

Acceleration of Integrated Public Transport Management: Study on Bus Rapid Transit Management in DKI Jakarta

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Abstract

We analyse the acceleration of integrated public transportation management in DKI Jakarta. Here we focus on the case of Bus Rapid Transit (BRT) or called TransJakarta. In this study the qualitative research methods are used through post-positivism paradigm. We collect the data through observation, interviews, and literature studies. We found that the acceleration of BRT-based integrated public transportation management in DKI Jakarta can be well carried out if each stakeholder understands and implements the transportation management system that has been approved whether it is for planning, organizing, or supervising. Meanwhile, there are several components that are needed for accelerating BRT-based integrated public transportation management: route restructuring, transportation integration, single bus operators, and fair law enforcement. It is also important to realize the collaboration among Indonesian regional-own enterprises (BUMD), Indonesian state-own-enterprises (BUMN), and all stakeholders for creating sustainable and equitable bus-based public transportation in DKI Jakarta.

Keywords: Management Acceleration, Public Transportation, Congestion, Bus Rapid Transit, Jakarta.

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INTRODUCTION

Transportation can cause several problems in urban areas. These problems are caused either by the lack of infrastructure planning, malfunction of public transportation networks or by socio-economic and cultural factors. Jakarta is one of big cities in Indonesia that has a severe transportation problem. As the capital city of Indonesia, Jakarta has been warned by some observers that it will face a very acute stagnation due to severe transportation problems such as traffic jams. Meanwhile, Jakarta has become the center of national economic growth. This can be seen from a rapid development of crowd and commercial centers. This positive improvement has an impact on increasing the public demand for fast and reliable transportation. At the same time, it also contributes for raising a lot of transportation problems. One of the problems that arise along with the development of urban communities is public transportation management.

Transportation plays an important role in supporting the development of a country, notably in supporting economic activities of the people. It is because the transportation system can improve service and mobility of the people as well as other resources. Moreover, it can stimulate development in all areas such as trade, industry, and other sectors among the regions. Furthermore, the current mode of transportation is not only intended for accessibility, but also for tourist attraction (Kovačić and Milošević, 2016). Transportation problems are a crucial problem for the government. Accurate and careful planning in making a public policy is an initial step that is needed for solving the transportation problems (Pambagio, 2013). According to Sani (2010), transportation has a strategic role since it has two important functions: for driving a development (promotion function) and serving real activities (servicing function). This concept is based on the fact that transportation plays an important and strategic role in national development as it can

accelerate the economy, strengthen unity and integrity, and affect all aspects on people's lives.

Land transportation in big cities such as Jakarta leaves several problems such as traffic jams, parking, public transportation, pollution, and the order of traffic regulation (Munawar, 2005). Jakarta as a metropolitan city, which is also a center of economic and trade, is experiencing complicated problems in the transportation sector. Traffic congestion becomes one of urban transportation problems that currently continues to be a polemic and receives public attention. Moreover, the congestion phenomenon in Jakarta is often used as a political commodity related to the succession of leadership.

Recently, Jakarta has a severe condition for traffic congestion. It affects not only people daily activities but also the environment (see, e.g., Asri and Hidayat, 2005; Li *et al.*, 2020). Following Sinaga *et al.*, (2019) and referenced therein, the traffic congestion in Jakarta is basically caused by several factors such as an uncontrol growth of private vehicles, poor public transportation quality, and lack of traffic discipline. This traffic congestion eventually creates negative impacts like economic loss due to longer time travel, waste of energy, high cost of vehicle maintenance, and stress among road users.

The traffic problem in Jakarta is one of the reasons for the central government of Indonesia to move the capital city of Republic of Indonesia to another region, i.e., East Kalimantan. This capital relocation is contained in the National Medium-Term Development Plan (RPJMN) for 2020-2024. Actually, there are other factors that caused this relocation such as the population density, pollution, inequitable distribution of national development, natural disasters, etc. The population in Jakarta always increases each year. In 2020 the population has reached 10.5 million. This huge population density creates other problems for transportation. Indeed, the plan to relocate the capital city from Jakarta to East Kalimantan does not significantly solve the transportation problems in Jakarta if there are no diminution of people density as well as the people mobility.

