SWOT ANALYSIS OF VILLAGE ROAD INFRASTRUCTURE PLANNING CASE STUDY OF TRAFFIC CONGESTION IN MEDAN JOHOR REGENCY

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Abstract

This study aims to analyze development planning issues and their impact on traffic congestion on Jalan Luku and Jalan Pintu Air, Kwala Bekala Village, Medan Johor District. Kwala Bekala Village is the second largest area with the highest population density, experiencing significant traffic congestion because it functions as a connecting route for settlements and the main access to tourist attractions (the Zoo). The main problems are spatial inconsistencies such as the conversion of road shoulders into illegal parking and street vendors (PKL), unplanned and overlapping infrastructure planning, and weak institutional controls that lead to violations of regional spatial planning. Traffic density causes congestion that disrupts time efficiency and road users. This study uses a qualitative descriptive approach with a case study method. Data were obtained through direct observation of traffic flow movements at certain hours at the study location. Data were analyzed using SWOT to identify strengths, weaknesses, opportunities, and threats that can formulate strategies for handling congestion. The SWOT analysis results indicate that the main weaknesses lie in road narrowing and misuse of road shoulders, while the greatest threats are the growth rate of private vehicles, which is faster than infrastructure development, and weak law enforcement. This study identifies four main strategies that must be implemented to sustainably increase traffic capacity and smoothness: (1) Accelerating improvements in road capacity and conditions, (2) Developing comfortable and integrated mass transportation, (3) Enforcing regulation of road shoulder misuse.

Keywords: Congestion, Spatial Planning, Infrastructure, Remove They will, SWOT Analysis.

INTRODUCTION

Subdistrict Medan Johor is Wrong One subdistrict Which There is in City Medan with wide region around ±26.73 km² with a population growth rate of around 1.3% over the past five years. Medan Johor District is divided into six sub-districts: Kwala Bekala, Gedung Johor, Kedai Durian, Suka Maju, Titi Kuning, and Pangkalan Masyhur. 6 ward the, although Ward Kwala Bekala own region widest second as big as ±4.47 km² And The second largest population is around ±38,126 people, the traffic flow on this village road is quite dense because it is a connecting road between areas and settlements leading to the city center. Inappropriate land use in Kwala Bekala District, such as changing the function of the road shoulder into a place parking wild And trader foot five become matter Which must noticed with Good. Condition This can resulting in obstruction of traffic flow on the road, especially during rush hour on Jalan Luku and Jalan Pintu Air which are one of the... One road connector between village to center Medan Johor and as a way main going to tourist attraction garden animals in Medan City. The daily traffic congestion on Jalan Luku and Pintu Air results in congestion that impacts the time and energy efficiency of road users, both newcomers and local villagers. Based on the congestion, several issues can be identified, as follows:

1. Problems Tata Room And Infrastructure

Unplanned infrastructure development, overlapping, and a lack of good coordination between government agencies (both central and regional). Infrastructure is a system that provides various facilities. public like road, transportation And other Which functioning For fulfil need social And economy humans (Grig, 1988).

2. Problems Social And Economy

Population growth, increasing urbanization and the rise of housing and commercial development have resulted in an increase in the volume of vehicle ownership.

3. Problems Institutional

Weak control and supervision from the central and regional governments as policy makers, causes violations of regional spatial planning to occur frequently.

Evaluation infrastructure very important done For look for solution And handle problem congestion Which Rural infrastructure must consider several factors, including infrastructure that facilitates accessibility through good roads, which can reduce congestion and save time. Village roads are connecting roads. which is very important for connecting each village, region, and settlement. Infrastructure development is also defined as an effort to make changes in a structured manner in order to build efficient facilities and infrastructure (Mulyani, 2005).

