The underlying issues in promotion of modal shift in Hanoi - Vietnam

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Abstract

A sustainable transportation requires a good public transport system. Therefore, the promotion of modal shift from private vehicle to public transport usage is essential, especially for a motorcycle-dominated city such as Hanoi -Vietnam. The dominance of small lane road creates poor accessibility and it is a big restraint of modal shift. Moreover, poor quality is pushing people out of public transportation usage. Hanoi has no MRT, BRT, Sky train or subway. The bus, which is the main public transport, has inadequate supports. And bus only serves 10% of traffic demand. Besides, the road user's behaviors are other restraints to modal shift. Due to its flexibility and accessibility, private vehicle preference goes deep down into people mind and become a habit. In addition, law disobedience makes it more difficult to promote modal shift. Government, one of the biggest party involve in bus operation and development, still support not enough for the bus. The complexity of policy makes it more difficult for socializing the bus investment and development. However, there are many countermeasures that applied to deal with those issues. This paper will also suggest some countermeasures for promoting modal shift.

Keywords: sustainable transportation, modal shift, public transport

1. General Introduction

As a common sense, the more developed the city is, the more it tend to shift from private vehicle usage to public transportation. Therefore, promoting modal shift is necessary for the development of developing cities such as Hanoi. However, as a motorcycle dominated city as many other South East Asia cities, there are many restraints in promoting this modal shift.

2. Literature Review

A modal shift occurs when one mode (A; e.g. road) has a comparative advantage in a similar market over another (B; e.g. rail). Comparative advantages can take various forms, such as costs, capacity, time, flexibility or reliability. Depending on what is being transported, the importance of each of these factors varies. For some, time is of the essence and a modal shift will occur only if the new mode offers time improvements or new capacity is no longer available, while for others it is mostly a matter of costs. The outcome is a series of decision made by firms (for freight) or individuals (for passengers) to shift to another mode if comparative advantages are significant enough. Comparative advantages can involve the difference in cost, time, level of service or reliability between two modes.

3. Methodology.

This paper focuses on presenting data collect from various sources especially from Hanoi Urban Transport Management and operation Center (TRAMOC), Hanoi Bus company (TRANSERCO), Hanoi Traffic Police Bureau, and other sources. These data are chosen combine with the data and pictures from site observation. Then these data analyzed to point out the underlying issues in promotion of modal shift in Hanoi.

4. Results

4.1. Motorcycle dominated city

The dominance of motorcycle in the city is caused by the dominance of small lane road in the

city and the characteristics of motorcycles themselves.

First, there are many small lane road in Hanoi old quarter. This type of road is located mainly in Hoan Kiem district. This area is the Core Business District area (CBD) in Hanoi. This area is account for the population of 66 000 people in an area of 81 ha. The density in this area is 82300/km^2. This density is too high in comparison with other metropolitan of other cities.

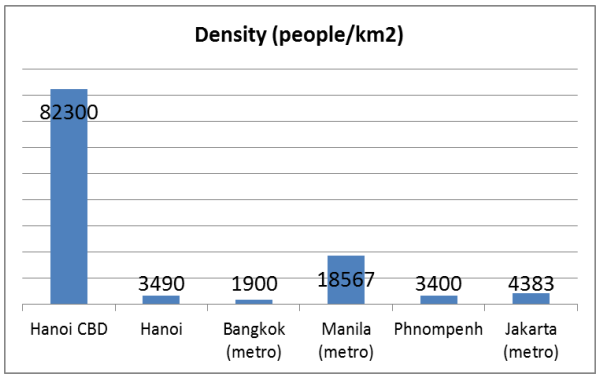

Fig. 1 Density of some South East Asia cities

As there are too many people in a small area, there are many small lane roads in this area. Moreover, the small lane road access directly to the main road and highway without any distributor road/ frontage road. This creates the traffic chaos an often lead to local congestion in the intersection. The average road width is 1.5m make this area "the motorcycle-access-only zone". In the old quarter, there are even lane with 0.5m wide and 46 m long.

