

## Research on Solutions to Attract Bus Passenger in Ho Chi Minh City

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**Abstract:** Paper presents some opinions, solutions for improvement of organization and management of public transport bus systems in Ho Chi Minh City (HCMC). It aims at to increase the efficiency and convenient to attract more bus passenger, based on the results of public opinion surveys and learning the experience of bus system of urbans in the world.

**Keywords:** Public Transport, Bus Network, Bus Fare and Ticketing.

### 1. INTRODUCTION

Bus network in HCMC includes 141 bus routes on streets (2,615 buses), 55 bus routes for workers (131 buses) and 133 schools using buses (422 buses). In these, there were 137 vehicles using CNG, 22 vehicles with low and semi-low floor, 34 vehicles with aiding handicap. To date, there are 25 enterprises participate in activities public transport by bus and picking up pupils, students and workers. There were 80 first and end points of bus routes and 4,258 bus stops & bus shelters. New styles of bus stops, bus shelters were implemented. The bus services were improved step by step.

Bus user volume (in Figure 1) was increased rapidly four times from 36.2 million in 2002 to 414 million in 2013, but it was down to 367 million in 2014 and 334 million in 2015. The urgent work is to find the solutions to attract people to use the bus, it will help to reduce individual vehicle traffic on the streets.

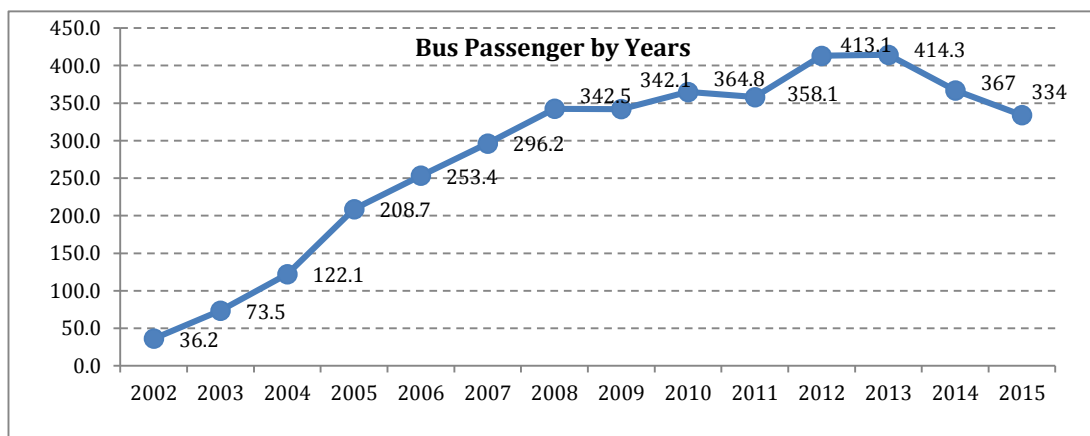


Figure 1. Bus user volume by years

**Research method:** for finding the solutions to attract bus passengers, has been done some work, such as, review on result of public opinion surveys by questionnaire, consideration to people's travel characteristic, synthetic analysis to know the people's requirements on bus service and study on success of bus services from other cities in the world.

## 2. REQUIREMENT OF PEOPLE ON BUS SERVICES

**2.1 Daily Travel Demand:** the rapidly increasing of travel demand was showed by number of the daily trip, with 3.12 times increased from 1996 to 2013 (Table 1).

Table 1. Travel demand in HCMC

Content	1996	2003	2013	2013/1996
Population (000),	4,839	5,846	7,990	1.65 times
Urban population (000),	3,484	5,115	6,592	1.89 times
Travel coefficient (number of trip/ day/ person)	1.70*	2.5*	2.8*	1.65 times
Number of trip/ day (000) in urban area	5,922.8	12,787.5	18,457.68	3.12 times

Source: HCMC Statistical Yearbook, \*Almec Co. Note: not including pedestrian trips.

