

Sourcing Strategies for Adopting in-house Additive Manufacturing (AM) in the Automotive Supply Chain – A Post-COVID-19 Perspective

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Abstract

Additive manufacturing (AM) is recognized by many supply chain professionals and global automakers as the best alternatives to manage disruptions and boost automotive supply chain resilience. A semi-structured interview was conducted among Indian auto firms' industry experts to determine the current status of AM implementation in the Indian auto industry. The industry experts of Indian and foreign-based automakers operating in India have suggested in-house AM production to tackle the upstream automotive supply chain's complexity during disruptions. This choice's significant cause is to protect the auto components' design secrecy from private exposure and retain the firm's competitive advantage. In addition, the overall difficulties prevailing in the outsourcing activities, particularly in the upstream automotive supply chain due to various uncertain events such as COVID-19, also influenced their choice towards in-house AM production. Hence, it is necessary to analyze the feasibility of initiating in-house AM production in the upstream automotive supply chain for the post-COVID-19 unusual scenario. The resource-based view (RBV) and knowledge-based view (KBV) of strategic sourcing are suitable for establishing in-house AM production in the OEM's plant location. In this regard, a step-wise procedure has been proposed to guide OEM's management towards significant adoption of in-house AM production. The RBV theory states that resources and capabilities have to be precious, unique, and organizationally active to achieve sustainable competitive advantage.

The KBV theory, an extension of RBV theory, states that intangible resources, such as human capital and knowledge, are a firm's unique resources to help achieve a competitive advantage. As per the RBV/KBV theories, the firms may contract outsourcing with the leading resource and knowledge providers to pass knowledge and resources currently not owned by the firm. With the guidance of RBV/KBV theories, OEM's management has to make a short-term collaboration with an AM service provider to transfer the knowledge, human capital, and other resources from them to OEM. This short-term collaboration may help OEM to develop its internal capabilities with the knowledge and resource transfer offered by the AM service provider. Similarly, OEM can benefit from hiring technical personnel from the AM service provider to develop its employees' knowledge and technical skills on AM.