

Herika 2

2-Paper+No+2+Final

 Lektor Kepala

Document Details

Submission ID

trn:oid::3618:106925249

Submission Date

Aug 3, 2025, 5:09 PM GMT+7

Download Date

Aug 3, 2025, 5:14 PM GMT+7

File Name

2-Paper+No+2+Final.pdf

File Size

233.2 KB

9 Pages**2,389 Words****13,194 Characters**

22% Overall Similarity

The combined total of all matches, including overlapping sources, for each database.

Exclusions

▸ 12 Excluded Matches

Match Groups

-  **25 Not Cited or Quoted** 19%
Matches with neither in-text citation nor quotation marks
-  **3 Missing Quotations** 2%
Matches that are still very similar to source material
-  **4 Missing Citation** 2%
Matches that have quotation marks, but no in-text citation
-  **0 Cited and Quoted** 0%
Matches with in-text citation present, but no quotation marks

Top Sources

- 21%  Internet sources
- 5%  Publications
- 14%  Submitted works (Student Papers)

Integrity Flags

0 Integrity Flags for Review

Our system's algorithms look deeply at a document for any inconsistencies that would set it apart from a normal submission. If we notice something strange, we flag it for you to review.

A Flag is not necessarily an indicator of a problem. However, we'd recommend you focus your attention there for further review.

Match Groups

- 25 Not Cited or Quoted** 19%
Matches with neither in-text citation nor quotation marks
- 3 Missing Quotations** 2%
Matches that are still very similar to source material
- 4 Missing Citation** 2%
Matches that have quotation marks, but no in-text citation
- 0 Cited and Quoted** 0%
Matches with in-text citation present, but no quotation marks

Top Sources

- 21% Internet sources
- 5% Publications
- 14% Submitted works (Student Papers)

Top Sources

The sources with the highest number of matches within the submission. Overlapping sources will not be displayed.

1	Internet	smartnet.niua.org	7%
2	Student papers	Trisakti University on 2025-07-30	6%
3	Internet	www.ceocongress.org	1%
4	Internet	www.repository.karyailmiah.trisakti.ac.id	1%
5	Publication	A D Tohjiwa, M H P P Amartya. "Implementation of TOD Concept on Gondangdia ...	1%
6	Student papers	Padjadjaran University on 2018-01-27	<1%
7	Student papers	Anoka Ramsey Community College on 2024-11-20	<1%
8	Publication	H M Taki, R Wicaksono, M A Badawi. "Transit Oriented Development (TOD) netwo...	<1%
9	Internet	dare.uva.nl	<1%
10	Internet	repository.karyailmiah.trisakti.ac.id	<1%

11	Internet	www.viva.co.id	<1%
12	Internet	www.lamudi.co.id	<1%
13	Internet	iopscience.iop.org	<1%
14	Internet	e-journal.trisakti.ac.id	<1%
15	Publication	S Bahri, AW Purwantiasning. "Designating the preference of tram shelter as a par...	<1%
16	Internet	www.cropj.com	<1%
17	Student papers	Institute of Graduate Studies, UiTM on 2014-12-18	<1%
18	Student papers	University of Leeds on 2024-08-29	<1%



IMPLEMENTATION OF THE TRANSIT-ORIENTED DEVELOPMENT (TOD)

CONCEPT AT HARMONI BUSWAY STOP

Herika Muhamad Taki¹, Hanuum Salsabila², Zefanya Elsyeria Yonathan³, Astari Minarti⁴

¹ Study Program of Urban and Regional Planning, Universitas Trisakti, Jakarta, Indonesia

^{2,3,4} Study Program of Environmental Technology, Universitas Trisakti, Jakarta, Indonesia

Corresponding Author: herika@trisakti.ac.id

Received : 08 - 12 - 2024

Revised : 10 - 01 - 2025

Accepted : 14 - 02 - 2025

DOI: <https://doi.org/10.25105/f9z00g03>

ABSTRACT

Urban issues such as limited land, traffic congestion, and air pollution in Jakarta require efficient solutions. Transit-Oriented Development (TOD) is a concept aimed at maximizing land use and improving public facilities around transit hubs. This research evaluates the implementation of the TOD concept at the Harmoni Busway Station in Central Jakarta using QGIS software to assess data conformity with TOD principles. The results show that the Harmoni Busway Stop meets most TOD principles, mainly walking, cycling, and connecting, with sufficient sidewalks, bicycle lanes, and intermodal connections. However, further development is needed in mix-use and eco-friendly facilities to optimize the area's function as a sustainable transit hub.

