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How can managerial efficiency be improved? Evidence from the bed and breakfast industry

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ABSTRACT

The bed and breakfast (B&B) industry is an emerging industry in Taiwan. This industry in Taiwan boosts local economic prosperity by creating more jobs, and it also preserves traditional culture while developing sustainable tourism. This study examines managerial efficiency for 18 cities and counties in Taiwan where bed and breakfast accommodations are located using the slacks-based measurement (SBM) model and the total-factor input and output efficiency indexes. Findings conclude that B&Bs do not invest useless inputs; rather, B&Bs optimally utilize inputs, which results in higher performing inputs than outputs. Number of employees has the highest input index score among the evaluated inputs, indicating that B&Bs in Taiwan manage labor requirements efficiently. For output efficiency index scores, room revenue receives the highest score, while food and beverage revenue earns the lowest score. Thus, this research recommends B&Bs in Taiwan to focus efforts on improving food and beverage services to maximize revenue.

1. Introduction

Tourism has become one of the fastest and largest growing industries due to increasing globalization and economic development. According to the 2016 UNWTO Tourism Highlights, international tourist arrivals worldwide increased from 25 million in 1950 to 1.19 billion in 2015. Arrivals are forecasted to reach 1.8 billion in 2030. The report also states that the tourism industry generated roughly 10% of the global Gross Domestic Product and created approximately 9% of jobs worldwide. The growth of the tourism industry creates an opportunity for a range of enterprises to enter the industry and provide different types of accommodations for tourists. More specifically, bed and breakfast accommodations (B&Bs) supply a lodging alternative to hotels and resorts, and specialize in providing guests with warm, friendly, and personalized service. B&Bs target consumers who do not like to stay at standard hotel rooms and are looking to experience something different and new, such as experiencing local and traditional cultures and natural or rural environments. Over the last decade, the B&B industry worldwide has quickly grown in number.

According to the statistical figures from the Taiwanese Tourism Bureau, the number of B&Bs in Taiwan grew from 40 to 7042 between 2012 and 2016. The Taiwanese government supports homeowners to run B&B enterprises and enacted B&B-specific policy and regulations in 2001. These policies encourage homeowners to become entrepreneurs and business owners with the intention of increasing household incomes while bolstering local economies. In Taiwan, there are regulations that limit the establishment of B&B facilities. For example, B&Bs must be built in certain areas, such as designated scenic spots, tourist sites, national parks, aboriginal reservations, remote areas, offshore islands, recreational farms, nature villages, and non-urban land. Due to the regulations and environmental issues, B&Bs in Taiwan are different from other types of accommodations. People can experience local culture without any artificial environment. Therefore, B&Bs are seen to be a positive contribution to innovation in tourist products and allow for sustainable tourism development with economic diversification. In addition to economic development, B&Bs can benefit rural socio-economic development and regeneration, especially in Taiwanese agricultural areas. B&Bs help with the industrial transformation of traditional agricultural areas to leisure-based areas with more economic value. For example, tourists can take long stays at B&Bs to experience the local and rural lifestyles and cultures. Through this process, B&Bs can also positively contribute to sustainable development of local economy.

However, the B&B industry in Taiwan is currently struggling with several regulatory challenges. According to the regulations for the management of B&B facilities, the business operation of a B&B facility cannot be allowed to have more than five guest rooms within a total floor area of 150 square meters. If a B&B with a business registration

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certification is located at an aboriginal reservation, recreational agricultural area, tourist area, or remote area, then it cannot be allowed to operate > 15 rooms within a total 200 square meters. This regulation controls the number of rooms and business areas of each B&B. Therefore, there are over 600 illegal B&Bs in Yilan County and over 300 illegal B&Bs in Hualien County. In order to solve the problem mentioned above, this research seeks to provide different insights through disaggregate efficiency index analysis to determine which sections of B&Bs should be enhanced and improved.

Unlike traditional studies of overall efficiency evaluation, the innovations and contribution of this research are threefold. First, this research disaggregates input and output variables through the SBM-DEA model so that B&B owners and managers can better understand the ways to improve. Second, there are limited studies on the B&B industry in Taiwan due to its recent increase in popularity and growing impact on the local economy. Third, the concept of total factor energy efficiency (TFEE) in Hu and Wang (2006) is applied in this research, thus developing the total factor input and output efficiency indexes for the B&B industry. This is a novel perspective, which allows B&B owners and managers to re-allocate their managerial resources. Therefore, this study aims to evaluate B&B performance in Taiwan by examining a sample of 18 cities and counties that have B&Bs. Each city and country is measured by the level of input and output of its B&Bs. The main purpose of this research is to contribute to the B&B industry by providing new angles to assess B&B performance by using the cities or counties as units. This paper also seeks to identify the determinants of efficiency indexes for the B&B industry.

