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STUDY ON DETERMINING THE LOCATION FOR THE DEVELOPMENT OF A TYPE A PASSENGER TERMINAL IN TANJUNG SELOR, NORTH KALIMANTAN PROVINCE

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Abstract

This study aims to identify the development potential of the Tanjung Selor Type A Terminal through the mixed use development approach, which integrates transportation, commercial, and social functions. The research focuses on assessing the feasibility of the terminal from technical, economic, social, and spatial aspects, as well as formulating development strategies that are adaptive to local characteristics. The research employed a mixed method approach, combining qualitative and quantitative techniques. Primary data were collected through questionnaires, interviews, and field observations, while secondary data were obtained from spatial planning documents, demographic statistics, and transportation records. The analysis consisted of spatial assessment, SWOT analysis, and trip generation–attraction forecasting to project future travel demand. The findings indicate that the Tanjung Selor Type A Terminal has significant potential to be developed as a multifunctional hub. Strength factors include strategic location in accordance with the regional spatial plan, high accessibility, and alignment with the New Independent City development agenda. Opportunities lie in integrating local economic activities through MSMEs, trade, and public spaces. The proposed development strategy emphasizes functional zoning, multimodal integration, and a mixed use development concept that enhances connectivity, stimulates local economic growth, and creates inclusive public spaces.

Keywords: Type A terminal, Mixed Use Development, SWOT, Trip Generation–Attraction, Tanjung Selor.

INTRODUCTION

Transportation is a fundamental component in regional development. It not only functions as a means of mobility but also serves as a primary driver of economic growth, equitable development, and the formation of activity centers within society. In the land transportation system, terminals play a vital role as public service nodes that connect various transportation modes, regulate the movement of people and goods, and support spatial and functional regional integration. As the capital of North Kalimantan Province, Tanjung Selor holds a strategic role within the regional urban system. The area has been designated as a Regional Activity Center in the provincial spatial plan and as an Independent New City through Presidential Instruction Number 9 of 2018. This designation indicates that Tanjung Selor is projected to become a driving force for economic, social, and governmental development in North Kalimantan. However, to date, Tanjung Selor does not yet have a representative Type A passenger terminal that functions optimally as a regional transportation hub.

A representative terminal should not merely be understood as a physical structure for boarding and alighting passengers, but as a public facility that meets standards of service, comfort, safety, and functional integration. A proper Type A terminal should be capable of accommodating intercity and interprovincial transport efficiently, providing adequate supporting facilities, and maintaining a well-organized circulation system. Furthermore, it should function as an intermodal integration node, connecting local transport systems with other modes to enhance travel efficiency and encourage the use of public transportation. The absence of a representative land terminal in Tanjung Selor has resulted in suboptimal organization of community mobility, inefficient public transport services, and underutilized opportunities for developing the area as an urban activity center. This condition suggests that the development of a Type A terminal should not be limited to fulfilling technical transportation requirements, but should also be directed toward area development that generates economic and social value. One relevant approach is the application of the mixed-use development concept, which integrates transportation functions with commercial activities, public services, and open spaces within a unified area.

Globally, the development of terminals as mixed-use areas has been widely implemented in various developing countries. Intercity bus terminals such as ISBT Delhi in India, Parañaque Integrated Terminal Exchange (PITX) in the Philippines, as well as My Dinh Bus Station in Hanoi and Ben Xe Mien Dong in Ho Chi Minh City in Vietnam, function not only as transportation nodes but also as centers of economic and social activity through the provision of commercial facilities, support for micro, small, and medium enterprises (MSMEs), and public spaces. This concept is highly relevant for implementation in Tanjung Selor, where a Type A terminal has the potential to be developed not only as a transportation hub but also as a city landmark and a center of urban activity, in line with the principles of Transit-Oriented Development (TOD) that promote economic equity and improve the quality of urban life.

METHOD

This study employs a mixed-method approach that integrates quantitative and qualitative methods to obtain a comprehensive understanding of the research problem. Qualitative data were collected through questionnaires and observations of the community in Tanjung Selor, while quantitative data were derived from the numerical processing of questionnaire results. The study also adopts a spatial planning approach based on the concept of mixed-use development to integrate transportation, commercial, social, and public functions within a unified terminal area. In addition, SWOT analysis is applied to identify internal and external factors influencing terminal development and to formulate appropriate development strategies. Trip generation and attraction analysis is used to forecast future passenger movement. The research is conducted in Tanjung Selor, Bulungan Regency, utilizing both primary data (questionnaires) and secondary data (spatial maps, transportation data, demographic statistics, and economic data). Data collection techniques are conducted using a quantitative descriptive approach to objectively describe conditions based on numerical data.

