
J I A E

JOURNAL OF INTEGRATED AND ADVANCED ENGINEERING (JIAE)

ASOSIASI STAF AKADEMIK PERGURUAN TINGGI SELURUH INDONESIA

P-ISSN : 2774602X <> E-ISSN : 27746038

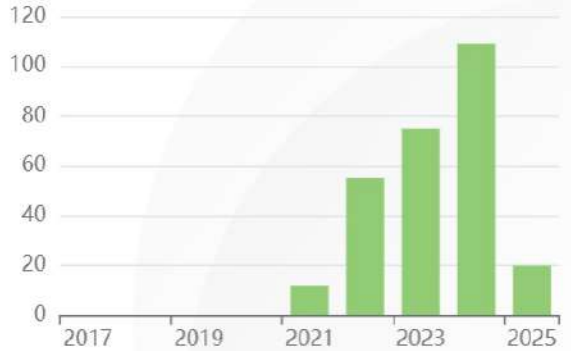
3.04545	274	Sinta 4
Impact	Google Citations	Current Acreditation

Google Scholar Garuda Website Editor URL

History Accreditation

Garuda Google Scholar

Citation Per Year By Google Scholar



Journal By Google Scholar

	All	Since 2020
Citation	274	273
h-index	10	10
i10-index	10	10

Editorial Team

ISSN: 2774-6038

Journal of Integrated and Advanced Engineering (JIAE)

Description of Image

Nama Jurnal	Journal of Integrated and Advanced Engineering
Initial	**JIAE**
Issues	**2 issues per year (March & September)**
DOI	**Prefix 10.51662**
ISSN	**2774-602X (print) | 2774-6038 (online)**
Editor-in-chief	**Prof. Dr. Andi Adriansyah**
Publisher	**ASASI**
Jurnal OAI	**https://asasijournal.id/index.php/jiae/oai**

Journal of Integrated and Advanced Engineering (JIAE) is a peer-reviewed scientific journal published 2 (two) times a year, in March and September. Editors receive research papers closely related to Engineering's field (Mechanical, Electrical, Industrial, Civil, Chemical, Material, Physical, Computer, Informatics, Environment and Architecture). Research themes focused on advanced research, applications in manufacturing, industry and development of renewable energy that integrated with local wisdom, green and sustainable technologies.

Announcements

No announcements have been published.

More Announcements...

Vol 4, No 2 (2024)

Table of Contents

Articles

ISSN: 2774-6038

Journal of Integrated and Advanced Engineering (JIAE)
Vol. 4, No. 2, September 2024: 125-130
http://asasijournal.id/index.php/jiae
http://doi.org/10.51662/jiae.v4i2.150

Identifying the potential in the functional characteristics of the MRT Senayan Tod area

Herika Muhamad Taki*, Julianus Pamungkas Payon Kuma, Wenseslaus Putra Arta Radom
Department of Regional and Urban Planning, Faculty of Architecture Landscape and Environmental Technology, Universitas Trisakti, Indonesia

Abstract
The condition of Special Capital Region of Jakarta (DKI Jakarta), as one of the economic centers in Indonesia, has a very high level of population mobility, both from within and from other cities around it. The existence of the Jakarta Mass Rapid Transit (Jakarta MRT) aims to provide guidelines for creating a city environment that is oriented towards humans as users and/or the public interest, with an emphasis on aspects of functional quality, visual quality and environmental quality. With the MRT Senayan, we can implement a good Transit Oriented Development (TOD) area with structured land use selection. This writing aims to identify the potential for functional characteristics in the Senayan MRT TOD area. Senayan MRT region has medium potential according to the major line since it has complete pedestrian amenities, crossovers, and a bicycle track. Senayan MRT station has also become a significant Transit Oriented Development (TOD) region, connecting numerous major areas in Jakarta, including Senayan, Gelora Bung Karno, Blok M, and the central city. Transit Oriented Development zones can help to alleviate some of the city's or area's problems when implemented correctly.

Keywords:
DKI Jakarta;
Mass Rapid Transit;
Transit Oriented Development;

Article History:
Received: April 23, 2024
Revised: May 29, 2023
Accepted: June 2, 2023
Published: October 24, 2024

Corresponding Author:
Herika Muhamad Taki
Department of Regional and Urban Planning, Faculty of Architecture Landscape and Environmental Technology, Universitas Trisakti, Indonesia
Email: herika@trisakti.ac.id

INTRODUCTION

Special Capital Region of Jakarta (DKI Jakarta), as Mother city country, is Wrong One center growth economy in Indonesia, offers convenience access to infrastructure and various field work, so result its height level mobility resident daily. With amount resident as many as 10,562,088 people on in 2020 and density resident amounting to 14,555 people/km based on census data Body Center Statistics (DKI-Jakarta Province) in 2021, DKI Jakarta will be city with level congestion highest fourth in the world on 2021. 2020. 2017 (TomTom Traffic Index) [1]. Until around 2010, focus repair infrastructure in Jakarta only focused on development road, bridge and widening road consequence growth resident and use vehicle personal as mode transportation main residents of DKI Jakarta. Government has applied various policy. For minimize problem that, is wrong One his choice is with repair and develop transportation general with objective reduce use vehicle personal as infrastructure supporter mobility people in DKI Jakarta. Appearance transport common in Jakarta gradually getting better, up to Finally on 2019 begins opening of Mass Rapid Transportation (MRT) Phase I and Light Rail Transit (LRT) Phase I.

