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**“Sustainable Transportation Management in TCS Pakistan:
Enhancing Supply Chain Efficiency through Green Logistics”**



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Abstract:

The study aims to examine the sustainable transportation management practices in TCS Pakistan and finding the way to enhance the efficiency of supply chain by green logistics. The study emphasizes the rising significance of sustainability in the logistics sector because of the rising prices in fuel, the global warming problem, and customers' growing demand for the efficient supply of goods. TCS is one of the largest logistics and courier Services Company of Pakistan with a wide transportation system, which has a significant impact on the fuel consumption and carbon emissions. The study highlights the significant operational challenges faced by the company, such as inadequate route planning, excessive reliance on fuel, suboptimal load utilization, the lack of real-time monitoring tools, and the absence of a robust sustainability framework.

To deal with these problems, a Sustainable Transportation Management Model (STMM) that involves route optimization, load consolidation, eco-driving, digital fleet monitoring and a gradual introduction of electric vehicles is proposed. The model aims to lower operational expenses, optimize delivery times, optimize vehicle utilization and decrease environmental footprint. The results of the simulation test conducted with the operations in Karachi showed considerable improvement in transportation efficiency. The results revealed that there was a reduction in travel distance, fuel consumption, and carbon emission, improve in delivery reliability, and improve in fleet utilization. A pilot implementation plan for Karachi South District has also been framed to test the feasibility of the proposed system.

The study also outlines deployment strategies, financial considerations, implementation timelines, and future enhancements, including machine learning-based forecasting and scaling up EV fleets. The study findings suggest that sustainable transportation practices have the potential to enable TCS to improve its long-term operational efficiency, environment, and competitive edge. The suggested framework is also relevant and useful for other logistics providers in Pakistan who are interested in modernizing their transportation infrastructure and promoting sustainable supply chain practices.

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