International Journal of Business, Human and Social Sciences
ISSN: 2517-9411
Vol:1, No:4, 2007

Public Transport Reform in Indonesia, A Case Study in the City of Yogyakarta

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***Abstract*—**The provision of urban public transport in Indonesia is not free of problems. Some of the problems include: an overall lack of capacity, lack of quality and choice, severe traffic congestions and insufficient fund to renew and repair vehicles. Generally, the comfort and quality of the city bus is poor, and many of the vehicles are dilapidated and dirty. Surveys were carried out in the city of Yogyakarta, by counting city bus vehicles and occupancies, interviewing the bus passengers, drivers and institutional staffs, who involve in public transport management. This paper will then analyze the possible plan to develop the public transport system to become more attractive and to improve the public transport management. The short, medium and long term plans are analyzed, to find the best solutions. Some constraints such as social impacts and financial impact are also taken into accounts.

***Keywords*—**City bus, management, public transport.

I. Introduction

A PROBLEM facing all urban areas in Asia, as well as in other developing countries is how to meet the growing demand for person movement. Traffic congestion has existed in urban areas since many years ago. Transport infrastructure and congestion issues are high on the agenda of such urban problems. The problem is not just a matter of traffic congestion, but it is one of regional planning. The planning has emphasized economic growth while paying little heed of traffic impact assessment. This is typical of the problems facing many South East Asian Cities, not least those of Indonesia, and reinforces the need of broader view in tackling urban transport problems than hitherto generally employed.

According to the Indonesian Development Plan [1], traffic management strategies should be implemented as follows:

a. development mass transportation system which should be well-run with reasonable price, efficient and safe.
b. development the road network which has the least negative environmental and social impact,
c. development integrated public transport system,
d. development traffic management strategies to achieve high efficiency and high quality of service.

II. Urban Public Transport Problems in Indonesia

The provision of public transport in Indonesian cities is not free of problems. Some of these problems include:

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a. an overall lack of capacity,
b. lack of quality and choice,
c. severe traffic congestion,
d. usurpation of bus stops by hawkers,
e. racketeering,
f. insufficient funds to renew and repair vehicles,
g. fragmentation of the bus sector,
h. complexity and inflexibility of the current regulatory framework and
i. ineffective legal and administrative structures.

It is important that public transport should offer a range of choice and quality to meet the aspirations of the riders [2]. Generally, the comfort and quality of the public transport fleet is poor, and many of the vehicles are dilapidated and dirty [3]. Whereas those who can least afford to travel may be prepared to suffer such indignities, people who can pay to travel by their own vehicles, or by taxi, would seldom find any temptation to use buses. Increasingly, patronage will be confined to the poorest members of society, thereby further eroding service levels and comfort.

Chaotic traffic and a dilapidated public transport system cannot enhance the reputation of Indonesian big cities. A further factor is the use of heavily polluting low-grade fuel: the resultant plumes of black exhaust fumes gravely compromise the appeal of the streets as places to walk, work or enjoy.

Needless to say, congestion is a problem, especially at peak periods. Public transport vehicles become snared in traffic jams, further weakening public transport's competitive edge by prolonging journey times and reducing the system's effective capacity.

Clearly, a particular factor in some Indonesian cities is the small size and low capacity of most public transport vehicles [4]. Viewed from the perspective of making better use of the road system, it may be preferable to use many fewer, but much larger, buses.

Some bus routes obey fixed stops, some of which have shelters. However, access can be difficult, especially when street traders monopolize bus shelters and illegal parking prevents buses from pulling into stopping places. As a result, stopping activity is haphazard, thereby reducing the value and reliability of the bus system. As an example, on one-way streets, buses loading and unloading from the far-side lane, with the result those passengers had to cross several hazardous lanes of moving traffic. Furthermore, those stops without shelters are rarely signified by a stop pole, which means that non-routine passengers have no indication as to where buses may stop.

In big cities, such as Jakarta, terminals are controlled by preman (self-appointed protection-racketeers). Some public transport routes suffer from the attention of calo, or people who endeavour to induce passengers to use a particular vehicle. Calo activities variously take place at terminals and along the route.

Indonesia's recent financial and monetary crisis has adversely affected the bus operations. Hence ridership has fallen, and operators have reduced services. The ability to repay bank loans has been impaired, and devaluation of the Rupiah (Indonesian currency) has increased the costs of spare parts and new vehicles alike.

