Benefits of Using Mass Rapid Transit in Jakarta

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Abstract: This research aims to obtain concepts and information about what benefits the community receives when using Mass Rapid Transit in Jakarta. The research data sources are online news, YouTube, and research articles for five years, namely from 2019 to 2023. Data sources are selected based on the credibility and suitability of the data to the problem being studied. Data processing uses NVivo 12 Plus software. There are four stages of data processing, namely the data input process, coding process, visualization process, and conclusion determination process. Coding validity was evaluated using a triangulation approach. The research results obtained five benefit points obtained by the community. First, Mass Rapid Transit opens many opportunities for workers. Second, Mass Rapid Transit cuts travel time. Third, Mass Rapid Transit saves energy. Fourth, Mass Rapid Transit provides various conveniences. Fifth, Mass Rapid Transit reduces air pollution. The community can feel the implications of the research results, especially those living in the DKI Jakarta area. With these five benefits, Mass Rapid Transit is expected to be able to help and provide a better transportation system in Jakarta.

1 INTRODUCTION

Indonesia is one of the top 5 countries with the largest population in the world. Automatically, there is a need to develop tools that support the productivity of residents. There is no exception in the field of transportation. Indonesia's vast territory certainly requires adequate transportation technology. Land, sea, and air transportation technology is now available in Indonesia. However, behind all this completeness, something is missing. The number of accidents on roads, railways, Indonesian waters, and national air routes proves Indonesia is still far from perfect. Congestion everywhere makes it uncomfortable for residents to spend too long on public transportation and buy private vehicles, which adds to traffic jams. (Sutrisno, 2016)

The government currently prioritizes infrastructure as part of its focus on economic development. With economic growth in the range of 5%, the government wants connectivity, economic equality, and the creation of new financial centers in various regions. A country's growth and development occur when all elements of the nation can be carried out sustainably to advance the economy in big cities in Indonesia and the regions. Currently, Jakarta, as the country's capital, the center of government,

economic, and business activities, has a significant role in advancing the country's economy, considering that almost 50% of the country's financial turnover is in Jakarta. On the other hand, the problem of traffic jams is a common occurrence in Jakarta and has not been resolved to date. With high population mobility, both in Jakarta and residents around the buffer zone of Jakarta who work in Jakarta, such as Bogor, Depok, Tangerang, and Bekasi, demand good infrastructure and extensive mass transportation modes, which can carry large capacity but are fast and environmentally friendly. On June 17, 2008, PT Mass Rapid Transit Jakarta (PT MRT Jakarta) was formed by the DKI regional government with the legal entity of a Limited Liability Company with majority shares owned by the DKI provincial government. The operation of the MRT, which is centered in Lebak Bulus, South Jakarta, and as a depot, will impact economic activities around the area. One is the Points Square Lebak Bulus shopping center, close to the Lebak Bulus MRT station. Points Square has been operating since 2005 with an area of 2.5 hectares. Before the MRT worked and was still under construction, several business actors in Points Square complained about the lack of buyers. Difficult road access during the construction of the MRT is thought to be one of the reasons consumers are reluctant to

buy at Points Square. This is, of course, inversely proportional to the strategic location of Poins Square, and the MRT line has quite promising business potential. With the high mobility of people using transportation, it also encourages changes in people's needs for shopping. (Prakoso & Ali, 2020)

Economic losses due to traffic jams in Jakarta based on research results from the Rainbow Foundation in 2005 were estimated at Rp. 12.8 trillion/year includes time, fuel, and health costs. Air pollution due to motorized vehicles contributes to 80 percent of pollution in Jakarta. The Jakarta MRT is powered by electricity, so it does not cause CO2 emissions in the city. Based on this study, it is clear that DKI Jakarta needs more reliable mass transportation like the MRT. (Sutrisno, 2016)

Several things have been achieved in previous research achievements related to the problems studied. (Sutrisno, 2016) stated that realizing that city planning does not allow for additional fleets on dirt roads, the government plans to build MRT (Mass Rapid Transit) along Jakarta. The plan is to start from Lebak Bulus and expand until it reaches the entire city. It is hoped that this development will help the community and city development. (Jakarta et al., 2020) The MRT is necessary for Jakarta and benefits Jakarta residents by assisting them in overcoming congestion problems; the MRT can also increase economic growth. (Last, 2019) also states that the MRT can help reduce air pollution from private vehicles. This can help keep the air healthy and clean, creating a better environment.

