Study on the Application of the Holistic Optimization Method of the Manufacturing Process in the Case of a Reduced Extension Instances Database

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Abstract. The optimal management of the manufacturing processes is achieved through a set of optimal decisions, which must be made for choosing the best way to follow, every time we find ourselves in a point from which several potential manufacturing paths start. A dedicated method, namely the Holistic Optimization Method has been already developed in this purpose, and validated in a number of studies based on artificial and real instances databases. In the current papers, which approach the optimal management of the manufacturing processes, in order to estimate the consequences of a decision, are used known methods, such as: NN methods, big data analysis, statistical methods, etc. In all these cases, the database size plays an essential role in terms of estimation quality. The present study aims to prove the feasibility of applying the Holistic Optimization Method when the decision-maker does not dispose of a consistent database. This can be a significant advantage relative to the other methods. The study is performed using an artificially generated instances database in the case of a turning process, and the results obtained are promising.

Keywords: decision making, holistic optimization method, instances database, comparative assessment, turning process

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