RESULTS AND DISCUSSION

SWOT Analysis (Strengths, Weaknesses, Opportunities, Threats)

Results of SWOT Factor Identification

Based on the primary and secondary data that have been collected, the following findings were obtained for the SWOT analysis:

a. Strengths

- Strategic location in the center of Tanjung Selor, in close proximity to the main road network.
- Proximity to Tanjung Harapan Airport (±3 km) and Kayan II Port (±6 km), supporting intermodal functions.
- Availability of approximately 1 hectare of land that can be managed in an integrated manner.
- Government support for the development of land transportation as part of the national connectivity system.
- Public enthusiasm for the provision of public and commercial facilities within the terminal area (based on questionnaire results).

b. Weaknesses

- Relatively limited land area for a Type A terminal function (ideal >2 hectares).
- Existing road infrastructure (Jl. Serindit & Jl. Handal) remains narrow, potentially causing traffic flow conflicts.
- Limited supporting facilities (green open spaces, modern utilities, drainage systems).
- Limited private investment in the transportation sector in the North Kalimantan region.

c. Opportunities

- Tanjung Selor has been designated as the administrative center of North Kalimantan Province and a nationally strategic urban area.
- Increasing movement of people and goods in line with population growth and economic activities.
- Support for the mixed-use concept in line with trends in modern, efficient, and sustainable urban development.
- Potential synergy with the development of local MSMEs, tourism, and service sectors.
- Government programs related to smart city initiatives and inter-regional connectivity in Kalimantan.

d. Threats

- The increasing growth of private vehicle ownership, which may reduce interest in public transportation usage.
- Competition from online transportation modes and door-to-door travel services that offer greater flexibility.
- Risk of environmental degradation due to increased activities (waste, air pollution, noise).
- Regulatory uncertainty or delays in the development of supporting infrastructure.

- Potential resistance from local communities if terminal development does not adequately consider social and environmental aspects.

Based on the data above, the next step is to integrate internal and external factors to construct a matrix categorized into four strategic groups: SO (Strength–Opportunities), ST (Strength–Threats), WO (Weakness–Opportunities), and WT (Weakness–Threats). The formulation of these four categories is presented in the table below.

Table 1. SWOT Matrix

Strategy	Formulation
SO (Strength–Opportunities)	- Optimize the terminal's strategic location as an intermodal hub connected to the airport and seaport. - Encourage investment in the commercial sector and local MSMEs through the provision of business spaces within the terminal. - Integrate a smart terminal concept supported by technology (WiFi, digital ticketing systems, CCTV).
ST (Strength–Threats)	- Utilize the available land to create an efficient circulation system, ensuring competitiveness with online transportation. - Provide comfortable public facilities (waiting areas, prayer rooms, clean toilets) to enhance public transport user loyalty. - Develop a green terminal with green spaces to reduce pollution.
WO (Weakness–Opportunities)	- Propose spatial planning policy support and government investment to address land and infrastructure limitations. - Integrate terminal development with urban revitalization programs. - Collaborate with the private sector (PPP) in providing commercial facilities and utilities.
WT (Weakness–Threats)	- Control environmental impacts through modern utility planning (drainage, waste collection points, waste treatment). - Establish strict parking regulations to avoid conflicts with private vehicles. - Increase community participation in planning to prevent resistance.

After constructing the SWOT matrix, a Quantitative SWOT Analysis (IFAS–EFAS) was conducted to obtain more measurable results. This analysis employs the IFAS (Internal Factor Analysis Summary) approach for internal factors (Strengths–Weaknesses) and the EFAS (External Factor Analysis Summary) approach for external factors (Opportunities–Threats). The stages of this technique are as follows:

a) Identification of SWOT factors (S, W, O, T).
b) Assignment of weights (0.0–1.0) based on the importance level of each factor (total weight = 1.0 per table).
c) Assignment of ratings (1–4) to reflect actual conditions:
   - 4 = very strong / very high opportunity
   - 3 = strong / moderate opportunity
   - 2 = weak / low opportunity
   - 1 = very weak / major threat
d) Weighted score = weight × rating.
e) Determination of strategic position (aggressive, defensive, turn-around, diversification) by calculating total IFAS and EFAS scores.

Table 2. IFAS Calculation – Internal Factors

Internal Factors	Weight	Rating	Score
Strengths (S)			
Strategic location near city center & main road access	0.15	4	0.60
Proximity to airport & seaport (intermodal)	0.12	4	0.48
Available land ±1 hectare	0.10	3	0.30
Government policy support in transportation	0.10	3	0.30
Public interest in public & commercial facilities	0.08	3	0.24
Total Strengths	0.55	–	1.92
Weaknesses (W)			
Limited land area for Type A terminal	0.10	2	0.20
Narrow surrounding road infrastructure	0.08	2	0.16
Limited utilities (drainage, green open space, MEP)	0.07	2	0.14
Low private investment in transportation sector	0.10	2	0.20
Total Weaknesses	0.35	–	0.70
TOTAL IFAS	0.90	–	2.62

