

COMMUTER SURVEY FOR ASSESSMENT OF FLAT FARE SYSTEM IN BMTC

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The study has been assigned to carry out commuter opinion based survey to assess the flat fare system for passengers traveling in BMTC.

Flat fare system is in vogue in some of the developed cities of the world and reduced the complexities aroused due to denomination ticketing. This system leads and helps to achieve Smart Card based electronic fare collection system in future. Thus reduces the man-hour lost, human errors and other human (conductor) related problems in ticketing.

As per the study conducted, the sale of tickets ranging from Rs.3/- to Rs.10/- contribute to 98% of the total sale and 98% of the total revenue earned. This works out to average fare per passenger is Rs.6.45/-. The fare structure is very sensitive in nature and commuters willingness to travel by BMTC buses or shift to other modes is largely based on this issue. Hence a scientific and rational study on fare structure based on either distance traveled (fare stages), or an average fare (flat) system.

Though the flat fare system has a good number of advantages like less work involved to conductors, less cash transaction due to its rounded value, less pilferages etc., leading to the introduction of smart cards and also common ticketing for multi model travel, ultimately to suggest conductor less management. The flat fare system however may lead to additional burden to the driver as he will have to monitor the embarking passengers and their ticketing process in addition to their alighting. The flat fare system is effectively practiced in developing and developed cities where in the population of the urban area as well as public transport vehicle users are relatively in small numbers as compared to Indian cities. However it is the introduction and circulation of the practice and hence can be adapted to developing city like Bangalore, where the users are adequately exposed to innovative technologies.

Considering the findings based on the studies, for an average fare per passenger of Rs.6.45/-, the flat rate will have to be introduced with 2-3 denomination tickets/cards such that the average tickets should not fall below Rs.6.45/-.

As per CIRT report, a flat fare of Rs.5/- and Rs.10/- (two tier) was proposed to cover up all requirements for which, commuter response is required and their feed back will obviously to be considered.

The three important criteria to evaluate the proposal will have to be based on,

- i. The existing commuters will shift to the proposed flat system of Rs.5/- and Rs.10/-
- ii. The existing commuters paying less than Rs.5/- or Rs.10/- (to pay more than at present) may shift to other alternate mode en-mass.
- iii. The existing commuters paying less than Rs.5/- and Rs.10/- will NEVER shift and continue to commute in BMTC service as CAPTIVE RIDERS.

The above three options lead to another Pandora box that commuters paying more at present (more than Rs.5/- and Rs.10/-) will pay less due to flat system, leading them to use buses more for their journey in addition to the SHIFT of other mode passengers (autos and 2Wh) to BMTC buses as it works out economically for them.

Similar studies will be carried out for the other proposals viz.

Proposal-2.....Rs.3/-, Rs.6/- & Rs.10/-

Proposal-3.....Rs.4/-, Rs.8/- & Rs.10/-

In order to validate the various proposals and options presented in CIRT report, it is essential to involve end users i.e, commuters. Hence commuters' response survey is being conducted and conclusions are drawn for taking proposal with regards to the introduction of flat fare system.

Commuter's response survey

Before taking up the decision or drawing any recommendations, it is necessary to carry out commuter response survey about the system and proposal with options as suggested by CIRT.

The survey data sheet is designed on a scientific and rational approach. The effect of pass holders on the proposed system will have to be worked out.

Selecting a sample size is very vital and hence as per the stipulated and suggested size of randomly selected 1000 commuters to the proposed models is chosen (as suggested by BMTC). Samples from Bangalore urban & suburban areas are collected and analyzed to draw observations and conclusions.

COMMUTER RESPONSIVE SURVEY FOR BMTC ON FLAT FARE SYSTEM

Day _____ Date _____ Origin _____ Destination _____

Amount spent daily in BMTC _____ Amount spent per trip _____ pass holder Y N

Approximate distance travel in Bus daily _____ approximate distance travel in bus per trip _____

Any problem you are facing while purchasing ticket _____ Do you get small changes back _____

Do you prefer to have flat rate for your journey Y N if so

Option 1		Option 2			Option 3		
<input type="checkbox"/> Rs.5	<input type="checkbox"/> Rs.10	<input type="checkbox"/> Rs.3	<input type="checkbox"/> Rs.6	<input type="checkbox"/> Rs.10	<input type="checkbox"/> Rs.4	<input type="checkbox"/> Rs.8	<input type="checkbox"/> Rs.12

Advantages of Option 1 _____

Disadvantages of Option 1 _____

Advantages of Option 2 _____

Disadvantages of Option 2 _____

Advantages of Option 3 _____

Disadvantages of Option 3 _____

If you are a pass holder, if the above three options are made to you, which one you prefer? & Why

Keeping in mind that there could be wrong data, the sample size is increased to 5% more i.e. a total of 1061 commuters are interviewed and the data was obtained as stated in the Performa.