Meanwhile, Special Capital Region (DKI) Jakarta has bus-based public transportation. However, it

is still not fully integrated with other transportation modes. The release of DKI Jakarta government policies such as OK O'Trip / Jak Lingko is not based on the trajectory studies. Hence, the use of DKI Jakarta Regional Budget (APBD) is not on target as it is wasted in a subsidy program through Public Service Obligation (PSO). This waste of PSO is clearly seen on Bus Rapid Transit (BRT) route with Jak Lingko operators which are overlappingly created and seem to be double PSO. Moreover, the route of BRT, or called TransJakarta, coincides with the route of other transportation modes notably Mass Rapid Transit (MRT) and Light Rail Transit (LRT). This overlapping trajectory has made BRT inefficient. It is necessary to re-routing the BRT route in order to avoid a coincide with other transportation lines.

Moreover, there are still inconsistencies of law enforcement for BRT lines violations. It causes the nature of rapid in BRT not fully fulfilled. It results an injustice for BRT users who have left their vehicle at home. This law enforcement inconsistency is inseparable from the institutional system in Indonesia which still needs to be evaluated. The policy for developing regional mass public transportation is carried out by the regional government. However, law enforcement is done by the judiciary and police which is not under the control of the regional government institutionally. Indeed, the results of fines for minor traffic crimes are non-tax state revenue of law enforcement agencies and not for regional income as usually the case in the city of developing countries around the world.

The government of DKI Jakarta has made an effort to build several new roads. Nevertheless, it is constrained by the limited space available. The growth of road is slower compared to the needs. According to the data reported by the Transportation Agency of DKI Jakarta in 2016 (see Figure 1), the number of daily trips from and to the city of Jakarta has reached 21.5 million trips/day. It is estimated that 16 million (75% of the trip) used private vehicles, while the proportion of using public transport is only 25%. Meanwhile, the road only occupies 7.3% of land area and the growth only reach 0.01% per year. Therefore, it seems that the chaotic transportation problem in Jakarta is caused by an imbalance between supply and demand.




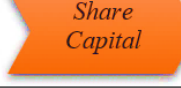
SUPPLY  Road Network	<ul style="list-style-type: none"> - Road length 6.936 km = 48.4 km² - Road ratio 7.3% of land area (area of DKI Jakarta 7,659 km²: Land 661.52 km² and waters 6,997.50 km²) - Road length growth = 0.01 %/year
DEMAND  Travel Needs	<ul style="list-style-type: none"> - 21.5 million trips per day (in Jakarta including commuting), (47.5 million trips/day Jabodetabek). - 75% (± 16 million trips in Jakarta using private vehicles)
 Motor vehicle	<ul style="list-style-type: none"> - Number of motorized vehicles in DKI: 17 million units (± 25 million Jabodetabek) <ul style="list-style-type: none"> ▪ Private vehicles: 16.545 million (96.5 %) (4 million cars, 13 million motorcycles) ▪ Public transportation: 455 thousand (3.5 %) - Average growth for the last 5 years (2011-2016): ± 9 % per year
 Share Capital	<ul style="list-style-type: none"> - 96.5 % private vehicle, serving 44 % of trips - 3.5 % public transportation, serving 56 % of trips (of which 3 % are served by Jabodetabek KA/KRL).

Figure 1: Data of transportation supply & demand in DKI Jakarta

Up until now, the mass public transportation (*Angkutan Umum Masal*; AUM) development policy has been implemented into several modes of transportation namely *Kereta Rel Listrik* (KRL), airport train, and BRT. Among these three types of public transportation, the development of BRT has received special attention from government of DKI Jakarta. Moreover, it is often used as a political commodity for the leadership succession in DKI Jakarta.

The development of TransJakarta is believed to be one of the keys to solve the traffic congestion problem in Jakarta. It can give safe, comfortable, fast, and low-cost public transportation. Building a fast bus-based mass transit system may be the fastest and cheapest solution to solve the traffic congestion problem since the main purpose of public transportation is to provide alternative transportation to the community. By providing proper public transportation, people have options and do not rely on their private vehicles. This study focuses on the discussion of the acceleration of Bus Rapid Transit mass public transportation management in DKI Jakarta.

