



Accounting for customer satisfaction in measuring hotel efficiency: Evidence from the US hotel industry

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ARTICLE INFO

Article history:

Received 6 February 2011

Received in revised form 12 July 2011

Accepted 25 August 2011

Keywords:

Customer satisfaction

Hotel efficiency

Bayesian distance stochastic frontier

US hotels

ABSTRACT

Customer satisfaction, though an important output, is often ignored in hotel efficiency studies. Our study provides empirical evidence that excluding customer satisfaction may lead to significant difference in the mean and ranking of hotel efficiency scores. We derive our hotel efficiency scores using the distance stochastic frontier method based on a balanced sample of leading hotel chains in the US. We present and compare the efficiency results from two models, one that includes customer satisfaction and one that excludes customer satisfaction. The study discusses the difference in efficiency scores between the models. It also elaborates on the efficiency scores of some individual hotel chains and provides directions for future research.

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1. Introduction

The literature on the efficiency measurement of the hotel industry is now rich with studies that cover different countries or regions (e.g. UK, Australia, Portugal, Slovenia, Morocco, France, Italy, Thailand, and Spain), use more advanced and different methodologies (e.g. Data Envelopment Analysis (DEA), Bootstrapped Data Envelopment Analysis (BDEA), Stochastic Frontier (SF), and the Malmquist Index (MI)) and different measures and definitions of inputs and outputs. The traditional use of simple performance ratio measures is not common anymore; in fact the shift is more towards methods that can account for the multiple input/output complexities of the hotel industry (Hwang and Chang, 2003; Reynolds, 2003; Barros and Alves, 2004; Barros, 2005; Chiang et al., 2004; Sigala et al., 2004; Wang et al., 2006; Barros and Dieke, 2008; Assaf and Knežević, 2010).

The literature is thus rich and the fact that more studies continue to be conducted illustrates the importance of this topic. It is simple to provide supportive arguments that efficiency measurement enables a hotel company to monitor its effectiveness in achieving its goals and objectives, managing products and services, and obtaining product/service results (customer satisfaction). It is closely linked to efforts to make strategic plans, clarify organizational goals and objectives, characterize decision-making needs, and analyze managers' needs for information. The clear knowledge

of efficiency is also essential for international expansion and international diversification.

We can cite many other arguments why efficiency measurement is important and how it can benefit hotel companies. The present paper was motivated by all the above, and our aim is to extend the current literature both in terms of scope and method. Though the literature is rich, it is common to see studies mis-specifying the correct inputs and outputs of the hotel industry. For example, it is surprising that customer satisfaction, one of the most important hotel outputs, has often been ignored in related studies. The hotel industry is usually classified as a service industry, and customer satisfaction is the "most important metric for reflecting the quality that is actually delivered to customers through the product/service and by the accompanying servicing" (Vavra, 1997, p. 25). Customer satisfaction is also an important determinant of long term survival, and it is the customer-based measurement system for assessing—and improving—the service of a hotel. The literature is clear on the issue that it is more costly to attract a new customer than it is to retain an existing customer (Naumann, 1995).

Thus, our argument is that for a comprehensive measurement of hotel efficiency, there is a need to account for both the quantity of outputs as well as the quality of outputs which can be reflected through customer satisfaction. In other words, our aim is to measure hotel efficiency while also accounting for customer satisfaction. We collect data on customer satisfaction from US hotels, which offer an attractive context for efficiency analysis. We can cite only one study from the literature that focused on US hotels and this was over a decade ago (Anderson et al., 1999). Thus, certainly, there

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is room for more studies on this country especially that the US hotel industry has gone through many changes (e.g. economic, political, etc.) over the last 10 years. The US hotel industry is also the largest in the world, and often attracts the attention of academic and local and international industry readers.

The study innovates with the methodology adapted to measure hotel efficiency. The available studies are mainly dominated by two techniques: the Data Envelopment Analysis (DEA) and Stochastic Frontier (SF) methodologies. While both these methods have their advantages, there are many more recent versions of these methodologies that proved to provide more robust efficiency estimates. We use here the Bayesian distance stochastic frontier approach which improves on both the DEA and SF methodologies (Koop et al., 1997; O'Donnell and Coelli, 2005). For instance, the method allows for the inclusion for multiple outputs while also accounting for measurement error. Thus, it combines the advantages of both the DEA and SF methods.

The paper proceeds as follows: Section 2 presents the literature review. Section 3 introduces the input/output variables used in the study, and elaborates on the sources of data collection. Section 4 elaborates on the methodology. Section 5 presents and discusses the results, and Section 6 concludes.

2. Relevant existing research

The literature on hotel efficiency has developed swiftly over the last few years, driven mainly by the rapid changes and challenging economic trends which continue to face the industry. The recent focus has been on introducing more complex performance methods such as the Data Envelopment Analysis (DEA) and stochastic frontier (SF) methods, which in contrast to the simple ratio methods can account for the multiple inputs and outputs setting of the hotel industry. For a review of some these studies refer to Assaf et al. (2010).

