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Service quality—developing a service quality index in the provision of commercial bus contracts

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Abstract

The measurement of service quality continues to be a challenging research theme and one of great practical importance to service providers and regulatory agencies. The key challenges begin with the identification of the set of potentially important dimensions of service quality perceived by passengers, current and potential. We then have to establish a way of measuring each attribute and identifying their relative importance in the overall calculation of satisfaction associated with existing service levels. Once a set of relevant attributes has been identified, this information can be integrated into programs such as monitoring and benchmarking, and even in contract specification. This paper, building on earlier research by the authors, investigates ways of quantifying service quality and comparing the levels within and between bus operators. The importance of establishing suitable market segments and the need to scale the service quality index for each operator to make meaningful comparisons is highlighted.

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1. Background

There is an extensive literature (Fielding et al., 1985) on measuring the cost efficiency and cost effectiveness of bus services and operations. A major data input is the level of service output, typically measured on the demand side by annual passenger trips or passenger kilometres and on

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the supply side by vehicle kilometres. As aggregate indicators of total output, these measures implicitly assume homogeneity of service quality. Passengers, however, evaluate services in many ways that may not be systematically associated with the amount of use of the service; indeed it is unclear whether aggregate passenger kilometres can be a proxy for differences in passenger satisfaction across bus segments.

Several studies have since refocused on the measurement of service quality, investigating the role of trade-off methods such as stated preference (SP) (e.g. Prioni and Hensher, 2000; Hensher, 1991 and Swanson et al., 1997) and univariate procedures that rate individual service items on a satisfaction scale (Cunningham et al., 1997). Although a passenger may perceive specific aspects of service quality as either positive or negative, we assume that the overall level of passenger satisfaction is best measured by how an individual evaluates the total package of services offered. Appropriate weights attached to each service dimension will reveal the strength of positive and negative sources of overall satisfaction. The SP paradigm enables us to develop preference formulae for a large number of service level scenarios, which can be implemented at the bus business level to establish operator-specific indicators of service delivery quality and effectiveness. The resulting satisfaction (utility) indicators obtained from the SP experiments measure the expected utility that a passenger obtains from the current levels of service and how this might change under alternative service level regimes.¹

In 1999, the Institute of Transport Studies (ITS) began researching ways the bus and coach industry in New South Wales (Australia) might capture customer satisfaction with service levels (Prioni and Hensher, 2000; Hensher and Prioni, 2002). The intention was to provide insights into how quality could be built into a possible future government performance assessment regime, including calculating value for money in commercial bus contracts. It would also provide insights into the effectiveness of service levels from a passenger viewpoint and identify which service aspects are working best and which need more improvement. ITS undertook a pilot program in which an on-board customer survey was undertaken with the support of 25 operators, focusing on a current trip and seeking information on passenger perceptions of service levels on 13 predetermined attributes. Stated choice (SC) methods were used, in which a sample of passengers were asked to choose their most preferred package from a number of alternative packages of service levels based on these attributes. Multinomial logit (MNL) models were estimated to establish the relative weights attached to the statistically significant attributes, representing the contribution of each service attribute to the calculation of an overall service quality index (SQI). The pilot program showed the value of SQI as a way to capture customer perceptions of service quality.

In 2000, we embarked on the development phase. Two key features were identified that needed more attention: selection of service segments within an operator's domain, and a carefully structured sampling plan. This paper presents the findings of this development phase. One major public operator and one major private operator were invited to participate and asked to propose service segments. A total of nine service segments were surveyed in this current round, sufficient to

¹ Given the heterogeneity of the population of bus passengers, segment-specific service quality indicators can be identified.

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