Deferring maintenance, cannibalizing fleets, reducing service frequencies and holding down fares may represent short-term solutions to the financial crisis, but they are not sustainable in the longer term. Fare increases are inevitable if the public transport operation is to meet its longer-term costs.

Bus route plan should be renewed periodically. When changes are made, they generally involve the lengthening of existing routes, although if these cross the municipal boundary they consequently fall within the jurisdiction of the DISHUB (provincial road transport and traffic unit). The procedure for bus route development relies strongly on negotiation and consensus between the DISHUB and the route association leaders. It is understood that public requests for new routes are seldom made or accommodated, which must be seen as a serious limitation on the development of satisfactory public transport services.

Indeed, requests to provide new bus routes are rarely made because it is well known that nothing can be done without the agreement of vested interests. Proposed changes would most likely be opposed by anybody whose well-being would be adversely affected.

The provincial and municipal DISHUBs do not systematically monitor the supply of public transport services, nor do they collect data on the demands of transport users. It is understood that they largely protect the interests of the bus companies. Hence their role is passive and reactive, and inconsistent with national or municipal public transport policy.

III. Public Transport in Yogyakarta, A Case Study

The city bus network in Yogyakarta comprises 19 licensed routes, although only 16 routes are operated with a total vehicle allocation of 591. Three routes were closed because of the low demand. It is the driver who decided whether to depart from the route. There is no systematic network planning process. Additional demands are generally met by extending routes rather than creating new ones. That said, the bus network has hardly changed within the last decade, apart from the relocation of some terminals and the abandonment of three routes. The number of buses licensed to serve urban bus routes has likewise remained static throughout, although there has been a substantial fall in the number of vehicles actually deployed on the services.

The route length varies from 25 km to 62 km. Bus frequencies are extremely high. The average headway is 12 seconds. Load factor is very low. The average load factor is 27 %. It is lower than that five years ago, i.e. 36 %. It means that the demand has decreased sharply. The other problem is the security problems. There are many pick pockets in the bus. Most of the passengers are students and school children. They ara captive passengers. They have no preference, because they do not have any private vehicles. The fare is flat fare, it does not depend on the distance and time. There is only single trip ticketing system. There is no weekly or monthly ticket.

The only organization recognized by government to represent the road transport sector is ORGANDA. It represents owners and operators (not drivers) of taxi and buses. ORGANDA is funded by member subscriptions and a levy on vehicle testing fees (KIR) collected by DISHUB. ORGANDA has 3 levels, municipal, provincial and national, reflecting the levels of government. The Board of ORGANDA Yogyakarta Province includes public transport vehicle owners. They are elected at the 5-yearly congress and serve for 5 years. ORGANDA Yogyakarta maintains a small office staff. Its functions include the collection and analysis of operational data to support representations to government, including on fare levels. ORGANDA's services to its members include guidance on the implementation of government policies and legislation. There is some consultation, but mainly one-way (downward) communication. Government regards ORGANDA as a partner, which suggests some 'commonality' with government rather than opposing interests. Many bus owners and drivers reported that they didn't feel that ORGANDA effectively represented their interests and was only effective in resolving formal public transport issues like fares and route arrangements. As observed, the big cooperatives also play a role as intermediaries between government and the bus industry. In so doing, they have detracted from ORGANDA's authority. Every owner of bus vehicle operating in Yogyakarta must be a member of one of the five cooperatives, and each co-operative maintains an effective monopoly on access to the routes it controls. No vehicle may operate on route unless the vehicle owner or driver is a member and has paid membership fees. Each year an Annual Members Meeting is held which is attended by the representatives of bus owners. The cooperatives are essentially external bodies controlling the bus industry. The biggest cooperatives are not democratic and there appears dissatisfaction among their members about their accountability, especially for the substantial funds collected. There is no legal basis for the cooperatives' control of routes since route licenses are awarded to the vehicle owners. They have been able to dominate the industry because the licensing system (a separate route license for each vehicle) is inappropriate. Government finds it necessary to use the cooperatives as intermediaries between the regulatory agencies and the route license-holders whose number is more than 200. It is clearly impossible for a government agency to control the activities of such huge numbers of license holders or coordinate them into a route structure and impose service obligations. However, by using the cooperatives as intermediaries, government has recognized and consolidated their proprietary rights over the routes and enhanced their power and influence. Operational control of the routes has thus effectively passed to the cooperatives.

