Chapter 13
Adopting Robotic Process Automation (RPA) in the Construction Industry

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ABSTRACT

The chapter embarked on a comprehensive exploration of robotic process automation (RPA) and its merge with building information modeling (BIM) in revolutionizing the construction industry. By investigating the applications, benefits, challenges, and opportunities associated with RPA and its integration with BIM, this research has shed light on the immense potential for transforming productivity, efficiency, safety, decision-making, and sustainability in construction processes. Moreover, the merge of RPA with BIM represents a paradigm shift in collaboration, data management, and decision-making within the construction industry. By combining the strengths of these two transformative technologies, stakeholders can achieve unprecedented levels of coordination, efficiency, and accuracy throughout the project lifecycle. RPA, when integrated with BIM, empowers real-time monitoring, safety analysis, clash detection, risk assessment, and advanced simulations, allowing for proactive identification and resolution of issues.

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GENERAL

The construction industry, with its intricate and resource-intensive nature, has always been at the forefront of innovation and technological advancement. Growing evidence has emerged in recent years that robotic process automation (RPA) has the ability to completely alter how construction projects are organized, carried out, and managed. RPA, a cutting-edge technology that integrates robotics and artificial intelligence, has the potential to increase construction operations' productivity, efficiency, and safety.

Traditional construction methods frequently involve manual work, time-consuming jobs, and a great deal of reliance on human input. But with the introduction of RPA, a new era in the construction industry has begun. RPA offers the ability to optimize resource allocation, streamline workflows, and reduce errors by automating repetitive and boring procedures. From surveying and site preparation to material handling and project monitoring, this technology has a wide range of uses.

This thesis seeks to investigate how RPA might revolutionize the construction industry. To identify the advantages and difficulties connected with its implementation by investigating its uses throughout different stages of construction is aimed. Real-world case studies and research findings will also be examined to assess the influence of RPA on productivity, cost-effectiveness, and overall project success. Through this research, I aim to shed light on the key opportunities and limitations of RPA in construction. Stakeholders in the construction industry can make well-informed choices about the integration of RPA into their operations by being aware of the potential advantages and difficulties. In the end, this investigation will add to the larger discussion on the use of cutting-edge technologies in construction, paving the way for a more productive, creative, and sustainable industry. The exploration of RPA in the construction industry presents an opportunity to streamline processes, enhance productivity, and improve efficiency. RPA can free up valuable human resources to concentrate on more sophisticated and strategic activities by automating time-consuming and repetitive procedures. All parties concerned could profit from an increase in production and a shortening of project timelines as a result.

BIM, or Building Information Modeling, is a revolutionary digital approach that creates a comprehensive 3D model of a building, acting as a shared hub of information for all project stakeholders, from architects to facility managers. This intelligent model not only visualizes the building's geometry but also embeds crucial data about materials, systems, and components, enabling better collaboration, enhanced decision-making, and a more efficient construction process. The combination of RPA with BIM has the potential to enhance decision-making, data management, and cooperation in construction projects. Stakeholders can improve workflows, improve