Table 2. Vehicle use ratio in daily trip

Mode	2002 (Houtrans) (%)	2013 (Metros) (%)	2013/2002 (%/year)
Bike	9.4	2.8	-6.8
Motorbike	81.8	83.0	3.3
Car	1.9	5.3	12.6
Bus	4.2	6.3	6.7
Other	2.7	2.6	2.8
Total	100,0	100	3.1

Source: JICA. Note: Excluding intra-zonal trips.

Motorbike was the priority choice of the people and they shifted slowly to car (Table 2). Although bus was used more popular, increasing from 4.2% to 6.3% during 11 years but it still showed some limitations because of mixed uses of road with other vehicles.

### 2.2 Passenger Trip Characteristics

Diverse characteristics of the trips: with a growing number of places for origin and destination, people have to move more each day for work, for school, tourism, health care etc. Almost the trips cross many streets of the city, so the bus users have to transfer to different bus routes. The convenient bus services were requested strongly especially at place of bus interchange for reducing transition time and travel cost. The bus system is required to satisfy travel demand easily, quickly and conveniently, so that, people would have a motivation to shift from motorcycle into using bus daily.

### 2.3 Finding the requirement on Bus Service

The people's requirement on bus service can be synthesized through the results of public opinion surveys in the past years, such as:

- 1) People's Opinion Surveys on bus services (Houtrans, 2003 year): the general survey result presented in Figure 2. the leading attention of people is network of bus routes:

the route network is extensive with good connections between the residence and destination (47%). Other important attentions are: hours of bus operation must meets people's activities (37%); vehicle quality: clean, safe and attractive (32%), security on vehicles (31%); frequency: buses must operate continuously to reduce the waiting time of passengers (24%); travel speed must ensure fast (23%). In addition: fare, comfort level in the bus, the assess road to bus stops, drivers attitude, waiting conditions ... also are factors interested by people. Regarding score on the scale of assessment (Figure 2), people consider that the fare is suitable, getting good score. Lowest - below normal level are: bus routes, operation hours, quality of buses, frequency, driver attitudes, waiting conditions etc

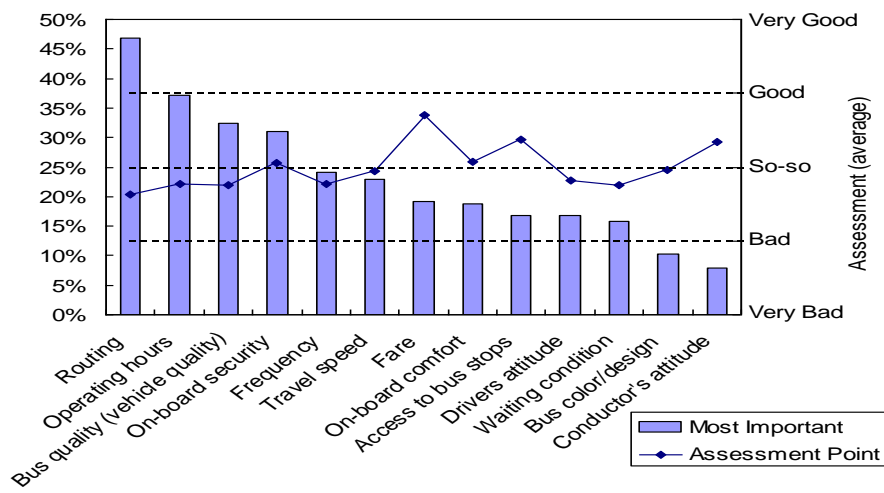


Figure 2. People's assessment through the questionnaire survey (Houtrans, 2003)

- 2) The study on "Satisfying index of people on public service quality" (HIDS Institute, year of 2006, 2008): three main reasons of not using the bus are presented in Figure 3, including: inconvenient transfer of routes (36% - 52%), long distance between home/work place and bus stops (27% - 29%), long waiting time (15% - 20%). The remaining cause were listed as: vehicle condition (1% - 3%), crowded bus (4% - 12%), accounting a small rate.

