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# Analysis of the Implementation of Policy and Integrated Transportation of Bus Rapid Transit (BRT) in Medan City

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***Abstract.*** *This study aims to describe the Analysis of the Implementation of Policy and Integrated Transportation of Bus Rapid Transit (BRT) in Medan City. The qualitative research method is also known as a method where the research is conducted under natural conditions. This research method is a scientific procedure or approach to obtain data with specific objectives. Data analysis is the process of systematically searching for and organizing data. The data collection techniques used in this study are observation, interviews, and documentation studies. The data obtained are then analysed through three stages: data reduction, data presentation, and verification. The results of the study show that the Medan City Government is currently implementing significant development in urban mobility with two main activities: the development of Bus Rapid Transit (BRT) and the development of Kesawan and Merdeka Square areas. Both activities emphasize the importance of developing pedestrian and cyclist facilities while facilitating the people of Medan City in accessing public transportation. These efforts are positive actions taken by the Medan City Government toward the development of sustainable urban mobility while ensuring that all corners of Medan City can be reached by quality public transportation.*

***Keywords***: *Implementation of Policy, Integrated Transportation of Bus Rapid Transit (BRT) in Medan City, Analysis*

## 1. INTRODUCTION

Currently, infrastructure development and mobility policies are still oriented towards a conventional approach that prioritizes private motor vehicles. This prioritization has led to a dependency on personal vehicles among the public, resulting in issues such as pollution and a decline in the quality of life for urban residents. Moreover, the current provision of public transportation services is not optimal, exacerbating society's reliance on private motor vehicles. Furthermore, this dependency can lead to social issues, such as inequality for those who cannot access private vehicles. The unreliability of public transportation services is evident in the limited network coverage, restricted fleet availability, and insufficient frequency of arrivals.

As one of the largest cities in Indonesia, Medan has a high level of mobility. However, like many other cities in Indonesia, the transportation modes in Medan are still dominated by private vehicles. According to data from the Central Statistics Agency (BPS) in 2020, the total number of motor vehicle ownership in Medan reached 288,378 units, with

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95% of these being cars and motorcycles, creating an imbalance in mode share on the roads. In an effort to reduce dependency on private motor vehicles, Medan is currently one of the cities receiving support from the Ministry of Transportation and the World Bank for the implementation of a Bus Rapid Transit (BRT) system. This collaboration is seen as a good initial step toward more sustainable mobility in the city.

The implementation of BRT infrastructure cannot be separated from other mobility systems, such as pedestrian and cyclist facilities. To ensure optimal BRT service, particularly in terms of passenger capacity, it is essential to have facilities that bridge the gaps at the beginning and end of trips using the BRT, known as first and last mile solutions. With improvements to pedestrian and cycling facilities, it is hoped that BRT services can reach more areas and be more easily accessible and comfortable for all segments of society. In addition to enhancing pedestrian and cycling facilities, BRT implementation also needs to consider road space design, traffic management systems, and urban mobility policies, which will also be discussed in this document.

In addition to the BRT plan, as of the preparation of this report, the Medan City Government, together with the Ministry of Public Works and Public Housing (PUPR), is planning and developing the Medan City Centre area. This includes the development of Merdeka Square, improvements to pedestrian facilities, and the construction of cycling facilities in the Old Town area of Medan, the construction of an underpass on Gaharu Street, and the construction of an overpass at Medan Railway Station. Aside from the underpass construction plan, all of these activities and development plans intersect with the planned corridors and routes for the BRT, which are expected to begin construction in late 2023. To realize comfortable and reliable mobility in Medan, the various plans must be coordinated and integrated with one another. It is important to note that sustainable transportation systems such as BRT, pedestrian facilities, and cycling facilities need to be prioritized. In order to meet these priorities and monitor development progress on the ground, adjustments to the above infrastructure planning must be made to ensure they can be implemented ideally.

This operational model allows the BRT to serve corridors both within and outside the dedicated BRT lanes, thereby enabling more residents to be served compared to the previous system.