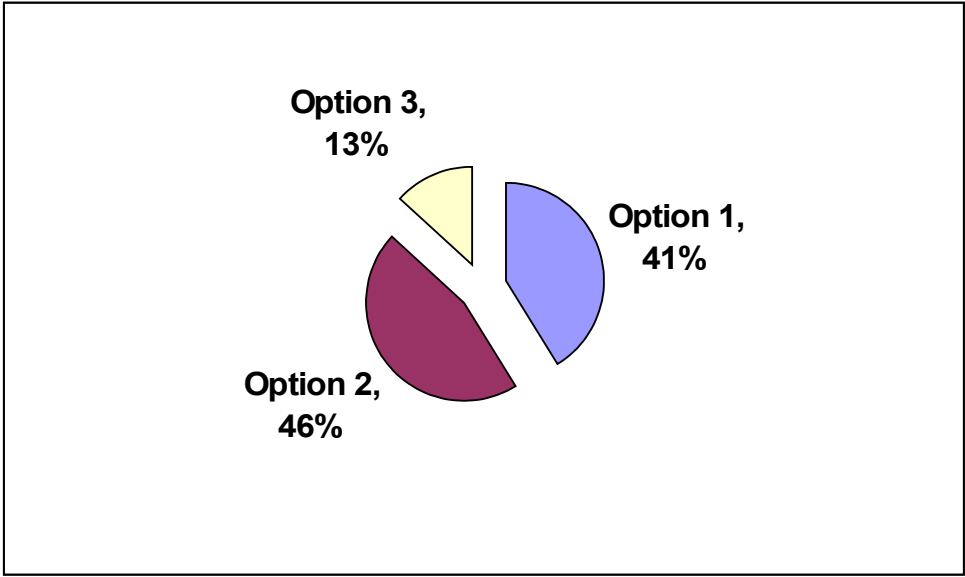
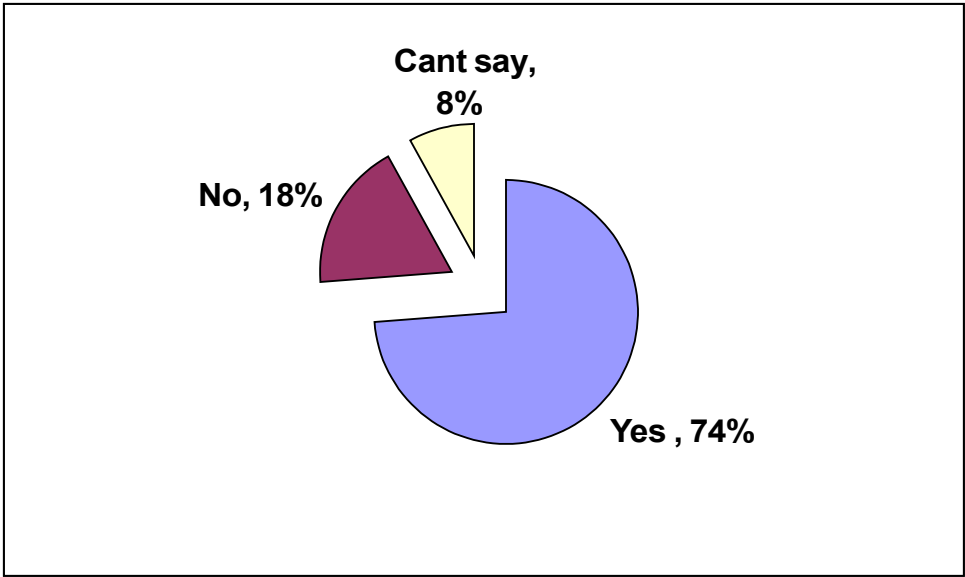
ANALYSIS OF DATA AND PRESENTATION:

It is understood from the data obtained that the urban commuters are well aware of the flat rate system where as time taken for the surveyors for sub urban passengers are considerable as they were made understand the meaning of FLAT RATE SYSTEM.