Keywords: Land Use; Transit-Oriented Development (TOD), Harmoni Busway Station, QGIS, sustainable urban planning

INTRODUCTION

Jakarta is a dense and busy capital because it is the center of various economic and government activities. Various modes of transportation support these activities. It is not surprising that transportation is one of the obstacles to people's mobility when traffic jams occur. According to data from the DKI Jakarta Central Statistics Agency (*Badan Pusat Statistik - BPS*) for 2022, the number of motorized vehicles continues to increase every year. In the last five years, the most rapid increase occurred in 2021, 7.60 percent. The government is trying to change people's behavior and encourage them to switch to public transportation. The number of Trans-Jakarta passengers during 2017-2019 skyrocketed. (Knowles *et al.* 2020).

The forms of land used in DKI Jakarta are residential, office, industrial, health facilities, and transportation. Land use in the transportation sector can be through stops, stations, and terminals. In using land for bus stop construction, Jakarta launched Transjakarta in 2004. Transjakarta is a bus with integrated routes throughout Jakarta connected to many transits stops. One bustling transit stop in Transjakarta is the Harmoni Bus Stop. (Taki *et al.* 2018).

Harmoni Bus Stop is in Gambir District, Central Jakarta City, Special Capital Region of Jakarta 10120. Harmoni Bus Stop uses the Transit Oriented Development (TOD) concept. TOD is defined as an approach to transportation and land use planning, especially in large cities so as to make pedestrians, cyclists, and people passing by in transit areas comfortable.

The book Urban Rail Transit Design Manual states several parameters for transit station design. One of the parameters is accessibility. "Accessibility for users from a wide variety of groups is a key factor in transit station design. Accessibility is the ease of reaching a certain area or place." TOD maximizes the efficiency of existing public transport services by focusing on development around transit stops or stations. (Taki *et al.* 2018).

The principles of TOD, as reviewed from the TOD Standard 3.0, are as follows (ITDP, 2017):

1. Walk

In the TOD Standard, the term "walking" or "walkability" should always be understood to include pedestrians with luggage, such as wheelchairs, canes, strollers, and shopping carts. Complete walkways and crosswalks should fully support all road users in accordance with applicable local or international standards.

2. Cycle

It combines the convenience of door-to-door walking and schedule flexibility with a range and speed similar to local transit services. Bicycles and other human-powered

transportation, such as tricycles, also activate streets and greatly increase the coverage area of transit station users. They are highly efficient and use little space and resources.

3. Connect

Walking can be easily hindered by detours and is particularly sensitive to network density. A dense network of streets and sidewalks offering multiple routes to destinations, many street corners, narrower streets, and slow vehicle speeds makes walking and cycling varied and enjoyable and strengthens street activity and local commerce.

4. Transit (public transportation)

Public transport services connect and integrate people with the city beyond walking and cycling distances and are essential for people to access opportunities and resources. Highly efficient and balanced urban mobility and compact development patterns support and reinforce each other.

5. Mix

A mix of land uses within an area keeps local streets vibrant and safe. The mix encourages walking and cycling, supports longer transit service times, and creates vibrant, complete neighborhoods where people want to live.

6. Densify

Urban density is needed to accommodate growth in the limited areas that can be served by quality public transport and to provide users that can encourage and justify the development of high-quality public transport infrastructure.

7. Compact

With shorter distances, compact cities require less time and energy to travel from one activity to another, do not require extensive and expensive infrastructure (although high planning and design standards are required), and preserve rural land from development by prioritizing density and redevelopment of previously developed land.

8. Shift

This principle aims to improve mobility by regulating parking and road use.

RESEARCH METHODS

This research uses a descriptive analytical approach to evaluate the implementation of the TOD system at Harmoni Busway Stop, Central Jakarta. This approach combines direct observation in the field with spatial analysis based on digital map data. The research focuses on the eight main

principles of TOD, namely walk, cycle, connect, transit, mix, density, compact, and shift, to assess the suitability of the area with the TOD concept and identify areas that require further development.

Primary data was obtained through direct observation at the research site, where observations were made of physical facilities, movement patterns of transportation users, and the quality of intermodal integration. Photo documentation was used to record the presence of sidewalks, bicycle lanes, and other supporting facilities.

Meanwhile, secondary data in the form of digital maps of the Central Jakarta area were obtained from Indonesia Geospatial sources to support spatial analysis. Data analysis was conducted using QGIS software, utilizing several geoprocessing tools to process spatial data. Buffer analysis was used to determine the zone of influence around the Harmoni Busway Stop within a certain radius. Clip and intersection tools were used to delimit the study area and identify areas of overlap between transportation elements, while union was used to combine various spatial data into a unified analysis.

Each TOD principle is evaluated using specific indicators. For example, the walk principle is evaluated through the presence and quality of sidewalks, while cycle is assessed based on the presence of bicycle lanes and supporting facilities. The connect principle is analyzed through the level of integration between transportation modes, and mix is seen from the availability of mixed functions such as residential, commercial, and public facilities (Taki and Maatouk 2018).