The difference between this research and previous research lies in the problem studied and the resulting research recommendations. Research was conducted to answer systematic questions about the benefits of using the MRT in Jakarta. This research carries out a coding process from various sources, combines coding in one visualization model, and determines conclusions utilizing the triangulation principle.

The main objective of building the MRT system is to provide city residents with the opportunity to increase the quality and quantity of travel/mobility to become more reliable, trustworthy, safe, comfortable, affordable, and economical. The benefit of having the MRT is that it can reduce vehicle density on the road because it is hoped that it can divert people who use private vehicles to mass transportation. The construction of the Jakarta MRT is also expected to impact Jakarta and its citizens positively.

2 LITERATUR REVIEW

MRT (Mass Rapid Transit) is an urban transportation system that has three main criteria: *mass* (large carrying capacity), *rapid* (fast travel time and high frequency), and *transit* (stops at many stations at main urban points). MRT can be interpreted as a mode of transportation capable of transporting passengers in large numbers (mass) with very high frequency and speed (rapid). According to the mode, MRT can be grouped into several types: bus (bus lane/busway), subway, tram, and monorail. MRT buses can be distinguished from ordinary transport buses and other vehicles because they are usually shuttle buses that have specific travel routes and operate in particular lanes, so they are often called bus lanes/busways. Cities in developing countries typically choose busway-type MRT more because its development requires cheaper costs than subways, monorails, or trams. In principle, in the form of a subway, MRT has the same operating system as a train. However, the technical construction is different because the subway is underground, but the stations are directly connected to the activity center. London was the first city to implement a subway system as a mode of high-speed mass transportation in 1863. Trams are a form of MRT with a mode of transportation similar to trains, but the operating routes can be integrated with highways. In operation, there are two types of trams: (1) trams whose operating lanes merge with vehicle traffic lanes and (2) trams that have their operational route known as light rail. Monorail is an MRT with certain lines and usually does not occupy large areas of city space. Monorail usually consists of one route with a loop track system with several stop stations connecting to other MRTs or directly to specific activity locations. (Sutrisno, 2016). Andiyan et al. (2021) trace the research results regarding the analysis of the benefits of developing railway infrastructure on the island of Java, which is that reducing traffic density impacts reducing pollution from other land transportation modes. It is shown that the implementation of HST will positively contribute to the environment, reducing pollution by 207,982,695.13 tons of CO2 on the island of Java. The impact of reducing CO2 pollution will provide benefits in improving public health by reducing upper respiratory tract infections (ARI), reducing damage to the human nervous system, and increasing the level of human intelligence (IQ) so that it has an impact on improving society's productivity.

3 METHODS

This research uses qualitative research methods using a systematic literature review approach. The literature studied comes not only from research articles but also from several sources obtained online. Sources of data processed come from YouTube, online news, and research articles. The data must come from a credible source, whether YouTube channels, online news, or other sources. Data is searched using keywords that match the research question. The consideration for using this data is due to the availability of adequate internet data that can be accessed quickly (Hafidhah & Yandari, 2021). The selected data sample was published during the last three years, namely, 2021 to 2023. The data processing uses NVivo 12 Plus software. This software was chosen because it can produce coding visualization images, and the way to use the software is very user-friendly (Tambun & Sitorus, 2023).