75% data was obtained in the city area where as 25% was ear marked for sub urban areas. Further, considering the average bus occupancy, it is understood from the pilot survey that, 60:40 constitutes male and female in the urban areas and 81:19 for sub urban areas. However, for the calculation purpose, all these are once again combined to obtain commuter response.

- i. **About flat rate**
 - 74% said yes
 - 18% not preferred
 - 8% not sensitive to Flat rate

- ii. **If flat rate is introduced, the selection of choosing**
 - Option-1 i.e Rs.5/- and Rs.10/- 41%
 - Option-2 i.e Rs.3/-, Rs.6/- & Rs.10/- 46%
 - Option-3 i.e Rs.4/-, Rs.8/- & Rs.12/- 13%



iii. It is strongly felt to collect commuters' opinion or response along with the relative advantages and disadvantages in addition to crew opinion and operators choice. The proposed system is for the public transport commuters, and hence their opinion about advantages and disadvantages is considered as main attribute before implementation. A typical and the majority of commuters' findings are presented below.

Option 1:

Advantages: 1) Easy to obtain change or pay for the ticket.

2) Long journey passengers are benefited by paying Rs. 10/-.

3) Less complications as there are only two denominations.

Disadvantages: 1) Short distance passengers will have to pay more than at Present.

Option 2:

Advantages: 1) Uniform and well balanced for all stages.

2) Economical for long distance passengers.

3) Beneficial for short distance passengers.

Disadvantages: 1) Getting back change or paying for ticket fare is tedious due to denominations.

Option 3:

Advantages: NIL

Disadvantages: 1) Expensive to all stage passengers.

2) Getting back change or paying for ticket fare is tedious due to denominations.

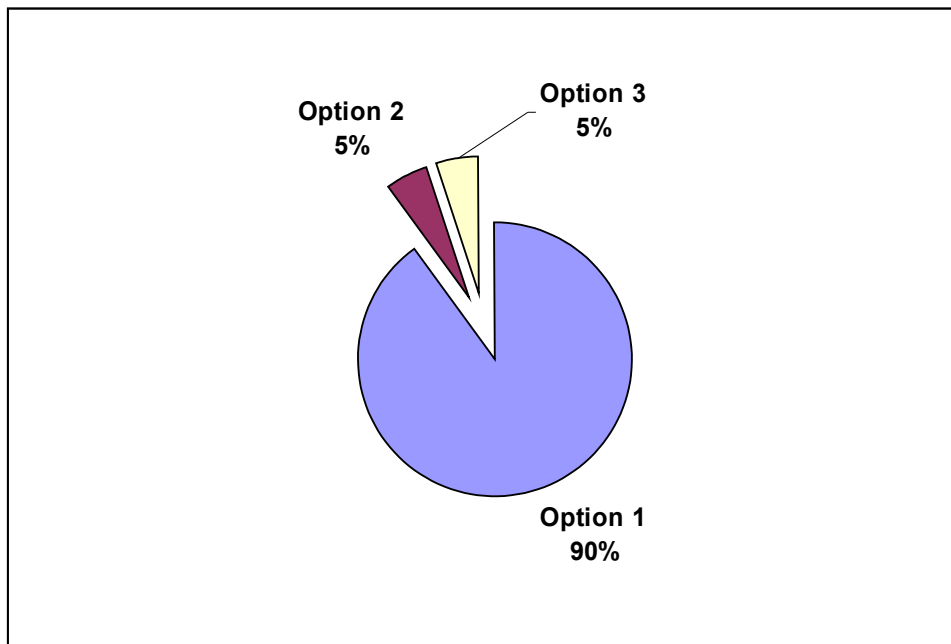
3) Long and short distance passengers are not benefited as they have to pay more in either case.

CREW OPINION

A good number of conductor and drivers (91 numbers) are interviewed to collect their first hand opinion about the proposed system.

Option 1 is most preferable as collecting and giving changes will consume more time in other options. Due to simplicity of option 1 it is felt that a driver alone can handle with ease.