RESULTS AND DISCUSSION

The development of Transit Oriented Development (TOD) at Harmoni Bus Stop can have several positive impacts, such as reducing the use of private vehicles, which also reduces congestion, air pollution, and greenhouse gas emissions. City dwellers tend to walk when visiting nearby places, leading to a more active and healthier lifestyle. Apart from that, the development of the public transportation system, namely Transjakarta buses with adequate and comfortable facilities and infrastructure, is expected to increase interest in using the public transportation system, which can impact increasing regional income from the tariffs set for this transportation. This also aligns with the potential for increasing property values around the TOD area. The development of public transport from an economic perspective is also seen to have a positive impact by increasing access to employment and economic opportunities for urban communities. On the

other hand, in terms of urban mobility, TOD can reduce dependence on private vehicles and cut transportation costs while increasing mobility in cities. (Taki *et al.* 2024).

Table 1 Strategic Application of TOD at the Harmoni Busway Stop

Strategy/TOD Principles	Strategy Implementation	Target
Walk, connect	A Pedestrian Bridge makes it safe and comfortable for pedestrians to connect to the Harmoni Busway Stop area and the surrounding buildings.  <i>Figure 1. A Pedestrian Bridge in Harmony Area</i> Source: Researchers, 2024	Pedestrian safety and comfort, as well as easy and integrated access
Compact, transit, shift, density	With the availability of public transportation, Transjakarta buses are a cheap, safe, and comfortable mode of transportation  <i>Figure 1. Transjakarta users at the Harmoni bus stop</i> Source: Researchers, 2024	Making people switch to public transportation reduces air pollution and congestion.

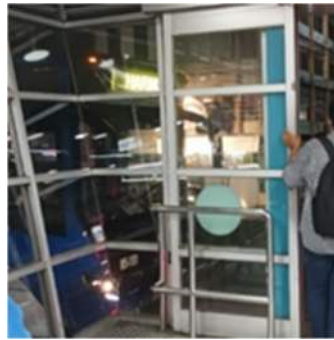


Figure 3 Transjakarta bus at Harmoni bus stop
Source: Researchers, 2024

Televisions are provided as a reminder of the arrival schedule of Transjakarta buses that can be inserted advertisements, and a beverage vending machine is provided so that bus stop users (especially those in transit) do not need to leave the harmony busway stop area

Mix



Figure 4 Vending Machine at Harmoni Bus Stop
Source: Researchers, 2024

Additional revenue from advertising facilities and the provision of vending machines, as well as making Transjakarta bus users safe because of complete facilities and infrastructure

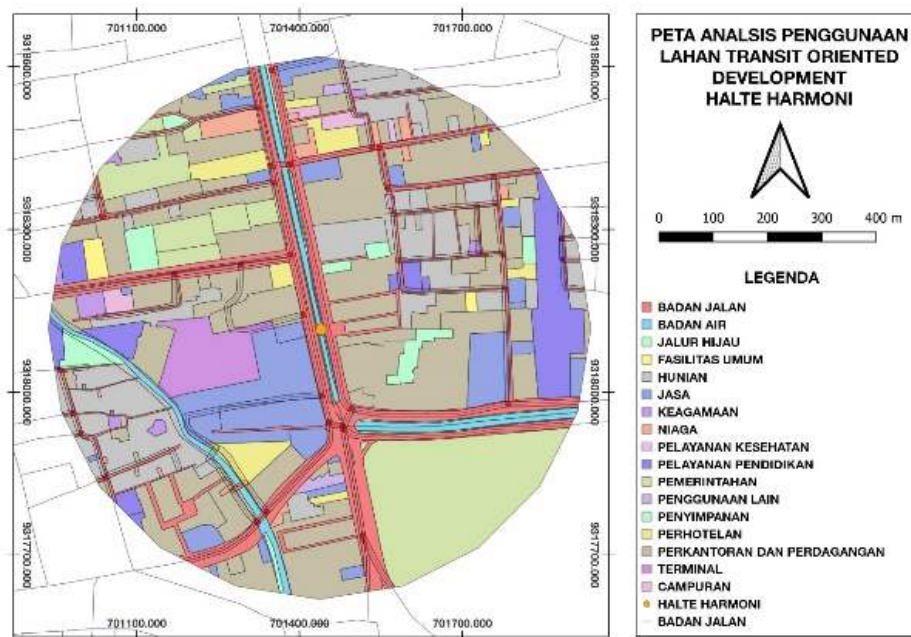


Figure 5. TOD Area from QGIS Software

Source: Researchers, 2024

The Harmoni TOD area zoning consists of:

1. Location of public transport stops

This area is passed by Transjakarta Bus Rapid Transportation (BRT) which passes through many routes. For Transjakarta BRT transportation, it has a bus stop that is connected to a pedestrian bridge. The Harmoni BRT stop is a Transjakarta stop that passes 8 routes, namely, routes 1, 2, 3, 5C, 7F, 8, 8A, and 10H.