Fig. 2 Motorcycle-access-only zone with the small lane road access directly to main roads

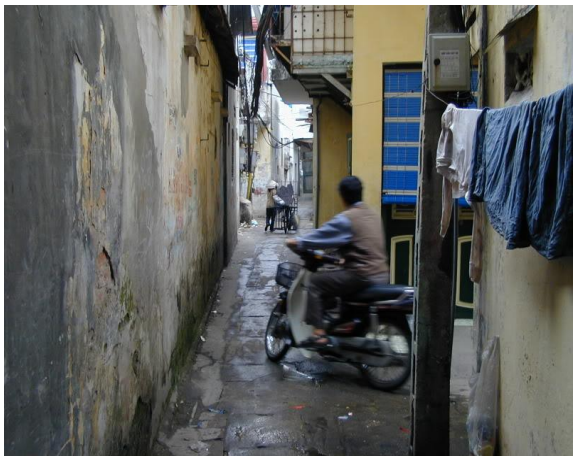

Fig. 3 the average road width is 1.5m

Fig. 4 lane with 0.5m wide and 46 m long

Second, the motorcycle itself makes it the best choice for transportation in Hanoi. The mix traffic flow in Hanoi requires a type of vehicle that is easy to maneuver. In addition, there are only 5 separated lane roads in Hanoi so we can consider Hanoi traffic model is non-lane-based mix traffic. The 5 separated lane road in Hanoi are Trần Khát Chân -

Đại Cồ Việt, Kim Liên - Xã Đàn; Giải Phóng (đoạn Pháp Vân - Đại Cồ Việt); phố Huế - Hàng Bài và phố Bà Triệu. (**Source**: Hanoi Department of Traffic). Besides, motorcycle is chosen because of it accessibility. This door-to-door vehicle is best suit for the small lane road in Hanoi.

4.2. Public Transportation

The Public Transportation in Hanoi is inadequate in term of variety, quantity, quality and priority. There is no sky train and subway in Hanoi and bus is the only urban public transportation. There are on-going projects of building sky train and subway in Hanoi. According to Ministry of Transport, there are 8 sky train routes. However, the first route Cat Linh – Ha Dong need to be completed in 2013 but was delayed to 2015.

Fig. 5 The first sky train route present condition.

The subway in Hanoi will follow Tran Hung Dao – Thuong Dinh in a 6 km route and this is an on-going project from now to the year 2030. BRT is also another on-going project. In the first BRT route (06), there are 8 BRT stops and share the same position with normal bus stops. The BRT use the same vehicle and bus stop with the normal bus. The only difference is BRT will stop only in BRT stop. It saves the time stop in every bus stop so it is faster.

In tern of quantity, the number of bus in Hanoi is not enough. There are 82 bus route in Hanoi and served 10% of travel demand of Hanoi Road User (**Source**: TRANSERCO 2010). This figure in Bangkok – Thailand is 559 bus routes, the bus operate from 5 am – 11 pm and night bus operate 24 hours/day. (**Source:** Transitbangkok.com) The lack of bus results in the overcrowded on bus. The design capacity of a bus is 80 people, however, in rush hour, one bus need to carry up to 120 - 160 people. (**Source:** TRANSERCO 2010).

Fig. 6 Overcrowded on bus.

There are 1612 bus stops and 2 bus interchange in Hanoi. There is no Park-and-Ride system in bus interchange. (**Source:** TRANSERCO 2010).

The quality of bus is not good especially customer service. The reason is the drivers and bus assistants are always over stressed by the congestion in Hanoi and the low salary. The Average Labor costs per GDP per capita for drivers in TRANSERCO is the lowest in comparison with BMTA – Bangkok and YMTB – Yokohama

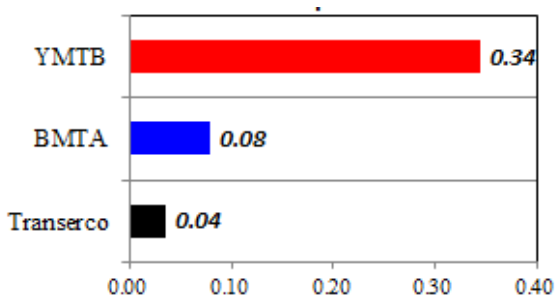

Fig. 7 Average Labor Cost per GDP per capita (**Source:** JICA TRAHUD II WG_4 workshop)

Lack of bus priority is another issue prevent the promotion of modal shift. There is only 1 priority lane for bus in a 3.8 km route on Nguyen Trai Street. There is no other project on building other priority lane for bus. ITS

have not applied in Hanoi thus it is impossible for using bus priority traffic signal. Moreover, there are some road on the Hanoi CBD that the bus cannot access because of their size.

There are many issue related to Public transportation that pull people out of using it. Therefore, improving public transportation quantity and quality is necessary for promoting modal shift. Moreover, providing various choice for road users will forwarding the shift from private vehicle to public transportation.

4.3. Road User behavior

There are 2 big issues related to road users in Hanoi: private vehicle preference and law disobedience.