The inputs and output variables used in hotel efficiency studies have also been recently reviewed by Barros and Dieke (2008). Some of the most common outputs include number of room sold, total revenues, market share, growth share, number of guests, number of nights spent, and food and beverage revenues while some of the most common inputs include labor, number of rooms and capital (Anderson et al., 1999; Hwang and Chang, 2003; Barros and Alves, 2004; Reynolds, 2003; Barros and Alves, 2004; Sigala et al., 2004; Barros, 2005; Chiang et al., 2004; Wang et al., 2006; Reynolds and Thompson, 2007; Barros and Dieke, 2008; Assaf and Knežević, 2010).

This review of the literature clearly indicates that none of the previous studies has used customer satisfaction as an output variable in estimating hotel efficiency. Customer satisfaction is defined “as the customer’s fulfillment response. It is a judgment that a product or service feature, or the product or service itself, provided [or is providing] a pleasurable level of consumption-related fulfillment, including levels of under and over-fulfillment” (Oliver, 1997 p. 13). The notion that customer satisfaction can serve as an output in efficiency modeling is heavily rooted in extant literature. The primary theory-based anchoring for the use of satisfaction as an output measure is the strong link between satisfaction and loyalty (Anderson and Sullivan, 1993; Bearden and Teel, 1983; Bolton and Drew, 1991; Boulding et al., 1993; Fornell, 1992; LaBarbera and Mazursky, 1983; Oliver, 1980; Oliver and Swan, 1989; Yi, 1991). First, satisfied and loyal customers reduce the cost of future transactions (Reichheld and Sasser, 1990). For example, advertising monies have greater efficiency when targeted at loyal customers because it is already known that loyal customers have a want/need for the product or service. Second, satisfied and loyal customers decrease price elasticities. This decreased elasticity is because loyal customers

are less probable to switch brands in the case of a price increase than are non-loyal customers (Krishnamurthi, 1991). Third, satisfied and loyal customers are less likely to terminate a relationship with the firm in the circumstance of a service failure. This failure buffer results from the fact that a person’s satisfaction judgment is a cumulative evaluation of all experiences with the firm (Cronin and Taylor, 1994) and loyal customers most likely have a history of unflawed interactions with the firm. Fourth, positive word-of-mouth from satisfied customers reduces the cost of attracting new customers and bolsters the company’s overall reputation, while that of dissatisfied customers has the reverse effect (Fornell, 1992). In summary, the above logic supports the contention that customer satisfaction can and should serve as an output measurement in hotel efficiency modeling.

Thus, the present study aims to measure hotel efficiency while accounting for customer satisfaction. We also account for other important outputs which we will discuss in the next section.

3. Output and input variables

As stated before, our study aims to account for both the quality and quantity of outputs. We use here customer satisfaction to reflect the quality of hotel outputs, and we use total revenues (revenues from rooms, F&B and other outlets) and occupancy rate to reflect hotel outputs. On the inputs side, we distinguish between three types of inputs: number of outlets (proxy for fixed capital), number of FTE (full time equivalent employees) and other operational costs (administrative costs, costs of utilities and rent). These input and output variables have been used in most recent studies (Morey and Dittman, 1995; Anderson et al., 1999; Peypoch and Sbai, 2010).

Our data set involves a balanced sample of leading hotel chains in the US. In total, we have nine hotel chains. Our data range from 1999 to 2009 (8 hotel chains \times 11 = 88 observations), and were obtained mainly from the Euromonitor database as well as from the annual reports of the hotel chains involved. Some data like the number of outlets were collected from either the hotel website or from speaking directly with the hotels. Table 1 summarizes some operational characteristics for the hotels involved, averaged over the last 4 years of our data (2006–2009).

Our data on customer satisfaction were obtained from the American Customer Satisfaction Index (ACSI). The ACSI measures the quality of the goods and services as judged by the customers that consume them (Fornell et al., 1996). An individual firm’s customer satisfaction index reflects its served markets—its customers’—overall evaluation of total purchase, both actual and anticipated (Anderson et al., 1994; Fornell, 1992; Johnson and Fornell, 1991). While only an overall customer satisfaction score is publicly available through ACSI, it is prudent to note that the ACSI procedure uses three input variables to operationalize the construct: (1) an overall rating of satisfaction; (2) the extent to which performance exceeds or falls short of expectations; and (3) an assessment of performance relative to the respondent’s ideal good or service in the category (Fornell et al., 1996). Interestingly, the latter are typically employed as antecedents in models of transaction-specific satisfaction (Oliver, 1980; Yi, 1991), but ACSI researchers use them as indicators of satisfaction because the ACSI models strives to operationalize satisfaction as a cumulative index (Fornell et al., 1996). Furthermore, the latent variable approach in assessing overall customer satisfaction only extracts shared variance [the portion that is common to all three questions]. Therefore, satisfaction is not confounded by either disconfirmation or comparison to an ideal (Fornell et al., 1996).

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