Table 3. EFAS Calculation – External Factors

External Factors	Weight	Rating	Score
Opportunities (O)			
Status of Tanjung Selor as provincial administrative center	0.12	4	0.48
Growth in movement of people and goods	0.12	3	0.36
Trend of mixed-use development in urban areas	0.10	3	0.30
Potential synergy with MSMEs & tourism	0.08	3	0.24
Support for smart city & Kalimantan connectivity	0.08	3	0.24
Total Opportunities	0.50	–	1.62
Threats (T)			
Growth of private vehicles reducing bus demand	0.10	2	0.20
Competition from online transport & door-to-door travel	0.08	2	0.16
Risk of environmental degradation (waste, pollution, noise)	0.07	2	0.14
Regulatory uncertainty & infrastructure support	0.07	2	0.14
Community resistance	0.08	2	0.16
Total Threats	0.40	–	0.80
TOTAL EFAS	0.90	–	2.42

The rating reflects the actual condition of factors in the field compared to the ideal standards of a Type A terminal. The rating scale used ranges from 1 to 4, with the following interpretation:
4 = very strong condition / very high opportunity
3 = fairly strong condition / moderate opportunity
2 = weak condition / considerable threat
1 = very weak condition / major threat
The rating assessment is based on:
1. Field observations of the physical and operational conditions of the terminal.
2. Results of questionnaires and interviews, particularly user and stakeholder perceptions.

3. Compliance with transportation standards and policies, such as Type A terminal functions and intermodal integration.

From the tables above, the total scores are:

- IFAS – Internal Factors = 2.62 → indicating that internal strengths are more dominant than weaknesses.
- EFAS – External Factors = 2.42 → indicating that external opportunities outweigh threats.

These results indicate that the Tanjung Selor Type A Terminal is positioned in Quadrant I (Aggressive Strategy), meaning that the development of a *Mixed-Use Development* at the Tanjung Selor Type A Terminal can be implemented by emphasizing SO (Strength–Opportunity) strategies.

Based on the results of the SWOT analysis, the following strategic implications are required:

1. **SO Strategy (Strength–Opportunities): Aggressive Terminal Development Strategy**
   The SO strategy focuses on leveraging internal strengths to capture external opportunities. In the context of the Tanjung Selor Type A Terminal, this strategy is directed toward developing the terminal as a center for transportation integration and economic activities (intermodal hub).
   a. **Terminal Design as an Intermodal Hub**
      The terminal is designed as a center for the interchange of transportation modes between land, sea, and air, considering its proximity to Tanjung Harapan Airport (±3 km) and Kayan II Port (±6 km). The provision of shuttle bus access, pedestrian pathways, and integrated drop-off areas forms part of the technical design of the intermodal terminal. The terminal's function is expanded to accommodate park-and-ride areas, as well as digital connectivity (real-time information systems) to monitor intermodal schedules.
   b. **Development of Commercial and MSME Functions**
      The provision of commercial zones within the terminal, such as food stalls, convenience stores, and local MSME centers, will serve as the economic driver of the area. The terminal may also accommodate exhibition spaces for local products and co-working spaces for micro-entrepreneurs. The government can facilitate partnerships with MSMEs through business incubation programs in the transportation and tourism sectors.
   c. **Implementation of a Smart Terminal**
      The terminal is designed as a smart terminal supported by digital technology, including electronic ticketing systems, AI-based CCTV, public WiFi, and a command center for bus traffic monitoring. Integration of local transportation applications with online ticketing platforms (such as Traveloka, RedBus, or KAI Access) is intended to enhance user accessibility. This development is recommended to be carried out in a progressive-aggressive manner by utilizing internal strengths (location, government support, and public interest) to capture external opportunities (urban and economic growth).
2. **ST Strategy (Strength–Threats): Competitive Strategy Against External Threats**
   The ST strategy aims to utilize existing strengths to address potential threats such as increasing private vehicle usage and competition from online transportation modes.
   a. **Enhancing User Comfort and Loyalty**
      The terminal should provide high-quality public facilities, such as air-conditioned waiting rooms, adequate prayer rooms, clean toilets, and charging stations. The implementation of minimum service standards (MSS) in transportation can serve as a benchmark for service quality.
   b. **Efficiency of Circulation and Operations**
      The terminal site design must optimize the circulation flow of vehicles and pedestrians to prevent congestion. The utilization of approximately 1 hectare of land is directed toward functional zoning, including bus circulation areas, passenger waiting areas, commercial zones, and green open spaces.
   c. **Implementation of the Green Terminal Concept**
      Terminal development adopts an environmentally friendly concept, including green roofs, eco-drainage systems, and solar panels. Waste and wastewater management systems are also prepared to maintain environmental quality.
3. **WO Strategy (Weakness–Opportunities): Adaptive and Collaborative Strategy**
   The WO strategy is directed at minimizing internal weaknesses by leveraging external opportunities.
   a. **Support for Spatial Policy and Funding**
      Local governments need to integrate the terminal into the Regional Spatial Plan (RTRW) and Detailed Spatial Plan (RDTR) of Tanjung Selor to ensure a strong legal foundation. Funding support can be obtained through the Special Allocation Fund (DAK) for transportation and Public–Private Partnership (PPP) schemes.
   b. **Infrastructure Revitalization and Connectivity**

