

Maintenance modelling: revisiting common assumptions

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Abstract

Modelling is fundamental to evaluating and optimizing maintenance systems. It has been the object of research since the 1960s. A wide range of modelling tools were considered by researchers such as linear programming, Bayesian networks, Markov chains and various types of simulations. Since modelling is inevitably an abstract of the real world, a key aspect of models is the accompanying assumptions. However, while the body of literature is growing, the majority of researchers still use the same set of common assumptions such as perfect maintenance, perfect inspections and immediate availability of maintenance resources. Surprisingly, the effects of these common assumptions does not appear to have been closely examined. This could be one of the factors that are contributing to the expanding gap between academia and industry in the field. The current research attempts to provide an overview of common assumptions related to maintenance modelling and investigate its origins. In addition, potential impact on the model's use and results is discussed. It would be interesting to assess the effects of these assumptions both in combinations and individually using published data.

Keywords

Modelling, maintenance, assumptions

Biography

Abdullah Alrabghi is an Assistant Professor of Industrial Engineering at University of Jeddah. His research interests include Discrete Event Simulation and simulation based optimization. His current work examines advanced applications of simulation based optimization in industry where he published several conference and journal papers. He obtained his PhD in Manufacturing from Cranfield University (UK), his MSc in Engineering Business Management from University of Warwick (UK) and his BSc in Industrial Engineering from King Abdulaziz University (SA).