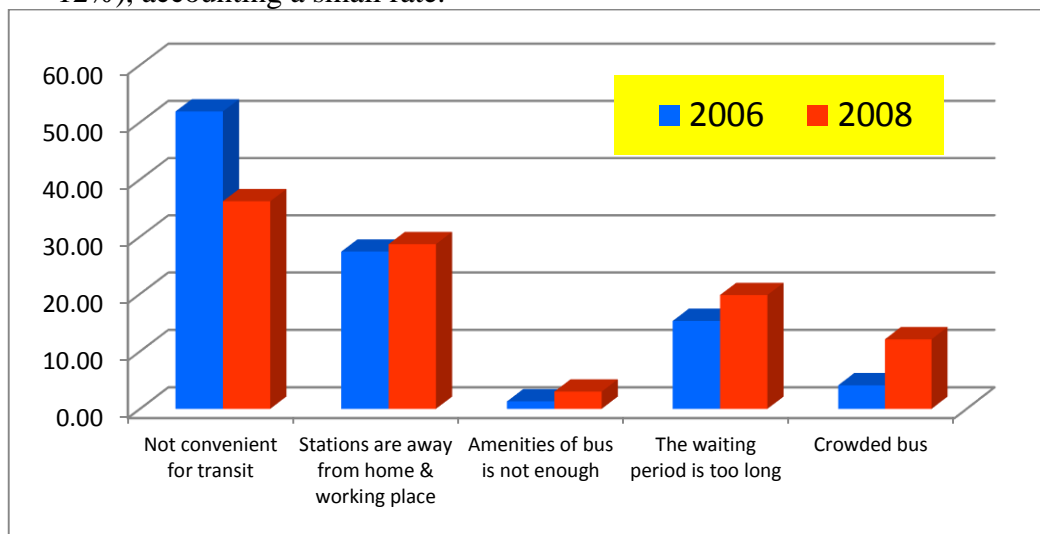


Figure 3. The cause of "people do not use bus service"

- 3) The research "Completion and development the bus route network in HCMC"

(HCMC Transportation Department, 2009 year):

The causes of selection of bus service: cheap fare was identified as the main cause of selecting bus service (Figure 4). The remaining causes of bus choice were showed the lower ratio, such as, none other vehicle to go, because of: safe, near home, many buses etc.

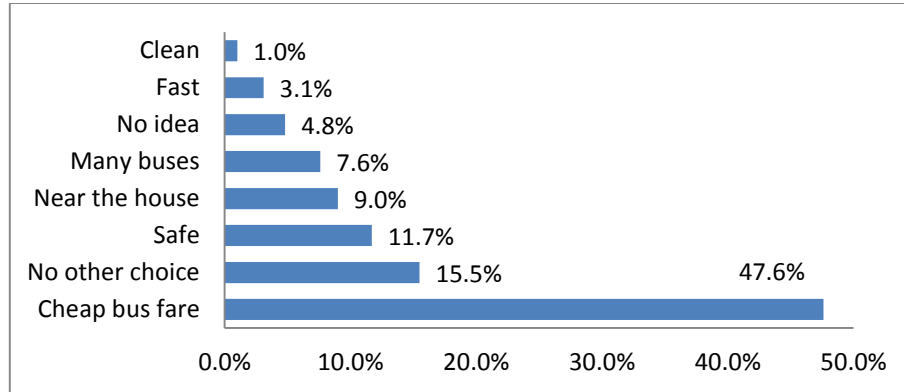


Figure 4. The causes of selecting bus services

The cause of not selection of bus service (Figure 5): travel by bus was not convenient in comparison with individual vehicle (73% mentions). In this, the most important impacts were: lack of bus route information, long distance between home/work place and bus stops, insufficient transfers, long waiting time...