Four stages are carried out in the data processing process with NVivo: the data input stage, coding stage, visualization stage, and conclusion stage (Sitorus & Tambun, 2023). In the first stage, data input, two methods are used: internal and external data. Internal data is data input to NVivo without using an internet connection. This data is usually data that is already available on the laptop, such as research articles. Meanwhile, external data is input into NVivo using an internet connection; the data input process uses the capture for the NVivo facility. Examples of external data originating from the internet include YouTube, online news, and social media. The second stage is coding data according to the answers to the research question. Coding is simple words or sentences that are answers to research questions. At this stage, content analysis is carried out, namely, understanding the research data's words or sentences (Tambun, 2021). Specifically for the coding process for YouTube data or social media sources in video form, coding is carried out after a transcript of the YouTube content or video. Analysis was done by making transcripts; then, a coding process was carried out (Salahuddin et al., 2020). The third stage is to create a coding visualization image. Visualization coding is a collection of coding that forms an image. Coding images are interconnected with various data sources. This coding image is analyzed in the process of drawing research conclusions. The fourth stage is determining research conclusions. Research conclusions are answers to research questions. The answer can be seen from the existing coding. Coding is considered to have strong validity if the coding is confirmed from various data sources. Coding validity is substantial if it is confirmed at least three times from various data sources. This principle uses triangulation to measure coding validity (Natow, 2020). Next, the coding is sorted based on the most confirmations to the coding with the fewest confirmations. These codes used as answers to research questions, as well as research conclusions.

4 RESULTS AND DISCUSSION

This research produced several references consisting of 5 Online News, 1 YouTube, 1 Social Media, or Instagram. The coding process was carried out using Nvivo 12 Plus Software. 5 codings are valid and confirmed at least three times in the data sources studied. Figure 1 is a visualization image of the resulting coding.

All coding in Figure 1 is an answer to the research question. Coding comes from content analysis of the various data studied. The coding process uses the facilities available in the NVivo 12 Plus software. The following is a summary table and intensity of each coding created.
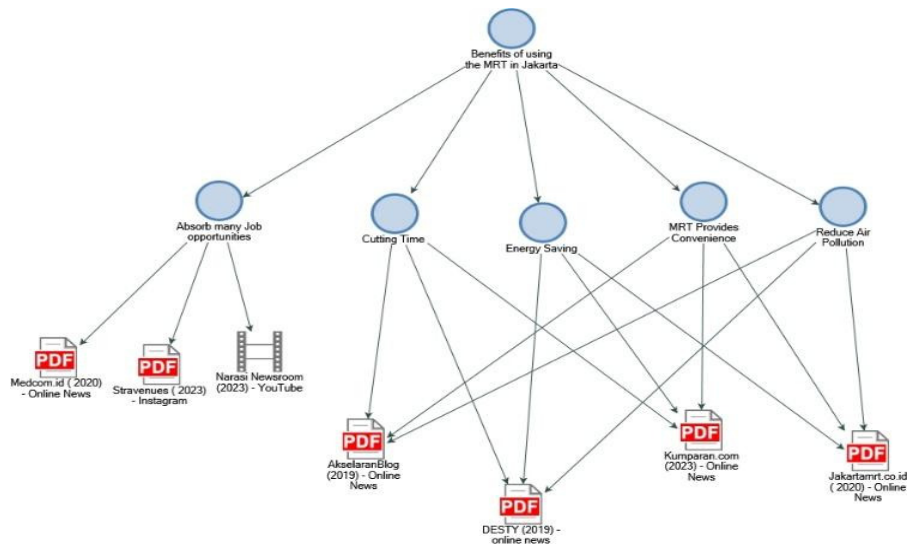
Figure 1: Coding Visualization Image.

Table 1: Recapitulation of Coding.

No.	Coding	Intensity	Reference
1	Absorb Many Job Opportunities	3	• Medcom. id (2020) – Online News • Stravenues (2023) – Instagram • Newsroom Narrative (2023) – YouTube
2	Cutting Time	3	• Akselaran Blog (2019) – Online News • Desty (2019) – Online News • Kumparan.com (2023) – Online News
3	Energy Saving	3	• Desty (2019) – Online News • Kumparan.com (2023) – Online News • Jakartamrt.co.id (2020) – Online News
4	MRT Provides Convenience	3	• Akselaran Blog (2019) – Online News • Kumparan.com (2023) – Online News • Jakartamrt.co.id (2020) – Online News
5	Reduce Air Pollution	3	• Akselaran Blog (2019) – Online News • Desty (2019) – Online News • Jakartamrt.co.id (2020) – Online News

