

**Light Rapid Transit (LRT) Transport Integration Performance
(Case Study on LRT South Sumatra in 2019-2021)**

Yeti Komalasari

Politeknik Penerbangan Palembang

Corresponding Author E-mail: yeti.komalasari@poltekbangplg.ac.id

Received 3 March 2022; Revised 10 April 2022; Accepted 11 June 2022

Abstract: The purpose of this research is to describe and analyze the performance of the Light Rapid Transit (LRT) transportation integration, the South Sumatra LRT case study and the need for mode integration in realizing multimodal transportation. The research method uses the constructivism paradigm through qualitative research approaches and types with data collection techniques through observation, interviews and documentation. The main finding in this study is that the realization of passengers who integrate has decreased significantly due to the covid -19 pandemic with travel restrictions, although not as much as in early 2020 in 2021, passengers who integrate have increased. In 2019 the stations with the most passenger integration were at DJKA and Bumi Sriwijaya stations, in 2020 the most were at DJKA and Ampera stations, while in 2021 the most were at DJKA and Ampera stations. The novelty/originality in this research is supported by the latest observational data and studies that support the integration of Light Rapid Transit (LRT) in realizing the principle of multimodal transportation in South Sumatra.

Keyword: Performance, Integration, Light Rapid Transit (LRT)

1. Introduction

Transportation has a very important role in achieving the goals of economic development in a country. The importance of transportation for the people of Indonesia is influenced by the geographical condition of Indonesia which consists of thousands of islands. The need for transportation in an area is caused by the

interaction between social and economic activities in the area, the human desire to travel is never ending and the many needs that cause displacement from one place to another (Mahmudi, 2009).

The success of development is strongly influenced by the role of transportation as the lifeblood of development. The availability of public transportation in an area is very necessary in order to meet the transportation needs of the community, with this public transportation it can balance the density on roads caused by the high volume of vehicles on the road (Vian, 2017). According to Ardiyansyah (2015), passenger public transportation is passenger transportation carried out using a rental or payment system, such as city transportation (buses, mini buses, etc.), trains, water transportation, and air transportation. The main purpose of the existence of this passenger public transport (AUP) is to provide good and proper transportation services for the community.

The integration of intermodal transportation services plays an important role in realizing an effective and efficient integrated public transport service. connected and smooth or unimpeded during its journey (Listantari., et el 2021).

According to National Transportation System (2005), the purpose of the integration of intermodal transportation services is to eliminate non-physical barriers such as service tariffs, information systems for transportation operational schedules, ticket payment systems and others. The integration of intermodal transportation not only facilitates passengers to connect to the wider transportation network but also with safe, comfortable and efficient transfers between the various modes of transportation that serve them (Vespemann and Andrew, 2011). It is important to improve the quality of transit services in order to attract intermodal users (Vuchic 1999).

South Sumatra with a population of more than 1.8 million people (in 2018) has been clarified as a Metropolitan City. Therefore, the development of mass transportation must be realized. In accordance with the definition in Law 26 of 2007 concerning spatial planning, the Palembang Raya metropolitan area has fulfilled the requirements for clarification of a metropolitan area, namely the existence of functional relationships and an integrated regional infrastructure network system with a total population of at least 1,000,000 (one million). soul. In this case, the core urban area (Palembang City) with the surrounding urban area (part of the Banyuasin district and Ogan Ilir district) has functionally formed an

integrated urban area including the provision of regional infrastructure networks (transportation, energy, drinking water, etc.).

Currently, the public transportation system in South Sumatra has been served by 8 Trans Musi corridors, 7 conventional bus routes, 5 angkot routes and 5 taxi companies. However, the role of the road-based public transportation mode has not been able to overcome the increasingly evenly distributed congestion in the symbol city in the past few years. This prompted the emergence of proposals for the development of a light rail-based mass transportation system (monorail/LRT) in South Sumatra.

Studies to prepare for the development of the mass transportation system in South Sumatra have been initiated by several parties previously. The LRT connects SMB II Airport with OPI Mall with a total route of 23.5 km from northwest to southeast of Palembang City which is supported by 13 stations and 3 train cars. When using a 3 carriage train formation, the 4 person/m² train can accommodate 424 passengers.

This research was conducted with the aim of describing and analyzing the performance of the Light Rapid Transit (LRT) transportation integration case study of the South Sumatra LRT. Determination of problem boundaries in this research is done so that the research becomes clearer and more specific. Based on the research title, the limitation of this research is the performance of the Light Rapid Transit (LRT) transportation integration, the South Sumatra LRT case study as a form of implementing multimodal transportation in South Sumatra.

