

應用移動平均方法建構臺鐵縱貫線貨運量預測模式

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摘要

隨著台灣西部地區公路建設範圍擴大與服務品質提升，臺鐵貨運運輸功能已逐漸被公路取代，使得臺鐵縱貫線貨運營運面臨挑戰。對未來貨運需求量的準確預測，可讓管理者在環境變化下，事先掌握趨勢且有效安排資源。本研究選用實務管理者可簡單便利使用的移動平均法建構貨運量預測模式。收集民國 102 至 109 年間臺鐵縱貫線每月貨運噸數及延噸公里資料。比較 4 種不同輸入資料期數方式的模式預測績效。模式預測績效優良，平均絕對誤差率介在 13%至 18%之間。再以民國 110 年的月資料進行模式驗證，平均絕對誤差率介在 10%至 19%之間，驗證模式預測績效優良。顯示本研究所提之程序與模式，確實可為臺鐵提供準確可靠的貨運量預測結果。未來，營運管理者可參考使用，有助於營運資源有效安排與決策規劃。

關鍵詞：預測、移動平均法、貨運量、臺鐵

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Freight Forecasting Model Development with Moving Average Method for the Main Line of Taiwan Railway

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Abstract

In western Taiwan, the highway network has been expanded and service qualities of highway have been improved continuously. The demands of freight transportation are gradually shifted to highway from railway transportation. This condition is a challenge for Taiwan Railway Administration (TRA) to operate the freight transportation in Main line. With this variation, accurate predictions of freight demands can help managers to realize the demand trends and to efficiently arrange the resources in advance. For easy and convenient application in practical, this study collects the monthly freight data from 2013 to 2020 and applies moving average method to conduct the freight demands forecast models for TRA Main line. To compare the demands forecasting performance, four models are developed from different periods of input data. Based on the forecast results of Mean absolute percentage error (MAPE) values from 13% to 18%, the model forecast performances are good. Furthermore, the monthly data from 2021 are used to validate the forecasting model and the validation results of MAPE values are from 10% to 19%. Based on the good forecasting and validation performance, the proposed procedure and models can provide accurate and reliable freight demand predictions and help TRA managers to arrange the resources more efficient.

Keywords: Forecast 、 Moving Average 、 Freight 、 Taiwan Railway

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