

Comparative Analysis of Smart Freight Matching Business Models and Sustainability KPIs

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Abstract

The logistics and transportation sector is evolving rapidly due to digital advancements. A notable innovation in this field is Digital Freight Matching (DFM) platforms, reshaping freight matching. Comprehensive examination of DFMs indicates varied business models. A business model provides a structured framework for how a company generates value and profit, ensuring clarity in strategy, operations, and stakeholder engagement. Generally, the business models in the context of freight logistics can be classified into five different categories: Platform-based, Brokerage, Carrier-based, SaaS-based, and Asset-light models. Each configuration has distinct advantages and challenges, influencing a company's strategic choices. This study investigates these models, analyzes their influence on sectoral effectiveness, profitability, and long-term viability. The analysis compares their performance metrics, efficiency, expense, and sustainability considering market fluctuations. The findings aim to aid practitioners, regulators, and scholars, enabling informed navigation through the shifting logistics landscape.

Keywords

Digital Freight Matching, Business Model, Sustainability KPIs

Biographies

Tomas Agustin Bas is a master student at Polytechnique Montreal University. He is performing Agent Based Modeling to simulate the influence of different business models on freight matching platforms.

Samira Keivanpour is an assistant professor in the Department of Mathematical and Industrial Engineering at Polytechnique Montréal, Canada. She conducts research on sustainable solutions for supply chain and logistics management, with a focus on end-of-life product treatment, circular manufacturing, and the integration of Industry 4.0 technologies.

Asad Yarahmadi is a PhD candidate in Civil Engineering - Transportation Engineering at Polytechnique Montreal University. He completed his master in GIS and Remote sensing. With his unique blend of expertise in Geographic Information System (GIS) tools, Machine Learning techniques, and Remote Sensing, he excel at integrating technology to address the environmental impact of transportation. Throughout his academic and professional journey, Asad has demonstrated his commitment to sustainable transportation solutions. He also has a proven track record of effectively managing both academic research and industrial projects aimed at tackling crucial environmental issues, such as vehicle emissions. His ultimate goal? Facilitating a greener, more sustainable future.