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Implementation of Agile Management in Construction Industry: A Perspective Towards Existing Structures

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Abstract

Construction projects have high complexity in nature, especially construction work during the renovation or any addition to existing structures. Managing techniques during construction projects have not been transformed considerably over the last few decades. More than 80% of construction projects do not meet deadlines. This is due to multiple reasons including but not limited to some inherited nature of project management techniques. Fixed project scope is also a drawback of traditional project management**.** In addition, user requirements with respect to lightweight construction, structures, and architectural designs have significantly evolved over the same period. Therefore, an amplified gap has been observed between the current managerial project understanding and project operations along with its execution. Although, all the industries including construction engineering have learned from past experiences and have created frameworks for project implementation. The construction sector has been lagging in proper implementation as compared to other areas like Information Technology, Pharmaceutical, and the mechanical design industry. With recently established frameworks at hand, the construction industry has improved its competitiveness in the market. However, the comprehensive, and absolute implementation of a fully integrated approach is still not on-par. Due to this reason, a vast disparity has been noticed between client demands and project executions. This study investigates the implementation of an agile framework as a major requirement in the construction industry. The application of agile management has been analyzed through the evaluation of its impact on existing projects. The present research explores the following possibilities: Can agile management be implemented at various stages in the construction industry, particularly during the renovation phase of existing structures? What adaptations are necessary to use agile methodology in the understanding of process workflow during a new project, or renovation of an existing and operational building? How could agile or its parts be implemented during the design and planning phase of the renovation project to create proper deliverance? When agile could be implemented for multi-department efficiency improvement for renovation projects framework? How can agile management be integrated with upstream or downstream activities to improve project schedules? The results from this study revealed that agile methodology has great potential in the construction industry, whether it be implemented on newly proposed projects or renovation

projects. From this case study, improvements and fragility of the implementation and its artifacts have been identified in one of the extremely crucial renovation projects. In conclusion, the analysis presents various recommendations about the application and implementation of agile methodology encompassing several divisions within a construction corporation. This investigation also provides a practical outlook that facilitates an understanding of the advantageous implementation of agile methodology within individual phases of restoration and future construction projects.

Keywords
Agile methodology, Renovation, Fixed scope, Flexible Scope, Existing Structures.

Biographies
Mansoor Ahmed is an accomplished professional engineer with over 15 years of industrial and academic experience in Design, Development and Quality Assurance. He also successfully implemented Project Management techniques within the product development and construction industry. Mansoor has demonstrated excellence in cross-functional team's formation and leadership skills for interdisciplinary collaborative project and has proven track record for delivering turnkey projects from conceptual design to commissioning. Mansoor is a goal-oriented engineer with excellent communication, problem-solving skills, and ability to work with minimum supervision. His research interests include comparative study of managerial techniques in different industries and mechanical system designs.

Ch. Mohammad Abbas Iftikhar is a post-doctorate researcher in the field of Mechanical Engineering with over 13 years of experience including 7 years of research experience in the field of experimental testing and analysis of lightweight structural alloys. Dr. Iftikhar has completed doctoral study at the University of Maryland, Baltimore County with a specialization in non-linear material mechanics. Prior to his doctorate, he also holds a Master of Science degree from Germany in Computational Mechanics of Materials and Structures. His industrial experience includes but is not limited to the design and development of several projects in the automotive and medical industries. His remarkable problem-solving skills along with exceptional communication skills make him an exceedingly competitive research engineer in the field of structural mechanics and design engineering.

Akbar Syed has over 15 years of diversified experience in construction management, quality control inspections and design of various HVAC projects. Highly experienced in managing HVAC projects including but not limited to Heating Plants, Chiller Plants, and Climate Control Systems Upgrade. He earned his Bachelor's in Mechanical Engineering with specialization in Production Engineering from Osmania University, India and Master's in Mechanical Engineering from City University of New York, USA. He also earned certification for commercial Mechanical Inspector from International Code Council (ICC). He has excellent leadership and communication skills with demonstrated ability to analyze intricate situations and discover solutions to complex problems. My research interests are to apply Agile project management methodology in construction management.