



Exploring the Determinants of Hotel Occupancy Rate: A Dynamic Panel Data Approach

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Abstract

Previous studies often used occupancy rate as the major performance indicator of hotel industry. However, the often applied technique in previous occupancy performance determinants studies does not incorporate dynamic changing nature of occupancy rate. Heterogeneity among hotels is often neglected. Moreover, their analyses only focus on certain aspects of the relationships among hotel characteristics and occupancy performance. Different from previous works, this study applies dynamic panel data approach to examine the occupancy rate determinants in Taiwanese international tourist hotel industry. The data was drawn from 40 international tourist hotels in 10 years. Empirical results show that historical occupancy rate exhibits significant positive impact on occupancy rate. Proportion of individual traveler and proportion of domestic traveler have significant negative effects on occupancy rate. However, hotel size, hotel price and chain affiliation are not major determinants of occupancy performance. It implies that international tourist hotel investors and managers should focus on group and foreign travelers to increase their occupancy rate. Additionally, lowering its price or joining hotel chain does not necessarily enhance lodging performance. The empirical results are expected to provide useful reference for hotel management practice.

Keywords: Occupancy rate, Hotel industry, Panel data, Dynamic panel data approach, Performance, Determinants.

JEL Classification: C23, L25, L83.

1. Introduction

With the increasingly competitive market structure in the hotel industry, the improvement of hotel performance has become essential for survival in the ever-changing business environment. Jeffrey and Barden (2001) indicated that profitability is the best measure of hotel performance. Arnold (1994) and Malk and Schmigall (1993) suggested revenue per available room (RevPAR) and profit per available room (ProPAR) are the ideal measures of lodging performance. However, the above indicators are not usually available in the regular, reliable, comparable and disaggregated form (Jeffrey and Barden, 2001). Thus, occupancy rate becomes a general measure of lodging performance (Jeffrey and Hubbard, 1994; Ingram, 1996; Mattsson and Orfila-Sintes, 2014). Some hotel occupancy rate related studies focused on the changing of occupancy rate or forecasting hotel occupancy rate (Law, 1998; Law, 2004). Relative few studies have investigated the determinants of hotel occupancy performance (Jeffrey and Barden, 2001; Claver-Cortés *et al.*, 2006; Sun *et al.*, 2013; Mattsson and Orfila-Sintes, 2014). Moreover, their analyses only focused on certain aspects of the relationships among hotel characteristics and occupancy performance. Additionally, the dynamic relationships or heterogeneity among hotels were often overlooked since cross sectional or time series technique was used. Thus, this study tries to fill the gaps and applies dynamic panel data approach to explore the determinants of hotel occupancy performance.

2. Methodology

An analysis based on longitudinal occupancy rate data can provide more information about the performance trends. It obtains more detailed sketches of the relationship between occupancy rate and their possible determinants. Dynamic panel data approach is designed for the small number of time periods with larger number of firms in the dataset. It is typical of panel data on firms, and calls for estimation methods that avoid the need for large time dimension (Bond, 2002). The major advantage of dynamic panel data approach is the introduction of lags of the dependent variable as explanatory variables. The correct behavior specifications let us able to discover new relationships between dependent and explanatory variables (Brañas-Garza and García-Muñoz, 2011). Hotel operation data is often available with larger number of firms with shorter period. Thus, dynamic panel data approach was used in this study. We also apply Sargan test to examine over-identifying restrictions in our analysis.

The data was drawn from the *Annual Operation Report of International Tourist Hotels* between 1997 and 2006 published by Taiwanese Tourism Bureau. After discarding hotels that provided incomplete data, a final sample of 400 for 40 international tourist hotels in 10 years remained.

Regarding variable selection, the choice of explanatory variables was based on the previous literature which included number of rooms (SIZE), annual average room rate (PRICE), proportion of free individual traveler (FIT), proportion of domestic traveler (DOM) and chain-affiliated (CHAIN). All these variables determine the hotels' characteristics and therefore may affect occupancy rate performance.

3. Findings

The empirical results of this study are shown in Table 1. Last year's occupancy rate exhibits significant positive impact on occupancy rate. The results also indicate that proportion of individual traveler and proportion of domestic traveler have significant negative effects on lodging performance. However, hotel size, hotel price and chain-affiliated are not crucial for the determination of occupancy rate.

The positive relationship among different year's occupancy rate indicates that hotel managers are likely to predict hotel occupancy rate trends based on the previous year's occupancy rate. The proportion of free individual travelers is negatively correlated with occupancy rate. It implies that group travelers are still the major customers of the international tourist hotels. Hotels focus on group traveler market may attract more customers to increase their performance. The negative relationship between proportion of domestic traveler and occupancy rate indicate that foreign travelers are the main sources of customers for Taiwanese international tourist hotels. It implies foreign traveler-oriented marketing strategies are more likely to enhance lodging performance.

The ambiguous relationship between hotel price and occupancy rate may due to the different price sensitivity of hotel customers. That is, hotels in different price categories might attract different customers. The insignificant relationship between hotel size and occupancy rate may owing to large hotels provide more facilities whereas small hotels providing customized and personalized services to customers. The ambiguous relationship between chain affiliated and occupancy rate implies that brand name effect is not significant and chain-affiliated is not the main concern for tourists. This may due that some customers consider independent hotels provide flexible personal service and home atmosphere whereas others may rely on the trust of hotel brand name. Thus, chain-affiliated hotel occupancy rate is not necessarily higher than independent ones in Taiwan.

Table-1. Empirical results of occupancy rate determinants

	Coefficient	Std. Err.	P> z
OCC L_1	0.234***	0.073	0.001
SIZE	19.738	25.565	0.440
PRICE	3.685	4.327	0.394
FIT	-0.187***	0.049	0.000
DOS	-0.147**	0.057	0.010
CHAIN	-6.106	6.711	0.363
.Sargan test	chi2=164.687	Prob > chi2= 0.000	

* significant at 10%-level, ** significant at 5%-level, ***significant at 1%-level

4. Conclusions

This study applies dynamic panel data approach to analyze the relationship between occupancy rate and their attributes. The empirical results reveal that historical occupancy rate, proportion of individual traveler and proportion of domestic traveler are the major determinants of occupancy rate. However, hotel size, hotel price and chain-affiliated are not crucial for the occupancy rate determination. It also implies that international tourist hotel investors and managers should focus on group and foreign travelers to increase their occupancy rate. Additionally, lowering its price or joining hotel chain does not necessarily enhance lodging performance.

The results of this study should not be over-interpreted since the empirical data was only drawn from Taiwanese international tourist hotel industry in 10 years. A more detailed analysis is needed in the future. However, the empirical results are expected to provide useful reference for hotel management practice.

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