Access roads such as Serindit Street and Handal Street need to be widened and improved to support traffic flow. The integration of urban and interprovincial bus networks can be developed to enhance terminal accessibility.

c. **Collaboration with the Private Sector**
Encouraging private sector participation through management contracts for commercial areas, parking, and utilities. The Build–Operate–Transfer (BOT) scheme can be applied to the development of supporting facilities such as food courts or minimarkets.

4. **WT Strategy (Weakness–Threats): Defensive and Mitigation Strategy**
The WT strategy focuses on reducing internal weaknesses while addressing external threats to ensure sustainable development.

a. **Environmental Impact Control**
An Environmental Management Plan (EMP) is implemented to control noise, air pollution, and waste. Temporary waste processing sites and closed drainage systems are also developed.

b. **Parking Regulation and Management**
Strict parking regulations and vehicle control systems are required to prevent traffic conflicts with buses. The implementation of sensor-based smart parking systems can improve land-use efficiency.

c. **Enhancing Community Participation**
Involving local communities in the planning and monitoring process is essential to avoid social resistance. Community engagement programs, such as terminal-based entrepreneurship training or transport cooperative partnerships, can strengthen social support.

From the elaboration above, the development strategy of the Tanjung Selor Type A Terminal is focused on:

1. SO (aggressive) strategy as the main priority: developing the terminal into a modern, commercial, and digital intermodal hub.
2. WO and ST strategies as adaptive reinforcement, particularly in infrastructure development and user comfort.
3. WT strategy as environmental and social safeguards to ensure sustainability.

Thus, the direction of terminal development emphasizes synergy between transportation, economic, and social functions, while supporting the realization of a smart–green–integrated terminal concept in the North Kalimantan region.

Mixed-Use Development Concept

The *Mixed-Use Development* concept is a planning approach that integrates various spatial functions—transportation, commercial, social, public, and supporting facilities—within a single area in an integrated, efficient, and sustainable manner. In this case, the concept is applied to the Tanjung Selor Type A Terminal. The primary rationale for adopting this concept is to establish a transportation node that connects land, sea, and air modes. In addition, the terminal is envisioned to function as a new activity center in Bulungan Regency.

The implementation of the *Mixed-Use Development* concept at the Tanjung Selor Type A Terminal aims to:

- Enhance the terminal's function as an integrated transportation hub.
- Maximize the utilization of limited land (±1 hectare).
- Provide inclusive and human-centered public facilities.
- Introduce commercial spaces and MSMEs as drivers of local economic growth.
- Strengthen the terminal's role as a growth pole within the spatial structure of Tanjung Selor.

The application of this concept is based on several fundamental principles:

- **Functional integration** → transportation as the primary function, combined with commercial, social, and public uses.
- **Spatial efficiency** → optimal use of limited land through proportional zoning.
- **Accessibility and connectivity** → separation of bus and private vehicle flows, integrated with the urban road network.
- **Comfort and inclusivity** → user-friendly design, accessibility for people with disabilities, green spaces, and public areas.
- **Sustainability** → implementation of an environmentally friendly (*green terminal*) concept.

In this study, zoning allocation for terminal infrastructure was developed based on spatial analysis and community needs. These needs were identified through questionnaires distributed to local residents and further

analyzed using the SWOT method, resulting in a ranking of community priorities. Based on spatial and SWOT analyses, the zoning proportion for the Tanjung Selor Type A Terminal is planned as follows:

Table 4. Area Zoning Structure

Zone	Land Proportion	Main Function
Transportation Zone	±40%	Bus platforms, passenger boarding–alighting areas, bus circulation
Commercial & MSME Zone	±25%	MSME kiosks, culinary areas, retail, cafés
Public & Social Zone	±20%	Comfortable waiting areas, prayer rooms, nursing rooms, parks, open spaces
Supporting & Utility Zone	±15%	Parking areas, green open spaces, utilities (drainage, waste facilities, MEP)

The design location in this study is situated in Bulungan Regency, specifically on Serindit Street, with a land area of 10,000 m². This location meets the criteria and regulations for bus terminal development, both in terms of accessibility and development potential. The site holds significant potential as it is located in the activity center of Bulungan Regency and directly connected to a national road, which is a key requirement for the development of a Type A terminal.