Integrated LRT and MRT with transportation general other become Wrong One the solution offered by DKI Jakarta for overcome problem traffic jam. Integration a number of mode transportation with transportation mass-based train fire become factor pusher transformation of

DKI Jakarta towards draft system sustainable city and compact in form of Transit Oriented Development (TOD) [2][3]. Principle base application area Transit oriented includes: combination density population, capacity transportation bulk, and feature facilitating network accessibility; make sure the area is connected with transport bulk [2]. Create room the public can accessed surrounding community center transport bulk; Planning conceptual activity all round use in the corridor area transit oriented; Push use bicycle and support hiking activities in the area.

Transit Oriented Development (TOD) areas are draft development area priority urban areas transport general as bone back transport passenger and goods. The TOD concept is purposeful for increase efficiency transportation, reduce congestion and create room more city humane [4]. Senayan MRT TOD area is Wrong One moderate TOD area developed in Jakarta. Region This located in the District Kebayoran Baru, South Jakarta, and border with area Senayan, Gelora Bung Karno, and Blok M. Study This aim for identify potency and problem on characteristics function Senayan MRT TOD area.

LITERATURE VIEW

According to Governor Regulation DKI Jakarta Province Number 44 of 2017 Concerning Development Transit Oriented Development Area Article 1, Transit Oriented Development or Transit Oriented Development hereinafter abbreviated as TOD is something draft development area based And centered at the station transport general mass , which accommodates growth new become something area mixture with area with is 350 m to 700 m from center integrated area with area surroundings through utilization room surface land , space kite And lower land . The TOD area is area mixture settlement and commercial with accessibility tall to transport general bulk, where station transport general mass and transport terminals general mass as center area with building dense tall [5].

Transit-Oriented Development (TOD) is an urban planning and design strategy that focuses on creating compact, walkable, and mixed-use communities centered around high-quality public transportation systems. TOD aims to enhance mobility, reduce dependence on private vehicles, and foster sustainable urban growth by integrating transportation and land use planning. There are key principles of TOD are proximity to transit, mixed-use development, walkability, density, connectivity, and reduced parking requirements. There are also key components of TOD, such as: urban core around transit, public amenities, affordable housing, and sustainable infrastructure. Using TOD will get several benefits are reduction in greenhouse gas emissions due to decreased reliance on cars, preservation of green spaces by curbing urban sprawl, increased property values around transit hubs, boost in local businesses due to higher foot traffic, enhanced access to jobs, education, and services for residents, and encourages active lifestyles through walking and cycling. By emphasizing compact development near transit hubs, TOD promotes a shift towards sustainable and livable cities, balancing economic growth, environmental stewardship, and social equity.

The TOD concept was first formulated by Carlton (2009) as located mixed-use community near with transit points and commercial areas in possible distance taken with on foot or bicycle or with transport general for journey far [1]. As for mixed-use community in question is area consisting from diverse function that is residential, commercial, office, space open, and facility general and on generally is area compact and dense high. Figure 1 shows an application of Transit Oriented Development (TOD) concept in City Planning.

With draft area transit-oriented, PT MRT Jakarta encourages a number profit for society, namely:

Figure 1. Application of Transit Oriented Development (TOD) Concept in City Planning

- Reduce use vehicles, traffic jams road, and pollution air
- Supportive development walks too style life healthy and active
- Increase access to chance work and economy
- Increase amount transit passengers and profit from sale ticket
- Add choice mode movement area urban.

Principle other TOD developments stated by Taki et al. [13, 14, 15], that TOD concept works formed when materialized area developed compact based on the 5D principles that comprise from:

1. High Density, for increase user transit facilities.
2. High Diversity, with many functions' diverse buildings, then accessibility and movement public will increase.
3. Quality Design, provide comfort and security on various aspect user TOD room.
4. Walkable Distance, increase will for walk in the area the so that use vehicle personal can pressed.
5. Accessible Destination, increase accessibility from or going to TOD area close by not far away

RESULTS AND DISCUSSION

PT MRT Jakarta (Regional Owned Enterprise) sells right naming or naming rights of the Senayan Station to MasterCard so that now the name of Jakarta MRT station becomes Senayan Station Mastercard. Senayan MRT Station or Senayan MRT Station MasterCard as winner right naming is A kingdom station mode integrated service MRT Jakarta North to South Line. This station located in the Senayan region, Kebayoran Baru, South Jakarta and built below Road General Sudirman [6]. This Station is lower southernmost land station for phase First Jakarta MRT project before entering track kite. With 200 meters long and 19 meters wide, platform area passenger station lower land first in phase 1 is located at depth about 14 meters below surface land. An MRT in Jakarta is shown in Figure 2.

