PhD in Business Economics

Decision Support Tools for Hybrid Urban Mobility Systems.

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Summary

Urban mobility systems are under growing pressure due to accelerating urbanization, increasing traffic congestion, widespread car ownership, and the associated environmental consequences. While public transport has long been promoted as a sustainable alternative, conventional fixed-route systems often struggle to provide efficient and flexible mobility solutions, particularly in low-density areas and for first- and last-mile connections. Recent mobility policies, therefore, increasingly promote hybrid mobility systems that integrate multiple transportation modes into seamless multimodal travel solutions.

This thesis focuses on two representative multimodal integration settings: public transport combined with on-demand services and walking, and public transport integrated with bike-sharing systems. For these settings, it investigates how design and operations can be optimized by developing decision support tools for both strategic and operational planning. It addresses key challenges related to network design, routing, and scheduling decisions. Overall, the thesis demonstrates the value of integrating complementary transport modes and provides managerial insights for policymakers, transport operators, and urban planners seeking to develop more sustainable, efficient, and user-oriented mobility systems.