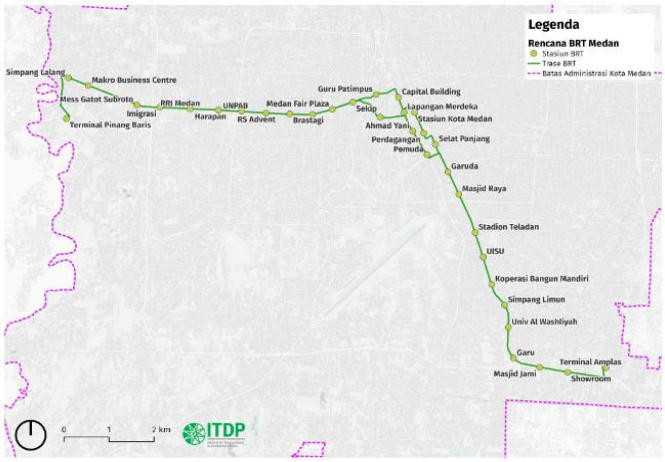


**Figure 1.** Plan for the Construction of Dedicated BRT Lanes and BRT Stations in Medan

The Medan BRT (Bus Rapid Transit) dedicated lanes are planned to be built along the main road of Medan City from the west to the east corridor, specifically along Gatot Subroto - Sisingamangaraja, connecting the Pinang Baris Terminal in the western part of the city and passing through the central area at Merdeka Square and Kesawan area before reaching the southeastern side of the city at Amplas Terminal. This dedicated BRT lane will span 21 km with at-grade construction and will be served by 33 dedicated BRT stations, two of which will be located within the aforementioned terminals.

The Medan City Government provides the Bus Rapid Transit (BRT) as a mode of public transportation in Medan. The establishment of the BRT is intended to support the provision of urban public transport in accordance with public desires for efficiency, safety, comfort, reliability, and affordability. With the operation of the BRT, it is hoped to enhance the attractiveness of public transportation, thereby reducing the use of private vehicles as an effort to decrease traffic congestion, disorder, and accidents (DLLAJR, 2007). The operation of the BRT as a public passenger transport in Medan will, of course, be supported by established travel routes. These travel routes are expected to meet the objective of serving the public's need for passenger transport that excels in service quality and adequate physical facilities. The use of the BRT aims to cater to the public's need for passenger transport along the route.

The operation of the BRT along the routes determined by the government requires supporting facilities, one of which is bus stops. A bus stop is a place where public passenger vehicles stop to pick up and/or drop off passengers, equipped with structures (Decree of the Directorate General of Land Transportation No. 271/HK.105/DRJD/96). BRT stops differ from regular bus stops; these stops serve as a small-scale terminal. The BRT does

not have large terminals and only picks up and drops off passengers at special stops used solely by the BRT. The construction of public facilities, especially bus stops, requires land; however, the problem lies in the limited availability of land and the fact that its area does not increase (Wicaksono, 2012; Aris et al, 2024). The determination of bus stop locations plays a significant role in enhancing the value of surrounding land. According to Setiawan (2006), the most influential factor on land and building value in a property is location, which includes being in a busy area, land and buildings on elevated ground, and those near the coast, whereas factors that have less influence include topography, which involves uneven land contour, area, and land type.

The socio-cultural dynamics of transportation in urban areas, generally, and specifically in Medan City, have shown a critical condition. This critical condition is evident in the phenomenon of increasing private vehicle use year by year and the public's disorder in transportation, reflecting the socio-cultural reality. The government's strategy to address the transportation needs of the public by building mass rapid transit (Bus Rapid Transit, BRT) is one alternative to reduce traffic congestion and the chaos of road users in urban areas. The BRT, manifested in the Mebidang bus, can be understood as a form of social engineering aimed at reducing the widening vertical gap in accessing transportation services.

The practice of using private transportation modes indicates a phenomenon of inclusion in transportation. This gives rise to socio-cultural implications that do not support the realization of justice in transportation, which can exacerbate accessibility disparities and increase social exclusion in society. The Mebidang bus represents an urban transport that can transform inhumane transportation practices. The introduction of new transportation values, such as discipline and respectful behaviour in using the Mebidang bus, represents a new order that is greatly needed by urban society as a whole. The inherent values of comfort, safety, respect for time, and costs in the Mebidang bus service are expected to reduce various risks associated with transportation. Thus, the Mebidang bus can enhance or improve the quality of life for the people in Medan City.

## 2. THEORETICAL BASIS

### Bus Rapid Transit (BRT)

Bus Rapid Transit (BRT) is a flexible, rubber-tired mode of transportation that offers fast transit combined with stations, vehicles, services, roads, and elements of the Intelligent Transportation System (ITS) within an integrated system with a strong identity (Levinson

et al., 2013). Bus Rapid Transit (BRT) is a high-quality, client-oriented transit system that offers speed, comfort, and affordable prices (Wright, 2013). Bus Rapid Transit (BRT) is a fast transportation mode that combines the quality of rail transport with the flexibility of buses (Tomas, 2011).

