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ABSTRACT

A MULTI-PERIOD REPAIR LIMIT
PREVENTIVE MAINTENANCE MODEL

BY

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The maintenance of a manufacturing firm's equipment is extremely important. What is the best time to replace a piece of equipment? When is the best time to perform preventive maintenance? These questions have been posed by both management and maintenance group in companies. Failure of equipment can happen anytime. The study makes use of a repair limit which is the basis for management's repair/replace decisions.

From the literature and articles reviewed, the proponent observed that most, if not all, focused on maintenance models with equally spaced intervals. Furthermore, all available literature on maintenance models are unconstrained.

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This study formulated a **MULTI-PERIOD OPTIMAL PREVENTIVE MAINTENANCE MODEL** with the objective of minimizing total expected cost which is composed of the cost of preventive maintenance and the cost of repairs and replacements. The model considers the interval between preventive maintenance points to be unequally spaced. Moreover, the maintenance model that was developed includes a budgetary constraint and a repair limit cost parameter.

This study includes the cost of preventive maintenance, failure replacements and failure repairs. The conditions for the models convexity were established and was proven through the numerical example. The study stated several assumptions in the development of the model and in reality, the model may fall short of real-world application. Hence, some of these assumptions has to be relaxed in order to come up with real-world applications. However, the model in the study would already provide information regarding the preventive maintenance points and the proportion of failures which could be attributed to repairs and replacements.