2. Theoretical Framework

Along with the development of time technology is developing very rapidly, therefore it is necessary to repair and rejuvenate the urban public transportation system, both facilities and infrastructure with various policies. According to Hazian (2008), in general the form of human intervention for the improvement of the transportation system is possible by 1) changing transportation technology; 2) changing information technology; 3) changing vehicle features; 4) changing the characteristics of the road segment; 5) changing transport network configuration; 6) changing operational and organizational policies; 7) changing institutional policies; 8) changing travel behavior; and 9) changing activity options.

The National Transportation System Service in Ilham and Komalasari (2017) is the creation of an effective transportation operation in the sense of safe, high accessibility, integrated, sufficient capacity, organized, smooth, fast, easy,

timely, comfortable and affordable rates. Integrated in the sense of realizing inter- and intra-modal integration in the infrastructure and service network which includes development, guidance and implementation so that it is more effective and efficient. In supporting reliable transportation services, optimal transportation performance support is needed.

Transportation performance is the ability or potential of public transportation to serve the needs of movement in an area, both in the form of transportation of goods and transportation of people. Performance is also the level of achievement or work result of the company from the targets that must be achieved or tasks that must be carried out within a certain period of time (Hazian, 2008). To minimize obstacles during intermodal transfers, the integration of intermodal transport services is one of the key success factors in its implementation. The integration here aims to coordinate and promote hassle-free and convenient services of high quality (Listantari et al 2021).

According to the Guidelines for Multimodal Integration (2019), the objectives of transportation integration include 1) faster, cut waiting time and transfer time; 2) easier, shorten walking distance, clarify information and provide convenience in one system; and 3) more affordable, cost-effective with integrated tariffs and payments.

Good integration between modes of transportation will make it easier for people to use public transportation, it is hoped that if it is managed properly it will increase public interest in using public transportation. The increasing needs of the community have led to higher road access to support smooth movement from one place to another (Cahiril, 2017).

3. Methods

The paradigm used in this research is constructivism paradigm. Constructivism paradigm is a paradigm that puts observation and objectivity in finding a reality or science. This paradigm views science as a systematic analysis of meaningful action through direct and detailed observations of the actors concerned. In this research, the researcher has determined the research focus which can be described 1) Implementation of the Policy regarding the activities carried out by the Provincial Government of South Sumatra in an effort to realize the Light Rapid Transit (LRT) development program in South Sumatra; 2) the development of integrated infrastructure is an effort by the government to realize the concept of multimodal transportation by emphasizing

the synergy of each mode; 3) types of Benefits It is hoped that the integration of Light Rapid Transit (LRT) transportation with other modes will provide benefits to the community and support the multimodal concept where there is no discontinuity of transportation modes; and 4) the degree of change that is expected is that the Light Rapid Transit (LRT) transportation integration development program that is set will trigger behavioral changes in residents to switch from using private vehicles to mass transportation. Changes that occur will parse the existing congestion level.

This research is a qualitative type of research which is stated by Bogdan and Taylor (1993) as a research procedure that produces descriptive data in the form of written or spoken words from people and observable behavior. Qualitative research basically has a number of characteristics that distinguish it from other types of research (Guba and Lincoln, 1985). Qualitative research is carried out in an independent and free natural setting or in the context of a purity or wholeness (entity), so that wholeness must appear as it is and there is no influence or particular interest Moleong (2000).

In this study, the research instrument is the researcher himself (the author) who is directly involved in the research. The researcher as the main instrument is the researcher who plans, collects, and interprets the data. Determination of informants in this study is based on the parties who master the problem, have data, and are willing to provide data, besides that the determination is also based on the criteria of objectives and benefits. Determination of informants in this study using a purposive technique, where only certain people or parties will be used as research objectives as a source of information. According to Sugiyono in qualitative research, the concept of population and sample is not known. Sources of information for qualitative research are informants or resource persons related to research problems and by researchers are considered capable of providing information and data (Sugiyono, 2007; Bungin, 2008).

4. Results and Discussion

The integration of the South Sumatra LRT has been carried out, namely with Damri and Bus Rapid Transit (BRT) with the total number of passengers integrating from 2019 to 2021, which can be seen in Figure 1.