Because of their route monopolies, cohesive organization and management structure, links to the military and political institutions and the large numbers of people they represent, the cooperatives have considerable power relative to the regulatory agencies. They are able to mobilize large groups to resist any development in urban transport that they perceive to be against their interests, such as the use of different type of buses. This unfavorable 'balance of power' between the regulatory agencies and the cooperatives, means that government cannot impose changes or innovations, even where these are clearly in the interests of the traveling public and, in the longer term, of the operators themselves. Government must negotiate any change in with the cooperatives. The protective stance of the industry is a major reason why public transport in Yogyakarta remains in a low-cost low-quality equilibrium. It represents the biggest constraint on change and development. The large cooperatives are forces for maintaining the status quo in the industry, not for service improvement. They stifle competition by restricting access to the routes they control. They impose joining fees, monthly and daily fees, adding to operating costs. Their interests lie in perpetuating their monopoly control and the income from their routes.

An important measure of the performance of the public transport system is the extent to which it meets the needs and preferences of its citizens. Interview surveys have been carried out, therefore, in the business centres. The number of respondents was 300. They were public transport users and non public transport users.

The journey purpose can be divided into 4 categories, i.e. to work, to school, to visit relatives and other purposes. The result is shown in Figs. 1 and 2.

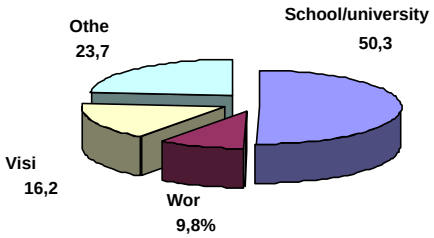

Fig. 1 Journey purpose for public transport users

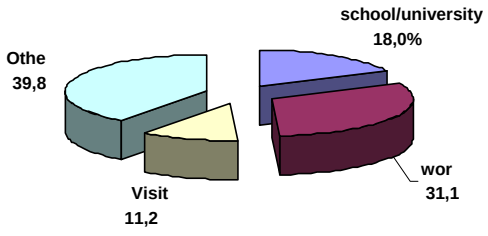

Fig. 2 Journey purpose for non public transport users

For non public transport user, most of them (75.6 %) use motorcycle. It is shown in Fig. 3.

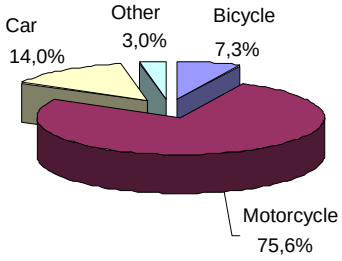

Fig. 3 Modal split for non public transport users

For public transport users, most of them use the public transport because they do not have private vehicle. The result is shown in Fig. 4.

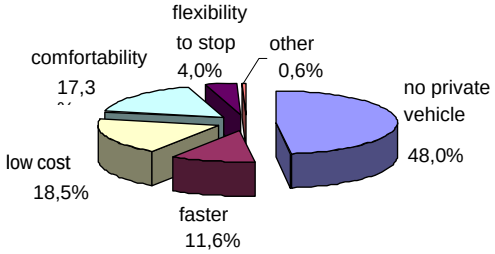

Fig. 4 Reason using public transport

For non public transport users, the reasons why they use private vehicles are: more flexible, faster, cheaper, more efficient aqnd more comfortable. It is shown in Fig. 5.

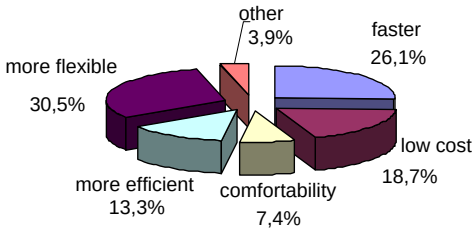

Fig. 5 Reason using private vehicle

For public transport users, most of them need to change to other bus before they reach their destination (see Fig. 6).

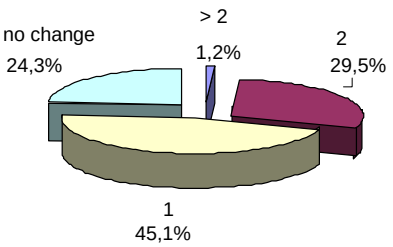

Fig. 6 Number of change to destination

For non public transport users, the reasons why they do not use the public transport are shown in Fig. 7.

