

## 摘要

本研究主要目的為透過灰色區間數的概念，利用其解決小樣本不確定問題的特性，修正在模糊層級分析法 (Fuzzy Analytic Hierarchy Process, FAHP) 下專家 (評估小組) 意見回饋時的不確定因素來進行供應商評選，使專家 (評估小組) 在進行指標或構面間比較時，能夠反映最真實的意見。

研究方法以模糊層級分析法為基礎進行供應商選擇，藉由模糊數概念解決舊有分析層級程序法中主觀及不精確的問題，並透過灰色區間數的概念，利用其解決小樣本不確定問題的特性，解決在進行模糊層級分析過程時，評選人員數量少而導至意見回饋樣本數較少，難以估算的問題；或評估人員對於語意尺度認知不明確，而成意見回饋時的不精確，避免因為這些原因，造成評估結果不準確，導至決策的偏差。

透過專家 (評估小組) 針對需求擬定參考構面及構面下的指標，利用層級的結構，將其做有系統的連結，透過專家 (評估小組) 針對各構面及各構面下指標間的強弱依據的回答，依此結果進行分析層級程序法的計算，找出各構面及各構面下指標間權重，進行供應商評選。

本研究實驗設計假設情境為在 MTO 生產流程下，透過系統動態學建構流程模型，模擬製造商生產運作。另外再設立專家意見實驗組及對照組，藉由同組評估小組填答不同意見所得的權重，加乘模擬所產生的供應商基本資料轉換為相對強度得分，進行研究方法運算，再比對模擬產生之績效結果，驗證所選供應商績效的確是最佳，驗證本研究所提出之選商方法確實有效。

關鍵字：供應商選擇，模糊層級分析法，灰色區間數。

# Abstract

In the environment of globalization, the cooperation between enterprises and the suppliers has changed closeness into diversity. How to look for the best supplier in the use of objectivity in order to meet the need of product becomes very important. Nowadays, every industry aims at the international and various developments. Materials that consist in a product may come from every corners of the world; in that case, we have more choices in picking the suitable copartner. However, the standard of the suppliers has a big influence in the production quality.

This research based on Fuzzy Analytic Hierarchy Process (FAHP) use to supplier selection. Use fuzzy number to solve the problems about subjective and imprecise in Analytic Hierarchy Process (AHP). And solve the problem about small sample and uncertain situation, sometimes come about who can't clearly understand the meaning about item to choice, during jury making decision by Grey Interval Numbers. This situation may bring about incorrect results and wrong decision.

This research makes a case under the MTO (make-to-order) producing process by SCOR model. Build the System Dynamic process model to simulate the supplier's production process. And there have two different questionnaires result every different item's weight. Herewith prove using this research method to select supplier is feasible and efficacious. Based on the evaluation criteria of need, we hope that enterprises can make an objective and correct decision in choosing the appropriate supplier.

Keywords: Supplier Selection, Fuzzy AHP, Grey Interval Numbers