Figure 1. Location of the Proposed Terminal Development

The proposed development area is bounded by:
North: Urban forest area
South: Residential settlements
West: Women's building (Gedung Wanita)
East: National road

This strategic location further supports the implementation of a *mixed-use* terminal that integrates transportation functions with economic and social activities.

i. Routes Served by the Terminal

The Tanjung Selor Type A Terminal currently provides several transport services, including intercity interprovincial buses (*AKAP*), intercity intraprovincial buses (*AKDP*), and pioneer bus services (*Perintis*), all of which operate on a daily basis. At present, these services are operated by DAMRI; however, the number of operators is expected to increase once the terminal is fully developed. The existing service routes are presented in the table below:

Table 5. DAMRI Route Services

Segment	Route Name	Fleet Size
AKAP	Tanjung Selor – Samarinda	4
	Tanjung Selor – Berau	2
		2
AKDP	Tanjung Selor – Malinau	4
Perintis	Tanjung Selor – Tideng Pale	2
	Tanjung Selor – Mangkupadi	2
	Tanjung Selor – Long Beluah – Long Tungu	2
TOTAL FLEET		14

Based on production data obtained from BPTD Class III North Kalimantan in 2025 (January–July), there were 30,388 departing passengers from Tanjung Selor and 18,233 arriving passengers at Tanjung Selor via the DAMRI pool (temporary terminal). These figures indicate a significant level of passenger activity, which has the potential to increase further through the implementation of the *Mixed-Use Development* concept. A comparison of this data is illustrated in the figure below.

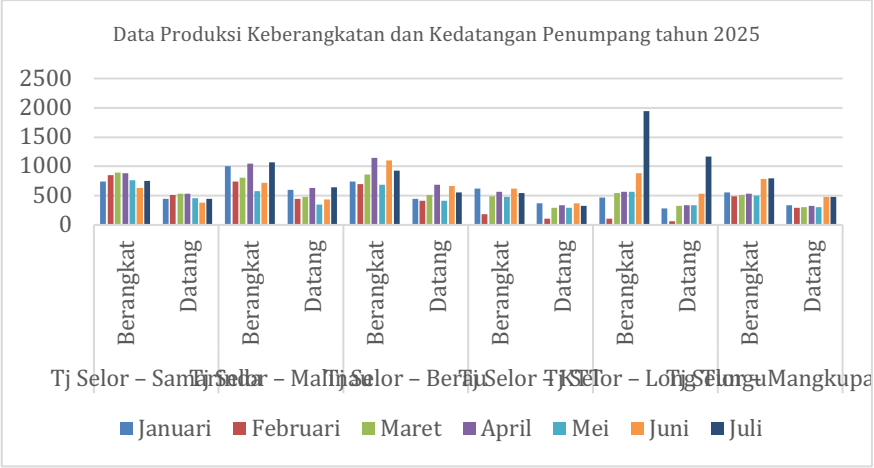

Figure 2. Bus Production Data 2025

ii. Mixed-Use Development Design Concept

Based on the spatial analysis, data on land use allocation were obtained, as illustrated in the figure below.

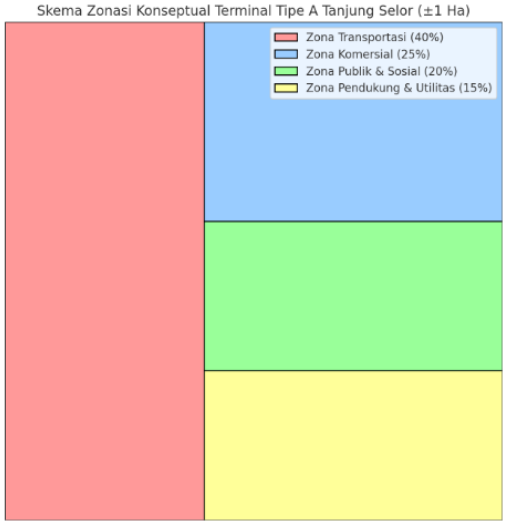

Figure 3. Zoning Distribution

From the zoning distribution, a conceptual design for the development of the Tanjung Selor Type A Terminal with the application of *Mixed-Use Development* has been formulated, as shown in the following figure:

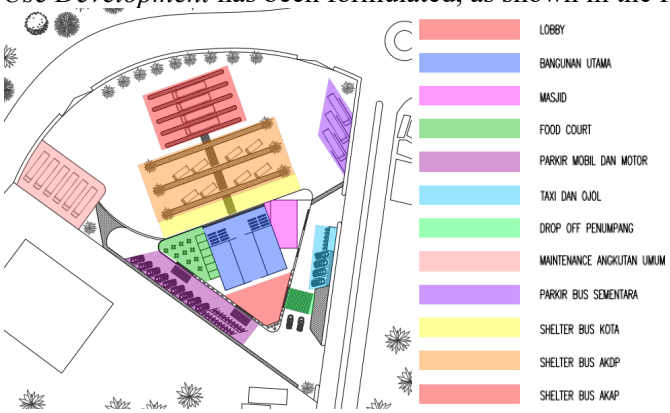

Figure 4. Site Development Design Concept of Tanjung Selor Type A Terminal

In addition to zoning distribution, it is essential to consider vehicle movement patterns within the terminal to prevent traffic conflicts. Therefore, the development design incorporates two distinct vehicle zones:

- A zone for private vehicles and online motorcycle taxis (*ojek online*).
- A zone for public transportation vehicles such as buses and *angkot*.

Further details are illustrated in the figures below:

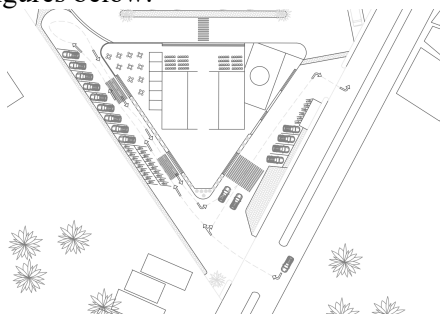

Figure 5. Circulation of Private Vehicles and Online Motorcycle Taxis

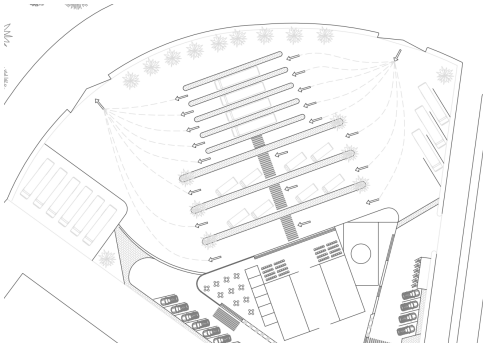

Figure 6. Circulation of Public Transportation Vehicles

The separation between private and public vehicles is expected to ensure smooth and conflict-free circulation within the terminal area.

Within the terminal building, spatial zoning is also necessary to maximize functional efficiency. The internal zoning includes a mosque, main building, food court, and lobby areas. The terminal building is designed with vertical development (multi-story) to optimize space utilization. The internal zoning layout is illustrated in the following figure:

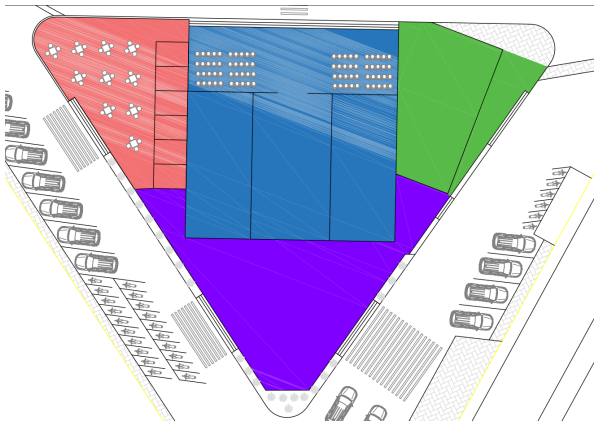

Figure 7. Zoning Distribution within the Terminal Building

One of the key potentials of the main building is the provision of a large waiting area on the ground floor (indicated in blue), which allows the second floor to be utilized for MSME activities and other supporting functions. The ground-floor waiting area also enables passengers to easily access bus departure points without the need for vertical movement from upper floors. Additionally, the ground floor is equipped with a food court (indicated in red) and worship facilities, specifically a mosque (indicated in green).

With this spatial arrangement, the future development of the Tanjung Selor Type A Terminal offers significant potential, particularly due to the possibility of further vertical expansion to accommodate additional functions and activities.

Forecasting Using Trip Generation–Attraction Analysis

With the development of the Tanjung Selor Type A Terminal into a *Mixed-Use Development*, it is expected that the terminal will not only attract users of public transportation but also function as a broader activity center. In this analysis, a *Trip Generation–Attraction* method with a macro approach is applied to forecast the future number of terminal visitors after the implementation of the mixed-use concept.