2. Existing building objects

Within the Harmony area there are several building objects such as office buildings, commerce, services such as health centers and schools, government, hotels, and local residents' homes.

3. Land use.

In these areas, land is used for public purposes such as offices, hotels, and commercial centers.

4. Pedestrian activity level

In this area the level of pedestrian activity is very high and dense at certain hours and days such as in the morning, the hours of departure for work, and in the afternoon, the hours of return from work. Pedestrians are dominated by those who work around the Harmoni area or who want to continue their destination from the area. (Taki *et al.* 2018)

In TOD, it is directly related to general connectivity. Connectivity has a meaning in the noun or noun class so that connectivity can express the name of a person, place, or all objects and things that are materialized. Connectivity also means relating to connectedness or connection status. Meanwhile, public transportation is a non-private mode of transportation that can accommodate many people with a predetermined destination / route. From the observation, the Harmoni bus stop is directly connected to the pedestrian bridge for people to get on, get off the bus stop, and cross the road. and if it includes the MRT stop that is being built in the same area, the bus stop and stop are connected to the JPO and open pedestrian area surrounded by offices and retail. (Taki *et al.* 2023)

CONCLUSION

In conclusion, the application of the TOD concept to the Harmoni Busway Stop provides many benefits, especially for pedestrians who move in the area. This bus stop has been well integrated through the Pedestrian Bridge and connected to commercial areas and public facilities in the vicinity. This increases convenience and safety for public transportation users, and encourages people to switch from private vehicles to public transportation, which can reduce congestion and air pollution. In addition, the area also shows potential for further development in terms of mix-use and green facilities to enhance its functionality as a sustainable transit hub.

REFERENCE

- ITDP. (2017). TOD Standard. 3rd (ed.) ITDP, London.
- Juliana, A., Senopati, A.A. and Diana, L., 2021. Application of Transit Oriented Development (TOD) Concept in Plaza Indonesia Area, Jakarta. *Architecture Innovation*, 5(1), pp.1-24.
- Knowles RD, Ferbrache F, Nikitas A. 2020. Transport's historical, contemporary and future role in shaping urban development: Re-evaluating transit oriented development. *Cities*. November 99, 2018:102607. doi:10.1016/j.cities.2020.102607.
- Taki HM, Maatouk MMH. 2018. Spatial Statistical Analysis for Potential Transit Oriented Development (TOD) in Jakarta Metropolitan Region. *J Geosci Eng Environ Technol*. 3(1):47. doi:10.24273/jgeet.2018.3.01.1091.
- Taki HM, Maatouk MMH, Lubis MZ. 2018a. Spatial Model of TOD in JMR's Master Plan. *Proc 2018 Int Conf Appl Eng ICAE 2018*. October:1–6. doi:10.1109/INCAE.2018.8579408.

- Taki HM, Maatouk MMH, Qurnfulah EM, Antoni S. 2018b. *Land suitability assessment for the potential location of transit oriented development (TOD)*. 224th volume. Springer International Publishing.
- Taki HM, Mahmoud M, Maatouk H. 2018c. COMMUNICATIONS IN SCIENCE AND TECHNOLOGY Promoting transit oriented development typology in the transportation planning. *Commun Sci Technol*. 3(2):64–70.
- Taki HM, Wartaman AS, Fatimah E, Adriana C, Setyawan EA. 2024. JUARA: Journal of Wahana Abdimas Sejahtera Counseling on the Use of TOD (Transit Oriented Development) in Sub-Urban Area at SMKN 5 Negeri Jakarta.
- Taki HM, Wicaksono R, Badawi MA. 2023. Transit Oriented Development (TOD) network arrangement system in the City of Jakarta. *IOP Conf Ser Earth Environ Sci*. 1263(1). doi:10.1088/1755-1315/1263/1/012032
- Vidal, L. (2013). *Urban Rail Transit Design Manual*. Hong Kong: Design Media Publishing Limited.



E-ISSN 2807-1077

Volume 4 Number 2 February 2025

Journal of Synergy Landscape

JURUSAN ARSITEKTUR LANSKAP

FAKULTAS ARSITEKTUR LANSKAP DAN TEKNOLOGI
LINGKUNGAN UNIVERSITAS TRISAKTI, JAKARTA, INDONESIA

In associated with Ikatan Arsitek Lanskap Indonesia (IALI)
PD. DKI JAKARTA
FPALI Forum Pendidikan Arsitektur Lanskap Indonesia