METHODOLOGY STUDY

This research uses a qualitative descriptive approach with a case study method. The qualitative descriptive method aims to explain or summarize various conditions according to the existing approach (Sugiyono, 2010). Data Which produced obtained with method observation in a way direct to Road Plow And Pintu Air Road, which frequently experiences traffic congestion, was observed by observing the existing road and traffic flow at certain times to obtain information. in-depth about the traffic jam that occurred. Data This analyzed using matrices SWOT that useful For identify strategy, according to Freddy Rangkuti (2013). Analysis SWOT is method analysis Which done to maximize strength (*strength*) and Opportunities (*opportunities*) Which in a way simultaneously Also can minimize weakness (*weakness*) And threat (*threats*) that exist.

A. General description Region

Subdistrict Medan Johor divided become 6 ward, that is ward Kwala Bekala, Building Johor, Shop Durian, Like to Move Forward, Titi Yellow And Base Mahsyur, with each region own wide Which diverse, matter This can seen based on the table and image below.

Table 1. Wide Subdistrict Medan Johor

Ward	Wide Total Area (Km^2)
Kwala Bekala	4.47
Building Johor	3.26
Shop Durian	1.43
Like Proceed	1.34
Titi Yellow	1.70
Base Famous	4.52

*Source: District Field Johor In Numbers, 2024
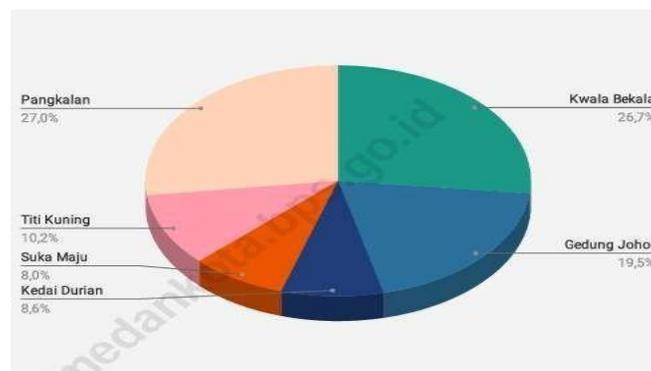
Picture 1. Percentage Area District Field Johor

*Source: Subdistrict Medan Johor In Number, 2024

B. Total population

The population in Medan Johor District has also increased over the last few years, with the District Base Famous Which own amount resident the biggest as much as 40,128 soul And Subdistrict Kwala Bekala has the second largest population with 38,126 people, this can be seen in the table and image below:

Table 2. Growth Resident Subdistrict Medan Johor

Year	Number (of Souls)
2021	151,756
2022	156,957
2023-2024	159,652

*Source: Subdistrict Medan Johor In Number, 2024

Figure 2. Amount Resident Subdistrict Medan Johor
*Source: Subdistrict Medan Johor In Number, 2024

RESULTS AND DISCUSSION

Along increase resident Which There is in Subdistrict Medan Johor, number users road Also the more This is also directly proportional to the growth in vehicle volume. The increase in vehicle volume on busy roads such as Jalan Luku and Pintu Air in Kwala Bekala District, roads in this district are quite frequently traveled and have a high traffic volume.

Table 3. Speed average users road

Jam Observasi	Kecepatan rata-rata (km/jam)
07.00 WIB – 08.00 WIB	7.5 km / O'clock
12.00 WIB – 13.00 WIB	17 km / O'clock
17.00 WIB – 18.00 WIB	12.5 km /O'clock

*Source: Analysis Author, 2025

Based on the observation results above, the traffic jam that occurs in Medan Johor District, specifically on Jl. Luku and Jl. Pintu Air, is at its peak in the morning. (Times to go to school and work) and in the afternoon

(O'clock home from work). Meanwhile, during the day it is relatively busy.

Picture 3. Condition Luku Street
*Source: Analysis Author, 2025

Figure 4. Condition Water Gate Road
*Source: Analysis Author, 2025

A.   Analysis SWOT
1.   Strength (Strengths)

- Medan Johor itself is traversed by major arterial roads, namely Jl. AH Nasution and Jl. Jamin Ginting. These two roads serve as important links between the southern region (such as the USU educational area, Al-Azhar, and the city center of Medan) and tourist areas like Medan Zoo.