4.1 Absorb Many Job Opportunities

Jakarta says that the development of modern transportation infrastructure has benefits. Apart from impacting the country's economy, for example, it opens up job opportunities for the community. Labor. For phase two of the 2020 period, with a project value of IDR 1.55 trillion, the workforce absorbed reached 356 people. Furthermore, for the 2021 period, with a project value of IDR 3.59 trillion, the workforce absorbed will reach 1,259 people. This figure is

significant because many workers were laid off due to COVID-19. According to William P. Sabandar, this transportation development can absorb local employment of up to 10,000 people from various sectors. (Jakarta et al., 2020)

4.2 Cutting Time

Indonesian people, especially DKI Jakarta, should be proud of the presence of this modern, high-tech mode of transportation such as the MRT. This MRT is

relatively modern, trendy, comfortable, and fast. Many benefits can be gained from the presence of the MRT in Jakarta. This transportation is also suitable for work purposes or just walking around. The benefit of the Aklai MRT is that it saves time. The presence of this MRT can reduce travel time even more than private vehicles, especially for workers who are known for their high daily mobility. It is hoped that the MRT can become a mode of transportation that can persuade urban residents who use private vehicles to use the MRT (Ma et al., 2019)

4.3 Energy Saving

Developed countries widely use MRT because it is considered more profitable than other modes of transportation. The book Towards a Golden Indonesia Through Organizational Culture and Work Culture by Gathot Supriono (2022) explains that the MRT is rail-based urban mass transportation. However, MRT is different because it uses technology. More sophisticated. MRT is a type of heavy rail transit train, where some of the MRT lines in Jakarta, from Senayan to Bundaran, HI, are underground. Each MRT Jakarta series has a capacity of up to 1,900 people per departure. By riding the Jakarta MRT, we have helped support savings in fuel energy use. (Ma et al., 2019) (Window on the World, 2023)

4.4 MRT Provides Convenience

This problem prompted PT MRT Jakarta to develop the concept of transit-oriented *areas-oriented development* (TOD) at several stations in phase 1 of the South–North corridor. TOD is an urban area that combines transit functions with people, activities, buildings, and public spaces to optimize access to public transportation to support passenger carrying capacity. Of course, new mass transportation in Indonesia will bring many benefits to Indonesia, especially DKI Jakarta. Of the many benefits that exist, we will discuss the benefits of the MRT in Indonesia individually. It is also hoped that the existence of the MRT will reduce the congestion level in the capital city. Those living in Jakarta's central and southern areas will also be significantly helped because this new transportation will shorten travel time if you take a private vehicle. (Ramadhani, 2019) (PT MRT Jakarta, 2019)

4.5 Reduce Water Pollution

After a long journey, finally, "Jakarta has an MRT!" The mass transportation mode MRT (Moda et al.)

phase 1 of the Lebak Bulus - Bundaran HI route was inaugurated on March 24, 2019, by President Jokowi. It was enthusiastically welcomed by the residents of Jakarta and its surroundings. This free public trial of the MRT was also carried out starting from March 12, 2019, for two weeks until it was finally officially operated commercially on April 1, 2019. The MRT can also reduce air pollution. The use of public transportation, such as the MRT, can help reduce air pollution that comes from private vehicles. This can help keep the air healthy and clean, creating a better environment. (Ma et al., 2019)

5 CONCLUSIONS

The results of this research have obtained answers to the research questions posed at the beginning. Five benefit points benefit the community so that people can experience the MRT and use the MRT as daily transportation. The five benefits are absorbing many job opportunities, cutting time, energy savings, MRT providing convenience, and reducing air pollution. The results of this research can be implemented, and the benefits of using the MRT in Jakarta for the people of Jakarta can be assessed. Order Research recommends five benefits so that they can have a positive impact on the citizens of Jakarta. Mass transportation will benefit nature, reduce pollution, and make life better. The growth of mass transportation will encourage the emergence of many job opportunities and small and medium businesses. The recommendation for further research is to explore the factors that encourage people to use the MRT as their mass transportation. With that conclusion, we have tips for making the MRT a solution to the problem of pollution and congestion.

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