Figure 2. An MRT in Jakarta

This MRT station is located between 3 subdistricts, namely Subdistrict Kebayoran Baru (52.10 %), Tanah Abang District (45.73%), and Subdistrict Kebayoran Lama (2.18%) are located in Central Jakarta and in South Jakarta with density the average population is 148 people / ha and including in category density resident low. Within a radius of 800 m from transit point, there are 14 types of subs use zoned land as diversity tall. Ratio residence and non-residential is 28.39 %: 71.61%, which includes in category very high with wide land residence amounting to 62.81 ha and wide non- residential land amounting to 158.40 ha [10]. Senayan MRT Station transit area has all over completeness pedestrian facilities, crossings, and bicycle track [11][12]. This station integrates with busway stop far away about 110 meters, and has proximity with BRT stop Route Blok M to Kota Station, Ragunan to GBK via Tendean, Pinang Ranti to round about Senayan, Tanjung Priok to Blok M, and Kalideres to GBK [8].

Senayan MRT Station connects various important areas in Jakarta such as Senayan Gelora Bung Karno, Blok M, and central city. This matter makes areas become easier reachable by societies from inside or outside Jakarta. Existence of Senayan MRT station can increase property value in the surrounding areas. These properties in the area become more reachable easily and have more accessibility. This Senayan MRT area becomes future area transit could be done to integrated Transit Oriented Development (TOD) by convenient access is going to this area is in the moment then crossing on weekdays especially at office hour because near with regional business and office areas [7].

Based on Regulation Minister of ATR/BPN Number 16 of 2017 Concerning Guidelines Development Region Transit Oriented, measure area is suitable TOD typology on Senayan MRT Transit Oriented Development (TOD) area including area with potential currently [9]. Figure 3 shows a map of TOD in Senayan Area.

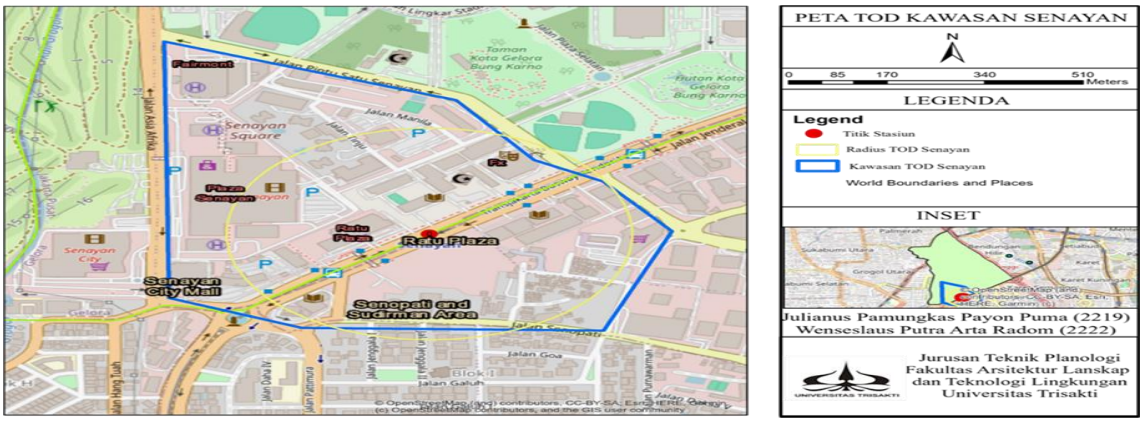


Figure 3. Map of TOD Senayan Area

CONCLUSION

As one of Indonesia's economic capitals, DKI Jakarta experiences a high amount of population mobility, both within and between cities. With the MRT Senayan, we can create a successful Transit Oriented Development (TOD) neighborhood with organized land use selection. This paper seeks to identify the potential for functional qualities in the Senayan MRT TOD sector. By big line, Senayan MRT area has medium potential because Senayan MRT station transit area has all over completeness pedestrian facilities, crossings, and bicycle track. Senayan MRT area also becomes very important Transit Oriented Development (TOD) area which connects various necessary area in Jakarta, such as Senayan, Gelora Bung Karno, Blok M, and central city. With using the right method Transit Oriented Development areas can reduce some problem on the area or the city.