We reveal that the policy of BRT-based Mass Public Transportation development in DKI Jakarta still leaves several problems. It requires a comprehensive study on the policy, thus the policy set by the government does not have such a strong negative impact at the level of implementation. Organizing the public transportation system through accelerating its management requires an integrated and evolutionary policy that considers the physical aspects as well as the human and environmental aspects. This work concerns about the way to accelerate BRT-based integrated public transportation management for public

transportation system in DKI Jakarta. The model to create an ideal BRT-based integrated public transportation management acceleration in the context of structuring the transportation system in DKI Jakarta is given.

1. LITERATURE REVIEW

1.1 Transportation management

Transportation could be understood as an activity to carry goods and passengers from one place to another. The most important element in transportation is transfer of goods or passengers to another place (Salim, 1993). The tools used to carry out the process of transfer depends on the shape of the object, the distance from the targeted place, and the purpose of the object to be moved (Miro, 2005). There are five principal elements in the transportation system: passengers, commodity, vehicle, road, and transportation management organization (Munawar, 2005). Transportation has a function to support economic development in the region by making a balance between transportation supply and demand. Besides the economic benefits, transportation can give us social benefits. It can be used to exchange information, services individuals or groups, travel for recreation, shortening distance to the workplace, etc. There are also political benefits such as creating unity and justice and giving more equitable service to the community (Andriansyah, 2015).

Management is a process consisting of planning, organizing, directing, and monitoring members and other resources to achieve predetermined organizational goals (Stoner *et al.*, 1995). It is focused on the processes and systems. Therefore, the overall process of management is atrocious if the processes and

systems of planning, organizing, directing, and monitoring are not good enough. The implementation of good management becomes a solution in an organization. Efficiency and effectivity are two cores in management (Suyuthi *et al.*, 2020).

Transportation management is the arrangement of the people and goods delivery system with the mode of transportation which aims to make the distribution process of people and goods more organized. In this study, acceleration of transportation management means to increase the speed of BRT-based integrated public transportation management in DKI Jakarta transportation system as seen from its process, input, output, and outcome.

1.2 Public policy

According to Gerston (2014), public policy is an effort made by the government at each level in order to solve public problems. Public policy is designed to achieve specific goals and produce certain results. Public policy is the main output of the political system. The final outcome of the policy will be carried out by public policymakers (government). There are five stages in the process of determining a policy based on Gerston (2014), namely (1) identifying public policy issues, (2) developing public policy proposals, (3) conducting public policy advocacy, (4) implementing public policies, (5) evaluating implemented policies.

The implementation of public policy has to consider three core elements (Fischer and Miller, 2017). First, it needs detailed specification of the program (i.e., how and by which institution/organization should the program be implemented? How the law/the program should be interpreted?). Second, there should be an allocation of the resources (i.e., how is the budget distributed? Who will run the program? Which organizational unit will be responsible for implementing it?). Third, the procedure of the decisions (i.e., how are the decisions of one case made?). Public policy is a law that regulates several aspects in society. This law has to be obeyed by each person and is binding on all citizens. Every violation will be penalized. Based on the stratification, public policy can be seen from three levels, namely general policy (strategy), managerial policy, and operational technical policy. In addition, from a management point of view, public policy work process is viewed as an activity that includes three aspects: policy making, implementation and control, and policy evaluation (Choiri and Hariyanto, 2014).

1.3 Transportation system

Each mode of transportation has to meet a criterion of public services. There are three basic criteria that must be owned by public transportation: comfort, safety, and speed (Dagun, 2006). Each passenger must feel comfortable during his trip by using public transportation services. Thus, there should be

several facilities in public transportation that provide comfort for all passengers such as air conditioning.

Security is also an important aspect in public transportation. A closed system is necessary for public transportation. The bus stops or terminals are only accessed by passengers who already had a ticket. Meanwhile, it is necessary to have a special place for boarding the passengers. This close system can prevent harm for the passengers.

A punctual time arrival is needed for public transportation. Thus, it is obligatory to have a special route for public transportation, such as rail for the train. In the case of TransJakarta, this special route is named busway. However, a lot of private vehicles use these special routes. Hence, it is necessary to ensure that the law enforcement is going well.

Public transportation is needed for the future of a city. It provides basic mobility services for the citizen as well as for people who don't have access to the private vehicle. Cooley (1893) revealed that the character of transportation is determined by its inter-relations with physical and social aspects. This framework of thinking leads to a concept that the management of urban public transportation is not only focused on the physical aspects, but also on the social aspect.

