

Legislative Council Panel on Transport
East Rail and Ma On Shan Rail Fare Study
- Establishment of Value of Time (VOT)

Introduction

The concept of Value of Time (VOT) is widely used in the transport industry and forms one of the key bases for transport modelling and forecasting. Usually, VOT is used to convert the time element of the journey into the cost element. In its simplest form, VOT is the value travellers would be willing to pay to save a certain amount of time in their journeys.

Measurement of VOT

2. On an individual basis, every person may have a different VOT and it could also vary by type and purpose of the journey. Some travellers would choose a slower journey due to a cheaper fare but others would choose to pay more for a faster and more reliable journey. To establish the average VOT of a region, Stated Preference surveys are conducted. In these surveys, each respondent is presented with a set of multiple journeys, with different origins and destinations. For each journey, there are two modes of transport, with different journey time and fares. The respondent is asked to select a preferred mode for a particular journey.

3. For a given set of price and journey time differentials, there may be some passengers who would opt for a faster but dearer option while the rest would choose a cheaper but slower option. This allows us to establish the probability of people choosing a certain mode at a particular price.

4. From the analysis, three parameters for each combination can be established - journey time differential, price differential and the resulting probability of choice for either of the modes. These three parameters for the entire data base are correlated using the well-known econometric concept of Logit Model. The data are analysed to provide a mathematical relationship between the probability of choosing a certain mode at a certain journey time and price. This mathematic relationship forms the basis for calculating the VOT.

The East Rail and Ma On Shan Rail Fare Study

5. The East Rail and Ma On Shan Rail Fare Study (“Fare Study”), based on Stated Preference experiment, was conducted in September 2003. ACNielsen (China) Ltd. was appointed the agent to carry out the survey and analysis on behalf of the Kowloon-Canton Railway Corporation. The study was divided into two parts – telephone interviews and face-to-face interviews. Residents living in North-east New Territories were randomly selected by established sampling methods. For better representation and to avoid biases, there was a predefined target size of the samples within each broad area of Sheung Shui, Fanling, Tai Po, Shatin and Ma On Shan.

6. For the telephone interviews, over 2 500 respondents’ usual travelling patterns, willingness to pay for journey time saving, transportation modes selection criteria and acceptability of different fare levels were explored. This part of the survey was to establish passengers’ existing travelling behaviour and preferences, and to validate the range of choices that were presented in the face-to-face interviews.

7. The face-to-face interviews were conducted amongst 800 randomly drawn respondents along existing East Rail and future Ma On Shan Rail catchment. A total of 13 pairs of journey combinations (six for respondents along East Rail and seven for respondents along Ma On Shan Rail) were devised. Each of these combinations was differentiated in terms of price and journey time among the respondents.

8. The collected data was converted into unique sets of journey time differential, price differential and the probability of choosing rail at a particular journey combination. An analysis was conducted to establish a mathematical relationship between the three parameters and tested for statistical significance. In this study, the VOT of residents living in North-east New Territories was calculated as \$0.16 per minute.

Kowloon-Canton Railway Corporation
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