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The impact of operational exposure and value-of-time on customer choice: Evidence from the airline industry

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ABSTRACT

This study examines how a passenger's operational exposure and value-of-time moderate the relationship between airline quality and passenger choice. Using a choice model, we show that the positive impact of providing nonstop flights and higher on-time performance is enforced by a passenger's exposure to airline operations, and high time value. In particular, the results show that segmenting passengers by their operational exposure may generate demand, even in a fairly standardized service operations industry, such as the airline industry. Finally, we discuss potential ways that airlines can discriminate the quality or the price of services provided based on our findings.

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1. Introduction

There are many aspects of a service company's offerings, including price, physical infrastructure (equipment and facilities) and operation quality that influence a customer's decision to purchase and use a service. While price and physical infrastructure are often well known to customers before a service is performed, operational quality may be less known *a priori* because customers experience the service at the same time the service is being performed.

Higher operational quality, in general, attracts greater numbers of customers and increases the customers' willingness to pay, *ceteris paribus*. However, the importance of operational quality in choosing a service provider may vary depending on customer characteristics (Anderson et al., 2008; Bell et al., 2005; Prousaloglou and Koppelman, 1995). For example, some customers may be extremely exposed to service operational processes, and these customers may place a high value on operational quality. On the other hand, customers with little disposable income may be relatively unconcerned about certain aspects of operational quality and be more concerned about low prices. It is the moderating effect of customer characteristics on the operational quality–customer choice relationship in the service sector that we explore. In particular, we examine how two customer characteristics – operational exposure and value-of-time, modify the relationship between operational quality and customer choice.

Using data from the US airline industry, we assess operational quality by the reliability and convenience of an airline's operations, as measured by the carrier's nonstop flight provisions and its on-time performance record on the passenger's route. We assess a passenger's operational exposure using two measures: whether the passenger is traveling with checked bags, and the presence of traveling companions accompanying the passenger. In addition, two proxies are used to assess value-of-time – the income level of passengers and trip purpose. Both high-income passengers and business passengers

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expected to have a relatively high valuation of travel time compared to low-income passengers and passengers traveling for leisure reasons.

A number of studies have been written on factors that influence airline choice by passengers (Hess et al., 2007; Koppelman et al., 2008; Proussaloglou and Koppelman, 1995; Suzuki, 2007; Wen and Lai, 2010). However, the implicit assumption in these studies is that all passengers have the same level of operational exposure and, as a result, they respond uniformly to airline operational quality regardless of operational exposure levels. To the best of our knowledge, this paper is the first to segment passengers on the basis of their operational characteristics in an airline choice study.

The main findings from our paper are the following: First, the positive impacts of nonstop flights and higher on-time performance on carrier choice are re-enforced by passenger operational characteristics, such as the presence of companions on a trip and the need to check luggage. Second, the positive relationship between nonstop flight frequencies by a carrier on a route and passenger choice of that carrier is stronger for high-income and business passengers, *ceteris paribus*. Managerially, these findings may be important to airlines as they determine strategies for differentiating quality by passenger segment. For example, airlines could vary checked baggage fees depending on whether passengers are traveling nonstop or connecting to their final destination in order to optimize gains from this revenue source.

The rest of the paper is organized as follows: Section 2 reviews relevant literature on customer choice and service operational exposure. Section 3 states our hypotheses and Section 4 describes our model and data. Sections 5 and 6 present our empirical results and a discussion of the results respectively. Conclusions, limitations and future research are discussed in Section 7.

2. Literature review

In this section, in order to better understand the role of operational exposure in choice decisions, we review related literature from services marketing. Next, we provide a general review of choice studies, and discuss how customer segmentation impacts choice. Finally, we specifically review choice studies that use airline industry data. Airline managers are interested in determining how passenger characteristics influence carrier choice, since they may be able to use their knowledge of customer segments in order to better price discriminate among passengers, thus increasing total revenues.

2.1. Customer presence in service operations

In order to better understand how operational exposure affects customer choice in service operations such as the airline industry, it is important to distinguish the service sector from the product sector. The literature notes two features that differentiate the provision of services from the provision of products – inseparability and variability.

Inseparability refers to the characteristic of the service sector whereby production and consumption of services often take place simultaneously; that is, they are not separable (Booms and Bitner, 1982; Zeithaml et al., 1985). Unlike manufactured products, services are not produced at one time and consumed later. Instead, customers are generally present during at least a portion of the service production process (e.g., health care, hair salons, restaurants, and public transportation). While customers are present as services are produced, the quality of service provider's operations (e.g., reliable operations, physical equipment fulfillment, helpful staff attitude) can directly influence the customer experience (Parasuraman et al., 1985). As a result, researchers view inseparability as a business opportunity to increase customer satisfaction; for example, while customers are directly exposed to the service operations, a service provider can better understand needs and, accordingly, customize service offerings (Chase and Tansik, 1983; Kellogg and Chase, 1995; Soteriou and Chase, 1998).

However, in some service industries, the ability to customize is quite limited. Instead, customers may be passively exposed to the operational processes of a service provider (e.g., public transportation, hotel and fast-food industry) (Mersha, 1990; Schmenner, 1986). As a result, customer heterogeneity may be implicitly overlooked and information on customer segmentation may be significantly absent (Verma and Young, 2000). Therefore, providers in these more standardized service industries may be able to attract certain customer segments if they are able to differentiate their services from the competition (Anderson et al., 2009; Kellogg and Chase, 1995; Soteriou and Chase, 1998).

Variability is another feature found more often in service operations than in product manufacturing firms. Variability (or heterogeneity) in services occurs since services are less consistent than manufactured products due to varying production factors (different staff availability, human emotions, equipment conditions, etc.), even for those service industries (such as the airline industry) that tend to be fairly standardized (Morris and Johnston, 1987; Zeithaml et al., 1985). Since the services are consumed at the same time as they are produced, “defects” may not be easily discarded or reworked. For instance, airline passengers may have to endure late flights and flight cancellations. Even when a customer uses the same service provider on a repeat basis, the service provider may change equipment or different personnel may be in attendance. As a result, service quality significantly fluctuates and may be unpredictable (Zeithaml et al., 1985).

Customers may view variability in service performance as unreliable or of low quality. In the airline industry, researchers have found that poor on-time performance negatively influences passenger satisfaction (Anderson et al., 2009; Bejou and Palmer, 1998; Dresner and Xu, 1995; Keiningham et al., 2014; Steven et al., 2012; Tsikriktsis and Heineke, 2004), affecting an airline's market share and financial performance (Dresner and Xu, 1995; Keiningham et al., 2014; Steven et al., 2012; Tsikriktsis, 2007).

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