Exploring the Role of Smart Technologies in Supply Chain Digital Transformation

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Abstract

Supply Chain Digital Transformation is urgently needed in light of the profusion of unforeseeable global events, such as political, economic, and climatic changes. Issues like supply shortages, inventory stockouts, supply-demand mismatch, and lack of coordination and transparency are troubling most modern supply chains. This study explores how smart technologies can be better used to accomplish digital transformation across various supply chain stages and stakeholders. In order to provide a comprehensive knowledge base, this paper reviews 210 of the most significant research articles to scientifically examine the relationships between smart technologies and their strategic role in supply chain digital transformation. This is attempted through literature review, bibliometric analysis, descriptive data analysis, and visual representation. The core contribution of this paper is to highlight the untapped potential of supply chain digital transformation, with a special focus on applications of Artificial Intelligence and Machine Learning technologies. Another novelty of this study is a detailed mind map that facilitates visualizing, comprehending, and simulating the broad range of results obtained from the bibliometric study. Research gaps, consequences, and future research directions are also highlighted as a further point of reference for academicians and practitioners.

Keywords
Supply chain digital transformation, Bibliometric study, Artificial intelligence, Machine learning and Mind map.

Biographies

Jeetu Rana is a PhD Scholar in the area of Operations Management at Indian Institute of Management, Lucknow. She has a Bachelor of Technology degree in Agricultural Engineering from College of Technology, Govind Ballabh Pant University of Agriculture & Technology, Pantnagar, Uttarakhand and a Post Graduate Diploma in Industrial Engineering from National Institute of Industrial Engineering, Mumbai. She has a corporate work experience of three years in manufacturing and automobile sector. She has also served as a Teaching Assistant at Indian Institute of Management, Calcutta for a brief period of time. Her research interests include supply chain management, supply chain digital transformation, multi criteria decision making, lean manufacturing and system dynamics.

Prof. Yash Daultani is a Faculty member in the Operations Management Group at IIM Lucknow. His research and consulting interests lie in the areas of Supply Chain Analytics, Supply Chain Digital Transformation, Industry 4.0, Service Operations, and Supply Chain Modeling. He has published research articles in top international journals such as the International Journal of Production Research, Expert Systems with Applications, Annals of Operations Research, etc. He is working as a reviewer for 15 renowned International Journals in the domain of Operations and Supply Chain Management.

Prof. Mohit Goswami is a unique amalgam of academics and industry. Prior to joining academia, he was associated with global blue-chip firms including Caterpillar Inc. (Decatur, Illinois, USA), Tata Motors Ltd. (Pune and Jamshedpur) and Tata Hitachi Construction Machinery Co. Ltd. (Jamshedpur) in various engineering and technology management roles. His research interests include new product development, supply chain design, product line management, risk modeling in supply chain. His research has been published in reputed journals as International Journal of Production Research, Technological Forecasting and Social Change, Journal of Intelligent Manufacturing,

International Journal of Advanced Manufacturing Technology. He is one of the select few individuals whose PhD at IIT Kharagpur got awarded in around 2 years 6 months time.