45.   The role of IoT solutions in transforming mobility in transport sector

David Wachira

1School of Computing and Informatics, Meru University of Science and Technology
*Corresponding author email: wdmwangi@gmail.com

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Abstract

The integration of Internet of Things (IoT) solutions is revolutionizing the transportation sector, enhancing safety, sustainability, and efficiency. This paper examines the impact of IoT on traffic management, public transit, and logistics, highlighting how these solutions are transforming mobility in the transportation industry.The research utilized a mixed-methods approach, involving both quantitative and qualitative data collection and analysis. It surveyed stakeholders like governmental organizations, for-profit businesses, and private citizens to understand their current use of IoT technology, and examined case studies of successful IoT-based transportation initiatives to identify best practices and lessons.The adoption of IoT solutions in the transportation sector has significantly improved traffic management, with 75% of respondents reporting less congestion and 60% reporting higher public transportation efficiency. IoT-based logistics management systems also reduced delivery times and transportation costs by 25% and 30%, respectively.This research is crucial because it sheds light on how IoT technologies can revolutionize logistics management, public transit efficiency, and traffic flow. By leveraging a systematic review of existing research, the study not only explores the design and application of monitoring models but also highlights the transformative impact of IoT across industries, including transportation.Sensors, connectivity solutions, and data analytics are the cornerstones of IoT technology. By implementing these technologies in the transportation sector, organizations can achieve significant improvements. Real-time monitoring of vehicles allows for proactive maintenance, preventing breakdowns and delays. Traffic data can be used to optimize routes, reducing congestion and travel times. Predictive analytics can identify potential safety hazards, leading to improved passenger security. Additionally, personalized experiences for passengers can enhance the overall service quality.Ultimately, the benefits of IoT in transportation extend beyond operational efficiency. By addressing air pollution, auto accidents, and infrastructure maintenance needs, IoT has the potential to create a more sustainable transportation system. This, in turn, will improve the overall quality of life for citizens and spur economic growth. Furthermore, this research serves as a foundation for further development in the field, facilitating the establishment of robust and interoperable transport monitoring systems. Implementing these systems in public service vehicles can unlock the vast potential of IoT, leading to a future of safe, efficient, and sustainable transportation.

Keywords: *Internet of Things, Smart Mobility, Public Transportation, Fleet Management, Real-time Data*