REFERENCES

[1] I. Carlton, "Histories of transit-oriented development: Perspectives on the development of the TOD Concept: Real Estate and Transit, Urban and Social Movements, Concept Protagonist," *Working Paper*, no. 2009-02, Institute of Urban and Regional Development, University of California, Berkeley, 2007

[2] R. Cervero et al., *Transit-oriented development in the United State: Experience, challenges, and prospects*, Transportation Research Board, Washington, DC, US, 2004

[3] A. Ibraeva, G. H. de Almeida Correia, C. Silva & A. P. Antunes, "Transit-oriented development: A review of research achievements and challenges," *Transportation Research Part A: Policy and Practice*, vol. 132, pp. 110-130, 2020, doi: 10.1016/j.tra.2019.10.018

[4] R. D. Knowles, F. Ferbrache & A. Nikitas, "Transport's historical, contemporary and future role in shaping urban development: Re-evaluating transit-oriented development," *Cities*, vol. 99, ID: 102607, 2020, doi: 10.1016/j.cities.2020.102607

[5] H. Lund, "Reasons for living in a transit-oriented development, and associated transit use," *Journal of the American Planning Association*, vol. 72, no. 3, pp. 357-366, 2006, doi: 10.1080/01944360608976757

[6] H. M. Taki, M. M. H. Maatouk, E. M. Qurnfulah, & M. O. Aljoufie, "Planning TOD with land use and transport integration: a review," *Journal of Geoscience, Engineering, Environment, and Technology*, vol. 2, no. 1, pp. 84-94, 2017, doi: 10.24273/jgeet.2017.2.1.17

[7] H. M. Taki, M. M. H. Maatouk & E. Mohammed, "Re-Assessing TOD index in Jakarta metropolitan region (JMR)," *Journal of Applied Geospatial Information (JAGI)*, vol. 1, no. 1, pp. 26-35, 2017, doi: 10.30871/jagi.v1i01.346

[8] H. M. Taki & M. M. H. Maatouk," Promoting transit-oriented development typology in the transportation planning," *Communications in Science and Technology*, vol. 3, no. 2, pp. 64-70, 2018, doi: 10.21924/cst.3.2.2018.103

[9] H. M. Taki & M. M. H. Maatouk, "Spatial statistical analysis for potential transit-oriented development (TOD) in Jakarta Metropolitan Region," *Journal of Geoscience, Engineering, Environment, and Technology*, vol. 3, no. 1, pp. 47-56, 2018, doi: 10.24273/jgeet.2018.3.01.1091

[10] H. M. Taki, M. M. H. Maatouk, E. M. Qurnfulah & S. Antoni, "Land suitability assessment for the potential location of transit-oriented development (TOD)," In *Smart Societies, Infrastructure, Technologies and Applications: First International Conference, SCITA 2017*, Jeddah, Saudi Arabia, November 27–29, 2017, Proceedings 1, 2018, pp. 357-359

[11] H. M. Taki, M. M. Hassan Maatouk and M. Z. Lubis, "Spatial Model of TOD in JMR's Master Plan," *2018 International Conference on Applied Engineering (ICAE)*, Batam, Indonesia, 2018, pp. 1-6, doi: 10.1109/INCAE.2018.8579408.

[12] H. M. Taki, A. S. Wartaman, E. Fatimah, M. C. Adriana & E. A. Setyawan, "Penyuluhan Pemanfaatan TOD (Transit Oriented Development) Pada Kawasan Sub-Urban di SMKN 5 Jakarta," *JUARA: Jurnal Wahana Abdimas Sejahtera*, vol. 5, no. 1, pp. 68 - 77, doi: 10.25105/juara.v5i1.17447

[13] H. M. Taki, R. Wicaksono & M. A. Badawi, "Transit Oriented Development (TOD) network arrangement system in the City of Jakarta," In *IOP Conference Series: Earth and Environmental Science*, vol. 1263, no. 1, pp. 012032, 2023, doi: 10.1088/1755-1315/1263/1/012032

[14] H. M. Taki, C. A. Pratiwi & M. A. Marasabessy, "Analysis of Application and Characteristics of Tod Fatmawati Area," *Journal of Synergy Landscape*, vol. 3, no. 2, pp. 428-422, Februari 2024, doi: 10.25105/tjsl.v1i2.19449

[15] B. M. Adji, J. Jonrinaldi, M. Masrilayanti, Y. Narny, A. Andriani, P. B. Handayani, A. Y. Putri, "A study on the operational performance of the Trans Padang bus Corridor VI (City center - Andalas University)," *Journal of Integrated and Advanced Engineering (JIAE)*, vol 4, no 1, pp. 65-76, 2024, doi: 10.51662/jiae.v4i1.131