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The subject of this dissertation regards supporting car fleet management procedures in an enterprise. Car fleet constitutes a large position in an enterprise's operating costs, especially in trade and distribution firms. Employees mobility needs increase and thus, to meet those needs and to cut the operating costs effectively, enterprises with sizeable means of transport (vehicles) seek adequate ways of car fleet management including proper selection of vehicles that meet their expectations. A proper vehicle fleet choice in an enterprise, with consideration of mobility plans, has a significant influence on the quality of services provided, timeliness, competitive advantage, safety and operating cost optimization of every enterprise. Increasingly, companies are outsourcing their fleet management to specialized car fleet management companies (CFM).

This dissertation observes that exploitative-utility parameters play an important role in reliability and depreciation. These parameters influence virtually every single cost constituting the monthly installment. A precise estimation of these parameters gives a CFM firm the competitive advantage in the market. Therefore, it is critical for a CFM firm to formulate a mathematical model capable of analyzing the parameters of failure frequency, downtime, losses and TCO. With the knowledge of the results of such analysis, a CFM company will be able to offer a vehicle characterized by the lowest possible financing and servicing costs, as well as the highest mobility and reliability ratings. Mathematical tools allowing for this level of comprehensiveness in car fleet management are not available in the current car fleet market.

The aim of this dissertation is to develop a decision-making model of vehicle fleet management in a company, taking into account selected exploitation and economic indicators, as well as the selection of vehicles according to tasks, mobility plans and business profile. For the purpose of achieving the goal and proving the thesis of the dissertation, the author analyzed the literature in the field of factors affecting the quality of needs for planning and management of the vehicle fleet, methods of multi-criteria decision support and methods and tools in the field of selection of vehicles for tasks.

The vehicle choice method devised in this dissertation uses mathematical statistics tools for selecting the exploitative-economic indicators indispensable in quality assessment of the devised car fleet management model. The mathematical model was designed with the help of expert knowledge and own research. The model was tested and verified using real-life data of given enterprises.

The developed model is a universal tool supporting the decision-making process in the field of vehicle fleet management in an enterprise and can be applied, among others, in companies dealing with vehicle rental and in transport companies providing transport services for various tasks.

