Performance of Chinese hotel segment markets: Efficiencies measure based on both endogenous and exogenous factors

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ABSTRACT

The hotel industry is a sector of growing significance, and its development is closely related to the regional economy; however, the industry's performance, especially its segment markets are seldom evaluated considering both the hotel and regional situation, which leads to inappropriate business decisions. This paper provides a conceptual understanding of the influence of regional factors on hotel development. Using a super-efficiency slack-based measure in a data envelopment analysis method, this study examines the regional operational efficiency of the mainland China hotel industry, an emerging hospitality market. Key regional factors are screened out by principal component analysis. This study provides an approach for improving the decision-making process of hotel managers by identifying the best performers in the sector to understand and discriminate between different occupancy rates and room prices as sources of performance enhancement. The findings elucitate that there are versatile efficiencies in China's regional hotel market segments.

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1. Introduction

Hospitality and tourism are increasingly important industries in many cities and regions. The hotel industry represents a crucial component of economic industry outputs, job creation, and business opportunity contributing to local economic development (Go, Pine, & Yu, 1994). The evaluation of hotel performance is crucial for hotel management and strategy by indicating gaps and providing a guide for future improvement. Hotel performance is typically evaluated by financial hotel operational indicators (Phillips, 1996). A measure of this type is problematic, particularly when applied to strategic planning, because it ignores the intrinsic link between regional characteristics such as visitor attractions and associated influences on occupancy rates (OR) and hotel room prices (Yang & Cai, 2016). Performance measured by operational indicators also adds bias to an evaluation, for example, a hotel with higher revenue may not perform better than one with lower revenue in the optimal use of local resources. The potential for hotel development that relies on local advantages can be limited by the decision process. This paper argues that hotel development is heavily dependent on local factors and, therefore, hotel performance or operational efficiency should be evaluated in conjunction with the consideration of a wide range of hotel and local conditions that affect hotel development.

Both endogenous and exogenous factors can influence the performance of hotel market. Although rapidly expanding, there is increasing diversification and competition in the hotel sector from other regions (Assaf & Josiassen, 2012; Lee, Capella, Taylor, Luo, & Gabler, 2014). Efficiency measures of performance based on input-output relations can generate useful information for management in competitive markets such as the hotel industry (Barros, 2005). By considering local potential and endowments, hotel industry strategies can be realistic and feasible. In China, for example, most regions favor the building of high-end and luxury hotels in the belief that greater investment boosts the industry and reaps higher profits. According to Smith Travel Research (STR), 234,854 rooms were expected to be added in 2014, contributing 56% of the high-
end hotel supply (4- or 5-stars) in the Asia-Pacific market (He, 2013). However, the revenue per available room (RevPAR) decreased by 2.8% from the year 2012 to the year 2013. This problematic demand-supply relationship requires careful examination of hotel industry efficiency considering regional factors.

The main purpose of this paper is to offer insights into efficiency-based performance assessments of the hotel industry incorporating both hotel and regional factors. This study contributes to the literature in three ways. First, this study attempts to incorporate regional factors that are widely acknowledged in hospitality research (Assaf & Josiassen, 2012; Holloway, 2004, p. 169; Yang & Cai, 2016) into an efficiency evaluation framework to extend the hotel efficiency research (for example, Assaf & Barros, 2013; Barros, 2005; Corne, 2015) and emphasize both endogenous and exogenous factors in different hotel segment markets.

Second, a super-efficiency slack-based measure (SBM) in a data envelopment analysis (DEA) is applied to a case study of the Chinese regional hotel industry. This method allows for performance evaluation based on multiple inputs and multiple outputs and, therefore, permits the investigation into sources of improvements in the hotel industry. Adopting super-efficiency scores, this study overcomes some problems in previous research in discriminating efficient units (Randy, Robert, & John, 2000). The findings, including the efficiency scores, identification of best performers, and slacks, can be used to explain the hotel market and as references to improve the decision process.

Third, China is an emerging but fast growing hotel market, which has attracted substantial attention (Gross, Gao, & Huang, 2013; Yang & Cai, 2016; Yang, Xia, Zhong, & Hu, 2015). Although there is a growing interest in analyzing the Chinese market (Huang, Mesak, Hsu, & Qu, 2012), there are very few investigations into its market segments or account of its efficiency with both endogenous and exogenous factors. This type of research is meaningful for practitioners to explain the supply-demand relationship and to develop appropriate locally based hotel development strategies. The findings of this research provide an overall analysis of the regional hotel industry in mainland China and will encourage other regions to develop their hotel industry by effectively deploying local resources in the different hotel market segments.