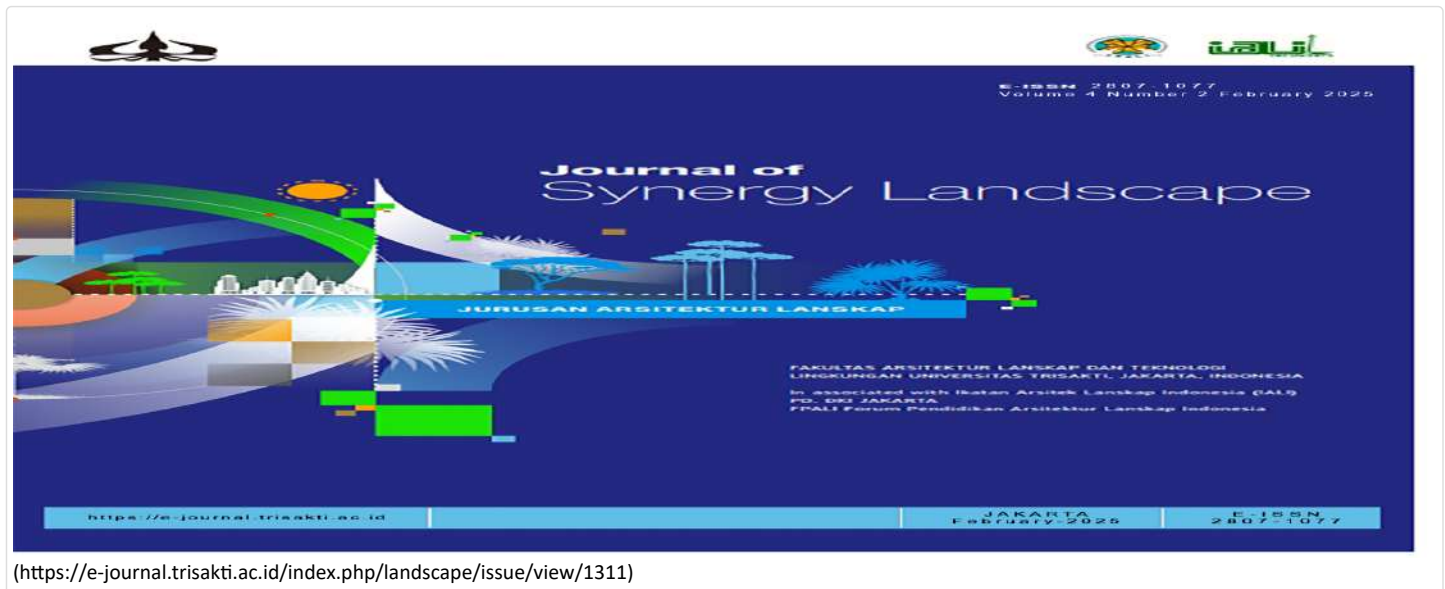


ISSN 2807-1077(ONLINE)

Journal of Synergy Landscape



Home (<https://e-journal.trisakti.ac.id/index.php/landscape/index>) / Archives (<https://e-journal.trisakti.ac.id/index.php/landscape/issue/archive>)
/ Vol. 4 No. 2 (2025): Vol. 4 No. 2 Februari 2025 (PRE-PRINT)



(<https://e-journal.trisakti.ac.id/index.php/landscape/issue/view/1311>)

Published: 2025-02-08

Articles

INNOVATION IN HIGH-RISE GREEN SPACE IN PANTAI INDAH KAPUK, JAKARTA (<https://e-journal.trisakti.ac.id/index.php/landscape/article/view/22427>)

Firly Putri Irenewati, Martinus Bambang Susetyarto



Abstract: 50

IMPLEMENTATION OF THE TRANSIT-ORIENTED DEVELOPMENT (TOD) CONCEPT AT HARMONI BUSWAY STOP (<https://e-journal.trisakti.ac.id/index.php/landscape/article/view/22428>)

Herika Muhamad Taki, Hanuum Salsabila, Zefanya Elsyeria Yonathan, Astari Minarti



Abstract: 42

EFFECT OF DIFFERENT AB MIX CONCENTRATIONS ON THE GROWTH AND YIELD OF SEVERAL MUSTARD VARIETIES IN AN AEROPONIC SYSTEM (<https://e-journal.trisakti.ac.id/index.php/landscape/article/view/22125>)

Arif Aula Rizki, Budiman, Achmad Yozar Perkasa, Zatanna Balqis



Abstract: 88

STUDY OF CLIMATE RESILIENCE ACTION IN THE WATER SECTOR WITH THE APPLICATION AND INNOVATION OF NATURE BASE SOLUTION (NBS) (<https://e-journal.trisakti.ac.id/index.php/landscape/article/view/22514>)

Widyo Astono, Ernaimayanti, Margareta M. Sintorini



Abstract: 11

INDOOR AIR POLLUTION AND THE INCIDENCE OF ACUTE RESPIRATORY INFECTION IN TODDLERS IN LATUHALAT VILLAGE, AMBON CITY, INDONESIA (<https://e-journal.trisakti.ac.id/index.php/landscape/article/view/22515>)