Option 1	90%
Option 2	5%
Option 3	5%

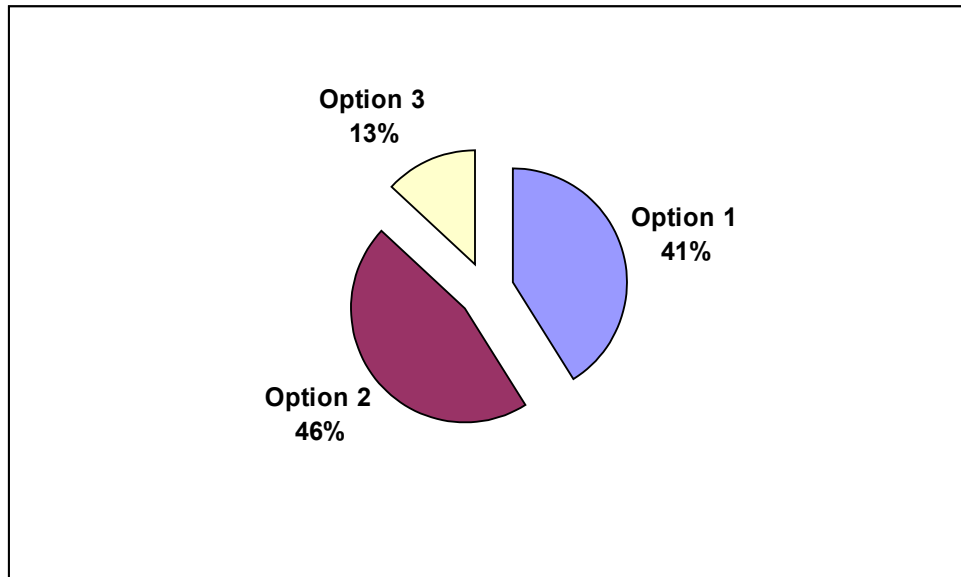


OPERATORS OPINION:

A few seniors officials of BMTC were interviewed maintaining the confidentiality and anonymity, the various advantageous and disadvantages are obtained from them if in case the options are introduced along with their reaction. Based on advantages and disadvantages cited, Option 1 is ranked I and followed by Option 3. The earnings in

Option 3 will be relatively more as compared to other two options. However, Option 1 is preferred by operator as it is less cumbersome.