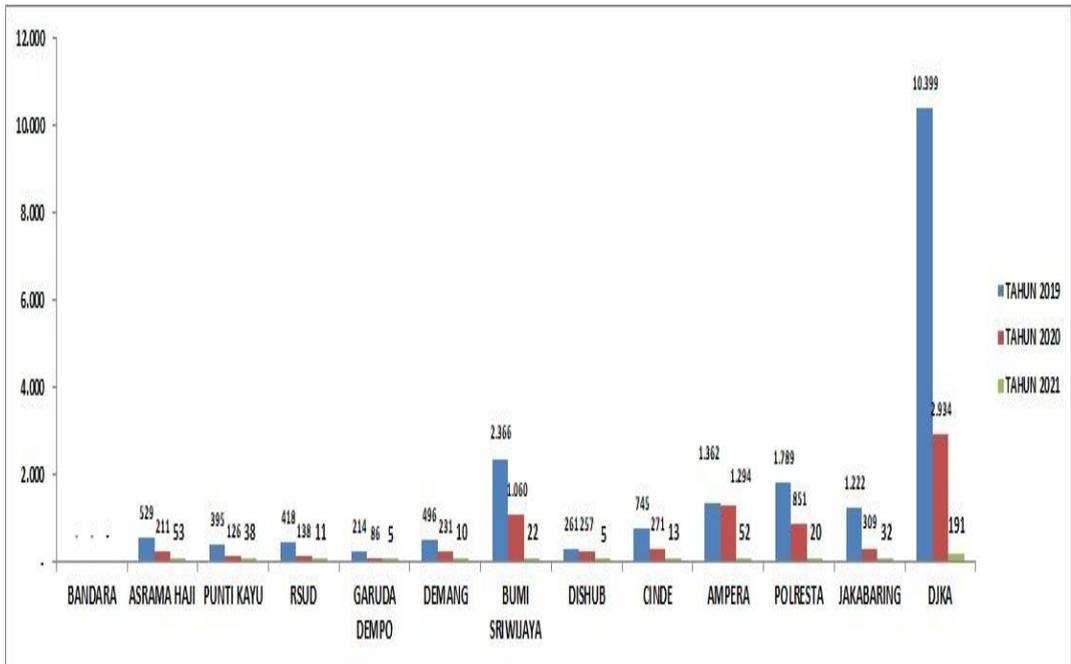


Figure 1. Realization of Passenger Integration in 2018-2021
 (Source: South Sumatra Light Railroad Management Center, 2021)

From figure 1 the realization of passengers integrating has decreased significantly due to the covid-19 pandemic with travel restrictions, although not as much as at the beginning of 2020 in 2021, passengers who integrate have increased. In 2019 the stations with the most passenger integration were at DJKA and Bumi Sriwijaya stations, in 2020 the most were at DJKA and Ampera stations, while in 2021 the most were at DJKA and Ampera stations (Ministerial Regulation No. 119 Years 2018). The South Sumatra LRT integration stop facility is approximately 5 to 25 meters from the station and is equipped with ramp facilities and guiding blocks on sidewalk access as shown in Figure 2.

FASILITAS DI LRT SUMATERA SELATAN

D. FASILITAS INTEGRASI LRT SUMATERA SELATAN



FASILITAS HALTE INTEGRASI LRT SUMSEL

Fasilitas halte integrasi LRT Sumatera Selatan berjarak + 5 – 25 meter dari stasiun dan dilengkapi dengan fasilitas ramp dan guiding block pada akses trotoar.

Figure 2. South Sumatra LRT Integration Facility
 (Source: South Sumatra Light Railroad Management Center, 2021)

In order to improve integration services, one of the latest South Sumatra LRT integration programs is BTS (Buy The Service) which is a form of integration service between South Sumatra LRT and Teman Bus, aimed at facilitating the mobility of the people of South Sumatra in transportation with the routes in Table 1 (Presidential Regulation Number 116 of 2015).

Table 1. BTS Intergation Route with Stations

No	Route	Corridor	BTS and Station Integration
1	Terminal Alang Alang Lebar-Dempo	1	1. Stasiun Asrama Haji 2. Stasiun Demang 3. Stasiun Cinde
2	Asrama Haji-Terminal Jakabaring	2	Stasiun Asrama Haji
3	Terminal Plaju-Terminal Jakabaring	3	1. Stasiun DJKA 2. Stasiun Jakabaring
4	Terminal Alang Alang Lebar-Talang Jambe	4	Stasiun Asrama Haji

Source: South Sumatra Light Railway Management Center, 2021

Besides being integrated, the South Sumatra LRT is also friendly to service users for vulnerable groups by providing special and easily accessible facilities. According to Law No. 25 of 2009, vulnerable groups are the elderly, children, breastfeeding mothers, pregnant women, disabilities, and victims of natural/social disasters. A number of facilities and infrastructure that must be met in the implementation of disability-friendly public services such as the provision of wheelchairs/sticks/cracks, easily accessible entrances, ramps with vines, special lifts for vulnerable groups equipped with braille letters, hallways that connect all rooms, toilets special for vulnerable groups, special counters for vulnerable groups, special waiting rooms for vulnerable groups, special guidance blocks for vulnerable groups, special parking for vulnerable groups that are easily accessible, assistive devices for the blind, hearing aids, children's play areas and lactation/breastfeeding rooms (Amin, 2008).

