PERGAMON

Transportation Research Part A 35 (2001) 773–788

TRANSPORTATION RESEARCH PART A

www.elsevier.com/locate/tra

Airline market share and customer service quality: a reference-dependent model

Yoshinori Suzuki [a,*], John E. Tyworth [b], Robert A. Novack [b]

[a] *Department of Logistics, Operations and MIS, College of Business, Iowa State University, 300 Carver Hall, Ames, IA 50011 2063, USA*

[b] *Department of Business Logistics, Smeal College of Business Administration, Pennsylvania State University, USA*

Received 12 October 1998; received in revised form 14 March 2000; accepted 15 March 2000

Abstract

Traditional models that explain the nature of the relationship between customer service quality and airline demand assume that the relationship can be approximated by using smooth or differentiable curves. Suzuki and Tyworth, however, recently argued that this assumption may not be valid, and that, if it is invalid, the model performance can be improved by using non-smooth functions to represent the relationship (Suzuki, Y., Tyworth, J.E., 1998. A theoretical framework for modeling sales-service relationships in the transportation industry. Transportation Research E 34 (2), 87–100). We use their framework to develop a model that represents the relationship between service quality and market share in the airline industry and then empirically compare its performance with conventional airline demand models. The results indicate that the relationship is characterized by a non-smooth curve and that our model provides a significantly better goodness of fit than other conventional demand models.

Keywords: Airline demand; Customer service; Reference point; Econometric model

1. Introduction

The relationship between customer service quality and passenger demand is a critical issue for air carriers, because it enables airline managers to make strategic decisions on the level of service and related resources needed to achieve market share targets. Although researchers have made considerable progress in this area, all of the current studies assume that the relationship can be

* Corresponding author. Tel.: +1-515-294-5577; fax: +1-515-294-2534.
E-mail address: ysuzuki@iastate.edu (Y. Suzuki).

0965-8564/01/$ - see front matter
PII: S0965-8564(00)00016-1

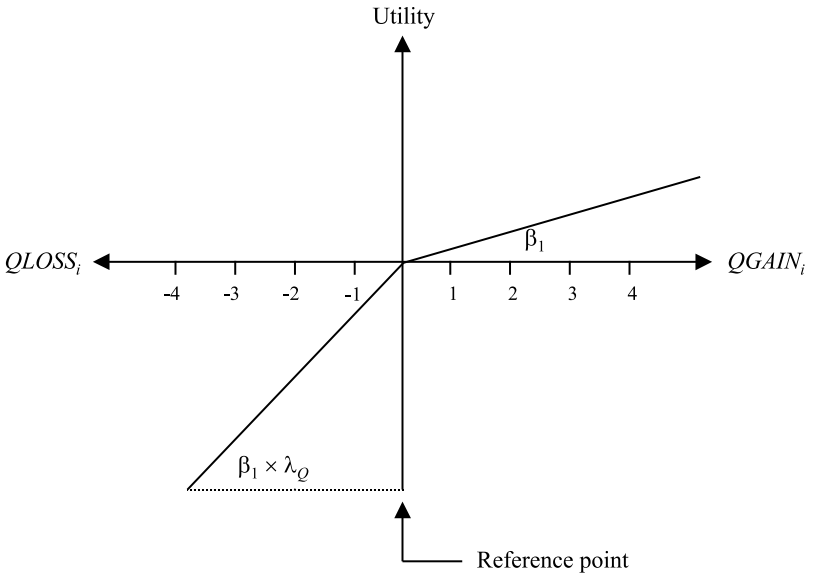

Fig. 1. Slopes reflecting loss aversion ($\lambda_Q > 1$). Source: Suzuki and Tyworth (1998), p. 92.

approximated by using smooth or differentiable curves such as linear, Cobb–Douglas, and binary logit functions (see, for example, Mutti and Murai, 1977; Borenstein, 1991; Dresner and Windle, 1992; Nako, 1992; Proussaloglou and Koppelman, 1995; Yoo and Ashford, 1996; Suzuki, 1998). [1] In other words, the current studies all assume that there is no "sudden change" of slopes for the functions representing the relationship between service quality and passenger demand. A recent theoretical work by Suzuki and Tyworth (1998), however, showed that this assumption may not be valid and, if that is the case, the model performance can be improved by using non-smooth functions to represent the relationship.

The Suzuki and Tyworth (1998) framework is based on the recently developed theory of human choice behavior called the *loss aversion* (Tversky and Kahneman, 1991). Simply stated, the loss aversion property suggests that consumers evaluate product or service attributes relative to a certain reference point (e.g., expectation), and react more strongly to losses (negative deviations from the reference point) than to the equivalent-sized gains (positive deviations). Thus, the loss aversion property implies that the utility function should be steeper for losses than for gains (see Fig. 1). Suzuki and Tyworth applied this concept to the aggregate model of transportation demand and argued that if each customer is loss averse with respect to service quality, the aggregate relationship between service quality and transportation demand must also be asymmetric about the reference point. They suggest that one should first approximate the transportation customers' "aggregate" reference point (market reference point), like the average customer service level, and then compute the slope of the demand function separately for service gains and service losses. This

[1] We consider logit choice models as demand models because, if choice probabilities are viewed as representing market shares, these models provide market share implications of customer service quality.