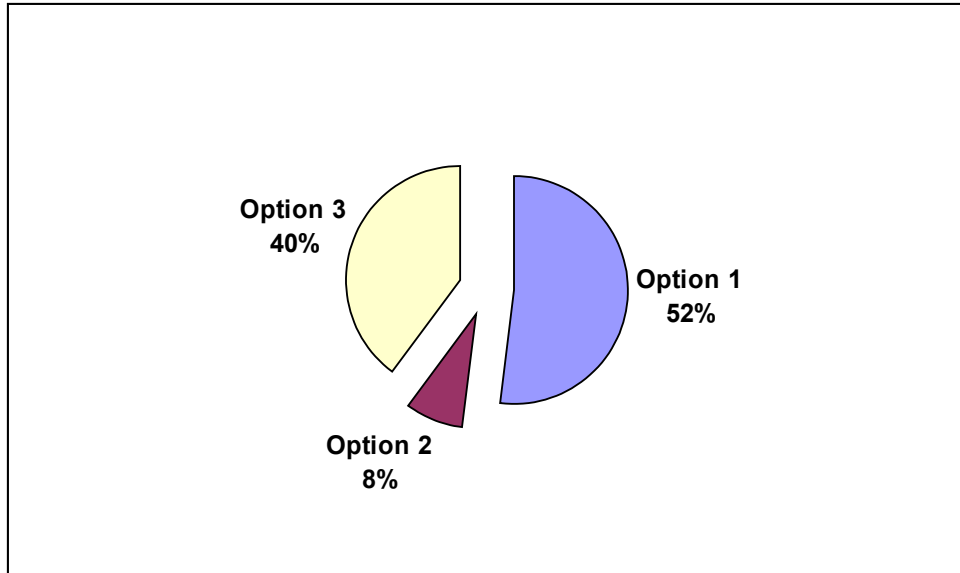
Option 1	52%
Option 2	8%
Option 3	40%



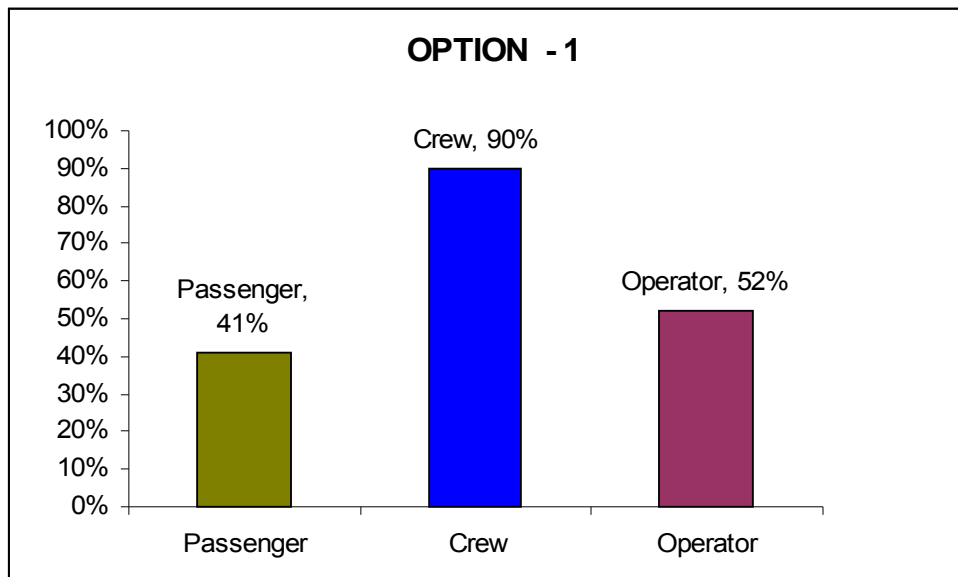
PASSENGERS OPINION:

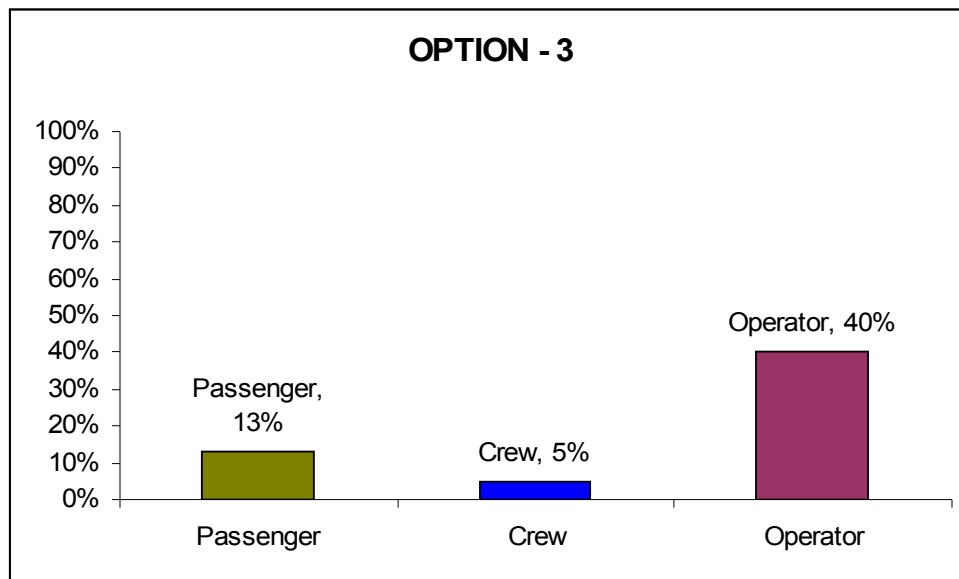
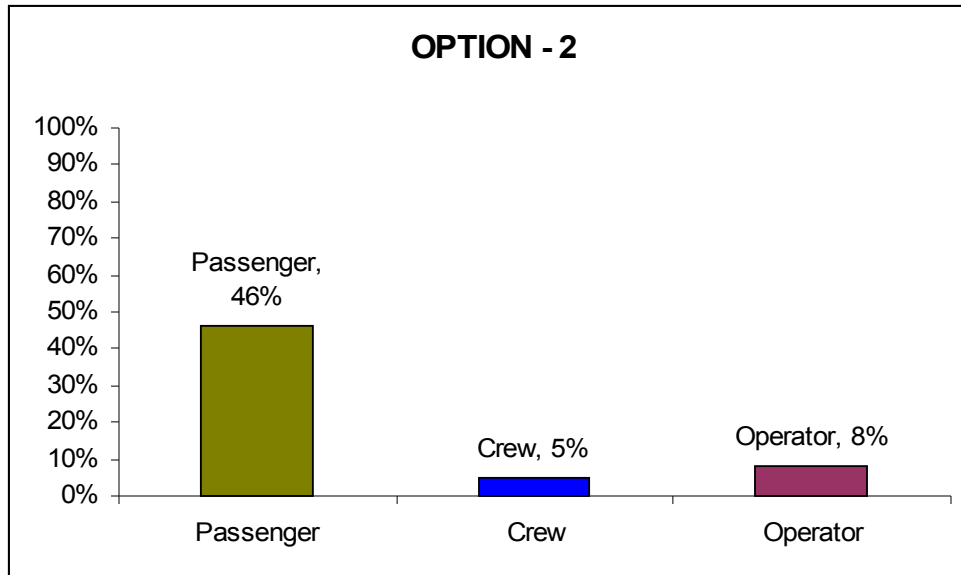
As per the passengers survey conducted, Option 2 is preferred by the passengers as the ticket fare starts from lowest of Rs.3/- as compared to other options. However they gave second preference to Option 1. A total of 1061 passenger's data were obtained and about 60 data were debugged due to wrong evaluation.

