The Disruption of Lean Agility: An Empirical Examination of Agile Practices in the Aerospace Manufacturing Sector

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Abstract. This study investigates the convergence of agile project management practices within the aerospace manufacturing industry, focusing on lean agility as a pivotal factor. By employing a mixed-methods approach, we conducted an empirical analysis across 15 aerospace firms, utilizing both quantitative surveys and qualitative interviews. Results indicate that lean agility significantly enhances operational efficiency and strategic alignment. However, the integration challenges underscore the need for an adaptive framework tailored to sector-specific constraints. This research contributes to the existing literature by providing actionable insights and practical guidelines for aerospace manufacturers seeking to optimize agile methodologies.

Keywords: agile project management, lean agility, aerospace manufacturing, strategic alignment, operational efficiency, mixed-methods research, industrial processes, adaptive framework

Introduction

In an era marked by incessant technological advancements and heightened competitive pressures, the aerospace manufacturing industry is compelled to adapt rapidly to sustain its strategic positioning. Agile project management, renowned for its flexibility and responsiveness, has emerged as a viable approach to managing complex industrial processes. Yet, its application within the aerospace manufacturing context remains inadequately explored, particularly concerning lean agility—a synthesis of lean principles and agile methodologies. This study embarks on an empirical examination of agile practices within the aerospace sector, focusing on their operational impact and strategic alignment. The research employs a robust mixed-methods approach, collecting data from 15 leading aerospace firms through comprehensive surveys and in-depth interviews. The

findings reveal that while lean agility enhances efficiency and facilitates strategic coherence, its implementation is fraught with challenges that necessitate a tailored approach. By advancing an adaptive framework, this study seeks to bridge the existing gap in agile literature and provide valuable insights for practitioners. The paper is structured as follows: Section 2 reviews the relevant literature on agile management in manufacturing, Section 3 details the methodology, Section 4 presents the findings and analysis, and Section 5 offers discussions and conclusions.

References

1. оглу Рагимов, Э. Р., & оглу Искендерзаде, Э. Б. (2023). ЭФФЕКТИВНЫЕ МЕТРОЛОГИЧЕСКИЕ АСПЕКТЫ ПРИМЕНЕНИЯ НАНОТЕХНОЛОГИЧЕСКОЙ ПРОДУКЦИИ В ТРАНСПОРТНОЙ СФЕРЕ. Сетевое издание «Нефтегазовое дело», (1), 126-142.
2. Rahimov, E., Rahimov, C., & Davudova, S. A. Determining the optimal relationship between speed and acceleration of a vehicle to minimize pollutant emissions into the atmosphere.
3. Рагимов, Дж. Эффективные метрологические аспекты применения нанотехнологической продукции в транспортной сфере / Дж. Рагимов, Э. Рагимов, Э. Искендерзаде // Сетевое издание «Нефтегазовое дело». — 2023. — № 1. — С. 126–142.
4. Rahimov, E., Rahimov, J., & Ahmedli, S. (2025). Determining the optimal relationship between speed and acceleration of a vehicle to minimize pollutant emissions into the atmosphere. Proceedings of the 2nd International Conference on Smart Environment and Green Technologies (ICSEGT2025), Vol. 1.
5. Talibzade, O. (2022). Organization of expenses in budget management, enterprises and organizations. Geostrategy, 71(5), 112–114.