

我國小客車登記數之預測模式建構與評估

Constructing and Comparing Forecast Models for Registration Number of Passenger Cars in Taiwan

企業管理學報 第 44 卷第 4 期 (108 年 12 月) 頁 91-109

DOI: 10.3966/102596272019120444004

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摘要

政府及企業組織在擬定管理決策的過程，皆需針對未來的市場趨勢、經濟環境等因素進行預測。高準確率的預測將有助於政府、企業組織做出最適的決策，避免因決策不當而導致組織面臨困境。我國因地理環境條件，造就了機動車輛登記數甚多的情形。本研究以我國小客車登記數作為研究之標的，其具體目的如下：(1)針對小客車登記數，經由歷年登記數建立 GM (1,1)灰預測模式；(2)透過灰關聯分析，探討外在因素影響小客車登記數之關聯程度；(3)加入關聯序後再透過複迴歸分析進行預測，並與 GM (1,1)進行準確率比較與模式評估。本研究結果顯示，當各參考因素之關聯度排序在考慮顯著性的情況下，將戶數、家庭儲蓄淨額、平均每人國民所得、平均每人民間消費支出、油價、經濟成長率、十五歲以上有偶率等七項因素導入與登記數進行預測時，可以獲得最高之準確率。

關鍵字：小客車登記數、灰預測模式 GM (1,1)、灰關聯分析、複迴歸

ABSTRACT

In the process of formulating management decisions, the government and enterprise organizations need to forecast the future market trends and economic environment. High-accuracy forecasts will help governments and organizations to make the most appropriate decisions and avoid the organization's difficulties caused by improper decision-making. Due to the geographical environment, Taiwan had a large number of motor vehicle registrations. In this study, the number of registrations of small passenger cars in Taiwan is the subject in this research. The specific objectives are as follows: (1)establishing a GM (1,1) grey prediction model for the number of registered passenger cars through the historical registrations number over years; (2)exploring the degree of correlation between external factors affecting the number of registrations of passenger cars by the aid of the grey correlation analysis; (3)adding predictions through complex regression analysis and evaluating models for accuracy comparison. The results of this study show that when the ranking of the correlation factors is considered to be significant, the highest accuracy rate for predicting the car registration number can be obtained when seven factors are included, such as the number of households, net household savings, average national income per capita, average per capita consumption expenditure, oil price, economic growth rate, and the ratio of couples greater than fifteen of age.

Keywords: Passenger car registration number, Grey forecasting model GM (1,1), Grey relational analysis, Multiple regression