The remainder of the paper is organized as follows. Section 2 reviews the efficiency measures of the hotel industry with a primary focus on the DEA method. This section analyzes why both hotel and regional factors matter. Section 3 describes the methodology. Section 4 presents the results of the Chinese hotel market according to star ratings, the key regional factors, and the regional hotel industry efficiency by star rating. The implications of these findings are discussed in Section 5, and Section 6 concludes the paper by recapping the findings and limitations.

2. Endogenous and exogenous factors affecting hotel business

2.1. Hotel performance measurement

The International Labour Office (1989) outlines five basic methods to measure hotel economic performance: a valued-added-based method, a gross profit-based method, a sales or revenue-based method, an occupancy-based method, and a spending-based method. Among others, RevPAR, average room rate (ARR), and Occupancy rate are commonly-used as key indicators and often appear in both research and hotel industry reports (Hung, Shang, & Wang, 2010; Mauri, 2013; Parte- Esteban & Alberca-Olive, 2013). To a certain extent, these financial indicators demonstrate a hotel’s achievement but do not reflect the costs or inputs that are spent to realize that performance.

By considering both inputs and outputs, efficiency evaluation has received significant recent attention from the hospitality industry, particularly evaluations using the DEA method. The DEA method relates to the concept of the production possibility frontier. Therefore, the efficiency measure refers to the generation of maximum output obtained from the given inputs consumed or by minimizing inputs to generate given outputs using the current technology available to the industry.

There is increasing interest in the application of the DEA technique to the hospitality industry. For instance, Hwang and Chang (2003) use DEA to measure hotel managerial efficiency change in Taiwan; Barros (2005) analyzes the efficiency of individual hotels belonging to a Portuguese state-owned chain; Assaf and Josiassen (2012) examine performance measures of international tourism destinations using DEA and bootstrap truncated regression models; Assaf and Barros (2013) present an efficiency analysis of some of the leading hotel companies worldwide. The purpose of DEA application includes: to enable the ranking of hotel performance (Assaf & Josiassen, 2012), to provide benchmarks or best practices (Assaf & Barros, 2013; Corne, 2015), to identify determinants (Huang et al., 2012; Shanga, Wang, & Hung, 2010), and to compare performance based on different organizational forms (Botti, Briec, & Cliquet, 2009).

There is still some room for the improvement and enrichment of hotel operational efficiency assessment. To our best knowledge, most studies emphasize only the endogenous inputs of the hotel industry such as labor, the number of rooms constructed, the surface area of the hotel, and operational cost (Corne, 2015) without considering exogenous factors that can significantly influence the market. Despite market segmentation to some extent based on a system of star ratings, few studies examine which segments of the hotel market are more efficient in a given region and in what manner a regional hotel industry can improve based on the efficiency analysis. This type of analysis can enrich the literature by analyzing emerging markets such as China.

2.2. Endogenous and exogenous factors

Both endogenous and exogenous factors can affect an industry, and this is particularly so for the hospitality industry. Currently, hotel management primarily focuses on internal management or endogenous factors assuming that a high level of service can lead to customer satisfaction and, therefore, attract more customers (Baker & Crompton, 2000). Endogenous factors that are intensively studied in the literature include capital investment, the quality of facilities and employees’ services (Prayag & Hosany, 2015), marketing and reputation (Rust, Zahorik, & Keiningham, 1995), management innovation (Fraj, Matute, & Melero, 2015; Nieves & Segarra-Ciprés, 2015), and entrepreneurship (Xiao, O’Neill, & Mattila, 2012).

With globalization, exogenous factors play an increasingly important role in the hotel industry (Assaf, Josiassen, & Agbola, 2015; Chen, 2010). To determine the potential of a sector’s development requires knowledge of the regional profile. A context-based perspective may more accurately explain a hotel industry’s performance considering its opportunities and challenges. At the global level, the international corporate chains of the lodging industry compete in various cities (Contractor & Kundu, 1998; Mathews, 2000). Some studies describe the destination as a “competitive actor” or “business unit” (Enright & Newton, 2004), which influences some traits of local hotels’ strategies, particularly with respect to the commercial dimensions (segments, seasonality, and occupancy (Jeffrey & Barden, 2000)). Additionally, empirical evidence demonstrates that regional features have a more significant impact on performance and can best explain the dynamics of the performance measure (Assaf et al., 2015). Failing to successfully
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