There are three aspects that influence the policy of urban transportation system. First, planning of roads and public transportation. This aspect includes the policy of land use as well as transportation management. Second, coordination between regulators and operators. This includes government management, coordination between institutions or agencies, and laws. The third aspect is the environmental aspect. Public mass transportation has several advantages compared to private vehicle. The goal of public transportation is not only to reduce the level of traffic density in urban areas, but also to provide transportation that is accessible to all members of the community.

One of the transportation systems that is growing in popularity around the world is BRT (see, e.g., Satiennam *et al.*, (2006); Mejía-Dugand *et al.*, (2013); Alpkokin & Ergun (2012)). BRT is a transportation that has a rapid nature. The buses flexibility and rail transit quality are combined in BRT. According to Levinson *et al.*, (2002), BRT is the solution for the need to increase transport capacity and improve access notably in central business districts since it is less costly, simpler to implement, and has the potential to be integrated into urban environments in ways that promote economic development.

2. RESEARCH METHOD

Traffic congestion is a transportation problem that is considered to be getting worse every year in

major cities in Indonesia, including Jakarta. It needs an integrated transportation system that is capable of realizing the availability of transportation services. It should be in line with traffic demand. The government should have a lot of concern about the traffic congestion problem since it causes several other problems. So far, the government policy has only seen transportation from a technical point of view. For instance, if the congestion is seen only from the comparison between length of roads and number of vehicles, then building a new road (flyover or underpass) and expanding the road is a solution. However, we need to be cautious as this solution can actually attract people for buying new private vehicles which can make the congestion even worse. In order to solve the problems, government of DKI Jakarta has implemented a mass public transportation development policy by issuing a Regional Regulation Number 5/2014. This regulation is a part of a Macro Transportation Pattern policy in Governor Regulation (Pergub) Number 103/2007. These regulations probably are a foundation to solve the transportation problem in DKI Jakarta. It is necessary to conduct an analysis in order to measure the quality of these policies, notably to measure their achievement and impact.

The reason for the development of mass public transportation, as written in Pergub Number 103/2007, is to organize an effective, efficient, smooth, and integrated transportation system. Furthermore, as written in Pergub Number 103/2007, the policy for developing AUM consists of BRT, LRT, and MRT. The implementation of AUM development policy is an embodiment of DKI Jakarta government for ensuring the availability of mass public transportation that meet people’s needs. It targets 60 % of the population using public transportation.

Based on AUM development policies government of DKI Jakarta has built 13 corridors operating out of the 15 planned for TransJakarta. There are also other modes of transportation such as MRT, KRL, LRT and even water transportation (WT). This study focuses on the implementation of AUM development policy in BRT, or known as TransJakarta. It has to be admitted that the operationalization of TransJakarta still does not have a significant impact in accordance with the objectives of the implementation of public transport development policies in Jakarta.