People prefer to use private vehicle because of it accessibility.. Traveling by motorcycle has been a habit of Hanoi people. Especially people in the CBD, the motorcycle is their only choice

It is very difficult to park a car in Hanoi CBD because this area prohibits parking on street. There are 687 parking area in Hanoi which is account for 12 ha (8-10% real parking demand) (**Source:** Hanoi People's committee)Moreover, the poor quality of bus and lack of bus make people less travel by bus. The main bus passengers are students, who is considered income and some are not old enough to own a motorcycle. The legal age to own a motorcycle in Vietnam is 18 years old.

Another problem is law disobedience. This lead to high accident rate, and also prevent the operation of public transportation.

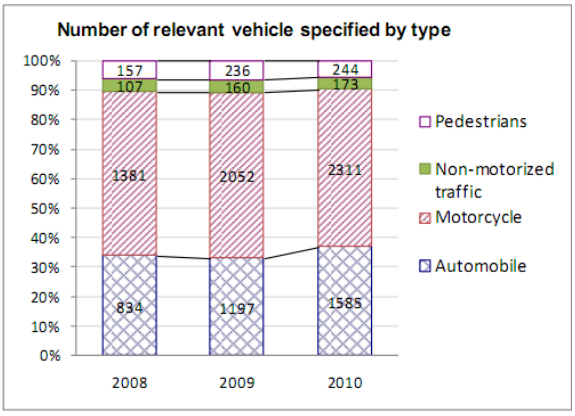

Fig. 8 Number of vehicle specified by type related to traffic accident (**Source:** Road Traffic Accident Analysis in Hanoi 2008-2010: Basic Characteristics)

Within 1 month, 7/2013, the Hanoi Traffic Police report 5 4000 cases violate traffic law in Hanoi. There are 308 cars and 2385 motorcycle was captured.

Fig. 9 Number of cases

Source: Hanoi Traffic Police Bureau 2013

In addition, within 10 days after the bus priority lane had been in operation, there are 500 cases was reported and 189 vehicle was captured because of driving on the bus priority lane. (**Source:** Hanoi Traffic Police Bureau 2010)

This highly affects the operation of bus and prevents the bus in operation in time. Thus, the bus quality and bus user satisfaction is reduced and make it more difficult to promoting modal shift.

4.4. Governmental support

The governmental support takes a high percentage and is increasing. However, it is improper.

The government investment in Hanoi transportation in the period 2009 – 2013 is 10,386 Billion VND ($500 million) in the period 2011 – 2015 (proposed) 228,918 billion VND ($ 11 billion). According to Dr. Khuat Viet Hung – Ministry of Transport is improper because it account for 22% of Hanoi GDP. This number in Vietnam is 3.5% GDP and even some other countries is only 7-8%. However, this proposal has not been approved.

The complex of policy make the investors do not want to invest in Hanoi especially in transportation. According to PCI 2012 (PCI is Provincial Competitiveness Index) Hanoi PCI is 53.4/100 and Hanoi is in the position 51/63 province of Vietnam. HCMC PCI is 61,19/100.

4.5. Countermeasures

There are countermeasures applied to deal with the mention issues Hanoi is focusing on BRT investment. BRT is now considered as a suitable Public transportation mode in the transition period between poor quality public transportation to high quality and mass transit public transportation. There is 1 project of building 20 km BRT lane on the route Kim Ma – Yen Nghia. The BRT lane is cement concrete for high strength requirement of the surface

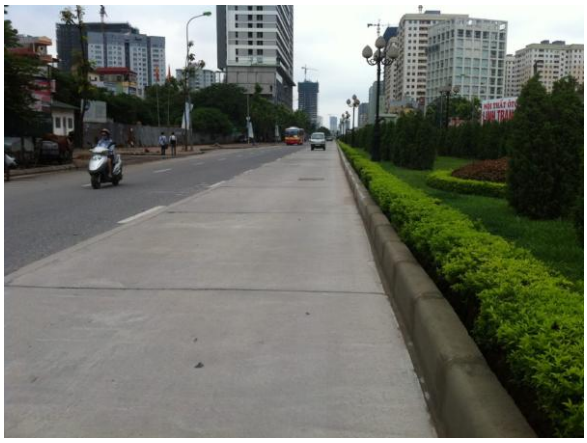

Fig. 10 BRT lane in Le Van Luong street

Ministry of Transport applied the law enforcement to deal with law disobedience. Specifically, MOT doubled the fine from 200.000 to 400.000 with the case pass the red traffic light.

5. Conclusion

Modal shift is essential for a modern and sustainable transportation system. There are many underlying issues prevent the promotion of modal shift. This paper addressed the related issued and hope that we can gradually find the suitable countermeasures.

5. Acknowledgment

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