

Foreword

The central focus of this book consists in the inclusion of new important aspects of practical relevance, such as different subcontraction possibilities and cooperative planning approaches to the operational transportation planning in the commercial road haulage. The book presents the concepts, models and algorithms for the efficiency increase in the operational transportation planning that include the subcontraction- and collaborative planning concepts developed far beyond the state of the art. The derivation and application of these concepts results in the extension of the intensively investigated problems of vehicle routing and scheduling to the integrated operational transportation planning problem with several subcontraction forms and collaborative request execution.

Even if the additional aspect of collaboration (which is itself of high complexity) is not considered, the full complexity of the operational transportation planning still remains insufficiently investigated in the scientific literature. The author presents an innovative approach including simultaneously several subcontraction forms, which - although of high practical importance - has not yet been discussed in literature. There exists no optimization software, not to mention a comprehensive Decision Support System, for the extended problem solved thousand fold daily in freight forwarding companies. On the basis of a real-life analysis an algorithm is developed by the author in order to solve this highly complex combinatorial optimization problem. The usage of the tabu search method seems reasonable. It allows adapting the latest methodical cognitions to the presented algorithm. Test series for the cost parameter variation of the different transportation modes show promising results and recommendations for the aimed mix between self-fulfillment and subcontraction. In this way, the developed algo-

rithm can be used beyond the operational planning horizon, namely for the long-term capacity analysis of the own fleet.

Due to the further extension by collaborative planning, additional essential potentials for efficiency increase are generated. A profit sharing concept is presented which plays a leading role in the collaborative planning. The profit sharing model for the groupage system, presented in this scientific work at hand, has a theoretical background and is of high practical relevance as well. Thus, it is evaluated in a practical context. On the contrary, the tests for estimating the cooperation benefits are conducted more on the theoretical level.

This book contains the important findings of theoretical and practical relevance for the research field of transportation planning. Therefore, it is essential for reading for researchers and students of logistics and combinatorial optimization as well as for executives in the area of transportation planning.

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