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Holistic Integration of Smart Technologies for Sustainable Urban Development: A Comprehensive Analysis of Smart Cities

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ABSTRACT:

The emergence of smart cities resulted from the sustainability challenges cities today face due to urbanization. Smart cities propose solutions by harnessing advanced technologies incorporated into their infrastructure. This study aims to explore the integration of various components and technologies for sustainable implementation of the 'smart city projects' in Indian context contributing to the national development. Data collection was done through systematic review of literature and case studies from legitimate online sources, contributing to a comprehensive exploration and synthetization of the data through analysis of case-studies. This paper focuses majorly on India's Smart City Mission, exploring its objective, scope, technological innovations and challenges. A comprehensive analysis of various types of smart technologies such as renewable energy integration, smart transportation, data analysis, waste and water management, green buildings, cybersecurity, urban agriculture and policy making integrated into smart cities was also conducted. A comparative analysis of two case studies - GIFT city in India and Singapore smart cities provides practical insight into implementation strategies. The research paper provides comprehensive discussion into the complexities of smart technological and challenges of society adapting to new lifestyles. Further, the study highlights the fact that utilizing Information and Communication Technologies (ICTs), citizens and social institutions can significantly contribute to making a city more livable and cognitive. Areas of further research are also mentioned in the paper. The findings also bring out the salient facts and call for optimum utilization of land, finance, natural, and human resources by all the concerned agencies and stakeholders while implementing the 'smart city projects' after thorough analysis of its impact, including on the natural environment.

Keywords— Smart city, Indian context, Smart technologies, Sustainable urban development, Data analytics, Case-studies

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