How customer satisfaction affects loyalty:
Insights from nonlinear hierarchical Bayes modeling of customer satisfaction index

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Abstract

The paper investigates the nonlinear relationship between customer satisfaction and loyalty. We extend the relationship proposed by the customer satisfaction index (CSI) model to include a nonlinear functional form between satisfaction and loyalty. We examine different functional forms on how satisfaction affects loyalty and propose a model that reflects intrinsic characteristics of nonlinear effects, such as saturation-attainable limit of effectiveness, non-constant marginal return, and asymmetric response between satisfied and dissatisfied customers, in a parsimonious way. The model is estimated via a hierarchical Bayes model to accommodate structural heterogeneity of companies surveyed in the analysis. The key contributions of the paper include a nonlinear structural equation model that includes nonlinear term of endogenous latent variable and an efficient algorithm of MCMC in terms of multi-move sampler by using Gibbs sampling.

The empirical analysis by using survey data shows that (1) hierarchical Bayes models estimated by borrowing other companies’ data are better than the independent model using their own data in terms of not only goodness of fit measures but also in the number of significant model estimates, (2) nonlinear models perform better than linear models, (3) nonlinear model with asymmetric marginal returns and attainable limits is found to be the best model. The managerial implications for loyalty management include: (i) there are limits to attainable levels of loyalty through satisfaction; (ii) the phenomenon of loss aversion is observed in customers’ responses; (iii) marginal return of satisfaction is asymmetric across satisfied and dissatisfied customers, i.e., increasing for dissatisfied customers and decreasing for satisfied customers, (iv) in general, direct effect of satisfaction is more significant than indirect effect through recommendation intention.

Finally, based on the estimated response curve of loyalty as a function of satisfaction and the empirical distribution of customers on the dimensions of CSI scores, we evaluate the efficiency of loyalty programs under assumptions of full and limited access to customers.

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\(^1\) Terui acknowledges the grant by JSPS KAKENHI Grant Number (A)25245054.