Margareta Maria Sintorini, Gracia Victoria Souisa, Adriana Ritje Nendissa, Marc Ramon Julio Kesauliya



Abstract: 7

Editorial Boards

Editor in Chief



Rini Fitri

Universitas Trisakti, Jakarta, Indonesia

Email: rini.fitri@trisakti.ac.id

 (<https://www.scopus.com/authid/detail.uri?authorId=57214077576>)
  (<https://scholar.google.com/citations?hl=id&user=0lc02rMAAAAJ>)
  (<https://sinta.kemdikbud.go.id/authors/profile/6035689>)

Member of Editors



Ichwana

Syiah Kuala University, Banda Aceh, Indonesia

Email: ichwana.ramli@usk.ac.id

 (<https://www.scopus.com/authid/detail.uri?authorId=57194064473>)
  (<https://scholar.google.com/citations?user=SeritiAAAAJ&hl=en&oi=ao>)
  (<https://sinta.kemdikbud.go.id/authors/profile/260257>)



Silia Yuslim

Universitas Trisakti, Jakarta, Indonesia

Email: siliayuslim@trisakti.ac.id

 (<https://sinta.ristekbrin.go.id/authors/detail/?id=5987907&view=overview>)
  (https://scholar.google.com/citations?user=axdLX_MAAAAJ&hl=en&oi=ao)
  (<https://sinta.kemdikbud.go.id/authors/profile/5987907>)



Etty Indrawati

Universitas Trisakti, Jakarta, Indonesia

Email: ettyindrawati@trisakti.ac.id

 (<https://sinta.kemdikbud.go.id/authors/profile/5974021>)
  (<https://scholar.google.com/citations?user=pd4oQ-osqLsC&hl=en>)
  (<https://sinta.kemdikbud.go.id/authors/profile/5974021>)

Layout Editors



Olivia Seanders

Universitas Trisakti, Jakarta, Indonesia

Email: oliviaseanders@trisakti.ac.id



Reza Fauzi

Universitas Trisakti, Jakarta, Indonesia

Email: rezafauzi@trisakti.ac.id

Jurnal Universitas Trisakti telah Terakreditasi SINTA

FAKULTAS ARSITEKTUR LANSKAP DAN TEKNOLOGI LINGKUNGAN

Akreditasi baru
SINTA 5

Journal of Synergy Landscape

(<https://e-journal.trisakti.ac.id/index.php/landscape>)

Link Jurnal



Selamat untuk:

Dr. Rini Fitri, S.P., MSi. dan Tim

Penerapan Konsep Transit Oriented Development (TOD) Pada Halte Busway Harmoni

Application TOD Concept on Harmoni Busway Station

Herika Muhamad Taki^{1*}, Hanum Salsabila², Zefanya Elsyeria Yonathan³, Astari Minarti⁴

¹Program Studi Perencanaan Wilayah dan Kota, Fakultas Arsitektur Lanskap dan Teknologi Lingkungan, Universitas Trisakti, Jakarta, Indonesia.

^{2,3,4}Program Studi Teknologi Lingkungan, Fakultas Arsitektur Lanskap dan Teknologi Lingkungan, Universitas Trisakti, Jakarta, Indonesia.

*Email: herika@trisakti.ac.id

Artikel Info

Diajukan: Tanggal Bulan Tahun

Direvisi: Tanggal Bulan Tahun

Diterima: Tanggal Bulan Tahun

Dipublikasi: Tanggal Bulan Tahun

Keywords

Land Use; Transit Oriented Development (TOD).

ABSTRACT

Reduced land for development, congestion due to the large number of private transportation, and air pollution are some of the problems of a big city like Jakarta that should be solved with efficient solutions. Transit Oriented Development (TOD) is one of the concepts of building a transit facility that has the principle of maximizing land and increasing adequate public facilities. The application of the TOD concept to the Harmoni Busway Stop provides many benefits for public safety and comfort. The research objective is to find out how the application of the TOD concept at the Harmoni Busway Stop located in Central Jakarta using map analysis with the help of QGIS software to determine the condition of data conformity with the TOD concept.

PENDAHULUAN

Jakarta adalah ibukota yang padat dan sibuk, karena menjadi pusat dari berbagai kegiatan ekonomi dan pemerintahan. Kegiatan-kegiatan ini didukung oleh berbagai mode transportasi. Tak heran, transportasi menjadi salah satu penghambat mobilitas masyarakat jika terjadi kemacetan. Menurut data Badan Pusat Statistik (BPS) DKI Jakarta tahun 2022, jumlah kendaraan bermotor terus meningkat tiap tahunnya. Dalam lima tahun terakhir, peningkatan yang paling pesat terjadi pada tahun 2021, yakni sebesar 7,60 persen. Pemerintah mencoba mengubah perilaku masyarakat untuk beralih ke transportasi publik. Pertumbuhan jumlah penumpang Trans-Jakarta selama 2017-2019 tumbuh secara pesat. (Knowles *et al.* 2020)