5. Conclusion

From the discussion of theoretical discussions with experts/stakeholders, the conclusions in this study are 1) the realization of the integration performance of Light Rapid Transit (LRT) with Damri and Bus Rapid Transit (BRT) has decreased significantly due to the COVID-19 pandemic; 2) in 2019, the largest Light Rapid Transit (LRT) passenger integration performance at DJKA and Bumi Sriwijaya stations; 3) in 2020, the largest Light Rapid Transit (LRT) passenger integration performance at DJKA and Ampera stations; 3) in 2021 the

performance of the largest Light Rapid Transit (LRT) passenger integration at DJKA and Ampera stations; 4) integration stop facilities are equipped with ramp facilities and guiding blocks on sidewalk access; 5) the latest program for the integration of South Sumatra's Light Rapid Transit (LRT) is BTS (Buy The Service).

6. Acknowledgement

Thanks are given to all parties who have contributed to the completion of this research 1) Director of the Palembang Aviation Polytechnic and his staff; 2) Head of the South Sumatra Light Rail Management Center and his staff; 3) Head of the Center for Research and Community Service at the Palembang Aviation Polytechnic; and 4) Informants in this study.

7. References

- Amin, O. Z. (2008). *Perencanaan Pemodelan dan Rekayasa Transportasi [Perencanaan Pemodelan dan Rekayasa Transportasi]*. Bandung: ITB
- Ardiansyah. (2015). *Manajemen Transportasi Dalam Kajian Dan Teori [Transportation Management in Study and Theory]*. Jakarta: Fakultas Ilmu Sosial dan Ilmu Politik, Universitas Prof. Dr. Moestopo Beragama.
- Bungin, B (2008). *Metodologi Penelitian Kualitatif: Aktualisasi Metodologis ke Arah Ragam Varian Kontemporer [Qualitative Research Methodology: Methodological Actualization Towards Contemporary Variants]*. Jakarta: Radja Grafindo Persada
- Bogdan., & Taylor. (1993). *Introduction to Qualitative Research Methods a Phenomenological Approach to the Social Science*. Surabaya: Usaha Nasional.
- Cahiril, M. (2017) Perencanaan Integrasi Layanan antar moda Railbus dan Angkutan Umum di Kota Padang [Planning for Integration of Railbus and Public Transportation Intermodal Services in the City of Padang]. *Jurnal Rekayasa Sipil*, 13(1).
- Guba, E. G., & Lincoln, Y. S. (1985). *Efective Evaluation*. San Fransisco: Jossesey-Bas Publishers
- Guidelines for Multimodal Integration (2019)
- Hazian. (2008). *Kinerja Angkutan Umum [Public Transport Performance]*.
- Ilham, C., & Komalasari, Y. (2017). *Buku Transportasi Multimoda [Multimodal Transportation Book]*. Bandung: Alfabeta

Law Number 26 of 2007

Law Number 25 of 2009

Listantari. (2021). Strategi Peningkatan Pelayanan Transportasi Antarmoda Terpadu di Kota Palembang [Strategy to Improve Integrated Intermodal Transportation Services in Palembang City]. *Jurnal Transportasi Multimoda*, 19(2).

Mahmudi. (2009). *Manajemen Kinerja Sektor Publik [Public Sector Performance Management]*. Jakarta

Ministerial Regulation No. 119 Years (2018).

Moleong, L. J. (2000). *Metodologi Penelitian Kualitatif [Qualitative Research Methodology]*. Bandung: Remaja Rosdakarya.

National Transportation System (2005) Ministry of Transportation

Presidential Regulation Number 116 of 2015 concerning the Acceleration of Light Rapid Transit in South Sumatra Province

Sugiyono. (2007). *Statistik untuk Penelitian [Statistics for Research]*. Bandung: Alfabeta

Vesperman, J., & Andrew, W. (2011). Intermodal Integration in Air Transportation. *Journal of Transport Geography*, 19(6).

Vian, A. M. (2017). Analisis Kinerja Angkutan Umum Penumpang di Kota Sorong Papua Barat [Performance Analysis of Passenger Public Transport in Sorong City, West Papua]. *Jurnal Unpar*.

Vuchic, V. R. (1999). *Transportation for Livable Cities*. New Jersey: Rutgers