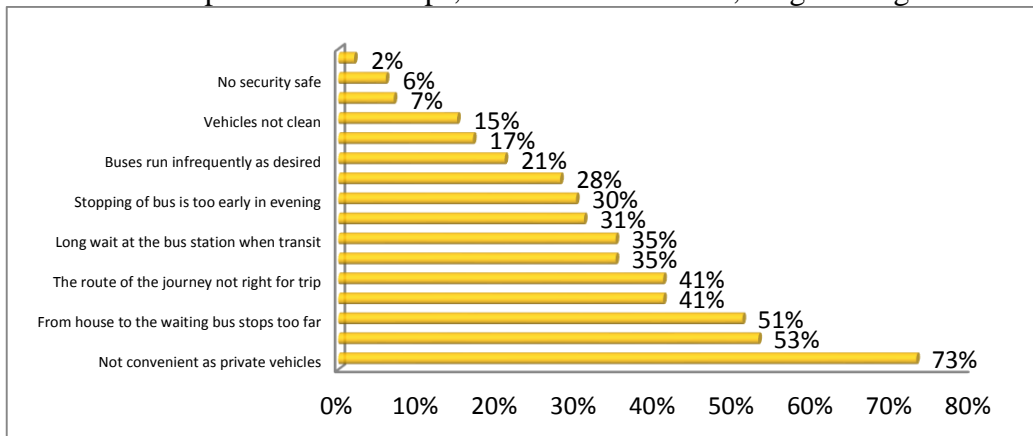
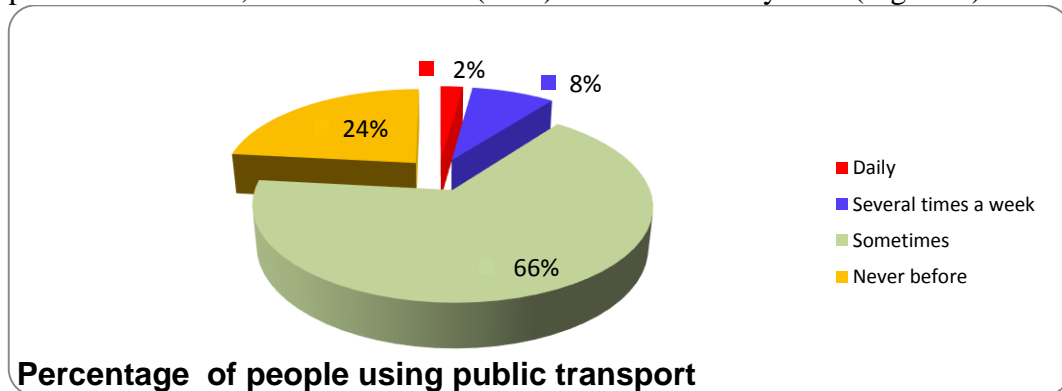


Figure 5. Unselect bus services

- 4) The Household Interview Survey along the corridor of metro line 2 (2012 year): about the usage of bus service, it showed the low ratio of daily using (2%), some use per week with 8%, sometime of use (66%) and never use by 24% (Figure 6).



Percentage of people using public transport

Figure 6. The ratio of using bus services

- 5) The survey in the website (www.buytphcm.com.vn, 2016 year), the ratio of very satisfied and satisfied of bus services were accounted 9% and 17%, respectively. These ratios were lower than the evaluation of unsatisfied and very unsatisfied (21%, 6%). For attracting more people using bus, some opinions were recommended: improvement of bus driver attitude; increasing bus frequency; shortening waiting time; more bus information, safety to ride, lane reserved for buses, punctuality of bus ( Figure 7).