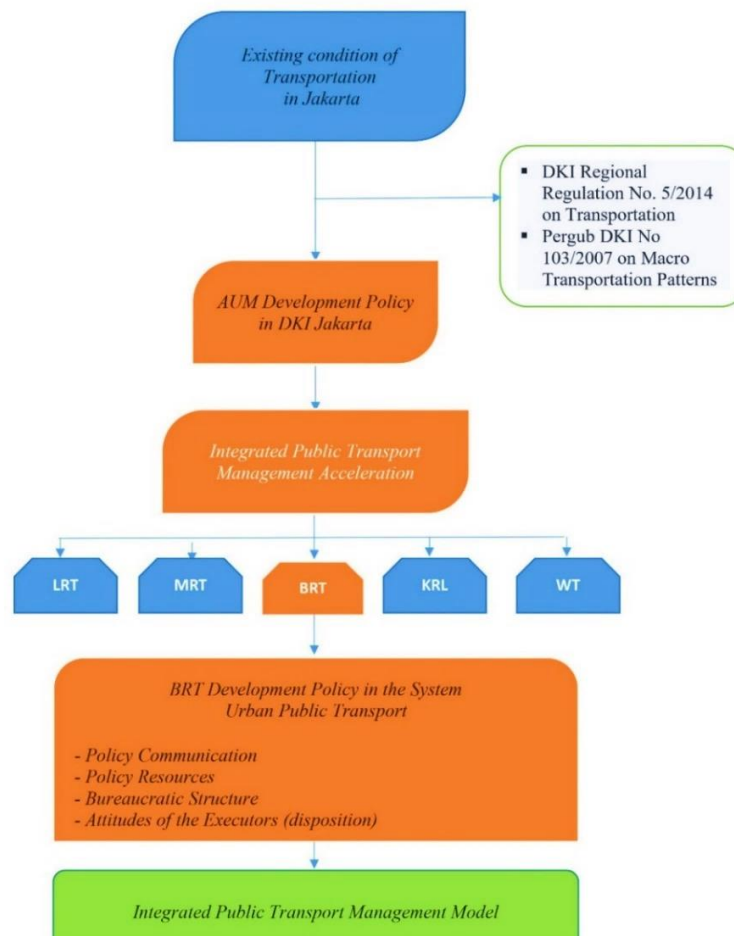


Figure 2: Framework of integrated public transportation management acceleration

The framework of this study can be seen in Figure 2. In this study the qualitative research methods are used through post-positivism paradigm. We use the method given by Edward (1980) as our conceptual framework in this study. It consists of four dimensions as follows:

1. Communication, with indicators: information delivery and dissemination, clarity, consistency, skills, and media accuracy.
2. Resource, with indicators: having appropriate skills, reliability, responsibility and authority, facilities and infrastructure, and ability.
3. Disposition, with indicators: motivation of the executor, team spirit, security, level of confidence, and punishment.
4. Bureaucratic structure, with indicators: clarity of standards, instructive, clarity at objectives, division of tasks, and division of authority.

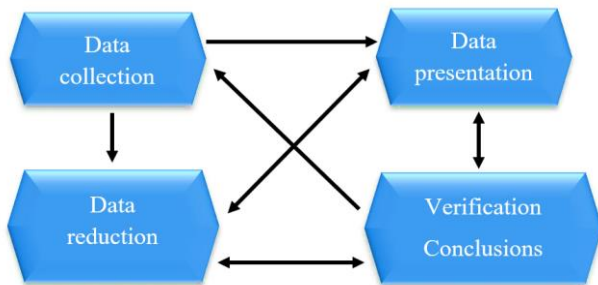


Figure 3: Components of interactive model data analysis (Miles, Huberman and Saldana, 2018)

We collect the data from various segments that were able to provide information about the BRT-based public transportation management in DKI Jakarta. The purposive sampling techniques, snowball and accidental samplings are used to decide the informant in this study. The informant in our study consists of Deputy Governor of DKI Jakarta in sector of trade and transportation industry, Head of DKI Jakarta Transportation Agency, President Director of PT TransJakarta, Dirlantas Pola Metro Jaya, Chair of Organda in DKI Jakarta, Koperasi of public transportation in DKI Jakarta, public transportation entrepreneurs, public transportation observers, public policy observers, and public transportation users. We collect the data through observation, interviews, literature review, and focus group discussions. We used the triangulation examination technique to ensure the validity, objectivity and reliability of collected data through field or literature studies. In this study, triangulation of sources and methods was used. Triangulation of sources and methods was carried out by re-checking between sources of data and methods with one another. The determination of such data processing techniques is based on the idea that our study does not only intend to reveal or explain the results, but also to provide arguments for the considered problems. As shown in Figure 3, we used a qualitative data interaction model by Miles, Huberman and Saldana (2018) to analyses the

data. After we collect the data, if it is necessary, we reduce the data by summarizing the data and selecting only the data that are in accordance with the objective of this study. The presentation of data is done after the data has been reduced or summarized. Finally, we verified the results and made a conclusion afterwards.

3. RESULTS AND DISCUSSION

TransJakarta is already operated since 2004. It has a Bus Rapid Transit system and is designed for the people living in Jakarta. Even though it has already operated for several years, there are still lots of problems that make the quality of TransJakarta decrease. For instance, the design of TransJakarta route has a consequence on their services. Almost all TransJakarta lines are built intersecting with other modes of transportation. Mix traffic between TransJakarta and others is inevitable. Thus, it can cause a delay in TransJakarta time arrival. Meanwhile, the MRT lines construction, which demolished certain TransJakarta corridors, has consequences to the delay of TransJakarta. Hence the quality of TransJakarta is still far from expected. As a result, it is hard to rely on TransJakarta as public transportation and thus makes the majority of people still depend on their private vehicle.