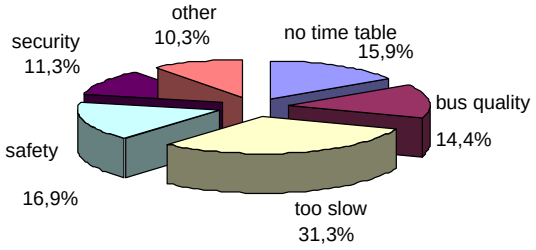

Fig. 7 The reason of non public transport users not to use public transport

Most of the respondents, public transport users and non public transport users, agree that the quality of public transport should be increased, although they have to pay more (see Figs. 8 and 9).

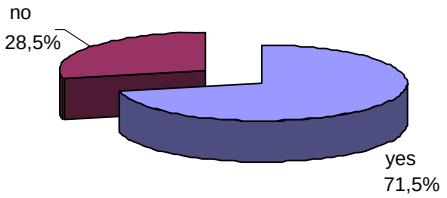

Fig. 8 Increasing quality but also increasing tariff (for public transport user respondents)

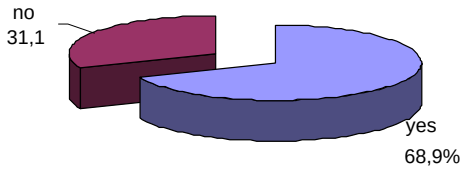

Fig. 9 Increasing quality but also increasing tariff (for non public transport users)

For non public transport users, they will use the public transport if public transport quality is better than now. However, it should be defined clearly the quality that they need.

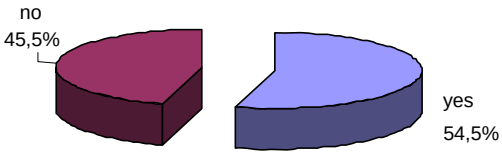

Fig. 10 Using public transport if the quality is better (for non public transport users)

The existing ticketing system is flat fare. Respondents have been asked if the ticketing system is changed to time based ticketing system, i.e. daily ticket, weekly ticket and monthly ticket. Most of them agree that the ticketing system should be changed to time based ticketing system (see Figs. 11 and 12).

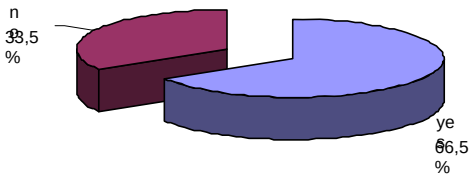

Fig. 11 Using time based ticketing system (for public transport users)

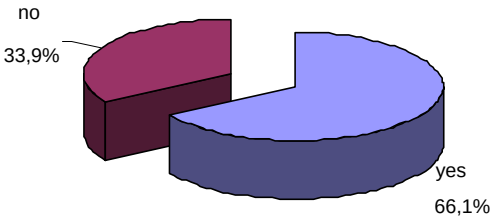

Fig. 12 Using time based ticketing system (for non public transport users)

The public transportation reform is a joint collaboration between Gadjah Mada University (GMU) and local government authorities (Traffic and Communication Agency). Research and feasibility study from the perspective of transportation study has been carried out by MSTT (Master Program in Transport System and Engineering) GMU. Research on electronic ticketing has been carried out by GMU Study Center on ICT [5].

Feasibility studies resulted that for the first implementation phase of the new public transportation system should start with 3 route corridors and a total number of 76 bus stations by the end of this year.

The organization reform will reform the existing regulatory policies and operational practices. The bus management system will be changed to the new system, called *buy the service system*. This system will change the existing system. The management will be organized by a joint organization among the government, ORGANDA, cooperatives and bus operators. The existing bus operators will be included in the new system, but they have to improve the service and also bus quality according to the minimum standard. The cost of the improvement will be subsidized by the government. The buses should stop only at at the bus shelters. The bus floor is 80 centimeters higher than the road pavement. The new bus stops will be built by the government. The bus shelter floor is also 80 centimeters higher than the road pavement. The passengers, therefore, can only enter the bus at the bus shelter. Bus lanes are also constructed in some places to reduce the journey time. The drivers and the crews will be paid daily or weekly by this new organization, but they have to follow the regulations, i.e. bus time table, safety and security.

