Exploring the Role of Artificial Intelligence and Machine Learning in Manufacturing MSMEs in India: Benefits, Limitations, and Ongoing Challenges

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The Indian manufacturing sector, specifically within Micro, Small, and Medium Enterprises (MSMEs), serves as a fundamental component of the country's economic development, contributing significantly towards employment generation, exports, and GDP. With the rising influence of digitalization across industries, Artificial Intelligence (AI) and Machine Learning (ML) have emerged as transformative technologies, offering huge potential to enhance efficiency, productivity, reduce operational costs, and improve product quality within the MSME sector. Notwithstanding these potential benefits, the adoption of AI/ML in Indian manufacturing MSMEs remains in its early stages, constrained by financial limitations, lack of skilled workforce, and insufficient infrastructure. This paper examines the current and potential role of AI/ML in Indian manufacturing MSMEs, focusing on the benefits these technologies offer, the limitations hindering their adoption, and the ongoing challenges that persist within the sector. By synthesizing existing literature, this study aims to provide a comprehensive analysis that could help policymakers, industry stakeholders, and MSME owners about the most effective strategies for adopting AI/ML technologies. The paper further explores how these enterprises can overcome obstacles to unlock AI/ML's full potential for improving operational efficiency, competitiveness, and innovation.

Keywords: AI/ML, MSMEs, manufacturing, India, challenges, benefits, technology adoption

Biography:

Dr. Devesh Kumar is serving as Associate Professor in the School of Commerce and Management, Studies, Central University of Himachal Pradesh, Dharamshala, India. A PhD in Information Systems, Devesh Kumar has vast experience in teaching, research, and administration. He has published several research papers in cloud computing, innovation diffusion, e-learning, and information systems in reputed journals. He has also presented several research papers in conferences in India and abroad. His teaching interests include Business Analytics, Data Mining, Descriptive Analytics, Data Visualization, Predictive Modeling, Machine Learning, and Information Systems. He has more than 25 years of experience in academics & research in higher educational institutes in India and abroad. He holds master's degrees in computer applications & business economics. Currently he is engaged in research in learning analytics, machine learning and predictive modeling.