Meanwhile, the collaboration between TransJakarta and the existing bus operators are not going so well. On certain routes, TransJakarta is a competitor for existing bus operators since their route is side by side. Actually, there has been an effort to collaborate with main bus operators on certain routes in order to avoid side by side route with TransJakarta. However, on other routes, TransJakarta has not fully embraced the existing bus operators. Hence, in these remaining routes the existing bus operators remains a competitor for TransJakarta.

Resources in policy implementation are divided into human and non-human resources, e.g., financial or time resources. These resources have to be available in order to facilitate the implementation of a policy. Besides human resources, financial and time resources play an important role in the successful policy implementation. Lack of funds or other incentives has a major contribution to the failure of policy implementation. The problem of policy system from implementing BRT-based transportation modes is also due to human resources that are directly involved in the BRT system. According to our finding, we found a problem in handling human resources, notably the welfare of organization members who support BRT system. It shows that Transjakarta Public Service Agency (BLUJT) is supported by more than 9000 employees. This number is so large compared to other developing countries that have BRT system.

Besides BRT system, Jakarta has another non-BRT system. These two systems cover 200 routes.

However, for the moment it cannot reach all areas in Jakarta. According to Sinaga *et al.* (2019), these two systems have different mechanisms. For instance, BRT system has Bus Halte while Non-BRT system uses Bus Stop.

Meanwhile, up until now the revitalization program has been accomplished by DKI Jakarta Transportation Agency. However, this revitalization has to be evaluated. Actually, the Transportation Agency revitalized only the existing trajectory. According to the informant from Transportation Agency, this revitalization is intersected with trajectory of other public transportation modes which has been operating in DKI Jakarta area for a long time. The revitalization is only conducted for TransJakarta trajectory and not for other public transportation modes.

There are several factors that influence the implementation of TransJakarta public transportation policy, i.e., economy, social, and politics. It has to be

noted that BRT system does not only concern about the business or profit but also the social aspect. The social aspect influence positively to the growth of BRT-system. Meanwhile, in order to run effectively the public policy, the standard and policy objectives have to be understood by all implementors who are responsible for achieving the objectives (Van Meter and Van Horn, 1975). Hence, this standard and objective have to be communicated to all implementors. The communication from various sources of information has to be consistent and uniform.

It is necessary for a city to have an excellent quality of transportation in order to reach a global level. However, transportation may become a source of problems for humans and environmental. The problem of transportation is different with respect to the problem faced by developing societies. It will be getting worse along with economic development while other problems such as sanitation and education decrease.

