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References 256
Supplements 0
Appendixes 0

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This dissertation, concerns the issue of decision support in car fleet management, taking into account a road safety. In this aspect, a balanced approach to the car fleet structure is necessary, with particular emphasis on the road safety aspects and road participants. Total safety management is the one of key processes, of every decision-maker, including: fleet manager, company owner who is using externally managed car fleet, representatives of the financing/leasing institution, insurer, telematics system provider, private road user or official of a state authority. Reducing number of road accidents, has an impact not only on the health and life of car users, but also on finances, mobility, timely deliveries and ecology. The issue of professional security management is a multifaceted decision-making problem, for the implementation of tasks, that should be properly coordinated. That's why constantly searching, tools supporting the optimization and evaluation of the car fleet management processes. One of the possibilities to support car fleet management, may be a create of a multi-criteria decision-making model, which are concentrate on the aspects of driver safety, ecology and finances.

The most important goal of this dissertation is to create a car fleet management multi-criteria model, taking into account the road safety issues. The **TR-CFM** model developed in this dissertation, can be used to optimize and evaluate the selection of vehicles and drivers to perform tasks within the managed fleet. In addition, it takes into account the randomness of adverse events and the time the resources remain in a state of failure. The developed decision model is the main element of the decision support method in car fleet management, **RDP-CFM**.

The dissertation, has been divided into nine chapters, which contain theoretical considerations, the developed method and its practical application. In the theoretical part of this dissertation, the issues of general management, process, decision support and car fleet management, were analyzed. Car fleet total costs of ownership (TCO) were characterized and analyzed the market trends on the current approach to fleet management. The issues of Car Fleet Management (CFM) were also characterized, the literature describing the issues of car fleet management and the current state of knowledge in this field was analyzed, the purpose, thesis and scope of the dissertation were defined, and decision problems and systems used in fleet management were presented. In the practical part of this dissertation, the author's method of decision support in car fleet management (***RDP-CFM***) is presented, which takes into account the possibility of optimizing the structure of the fleet and the selection of resources for tasks, as well as the assessment of existing solutions. The clue of the method is the developed decision model, mapping the problem of car fleet management, taking into account factors affecting both costs and safety or environmental impact. As part of the research, computational experiments using the Flexsim environment, which indicated the correctness of the conducted considerations and their high application potential. The considerations carried out in this dissertation, fulfill the research gap in the area of car fleet management and the problem of assigning funds to tasks in terms of improving road safety. The dissertation ended with a summary and identification of directions for further research.