

# **Implementation of Additive Manufacturing (AM) for Automotive Supply Chain Transformation in Post Covid-19 Scenario- A Barrier Analysis**

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## **Abstract**

Global automotive supply chains have experienced severe disruption on their performance due to the prolonging Covid-19 pandemic. One of the main causes behind the severity of this impact is complex and long supply chain network of Original Equipment Manufacturers (OEMs). Since automotive supply chains consist of various levels(tiers) of component suppliers located worldwide, it is becoming more vulnerable to any uncertain disruptive events like natural disasters, man-made disasters and infectious diseases like SARS, Covid-19 etc. Additive Manufacturing (AM) or 3D printing may be a viable platform for shortening the automotive supply chain by replacing the complex subassemblies of various parts into a single integrated structure that comprises the various feature of subassemblies. Supply chain transformation using AM can be effectively achievable if the AM utilization will be considered during sourcing stage itself. In this regard, various challenges faced by OEMs in the implementation of AM based supply chain for post Covid-19 scenario is analyzed by means of a survey among industrial and academic practitioners. Interpretive Structural Modelling (ISM) technique is used for making the analysis of those identified barriers. The outcome of the results will be useful to the decision makers of OEMs in implementing AM for post Covid-19 scenario.

## **Keywords**

Covid-19, Additive Manufacturing, Automotive supply chain, Interpretive structural modelling (ISM), Barrier analysis

## **Biographies**

**Dr. Mahaboob Sheriff K M** is currently working as a Postdoctoral researcher in the Engineering Management and Decision Sciences Division at Hamad Bin Khalifa University in Doha, Qatar. He has worked as Mechanical Engineering teaching faculty in the various academic institutions of India for the past twelve years. His field of interest is Logistics and Supply Chain Management. He has published twelve papers in various renowned international journals and conferences. He earned his PhD and M.E degree in Logistics and Production Engineering from Anna University, Chennai, India.

**Dr. Laoucine Kerbache** is currently serving as a Full Professor and a founding faculty member of the Engineering Management and Decision Sciences Division at Hamad Bin Khalifa University in Doha, Qatar. Further, he has been Full Professor of Operations and Supply Chain Management at HEC Paris in France for the last twenty-two years. For over thirty years of academic, research, and consulting activities, he has been very active in his areas of expertise, Operations and Supply Chain Management. He has published over one hundred papers in international journals. He has a PhD, MSc, and BSc in Industrial Engineering and Operations Research from the Mechanical and Industrial Engineering Department, University of Massachusetts, Amherst, USA.