Travel satisfaction with public transport: Determinants, user classes, regional disparities and their evolution

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Increasing public transport ridership while providing a service that better caters to individual travelers poses an important goal and challenge for society, particularly public transport authorities and operators. This study identifies and characterizes current and potential users of public transport in Sweden and identifies the most important determinants of travel satisfaction with Public Transport services for each segment of travelers. In addition, it investigates the changes over time of attribute importance among the different segments and the inter-segment geographical variation of overall satisfaction. The analysis is based on a dataset of almost half a million records. Travelers were clustered based on their socio-demographics, travel patterns and accessibility measures to enable the analysis of determinants of satisfaction for different market segments. The cluster analysis results with five segments of Swedish travelers include: (i) inactive travelers; (ii) long distance commuters; (iii) urban motorist commuters; (iv) rural motorist commuters and; (v) students. By contrasting satisfaction with the importance of each quality of service attribute, three key attributes that should be prioritized by stakeholders are identified: customer interface, operation, network and length of trip time. Interestingly, the results suggest an overall similarity in the importance of service attributes among traveler segments. Nevertheless, some noticeable differences could be observed. The quality of service attributes’ importance levels reveal overall changes in appreciations and consumption goals over time. The more frequent public transport user segments are more satisfied across the board and are characterized by a more balanced distribution of attribute importance while rural motorist commuters are markedly dissatisfied with service operation attributes. This work can help authorities to tailor their policies to specific traveler groups.

1. Introduction

Continuous urban growth, environmental issues, competition for limited space, longer commuting distances as well as the need to promote equity and equality in society are the primary reasons that make the use of Public Transport (PT) a priority in today’s world. Customer retention and the attraction of new users can be accomplished by increasing customer satisfaction with PT services and improving their public image, which are widely believed to play decisive roles in rising ridership (TCRP Report 47, 1999). Customer satisfaction is defined as the extent to which service delivery fulfills customers’...

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expectations (Morfoulaki et al., 2007) and it is believed to be a driver of individual attitudes towards PT which in turn influences travel choice, mainly for short distance and urban trips (Diana, 2012).

In recent years, a large number of PT authorities have introduced quality-based incentive payments (Trafikanalys, 2013; Van de Velde et al., 2008; Hensher and Houghton, 2004) in order to monitor and better align the quality of service provided with their customers’ needs and expectations. However, different travelers have different needs and priorities. Therefore, there is a need to understand how expectations and satisfaction with quality of service attributes (QoSA), as well as the importance attached to them, varies for different market segments. Furthermore, identifying users’ priority areas will help stakeholders to prioritise their investment. This is especially important for making PT more attractive to travelers who do not use it frequently. Evidence-based knowledge on such patterns will facilitate the planning and operations of PT services to better tailor them to travelers’ needs. This would help the authorities to concentrate their policies towards a manageable group of travelers, rather than performing market segmentation based on numerous combinations of traveler groups’ socio-demographic and external characteristics. In addition, benchmarking similar geographical regions through the comparison of their perceived performance may allow regional stakeholders to transfer best practices.

Determinants of travel satisfaction may vary not only among individuals but also between different geographical regions and over long time periods. Since individuals are capable of learning and adapting over time, their appreciation towards service provision may also change over time. In addition, factors such as urban form, transport accessibility and climate also impact individual travel needs (Liu et al., 2014). Thus, it is of utmost importance to understand how satisfaction with regard to specific service indicators evolves over time and varies among geographical contexts. To this end, this study is based on the analysis of a very large dataset which consists of almost half a million respondents. The dataset contains cross-sectional data collected over a long period of 14 years from across Sweden. Sweden encompasses different climates from continental to sub-arctic conditions and consists of various regions with uneven population density. In addition, local governments in Sweden have a high degree of autonomy to develop their own land use and PT policies. The size and diversity of the data used in this analysis underpins the representativeness, relevance and robustness of study results.

This paper proposes an analysis approach for analyzing service quality in any given country, region or concession area. The analysis consists of market segmentation, estimating the importance of satisfaction determinants, identifying priority areas and investigating how they evolve over time and vary across spatial units. More specifically this paper makes the following contributions to the growing research on travelers’ satisfaction: (i) it segments travelers into PT market segments based on their socio-economic, geographical attributes and travel patterns, including both users and non-users of the existing PT services; (ii) it identifies the determinants of satisfaction for each traveler segment, (iii) it explores whether service attributes’ importance changes over time for each segment; (iv) and it investigates whether overall satisfaction varies for different geographical regions.

In the next section, a literature review of travel experience assessment and its determinants with a special focus on socio-demographic and accessibility measures, followed by market segmentation techniques, is provided. We then discuss how Swedish PT users and non-users are segmented in regard of their socio-demographic and accessibility measures. The main determinants of travel satisfaction with PT for each of the traveler’s segments are then investigated. Next, we identify the priority areas for each of the segments. This is followed by an investigation of the importance of each attribute and the geographical distribution of overall satisfaction over time and by segment. Finally, we discuss policy recommendations and directions for future research.

### 2. Literature review

#### 2.1. Travel satisfaction and its determinants

Researchers have defined travel satisfaction with PT as the overall level of fulfillment with travelers’ expectations (Tyrinopoulos and Antoniou, 2008), the completion and fulfillment of needs and the outcome of cumulative and single-experiences. The most negative PT experiences have been shown to be particularly memorable (Friman and Fellesson, 2009). Customer satisfaction is a function of the image of the operator, travelers’ expectations, the perceived quality of service and the perceived price-quality ratio (Fornell, 1992).

The relation between service quality and customer satisfaction has been largely controversial. The assertion that an increase in supply leads to an improvement in satisfaction has proved to have its supporters (Barabino et al., 2012) and critics (Friman and Fellesson, 2009). Notwithstanding, there is a general agreement that an increase in overall satisfaction leads to an increase in customer loyalty, which can result in customer retention. Data on subjective traveler perceptions is usually collected through customer satisfaction surveys (on-board, online, phone or focus groups), whereas objective performance measurements are typically conducted by automated data collection techniques and mystery shopping surveys.

Travel satisfaction is commonly measured through overall satisfaction with the service and satisfaction with a range of individuals’ QoSA. Overall satisfaction could be interpreted as a measure of how travelers assess the whole package of QoSA (Hensher et al., 2003) while the influence of each of the QoSA on overall satisfaction differs and has been object of study during the last years. Methods for evaluating the importance of each QoSA on overall satisfaction that have been used in the literature can be classified into two main categories: (a) explicitly asking respondents in the customer satisfaction survey for indicating the importance they attach to each QoSA (Tyrinopoulos and Aifadopoulou, 2008; Eboli and Mazzulla, 2009;
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