

# **Applying Random Effect Model to Allocate Hotel Positioning Strategies of Location, Price and Scale in Cluster Analysis Framework**

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This study aims to locate the positioning strategies of international tourist hotels (ITHs) in Taiwan based on the framework of cluster analysis. With the panel data consisting of the annual operation reports of 72 international tourist hotels published by the Taiwan Tourism Bureau from 1998 to 2009, 37 hotels existing in the market each year during the 12-year period are included for analysis. Since the geographical characteristics mainly determine the market segmentation of hotel competition (Baum and Haveman, 1997), these hotels are divided into 4 geographical regions including Eastern, Western, Northern, and Southern regions. We relate the differences in geographic location, scale, and price to the profitability of hotels in each area. Because the price difference between hotels can be due to the difference in service quality, we use the service quality as the instrumental variable for endogeneity modification. Additionally, the Geographical Information System (GIS) is adopted to analyze the environmental conditions of hotels, including transportation and natural recreation resources.

The LM test results the value of 9437.16 with the significance level within 1%, indicating the application of panel data for the analysis format. To reveal the cluster effects, the random effect model is adopted. For endogeneity examination, the Hausman test results the value of 13.50 with the significance level within 1%. Accordingly, the model adopts the instrumental variable of service quality and results significantly. For the positioning strategies, our results suggest that hotels can apply the agglomeration strategy on pricing, but take the differentiation strategy on location and scale strategies for higher profitability. For the transportation resources, the railways, rapid transit and high-speed rail infrastructures significantly improve the profitability of hotels. However, recreational resources are not significantly effective on profitability, which can be due to the diversification of landscape and cultural features in Taiwan. Besides, hotels locate in different regions perform differently, and hotels in the northern region have higher profitability. The results allow the government as well as the industry to accurately locate the strategies for the future development of hotel industry.

**Keywords:** International tourist hotel, Profitability, Random Effect Model, Cluster Analysis, Service Quality, GIS

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