived as most important enablers. Major barriers included financial constraints, ineffective supply chain, lack of government support, poor layout and infrastructure, and outdated manufacturing systems. Principal component analysis (PCA) identified three components of agile barriers and five components of agile enablers. Agility drivers, enablers and barriers were also prioritized using analytical hierarchy process (AHP). Findings indicated that technological change agility, computerized numerical control machines and lack of government support were most influential agility driver, enabler and barrier respectively. To improve technological agility, SMEs should prioritize investment in CNC and flexible production technologies. Policymakers should strengthen financial and infrastructure support initiatives to mitigate critical barriers such as inadequate financing and outdated procedures. To speed up the adoption of computer-aided and digital manufacturing techniques throughout SME clusters, industry groups should support training and knowledge-sharing programs.

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