

# Modelling the Level of Service of Public Transport

- As a case study along Colombo – Galle buses



Figure 1: Example of a bus Terminal in Sri Lanka

Even-though Public Transport (PT) was the most common (60%) mode of transport in Sri Lanka, people are shifting from PT to private vehicles during last few years. That has created a significant traffic congestion on roads which is one of the critical issues in urban roads in Sri Lanka. Improving PT service quality and promoting PT among people would be one solution. The existing service quality of PT should be identified first and expected improvements should be captured. Many researchers have identified "Level of Service (LOS)" as an efficient tool to measure PT service quality [1]. Transit Capacity and Quality of Service Manual highlights the importance of user's perception for determining level of service [2]. This research attempt to quantify the existing LOS of PT based on bus passengers' opinion gathered through a questionnaire survey from route between Galle to Colombo. From the literature review, the study identified around 15 factors which affect the LOS of PT and incorporated them into the survey. Table 01 represents the identified factors.

Fare	Comfort	Travel Time
Reliability	Cleanliness	Waiting Time
Safety	Loading Level	No of bus stops
Frequency of Service	Service hours	Physical design of bus stops
Conductor attitude	Vehicle Condition	Facilities at the bus stops

Table 1: Factors which affect the LOS of PT

The significance of identified factors will be derived through the analysis of data collected in the form of user's preferences. In the survey, respondents are expected to rate their satisfaction level for existing PT service. Once the data is collected, data will be analyzed and the threshold values will be derived for each significant factor. Five LOS categories will be developed ranging from A to E

and relevant threshold value for each category will be derived for each quantitative factor.

Stated preference (SP) questions also were added into the survey to capture their preference on new service levels stated. The SP survey will help to identify user's tradeoffs between time and fare, and adjudge the future preference for new improved PT service in future [3]. The SP survey can be conducted by providing a set of predefined scenarios with defined number of alternatives, selected attributes and their corresponding levels [4]. The Figure 3 represents the attributes and their levels considered in the SP survey and one sample scenario used in the SP survey.

Attribute	Levels		
	<b>Bus fare</b>	Rs. 135	Rs. 180
<b>Travel time</b>	2 hrs.	3 hrs.	4 hrs.
<b>Waiting time</b>	5 mins	10 mins	15 mins

Table 2: Used attributes and levels for SP survey

The new knowledge expected from this study, compared to the previous studies, is deriving threshold values for five LOS categories of each significant factor that affect the level of service of public transport on the basis of the user's perception. It will help to identify the critical factors that affect the LOS of PT negatively or positively. Thus, the required improvements demanded in PT can be identified.

	Option 01	Option 02
<b>Bus fare</b>	Rs. 180	Rs. 135
<b>Travel time</b>	3 hrs.	4 hrs.
<b>Waiting time</b>	15 mins	10 mins

Table 3: One sample scenario used in the SP survey

“ The new knowledge expected from this study, compared to the previous studies, is deriving threshold values for five LOS categories of each significant factor that affect the level of service of public transport on the basis of the user's perception. ”

### References

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