Fig. 13 Bus shelter

It is planned to use smartcard system. Smartcard based electronic ticketing has been a common one in many countries. The local government has stated that the reformation of public transportation system should be achieved without overburdening the local government budget. As an empirical comparison, investment cost based on a similar electronic ticketing system (from overseas vendor) would require a minimum of US $ 1 million, while the local government budget is only US $ 0.3 million.

For rapid commuters it is required a type of device to control and also to collect the ticket automatically. There are some types of gate available in the market, but the price and also the cost for buying the device will be very expensive.

We try to make an approach by building the Gate locally, using local components for the mechanical parts and some of the electrical parts. This approach also gives benefits to the local home and small industry by promoting their products to higher level.

In the Fig. 14 below, it is shown the preliminary design of the *Gate Access* turnstile device. This design built by local manufacturer based on the project requirements. Three gate access ticketing machines have developed during this research project. Fig. 14 gives the illustration of *Gate Access* design and part of it.

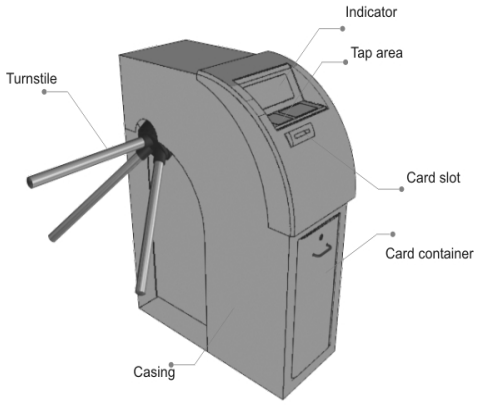

Fig. 14 Gate Access

This mechanic is installed inside the *Gate Access*, to swallow the single-trip ticket and put it in the card container. Single trip ticket will not be processed if being put on the tap area. There are three process scenario of the Gate each time there is a ticket entered in the motorized reader, which are:

1. **Single Trip Ticket**. All passengers using single trip ticket must enter the ticket to the motorized reader. Afterward, the reader will swallow the ticket and throw the ticket to the card container and then the turnstile lock will be opened.
2. **Time Based Ticket**. If a time based ticket is being inserted to the motorized reader, the card will be swallowed temporarily, then being process to check validity of the ticket. After the process is done the card can be taken again and then the turnstile lock will be opened.
3. **Dummy Card / Fake Card**. If someone tries to put a dummy card / fake card to the motorized reader, then the card will be automatically rejected, and the turnstile will remain locked.

IV. Conclusion

1. Policy Framework in the Short Term

In general, the main objective of public transport policy is: "To develop more efficient and effective public transport system to meet the various level of public transport demand". To fulfill this objective, the proposed policy framework is as follows:

a. Improving operational efficiencies in urban bus services:
   1) Improving hierarchy of public transport services
   2) Public transport priority system
   3) Improving public transport facilities
b. Developing bus industries
   1) Consolidating the bus industry
   2) Improving the existing regulation
   3) Improving Government's ability in public transport services
   4) Improving enforcement measure
   5) Improving coordination among agencies in public transport services

2. Alternatif Public Transport Modes for Big and Medium Cities in the Medium/Long Term

For big and medium cities, such as Jakarta, Bandung, Surabaya, Medan, Semarang and Yogyakarta mass transit could be the alternative public transport mode in the medium/long term. Mass transit system such as railway system can transport much more passengers than buses. Mass transit system could also be bus ways, a special space for buses on the road.

There are some advantages of mass transit, i.e.:

1. improvement in traffic condition
   a. relieving traffic congestion
   b. improving travel time
   c. reducing traffic accident
   d. enhancing the quality of services
2. improvement in the environment
   a. reducing air pollution

b. reducing CO2 emmission
3. enhancement of employment in developing the mass transit system
4. promotion of National and Local industries

However, the main problem is the financial problem. It is very expensive to develop such as system. Without government subsidy, the fare will be much more expensive than the existing bus fare.

ACKNOWLEDGMENT

The author would like to give sincerely thanks to Yogyakarta Provincial Government and the HiLink Project, Gadjah Mada University for the support of this study to improve the public transport system in Yogyakarta.

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