A COMPREHENSIVE INVESTIGATION INTO THE APPLICATIONS, BARRIERS AND FUTURE DIRECTIONS OF DRONE TECHNOLOGY IN SRI LANKAN CONSTRUCTION MANAGEMENT

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Abstract: Technology breakthroughs have led to notable developments in the building sector, which is a pillar of societal growth. Drone technology stands out among these because it has the ability to completely transform construction management by improving accuracy, safety, and efficiency. The aim of the research study is to examine the usage of drone technology in Sri Lanka's construction industry, emphasizing its current applications, challenges, and potential future developments. A quantitative research approach was utilized to this research study. Project managers, engineers, and quantity surveyors were among the 65 construction professionals who took part in a thorough questionnaire survey; 50 of them responded. Descriptive statistical techniques were employed to analyze the data, utilizing MS Excel and SPSS software tools. The research provides insights into the current status and future prospects of drone technology in construction, focusing on the Sri Lankan context. The research study utilized a convenient sampling method. The results indicate that drones are being utilized more frequently for accurate land surveys, rapidly generate comprehensive topographic maps, and produce visual progress documentation to mitigate potential conflicts between contractors and property owners. The primary obstacles cited for drone implementation in the construction sector are substantial initial expenditures for drones and accessories, high maintenance and operational expenses (including licensing and registration), and the necessity for operator clearance from regulatory authorities. The subsequent points were recognized as future implications of drone technology in the construction sector: Technological advancements will enhance the integration of drones with block chain, 5G, and artificial intelligence. Integrating drones with BIM systems facilitates real-time updates for enhanced precision and coordination. Advanced sensors and artificial intelligence will enable drones to identify hazards, thereby improving worker safety. Although the research is geographically confined to the northern and western portions of Sri

Lanka, its findings provide significant implications for other developing nations considering the implementation of drone technology in building.