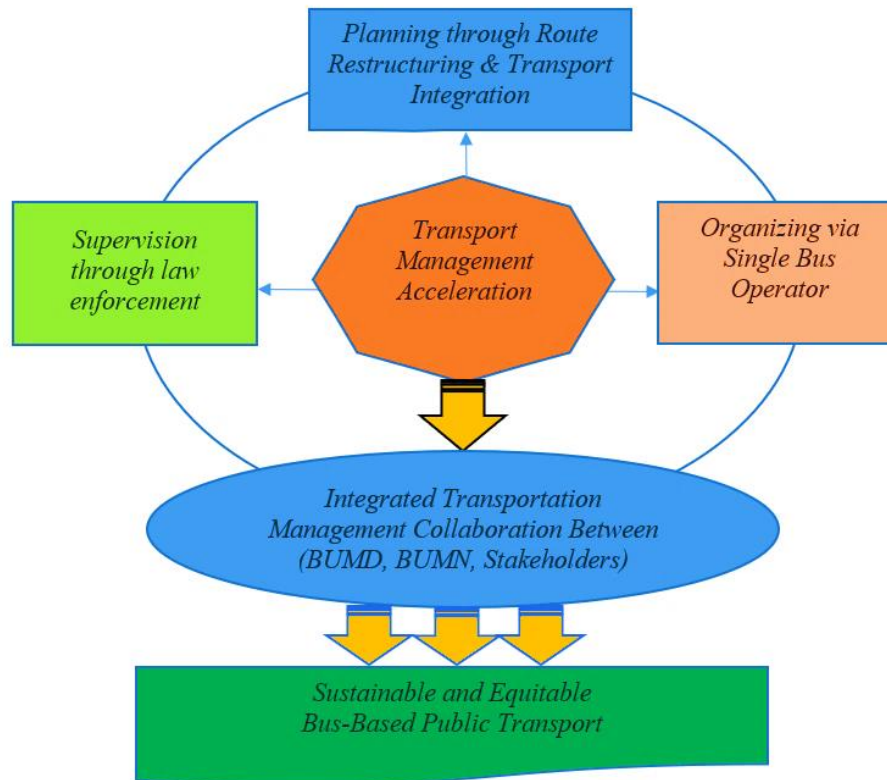


Figure 4: Transportation Management Acceleration Model

In terms of planning, the problem seems to be caused by several factors as follows: (a) there are different agencies outside government of DKI Jakarta who controls the transportation system; (b) long-term planning is carried out without any ownership from government of DKI Jakarta even though it has authority in Jakarta area; (c) weak coordination between agencies create obstacles when making a decision.

Furthermore, in terms of operational perspective the problem is found in the payment system as follows: (a) Same tariff system of each mode cannot be applied notably between TransJakarta, which is under the authority of government of DKI Jakarta, and Jabodetabek KRL-MRT, which is under the Ministry of Transportation; (b) The subsidies of various modes are determined by different institutions; (c) There is no

authority for the government of DKI Jakarta to determine the number of tariffs for Jabodetabek KRL and LRT services; (d) There is no cashless system for public transportation outside Jakarta.

Meanwhile, the problem in terms of supervision is given by: (a) licensing and monitoring the buses is carried out territorially. There is no synergy between regional government and Ministry of Transportation in issuing licenses and monitoring Angkot (city car public transportation) and city or intercity buses; (b) Government of DKI Jakarta is unable to determine the level of service provided by KRL and LRT.

From a public policy perspective, the policy of government of DKI Jakarta to handle transportation problems through the implementation of development policy of AUM can be seen as an effort to deal with public transportation problems. However, the government has to pay attention to the various stakeholders involved and affected by the policy. TransJakarta is the first and only BRT system in Indonesia with international standards. TransJakarta has been a symbol of renewing road-based public transportation in Jakarta, even Indonesia, for several years. It becomes a learning material for policymakers in order to build an affordable public transportation system with standardized professional services.

The transportation management model in DKI Jakarta is described in Figure 4. We suggest that it is necessary to restructure the route for avoiding inefficiency of TransJakarta services. This new route has to be placed in order to avoid mixed traffic with other transportation modes. It is necessary to restructure the routes based on community needs. The policy of developing BRT-based mass public transportation will only be effective if it is followed by a traffic restriction strategy. The strategy is implemented to control the operation of private vehicles and to encourage the shift of private vehicle users to BRT-based public transport. Meanwhile, there should be a single operator that operates the bus system in order to avoid an overlapping policy. There should be communication between the government and several stockholders in order to decide the operator that can fully control BRT. A consistent and fair law enforcement are needed to increase the quality of BRT system. The effectiveness of this management acceleration is determined by the consistency and continuity of law/regulation enforcement. Finally, it is also necessary to have integrated management between all of stakeholders, BUMD, and BUMN.

CONCLUSION

We study BRT-based integrated public transportation management in DKI Jakarta. We found that the quality of BRT system can be improved if all stakeholders understand and implement the

transportation management that has been approved by all stakeholders. It consists of several elements such as planning, organizing, and supervising all tasks and responsibilities. Meanwhile, to create a sustainable and equitable bus-based public transportation system in DKI Jakarta, we need to implement an ideal BRT-based integrated public transportation management acceleration model. This model can be carried out through several aspects, i.e., route restructuring, integration of transportation system, single bus operator, fair law enforcement, and good cooperation among BUMD, BUMN, and stakeholders for integrated transportation management. In conducting transportation management, we recommend the Government of DKI Jakarta to improve the quality and modernize the service. It is also necessary to have high-quality human resources, additional buses, additional operating routes, and improvement of ticketing systems. There certain aspects that can contribute to enrich this study. Further work can be done by considering more variables to create a model of transportation management acceleration.

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