

**IMPROVING DEMAND AND SUPPLY FORECAST ACCURACY IN INDONESIAN
LEADING HEAVY EQUIPMENT**

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STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

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ABSTRACT

IMPROVING DEMAND AND SUPPLY FORECAST ACCURACY IN INDONESIAN LEADING HEAVY EQUIPMENT

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PT. United Tractors site Bengalon already has its own forecasting method but has not applied forecasting methods such as Moving average, Weighted Moving Average, Exponential Smoothing, Exponential Smoothing with Trend and Trend Projection. Thus, it is important to conduct research related to the selection of the most optimal forecasting method to determine the number of spare parts items for the special excavator loader PC2000 unit. Based on the MAD value, the most feasible method used for forecasting all items in determining the quantity of spare parts of the excavator loader PC2000 unit is the Exponential smoothing method with trend and seasonality. Proven by the error value of the MAD forecast with Exponential smoothing with trend and seasonality is smaller than the company's forecast results and the other four methods, namely for sensor items 3.45; filter 37.11; carrier roller 1.14; tooth, single tiger 15.78; bushing 2.35 and hose hansei HHCP 2.80. Based on mape values it is known that each item can be foreseen by different methods to obtain the optimal value. For sensor items can be used exponential smoothing forecasting method with a MAPE value of 50%. The carrier roller item uses the weighted moving average method with a MAPE value of 20%. Items with a MAPE value filter 9% exponential smoothing method with trend and seasonality. Item tooth, single tiger with MAPE 24% using the exponential smoothing method with trend and seasonality. However, brushing and hose items are not allowed to use MAPE because the value exceeds 50%.

Keywords: Forecasting, MAD, MAPE

PT. United Tractors site Bengalon sudah memiliki metode peramalan sendiri tetapi belum menerapkan metode peramalan seperti Moving average, Weighted Moving Average, Exponential Smoothing, Exponential Smoothing with Trend and Trend Projection. Dengan demikian, penting untuk melakukan penelitian terkait dengan pemilihan metode peramalan yang paling optimal untuk menentukan jumlah item suku cadang untuk unit PC2000 loader excavator khusus. Berdasarkan nilai MAD, metode yang paling layak digunakan untuk meramalkan semua item dalam menentukan jumlah suku cadang unit excavator loader PC2000 adalah metode Exponential smoothing dengan tren dan musiman. Dibuktikan dengan nilai kesalahan prakiraan MAD dengan Exponential smoothing dengan tren dan musiman lebih kecil dari hasil estimasi perusahaan dan empat metode lainnya, yaitu untuk item sensor 3,45; filter 37.11; rol pembawa 1,14; gigi, harimau tunggal 15,78; bushing 2.35 dan selang hansei HHCP 2.80. Berdasarkan nilai mape diketahui bahwa setiap item dapat diramalkan dengan metode yang berbeda untuk mendapatkan nilai optimal. Untuk item sensor dapat digunakan metode peramalan penghalusan eksponensial dengan nilai MAPE sebesar 50%. Item carrier roller menggunakan metode weighted moving average dengan nilai MAPE sebesar 20%. Item dengan filter nilai MAPE 9% metode penghalusan eksponensial dengan tren dan musiman. Gigi item, harimau tunggal dengan MAPE 24% menggunakan metode penghalusan eksponensial dengan tren dan musiman. Namun, item menyikat dan selang tidak diperbolehkan menggunakan MAPE karena nilainya melebihi 50%.

Kata kunci : Forecasting, MAD, MAPE

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I dedicate this works for my beloved family, friends and Company who have supported me through my ups and downs.

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