Picture 5. Arterial road conditions vital connector educational area
*Source: Analysis Author, 2025

- A number of section road main in Medan Johor own body road Which relative wide .

Picture 6. Condition section road Medan Johor Which relatively wide
*Source: Analysis Author, 2025
Average wide section road on Jl. Luku And Door Water is 5-6 meters (shoulder road each side 1 meters).

- Plan development transportation modern, like bus electricity Which there is in Medan Johor

Picture 7. Condition Stop Bus Electric Field Johor – J City

*Source: Google Maps Photo, 2025

The Medan City Government has begun to make improvements. Plans are underway to develop modern transportation, for example, electric buses have begun operating at the J City bus stop in Medan Johor. However, these electric buses only operate on main roads and have not yet reached connecting roads. Therefore, access is still limited

Weakness (Weaknesses)

- In Road Plow And Sluice, Lots point road Which narrow And intersection Which No As a result, vehicle queues often snake around, making drivers bored and tired.

Picture 8. Condition narrowing of the road and intersection

Decreased wide section road as well as No existence signs And light Then cross in area intersection, causing traffic jams that cannot be resolved.
- The number of damage And abuse shoulder/body road.

Picture 9. Damage And Abuse Shoulder Road (Trader foot five & Parking wild)

Source: Analysis Writer, 2025

Almost all along point of Jl. Luku and Pintu Air, the shoulder of the road is being misused. Some of large used as place trade as well as parking wild. Damage in a number of point shoulder road Also make things worse condition the road section.

Opportunity (Opportunities)
- Utilization technology *smart traffic* so that current Then cross can walk with Good.
- Growth Area Education can made into point center service general.

Threat (Threats)
- Development infrastructure road No more fast from growth amount vehicle personal.
- Weakness enforcement law to violation misuse of the road shoulder, such as street vendors and illegal parking

3.2 Strategy Based on Results Analysis SWOT

	Strengths	Weakness
Threats	**ST** Speed up And improve road infrastructure development	**WT** Regulation of abuse shoulder road

Opportunities	SO Develop mass transportation	WO Use technology Then cross maximally

a. Speed up and improve development infrastructure road.
   Improvement No only about development physique (widening road And repair), But Also extend age roads and reduce obstacles so that congestion and travel time can be reduced.
b. Develop transportation mass.
   Focus to repair Standard Service Minimal—comfortable, safe, affordable, And appropriate time. Integration system (physique, rates, and information) are also very important, so that people are interested and want to switch from private vehicles to public transportation.
c. Order abuse shoulder road.
   Regulate roadside misuse. The basis must be clear, ranging from warnings and supervision to law enforcement and sanctions to create a deterrent effect.
d. Use technology Then cross maximally .
   Take advantage technology Then cross. System like ITS, ATCS, And real-time traffic Can help monitor current Then traffic, optimizing traffic lights, and providing road users with information about the road conditions they will be passing, thus helping to minimize or even reduce traffic congestion.

CONCLUSION

Tata room And infrastructure on the road Plow And Door Water Now Not yet capable accommodate surge amount vehicle .
As a result is congestion Which bother efficiency time And power for users road. Based on the
SWOT analysis, there are several strategic recommendations for this region, namely :
- Speed up And improve development infrastructure road
- Develop transportation mass
- Order abuse shoulder road
- Use technology Then maximum cross

Traffic congestion solutions require a balanced approach, namely adequate infrastructure, mass transportation services and technology Then cross must improved, And rule question shoulder road must enforced. Fourth matter this is not Can stand alone and must executed together so that capacity And smoothness Then cross Can truly increase And endure long. This, of course, requires full support from the government and the community, so that these four strategies can be implemented and have a positive impact on all relevant parties.

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