The remainder of this research is organized as follows. Section Two provides a brief background presence on the B&B industry and reviews the DEA applied in accommodation efficiency evaluation. Section Three illustrates the methodology applied in this research, including SBM-DEA model and the concept of total factor input and output efficiency, and then describes the data with three input and three output variables. Section Four reports the empirical results. Finally, the discussion is drawn in Section Five.

2. Literature review

2.1. The bed and breakfasts industry

There are limited research studies on the topic of the bed and breakfast accommodations (B&B). Generally, B&Bs are viewed as a family-owned accommodations. Homeowners provide guests with private rooms and breakfast. In addition to a “bed” and “breakfast”, hosts often offer guests local knowledge and travel information. Nuntsu, Tassiopoulos, and Haydam (2004) states that providing tourists with private homes for lodging is not a new concept. The concept originated in Europe and is popular in American vacation areas. Zane (1997) surveyed 1400 B&B guests and found that B&Bs appeal to guests because B&B specific-features, such as a private bath, a sense of privacy, a quiet atmosphere, and homeowners who offer local information. B&Bs were also found to contribute to an increase in earnings, foreign exchange, employment rate, and local economy. Based on Zane's survey, a couple who stayed at a B&B for vacation spent, on average, $225.72 USD for lodging, food, and other purchases per day. The total average spending per couple at B&Bs measured more than $530 USD per trip by multiplying 2.35 nights, the average length of stay at B&Bs. Survey participants also indicated that they planned to take 2.62 trips in the coming year, generating roughly $1388 USD at a B&B per year per couple. Hence, Kaufman and Weaver (1998) suggest that developing a better understanding of the B&B industry is important to strategy planning due to the continued growth of the B&B industry, and its relatively low barrier of entrance for small entrepreneurs.

2.2. DEA applied in accommodation efficiency evaluation

There are many extant studies examining hotel efficiency through the use of data envelopment analysis (DEA). For example, Morey and Dittman (2003) employed the DEA model to evaluate managerial performance for 54 owner-managed hotels in the United States. The results showed that the mean operational efficiency is 89%, indicating that managers can keep their output levels from saving their cost of input by 11%. Anderson, Fok, and Scott (2000) adopted DEA to assess overall, allocate, technical, pure technical, and scale efficiency levels for 48 hotels in the United States. They found that hotel inefficiency is a mean overall efficiency of 42%, implying that hotels can decrease 58% of input costs if they manage on their efficient frontier. Tsaur (2001) applied DEA with six output and seven input variables to measure 53 international Taiwanese hotels from 1996 to 1998. The mean operational efficiency score in this study was 87.33%, indicating that the managers can reduce the input costs by 12.67% if they ran on their efficient frontier. Chain hotels performed better than independent hotels because the efficiency score of chain hotels was 0.8997, while that of the independent hotels was 0.8573.

Hwang and Chang (2003) employed DEA and Malmquist productivity index to evaluate the managerial performance for 45 hotels from 1994 to 1998. They found a significant difference in efficiency change when examining varying customer sources and management styles. They also found an association between the efficiency of tourist hotels and the rating level of international hotels in Taiwan. Furthermore, this study divided the entire hotel industry into six clusters and studied each cluster's relative managerial efficiency and efficiency change in order to develop specific and effective management strategies.

Hu, Shieh, Huang, and Chiu (2009) applied two-stage DEA to assess allocative, cost, and overall technical efficiency for 68 international tourist hotels in Taiwan from 1997 to 2006. The Tobit censored regression model was used to determine the impact factors on the efficiency scores of the international tourist hotels. The study found that hotels located in a resort area, hotels in chain systems, hotels close to international airports, and hotels with higher occupancy rates performed better and received higher efficiency scores.

Previous studies focus on hotel efficiency performance, and there is little research concerning the B&B industry with particular focus on efficiency evaluation. The reason why to review “hotel” efficiency measurements is because both hotel and B&B belong to a type of accommodation with different room and business scales. Through this research, the B&B industry is explored from a different perspective.

3. Methodology and data

According to the literature review, there are no existing studies that focus on the disaggregate efficiency index of counties and cities where B&Bs are located. This paper employs the slacks-based measurement of non-oriented model in order to compute input and output efficiency for the B&B industry in Taiwan.

3.1. Data envelopment analysis (DEA) model

Farrell (1957) proposed the concept of a frontier production function. Data envelopment analysis (DEA) employs linear programming methods to establish a frontier by the decision-making units (DMUs) in the same period. The efficiency of DMUs can be assessed on the frontier. There are two components: technical efficiency and allocative efficiency. Technical efficiency is a reflection of a firm's capability to receive maximum output from a given set of inputs. How a firm adopts the inputs in optimal proportion given their respective prices and the production technology, is a reflection of the allocative efficiency of the