

# **Implementing Agile Methodologies in Engineering Projects: Challenges and Best Practices**

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## **Abstract**

This paper explores the adaptation of Agile methodologies within engineering environments, assessing both the significant challenges and the transformative benefits they bring to project management. While Agile has revolutionized software development, its integration into engineering industries has the potential to redefine traditional project delivery processes, enhancing flexibility, innovation, and customer satisfaction. This study combines an extensive literature review with case study analyses from sectors such as aerospace, automotive, and civil engineering to provide empirical insights into the successful application of Agile. By comparing Agile with other project management tools like Critical Path Method (CPM), Lean Manufacturing, and Six Sigma, we demonstrate how Agile methodologies can accelerate delivery, reduce costs, and enhance project quality in complex, dynamic engineering environments.

## **Keywords:**

Agile Methodologies, Engineering Project Management, Flexibility, Collaboration, Lean Manufacturing, Project Success

## **Biographies:**

**Eng Ehab**, Ehab started his career in volunteering and helping beneficiaries, migrants and refugees. Started working in the humanitarian sector since 2017 as a data collection officer where he was responsible for conducting personal interviews to gather data information about the beneficiaries especially in case management, child protection, Information management, data analysis, bio data for Protection, and making data figure reports, and also providing the technical support according to IT experience he was able to manage a strong proficiency in data collection and analysis. Plus, reporting in which it enables him to handle information management and advanced qualitative and quantitative research tasks. Working in humanitarian and development sectors have pathed a strong connections with other CSOs, Municipalities and INGOs in ground, where he strongly keeps in coordination for service mapping,

referral pathways method purposes and general assessments to strengthening capacity. Working in both sectors have enabled him to gain a reputation of being accurate, honest and efficient.

**Dr. Hitham Yam.** Dr. Hitham Ali Yami is a seasoned expert in business administration, with a rich background in both academia and industry. He earned his Ph.D. in Business Administration from the University of Sfax, Tunisia, where his dissertation focused on the intricacies of electronic management within Libyan oil companies. His academic credentials are further strengthened by a Master's degree in Business Administration from the University of Malaya, Malaysia, and a Bachelor's degree in Foreign Languages with a specialization in English and simultaneous interpretation from the University of Sirt. Dr. Yami has made significant contributions to the fields of business management and infrastructure development. He successfully managed a high-profile dam construction project for SAID Company, overseeing a team of 650 employees and completing the project within budget and on schedule. His leadership skills extend to the public sector, where he played a pivotal role in the Ministry of Tourism, Egypt, contributing to the development of key tourism strategies. A dedicated scholar, Dr. Yami has also contributed to academia through various publications and research. His career is marked by a blend of technical expertise and strategic vision, making him a valuable asset in both governmental and private sector initiatives. Dr. Yami's diverse experiences underscore his ability to navigate complex challenges and lead teams to success.