Bentuk penggunaan lahan di DKI Jakarta berupa pemukiman, perkantoran, industri, fasilitas kesehatan, dan transportasi. Penggunaan lahan di bidang transportasi dapat berupa halte, stasiun, dan terminal. Dalam penggunaan lahan untuk pembangunan halte, Jakarta mengeluarkan Transjakarta pada tahun 2004. Transjakarta merupakan bus dengan rute yang terintegrasi di seluruh Jakarta, dihubungkan dengan banyak halte transit. Salah satu halte transit Transjakarta yang sangat ramai adalah Halte Harmoni. (Taki *et al.* 2018b)

Halte Harmoni terletak di Kecamatan Gambir, Kota Jakarta Pusat, Daerah Khusus Ibukota Jakarta 10120. Halte Harmoni menggunakan konsep TOD (Transit Oriented Development). TOD didefinisikan sebagai pendekatan untuk transportasi dan perencanaan penggunaan lahan, khususnya pada kota-kota besar sehingga membuat nyaman pejalan kaki, pesepeda, dan orang-orang yang berlalu lalang pada area transit. TOD memaksimalkan efisiensi layanan angkutan umum yang ada dengan memfokuskan pembangunan di sekitar halte atau stasiun transit. (Taki *et al.* 2018c)

METODE PENELITIAN

Penelitian difokuskan pada penerapan sistem TOD pada Halte Busway Harmoni. Mengacu pada observasi terhadap penerapan delapan prinsip utama TOD, yaitu walk, cycle, connect, transit, mix, density, compact, dan shift. Dengan mengumpulkan peta Jakarta Pusat, yaitu lokasi Halte Busway Harmoni dari Indonesia Geospasial. Teknik analisis data menggunakan perangkat lunak QGIS pada geoprocessing tools seperti analisa buffer, clip, intersection, dan union yang meliputi wilayah di sekitar area TOD. (Taki dan Maatouk 2018)

HASIL DAN PEMBAHASAN

Perkembangan Transit Oriented Development (TOD) di Halte Harmoni, dapat membawa beberapa dampak positif seperti mengurangi penggunaan kendaraan pribadi yang juga mengurangi kemacetan, polusi udara, dan emisi gas rumah kaca. Penduduk kota cenderung berjalan kaki saat mengunjungi tempat-tempat terdekat, sehingga mengarah ke gaya hidup yang lebih aktif dan lebih sehat. Selain itu, pengembangan sistem transportasi umum yaitu bus transjakarta dengan sarana dan prasarana yang memadai dan nyaman diharapkan dapat meningkatkan minat menggunakan sistem transportasi umum, dimana hal tersebut dapat berdampak pada peningkatan pendapatan daerah dari tarif yang dipatok untuk transportasi tersebut. Ini juga sesuai dengan potensi peningkatan nilai properti di sekitar area TOD. Perkembangan angkutan umum dari segi ekonomi juga dipandang memberikan dampak positif dengan peningkatan akses lapangan kerja dan kesempatan ekonomi bagi masyarakat perkotaan. Di sisi lain, dalam hal mobilitas perkotaan, TOD dapat mengurangi ketergantungan pada kendaraan pribadi dan memangkas biaya transportasi

Tabel 1
Penerapan Strategis TOD Pada Halte Busway
Harmoni

Strategi/Prinsip TOD	Penerapan Strategi	Target
Walk (berjalan kaki), connect (menghubungkan)	Adanya JPO (Jembatan Penyebrangan Orang) yang membuat pejalan kaki aman dan nyaman untuk terhubung ke area Halte Busway Harmoni maupun ke gedung-gedung sekitarnya.  Gambar 1 JPO di Kawasan Harmoni	Keamanan dan kenyamanan pejalan kaki serta akses yang mudah dan terintegrasi
Compact (merapatkan) dan transit (angkutan umum), shift (beralih), density (kepadatan)	Ketersediaan angkutan umum, yaitu bus transjakarta sebagai mode transportasi yang murah, aman, dan nyaman.  Gambar 2 Pengguna Transjakarta di Halte Harmoni	Membuat masyarakat beralih ke kendaraan umum sehingga mengurangi polusi udara dan kemacetan.

		
Mix (pembauran)	Disediakan televisi sebagai pengingat jadwal kedatangan bus transjakarta yang bisa disisipkan iklan-iklan, serta disediakan vending machine minuman agar pengguna halte (khususnya yang transit) tidak perlu keluar area halte busway harmoni. 	Penambahan pemasukkan dari sarana iklan dan penyediaan vending machine, serta membuat pengguna bus transjakarta menjadi nyaman karena sarana dan prasarana yang lengkap.