Bus Rapid Transit (BRT), also known as busway, refers to high-quality buses based on a rapid transit system that is comfortable and cost-effective for urban mobility. It provides pedestrian pathways, necessary infrastructure, rapid and frequent service operations, and distinct marketing advantages and customer services. Essentially, Bus Rapid Transit (BRT) emulates the performance characteristics of modern railway transport systems. A BRT system typically costs 4 to 20 times less than Light Rail Transit (LRT) and 10 to 100 times less than underground railway systems.

**Urban Transportation**

Urban transportation refers to the modeling phase that estimates the number of trips generated from a specific zone or land use, or the number of trips attracted to a particular land use or zone. Urban transportation represents the volume of traffic produced by a zone or land use unit over time. It is defined as the number of trips occurring within a time unit in a land use zone (Tamin, 2011; Aris and Nuraini, 2024). An urban transportation system can be understood as a comprehensive unit consisting of components that mutually support and cooperate in providing transportation within urban areas. The overall (macro) transportation system can be broken down into smaller, interconnected (micro) systems that influence each other.

## 3. RESEARCH METHOD(S)

Qualitative research methods are those conducted in natural conditions; it can also be referred to as ethnographic methods, as this approach was initially used more in cultural anthropology research (Sugiyono, 2013; Sugiarto et al, 2023). In conducting this research, the researcher acts as a human instrument, and the data collection technique is participatory in-depth interviews. Thus, the researcher must interact closely with the data sources and must thoroughly understand the individuals providing the data (Moelong, 2004 in Purba and Nuraini, 2024; Yin, 2001 in Nuraini et al, 2023).

Research methodology is a scientific procedure or method for obtaining data with specific objectives. Sugiyono (2017 in Nuraini, 2024; Sugiarto and Ramadania, 2023a) states that research methodology fundamentally embodies scientific characteristics for acquiring data with specific purposes and uses. In the context of urban transportation

infrastructure planning, the research method employed is synthesis, which involves a comprehensive written summary derived from various reference sources concerning definitions or opinions. This summary is organized into a new piece of writing that forms a cohesive whole according to the researcher's needs. This presentation is obtained from various reference sources used by the researcher in compiling a scholarly work. The results of the synthesis may include data, facts, information, or new key ideas (Samin AN, 2016; Nuraini, 2019; Sugiarto & Ramadania, 2023b).

According to Sugiyono (2013), "Data analysis is the process of systematically searching and organizing data obtained from the synthesis results, arranging it into patterns, selecting what is important and will be studied, and then drawing conclusions that are easy to understand for oneself and others." The data collection techniques used in this research include observation, interviews, and documentation studies (Yin, 2001 in Sugiarto & Ramadania, 2021). The data obtained are then analyzed through three stages: data reduction, data presentation, and verification (Moleong, 2006 in Azizah et al, 2024)

## 4. FINDINGS AND DUSCUSSION

### Standards and Objectives of Urban Transportation Policy for Bus Rapid Transit (BRT) in Medan City

Every policy has its standards and objectives, which serve as the basis for determining the performance of policy implementation. In other words, the success of policy implementation can be measured by its standards and objectives. In this context, the content of the policy is essential to examine the direction of the implementation of the Bus Rapid Transit (BRT) development policy in Medan City. This also indicates that the implementation of the urban transportation development policy based on the Bus Rapid Transit (BRT) in Medan City must have fundamental standards and objectives, which, in turn, influence the implementation of the Medan City government's policy.

The implementation of the urban transportation development policy based on Bus Rapid Transit (BRT) in Medan City is the responsibility of the Medan City Local Government, as mandated in the Provincial Regulation of North Sumatra Number 5 of 2014 concerning Traffic and Road Transportation, Railways, Rivers, Lakes, and Ferry Services in North Sumatra Province. The government of North Sumatra is charged with ensuring the availability of mass public transportation to meet the transportation needs of the population. The targets planned with the implementation of the mass public transportation policy are that 60% of the population's journeys will use public transport, an average road network

speed of 35 km/h for road transportation, and the creation of safe, comfortable, and affordable conditions for rail, water, and air transportation.