Table 6. Passenger Production Data (2025)

Month	Tj Selor – Samarinda		Tj Selor – Malinau		Tj Selor – Berau		Tj Selor – KTT		Tj Selor – Long Tungu		Tj Selor – Mangkupadi	
	Leave	Come	Leave	Come	Leave	Come	Leave	Come	Leave	Come	Leave	Come
Jan	738	443	999	599	743	446	619	371	464	278	559	335
Feb	845	507	741	445	697	418	183	110	112	67	491	295
March	897	538	801	481	858	515	491	295	546	328	507	304
Apr	884	530	1049	629	1149	689	561	337	567	340	533	320
May	763	458	581	349	690	414	478	287	563	338	504	302
Jun	629	377	716	430	1104	662	616	370	888	533	788	473
Jul	749	449	1070	642	928	557	545	327	1945	1167	797	478

Source: BPTD Class III North Kalimantan

In this analysis, passenger production data from DAMRI Tanjung Selor branch for the period January–July 2025 were used. To obtain forecasting data, the first step involved calculating the average monthly departures and arrivals to determine the total average movement within the terminal. The results are presented below:

Table 7. Average Monthly Departures and Arrivals

Route	Avg_Departures/Month	Avg_Arrivals/Month
TjSelor_Samarinda_Leave	786,4	
TjSelor_Malinau_Leave	851	
TjSelor_Berau_Leave	881,3	
TjSelor_KTT_Leave	499	
TjSelor_LongTungu_Leave	726,4	
TjSelor_Mangkupadi_Leave	597	
TjSelor_Samarinda_Come		471,7
TjSelor_Malinau_Come		510,7
TjSelor_Berau_Come		528,7
TjSelor_KTT_Come		299,6
TjSelor_LongTungu_Come		435,9
TjSelor_Mangkupadi_Come		358,1
Total	4.341	2.605

The total average movement reaches 6,946 passengers per month over the seven-month period in 2025. Based on this, a forecasting scenario was developed using growth assumptions of 3%, 7%, and 10% per month for each route. The calculations use the following formulas:

Monthly Projection

$$\boldsymbol{X}_{i,bulanan} = X_i \times (1 + r)$$

$r = skenario\ pertumbuhan$

Annual Projection

$$\boldsymbol{X}_{i,tahunan} = X_{i,bulanan} \times 12$$

Total Movement Projection

$$\boldsymbol{T}_{tahunan} = \sum_i (\boldsymbol{X}_{i,tahunan\ berangkat} + \boldsymbol{X}_{i,tahunan\ datang}$$

Table 8. Growth Scenario 3%

Route	Departures /Month	Arrivals /Month	Departures /Year	Arrivals/ Year
Tj Selor - Samarinda	810	486	9720	5832
Tj Selor - Malinau	877	526	10524	6312
Tj Selor - Berau	908	545	10896	6540
Tj Selor - KTT	514	309	6168	3708
Tj Selor - LongTungu	748	449	8976	5388
Tj Selor - Mangkupadi	615	369	7380	4428

Table 9. Growth Scenario 7%

Route	Departures /Month	Arrivals /Month	Departures /Year	Arrivals/ Year
Tj Selor - Samarinda	841	505	10092	6060
Tj Selor - Malinau	911	546	10932	6552
Tj Selor - Berau	943	566	11316	6792
Tj Selor - KTT	534	321	6408	3852
Tj Selor - LongTungu	777	466	9324	5592
Tj Selor - Mangkupadi	639	383	7668	4596

Table 10. Growth Scenario 10%

Route	Departures /Month	Arrivals /Month	Departures /Year	Arrivals/ Year
Tj Selor - Samarinda	865	519	10380	6228
Tj Selor - Malinau	936	562	11232	6744
Tj Selor - Berau	969	582	11628	6984
Tj Selor - KTT	549	330	6588	3960
Tj Selor - LongTungu	799	479	9588	5748
Tj Selor - Mangkupadi	657	394	7884	4728

Table 11. Total Movement Projection Across All Routes

Scenario	Departures /Month	Arrivals /Month	Departures /Year	Arrivals /Year	Total Annual Movement
Low (3%)	4472	2684	53664	32208	85872
Moderate (7%)	4645	2787	55740	33444	89184
High (10%)	4775	2866	57300	34392	91692

To facilitate interpretation, the forecasting results are illustrated in the following figures:

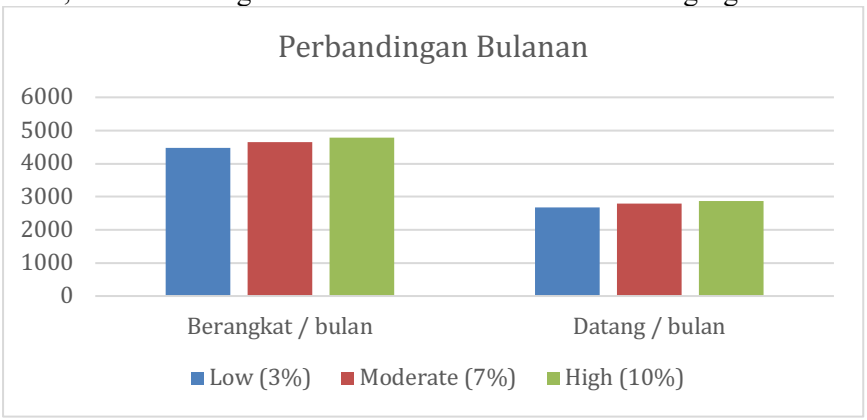

Figure 8. Monthly Comparison

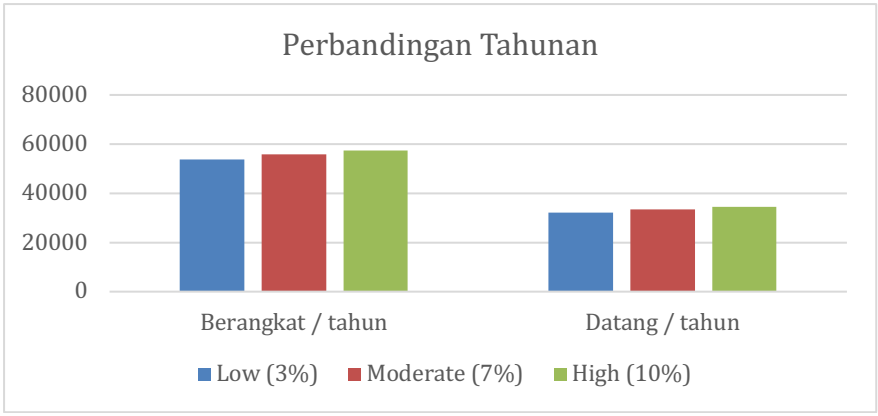

Figure 9. Annual Comparison

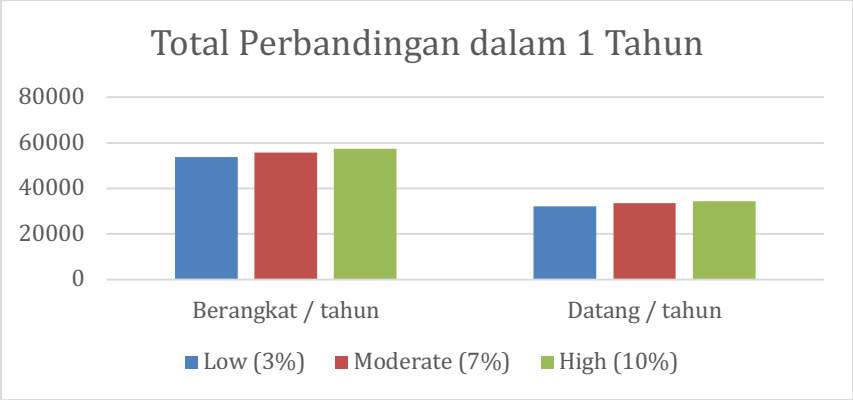

Figure 10. Total Annual Comparison

Based on the forecasting results using the *Trip Generation–Attraction Analysis*, it can be concluded that within one year, the projected passenger movement at the Tanjung Selor Type A Terminal after being developed as a mixed-use area could reach a maximum of **91,692 passengers annually** under the high-growth scenario (10%).

It is important to note that this total does not include additional visitors who come to the terminal solely for non-travel purposes (e.g., commercial or social activities). Furthermore, the forecasting does not account for peak seasonal variations such as national holidays (e.g., Eid al-Fitr, Christmas, and New Year), during which significant surges in passenger volume are likely to occur.

CONCLUSION

The development of the Type A Terminal in Tanjung Selor into a *mixed-use development* has the potential to become a new attraction and breakthrough in North Kalimantan Province, particularly in Bulungan Regency. It can create a public facility that is more active and optimally contributes to local economic development, while also introducing a new dynamic to community activities. In addition to serving as a new activity hub, the Tanjung Selor Type A Terminal is expected to function as an intermodal transportation connector integrating land, sea, and air transport systems. Forecasting conducted using trip generation–attraction analysis indicates a projected increase in passenger volumes, both departures and arrivals, with annual growth scenarios of 3%, 7%, and up to 10%. This projection highlights the need for proper terminal capacity planning to anticipate future mobility demands.

Based on the SWOT analysis, the development is supported by strengths such as its strategic location and potential for modal integration, as well as opportunities including regional economic growth and spatial planning policy support. However, it also faces weaknesses such as limited existing facilities and operational management, along with threats including budget constraints and potential community resistance. The integration of these internal and external factors leads to a development strategy that emphasizes the terminal not only as a transportation node but also as a center of local economic growth. The application of the mixed-use development concept within the terminal area enables the integration of transportation, commercial, social, and public functions into a unified space. This has significant implications for urban planning, including the expansion of waiting areas and drop-off zones, improved parking arrangements for private vehicles, separation of circulation paths between buses and private vehicles, and integration with local transportation modes. Furthermore, the development of commercial zones and public spaces within the terminal area is expected to strengthen its role as a new growth center while supporting continuous community activities throughout the day.

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