Gambar 5. Area TOD dari Perangkat Lunak QGIS
Zonasi kawasan TOD Harmoni terdiri dari :

1. Lokasi perhentian angkutan umum
Kawasan ini dilewati oleh BRT Transjakarta yang melewati banyak rute. Untuk angkutan BRT Transjakarta memiliki halte yang tersambung dengan jembatan penyebrangan orang. Halte BRT Harmoni menjadi pemberhentian Transjakarta yang melewati 8 rute yaitu, rute 1, 2, 3, 5C, 7f, 8, 8A, dan 10H.
2. Objek bangunan yang ada
Di dalam kawasan Harmoni terdapat beberapa objek bangunan seperti bangunan perkantoran, niaga, pelayanan seperti puskesmas dan sekolah, pemerintahan, perhotelan, dan rumah warga setempat.
3. Tata guna lahan
Di kawasan tersebut lahan yang dipakai untuk kepentingan umum seperti perkantoran, perhotelan, dan pusat perniagaan.
4. Tingkat aktivitas pejalan kaki
Di kawasan ini tingkat aktivitas pejalan kaki sangat tinggi dan padat pada jam dan hari tertentu seperti pada pagi hari, jam-jam berangkat untuk kerja, dan sore hari, jam-jam pulang dari kerja. Pejalan kaki didominasi oleh mereka yang bekerja di sekitar kawasan Harmoni atau yang hendak melanjutkan destinasinya dari kawasan tersebut. (Taki *et al.* 2018a)

Dalam TOD berhubungan langsung dengan konektivitas umum. Konektivitas memiliki arti dalam kelas nomina atau kata benda sehingga konektivitas dapat menyatakan nama dari seseorang, tempat, atau semua benda dan segala yang dibendakan. Konektivitas juga berarti berkaitan dengan keterhubungan atau status koneksi. Sedangkan angkutan umum adalah moda transportasi non pribadi yang dapat menampung banyak orang dengan tujuan/rute yang telah ditentukan. Dari hasil pengamatan, halte Harmoni langsung terkoneksi dengan jembatan penyebrangan orang untuk naik, turun dari halte, serta menyebrangi jalan. dan jika meliputi dengan pemberhentian MRT yang sedang dibangun di kawasan yang sama, halte dan pemberhentian tersebut terkoneksi dengan JPO dan pedestrian yang terbuka yang dikelilingi oleh perkantoran dan ritel. (Taki *et al.* 2023)

SIMPULAN

Simpulan

Penerapan konsep TOD pada Halte Busway Harmoni sangat bermanfaat bagi masyarakat, terutama untuk penjalan kaki yang berpergian untuk kerja atau sekolah di Kawasan Harmoni. Halte yang sudah tersambung dengan JPO dan sekitar halte yang dikelilingi oleh area komersil perkantoran dan ritel di pedestrian terbuka.

DAFTAR PUSTAKA

- Knowles RD, Ferbrache F, Nikitas A. 2020. Transport's historical, contemporary and future role in shaping urban development: Re-evaluating transit oriented development. *Cities*. 99 November 2018:102607. doi:10.1016/j.cities.2020.102607.
- Taki HM, Maatouk MMH. 2018. Spatial Statistical Analysis for Potential Transit Oriented Development (TOD) in Jakarta Metropolitan Region. *J Geosci Eng Environ Technol*. 3(1):47. doi:10.24273/jgeet.2018.3.01.1091.

- Taki HM, Maatouk MMH, Lubis MZ. 2018a. Spatial Model of TOD in JMR's Master Plan. *Proc 2018 Int Conf Appl Eng ICAE* 2018. October:1-6. doi:10.1109/INCAE.2018.8579408.
- Taki HM, Maatouk MMH, Qurnfulah EM, Antoni S. 2018b. *Land suitability assessment for the potential location of transit oriented development (TOD)*. Volume ke-224. Springer International Publishing.
- Taki HM, Mahmoud M, Maatouk H. 2018c. COMMUNICATIONS IN SCIENCE AND TECHNOLOGY Promoting transit oriented development typology in the transportation planning. *Commun Sci Technol*. 3(2):64-70.
- Taki HM, Wartaman AS, Fatimah E, Adriana C, Setyawan EA. 2024. JUARA: Jurnal Wahana Abdimas Sejahtera PENYULUHAN PEMANFAATAN TRANSIT ORIENTED DEVELOPMENT (TOD) PADA KAWASAN SUB-URBAN DI SMKN 5 NEGERI JAKARTA Counseling on the Use of TOD (Transit Oriented Development) in Sub-Urban Area at SMKN 5 Negeri Jakarta.
- Taki HM, Wicaksono R, Badawi MA. 2023. Transit Oriented Development (TOD) network arrangement system in the City of Jakarta. *IOP Conf Ser Earth Environ Sci*. 1263(1). doi:10.1088/1755-1315/1263/1/012032.