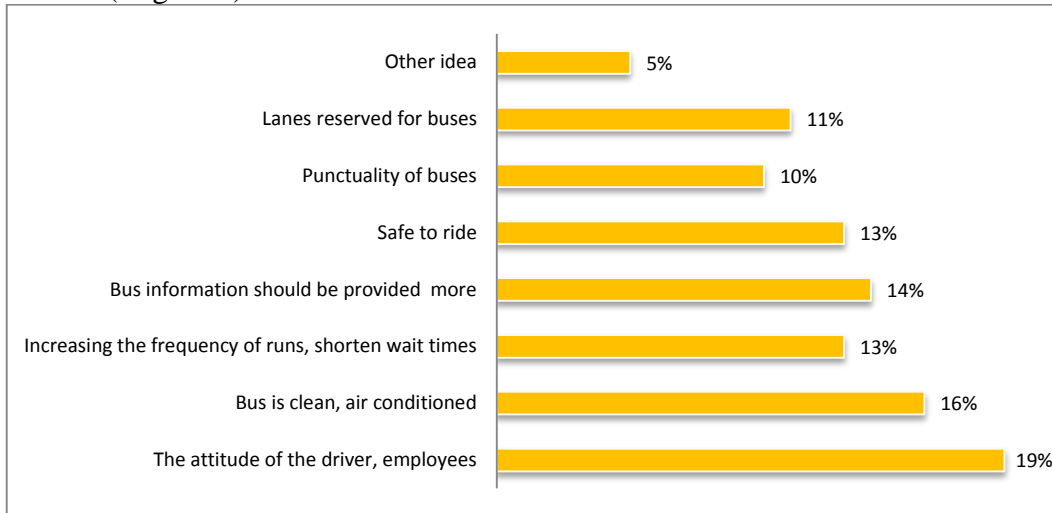


Figure 7. The bus service evaluation through the website

**General synthesis:** the opinions of people over the years concentrated on some important issues, such as: the layout of bus routes and organization so convenient for transfer from one bus route to other bus routes; the appropriate distance from house/working place to shelter - bus stop and reducing waiting time; improvement of bus service quality, including service attitude and vehicle; enhancement of bus route information, establishment of separate lanes for buses etc

### 3. PROPOSED SOLUTIONS TO ATTRACT MORE BUS USER

#### 3.1 Organizing all Bus Routes to an Unified Bus Network

Bus service manner, operation quality of every route should be considered as in an unified and supportive system, especially in the peak hours. The bus services should be managed for the whole network of the city, not managing separately in each route, each company, abolishing the passenger scramble of drivers. The bus management and operation were proposed following the main corridors, integrating to less number of companies (replacing of 25 companies).

#### 3.2 Building the Public Transport Authority

The Public Transport Authority (PTA) should be established, based on the existing Management and Operation Center of Bus Public Transport, learning experience from other cities, such as, Lyon, Grenoble, New York, Singapore, Paris, London and PTA of Western Australia, Danish Transport Authority etc.

### **3.3 Improving the Bus Operating Control Center**

The bus operating control center should be improved to increase bus service quality and efficient operation. It can learn from Bus Center of Seoul, Hongkong, Singapore, Cities of USA etc.

### **3.4 Reconstruction bus route network following Trunk and Feeder routes**

Bus rapid transit (BRT) should be proposed as the trunk bus routes with crowded passengers. The feeder bus routes will established, using small and medium buses to connect residential areas or to transfer passengers to the trunk routes. Reconstruction of bus route network, based on concept of trunk and feeder routes was proposed to increase effectively bus operation, to reduce coincidence and confliction of bus routes.

### **3.5 Bus Interchange**

The construction of effective bus interchanges in HCMC was proposed in relation with the travel demand characteristic, because people have to change some bus routes for the trips from house to arrive their workplaces and for reverse.

### **3.6 Innovation of Fare System**

A low fare system was emphasized to attract more passengers. The bus system should find the subsidy from difference sources: the government authorities, advertising cost, real estate services companies, super markets & trade companies, and others.

Smart bus cards should be applied for inter routes of different bus routes and intermodal tranfer of different modes. The fare types proposed as: tickets with unlimited trips by Daily card, by Weekly card; by Monthly card, by Annual card or Multi-trip tickets.

Zero fare pass will provide free travel, first for shuttle bus routes or circle bus routes in the the congestion area or important crowded areas.

## **5. CONCLUSION**

Currently the application of measures on organization and management of the bus system, based on world experience in order to attract more people to use buses and to abandon individual vehicles, is a very urgent task for new development of public transport in HCMC. It will directly contribute to reducing traffic congestion, air pollution and traffic accidents daily in city.

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