**Resources for the Urban Transportation Policy of Bus Rapid Transit (BRT) in Medan City**

The success of the policy implementation process largely depends on the ability to utilize available resources. Resources in policy implementation encompass not only human resources but also non-human resources, which can include financial resources and time. These policy resources must also be available to facilitate the administration of the implementation of a policy. In addition to human resources, financial and time resources are crucial factors in the success of policy implementation. A lack of or limited funding or other incentives in policy implementation is a significant contributor to the failure of that implementation.

Human resources are the most critical resources in policy execution. Resources chosen based on the principles of effectiveness and efficiency can be one of the driving factors for successful policy implementation. The issues of the policy system in the implementation of BRT-based transportation are not free from challenges related to human resources involved in the system, from each organization that plays a role in supporting the BRT system. Based on interviews with informants, issues were found in managing human resources, including the welfare of the members of organizations that support the BRT system, particularly regarding other mass transportation systems that intersect with the routes and corridors of the BRT system in Medan City.

**Inter-Organizational Communication and the Implementation Activities of the Bus Rapid Transit (BRT) System in Medan City**

In implementing public policy, effective communication among the implementing parties is essential, just as it is in the implementation of the Trans Mebidang policy, which uses the BRT system. The research findings indicate that the BRT system in Medan City, under the Trans Mebidang concept, does not solely rely on the BRT system; there is also a non-BRT system that serves routes outside the Trans Mebidang corridor. This implies that the implementing activities involve not only the BRT system but also the aforementioned non-BRT system. From the two services provided, BRT and non-BRT, it is evident that the operational activities of the two services differ. For instance, the Trans Mebidang BRT service has designated stopping points that have been established, whereas the non-BRT Trans Mebidang service includes bus stops marked by poles indicating where buses should stop.

**Characteristics of the Urban Transportation Implementation Agency for Bus Rapid Transit (BRT) in Medan City**

The focus on the implementing agency encompasses both formal and informal organizations involved in the public policy implementation process. This is crucial because the performance of public policy implementation is significantly influenced by the characteristics that align with the implementing agents. Additionally, the scope or area of policy implementation needs to be considered when determining the implementing agents. The broader the scope of policy implementation, the more extensive the involvement of agents should be. To streamline and connect the routes of the Trans Mebidang BRT system, a special combined unit is needed, which serves as the implementer of the Trans Mebidang public transportation policy. This special unit, or Task Force, consists of the police, the Medan Transportation Agency, the military, and municipal police. The characteristics of these implementing agencies are vital for facilitating the implementation of the public transportation policy under the Trans Mebidang BRT system, requiring coordination among Task Force members. Poor communication within the coordination of the Task Force can hinder the achievement of policy objectives. Effective communication must be carried out to ensure that the messages conveyed are received and understood.

**Economic, Social, and Political Environment of Urban Transportation for Bus Rapid Transit (BRT) in Medan City**

There are several obstacles faced by implementers in the execution of public policy. These challenges include the prevailing conditions within a country or region, such as economic, social, and political turmoil. Such conditions significantly impact the implementation of a policy. Factors affecting the implementation of the Trans Mebidang public transportation policy include economic, social, and political environments. From an economic, social, and political perspective, the implementation of the Trans Mebidang bus policy has developed over several years, touching upon aspects beyond mere business orientation and profit orientation; the social aspect also plays a significant role in the development of the BRT system. Insights gained from interviews with officials at the Transportation Agency indicate that social, economic, and political aspects heavily influence the implementation of the policy within the BRT system. The implementation of policy connects the policy objectives with their realization through government activities. This aligns with Van Meter and Horn's view that the implementation task involves building a network that allows public policy goals to be realized through the activities of government

agencies involving various stakeholders. The implementation process model proposed by Van Meter and Van Horn illustrates that elements determining the success of its application include aspects of both the political and administrative process.

**Attitudes/Disposition of the Implementers of Urban Transportation for Bus Rapid Transit (BRT) in Medan City**

Among the various factors that can influence policy implementation, one critical factor that cannot be overlooked is the attitude of the implementers. The effective implementation of the Bus Rapid Transit (BRT) policy will occur when the implementers possess a high level of awareness; they must not only be held accountable for their responsibilities but also have the capability and the desire to execute the policy. Therefore, clarity regarding resources—such as human resources, supporting infrastructure, and significant funding—is essential; however, without a high level of attitude and commitment from the implementers, the BRT policy may not achieve its expected outcomes. This indicates that the attitudes of the implementers, in this case, the BRT policy implementers, are a critical factor to consider regarding the effectiveness of policy implementation.