Option 1	41%
Option 2	46%
Option 3	13%



The above values are indicated in the form of a chart considering the opinion of all stake holders i.e. passengers, crew and operators.



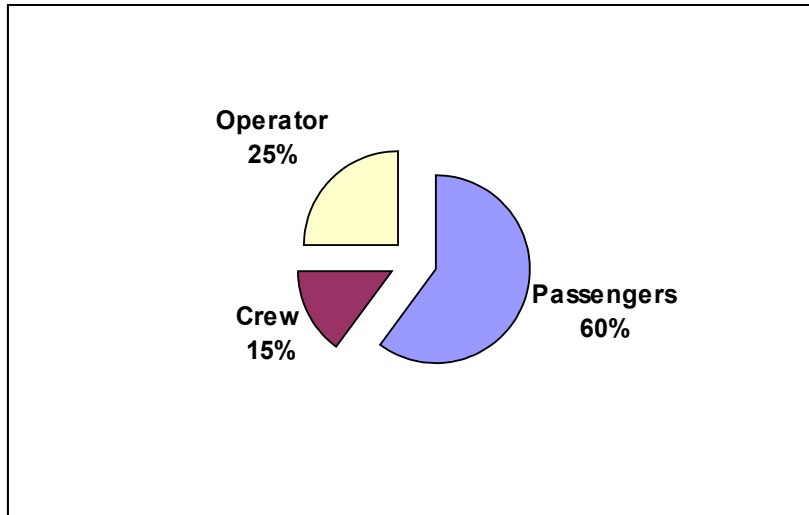


DEVELOPMENT OF WEIGHTAGES FOR STAKES HOLDERS TO ASSESS THE OPTIMAL SOLUTION:

About hundred stake holders involving passengers, crew and operator are interviewed and their importances in taking decision are public transport vehicle operation. This exercise is carried out as the public transport operation mainly concentrate on giving

good service to commuters or passengers based on operators perspectives and identified charters. The weight ages thus obtained are as follows:

Passengers	60 (0.6)
Crew	15 (0.15)
Operator	25 (0.25)



To work out the best option the above weight ages are used:

$$U1 = (0.41 \times 0.6) + (0.9 \times 0.15) + (0.52 \times 0.25) = 0.246 + 0.135 + 0.13 = \mathbf{0.51}$$

$$U2 = (0.46 \times 0.6) + (0.05 \times 0.15) + (0.08 \times 0.25) = 0.276 + 0.0075 + 0.02 = \mathbf{0.30}$$

$$U3 = (0.13 \times 0.6) + (0.05 \times 0.15) + (0.4 \times 0.25) = 0.078 + 0.0075 + 0.1 = \mathbf{0.18}$$

Note:

- 1) U1, U2, U3 are the utility functions of the three options.
- 2) 0.41, 0.46 & 0.13 are the passengers' opinion for option 1, 2 & 3.
- 3) 0.9, 0.05 & 0.05 are the crew preference for option 1, 2 & 3.
- 4) 0.52, 0.05 & 0.05 are the operator preference for option 1, 2 & 3.

The highest utility value based on qualitative approach is OPTION 1 i.e. introducing Rs. 5/- & Rs. 10/- denomination flat tickets where, all the three stake holders will be satisfied to a greater extent. Hence, OPTION 1 can be introduced and implemented. These denomination tickets can be printed in advance and can be swiped if necessary

from the passengers. Conductor presence can be minimized in this option as giving changes etc may not arise. If required booths can be created at the main stations which can give change in denomination of Rs.5/- & Rs.10/-. On a later date swipe cards can be introduced as per the plans that are envisaged by BMTC.

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