Generally, or in most cases, the attitudes of the implementers in addressing policy issues still rely on traditional methods of implementing policies. This means that the implementation of policy products often involves a passive approach without initiative from the implementers themselves. This was echoed in statements from one of the respondents. Commitment and consistency, as manifestations of the implementers' attitudes in executing policy products, are essential qualities that each implementer should embody and apply as part of their responsibilities. This is what can foster initiatives and new ideas to ensure the success of the BRT policy. Reality indicates, based on the previous statements, that the BRT policy has largely remained at the managerial level, while the implementers at the operational level still lack sufficient awareness.

**Analysis of the First and Last Mile Reach of the BRT Service in Medan City**

The development of the BRT needs to be balanced with the construction and arrangement of safe, comfortable, and secure pedestrian and cyclist facilities, both in areas designated as "origins" and "destinations," such as commercial and service areas, public facilities, and residential neighbourhoods. Using the assumption of a walking speed of 4.8 km/h and a comfortable walking duration of 5 minutes for BRT users (ITDP, 2017), it can be assumed that the area that will benefit from and have access to BRT stations extends 500 meters from the station point. For cyclist infrastructure, the same travel time (5 minutes) at a cycling speed of 15 km/h will result in a travel radius of approximately 1.25

km from the station point. In its application to the Medan BRT, this radius will be implemented at all BRT stations along the Terminal Pinang Baris-Terminal Amplas corridor, as this corridor is considered to meet the BRT planning standards in terms of infrastructure, thus serving as a model for other BRT route services. After identifying buildings as Points of Interest (PoI), these points are connected through the available road network. Roads with the most PoIs are then prioritized and connected with other road segments to produce a prioritized network for improving pedestrian and cyclist infrastructure, which can serve as a reference for the Medan City Government in programs aimed at enhancing road infrastructure based on BRT service coverage.

**Improving BRT Accessibility Based on Areas**

Reviewing the development activities and accessibility analysis of the BRT in the Merdeka Field and Kesawan area, it is necessary to adopt an area-based approach in addition to the station-based approach. Besides enhancing BRT accessibility within the area, this approach also aims to accommodate the potential of the Old City of Medan as an integration point for intermodal services, while aligning the area's arrangement with a low emission zone (LEZ) approach and directing the area to become a historical tourism destination and a centre for commerce in downtown Medan. The development typology for these road segments is based on field data and desktop surveys, including vehicle volume from traffic counting surveys conducted in April 2022, typical traffic density during peak hours, the largest vehicles using the road, parking conditions, and transportation plans applicable to the road (public transportation, sidewalk arrangements, and cycling infrastructure networks).

**BRT Stations in Medan City**

The station design will adhere to the recommendations outlined in the 2018 document, with the physical structure located in the middle of the road and flanked by two BRT lanes. However, adjustments will be made for mixed traffic, where the mixed traffic lane leading to Jalan Bukit Barisan will remain two lanes wide, and there will be no median between the right-side BRT lane and the aforementioned mixed traffic lane. The consequence of maintaining this lane configuration is a reduction in the right-side pedestrian space, although it will still exceed existing standards. The station layout, existing conditions, initial recommendations, and final recommendations for this station are illustrated in the accompanying figure.

**Figure 2.** Recommendation of the Layout and Illustration for the Merdeka Walk/Lapangan Merdeka BRT Station

## 5. CONCLUSION AND RECOMMENDATION

Based on the findings and discussions in the previous chapters, the following conclusions can be drawn:

The Medan City Government is currently undertaking large-scale urban mobility development, focusing on two main activities: the construction of the Bus Rapid Transit (BRT) system and the development of the Kesawan and Lapangan Merdeka areas. Both projects emphasize the importance of building pedestrian and cyclist facilities, making it easier for the residents of Medan to access public transportation. These efforts represent positive steps by the Medan City Government towards developing sustainable urban mobility, ensuring that all areas of Medan are accessible via quality public transportation.

The research findings indicate that the implementation of urban transport development policies based on the BRT system to establish an equitable and sustainable public transportation system in North Sumatra Province has not yet reached its optimal potential and still faces several limitations in areas such as planning, fare and payment systems, operations, and policy supervision. Although this policy implementation has had a positive impact by reducing congestion and organizing the urban transport system, it still leaves issues unresolved.

This policy implementation tends to follow a "predict and provide" approach, focusing on alleviating urban congestion and disorder, often neglecting fairness for transport users and other stakeholders who contribute to public transportation activities.

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