# ANALYZATION TRANSIT-ORIENTED DEVELOPMENT (TOD) FOR A RAILWAY STATION THROUGH GEOSPATIAL ANALYSIS

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#### ABSTRACT

#### Analyzation Transit-Oriented Development (TOD) For A Railway Station Through Geospatial Analysis

In these modern times, promoting sustainable land use and urban development is increasingly achieved through Transit-Oriented Development (TOD), particularly leveraging train services to enhance connectivity and reduce environmental impact. Using ArcGIS Pro, this study focuses on evaluating train stations in Putrajava. Malaysia, to identify nearby facilities and optimize development. The project centers on Putrajaya Sentral, aiming to enhance public transportation efficiency and urban mobility while addressing critical challenges like accessibility and environmental sustainability. By creating buffer zones and analyzing spatial data, the study identifies areas suitable for TOD, emphasizing mixed-use development around transit hubs to reduce traffic congestion and improve quality of life. The research underscores the role of GIS in urban planning, aligning with global trends towards sustainable urban growth and efficient transportation networks. From this study, it shows that Putrajaya Sentral is a High-Density TOD and can be categorized as a Primary zoning due to increase the number of amenities at zone 400-800m (Primary). This study recommends enhancing the facilities development in the radius of 0-400m (Core) from the transit station.

(Keyword: transit, TOD, transportation, planning)

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#### **CHAPTER 1**

#### INTRODUCTION

#### **1.1 Background of Study**

In this 21st century, promoting the sustainability of land use and urban development is thought to be best accomplished through the Train Service concept. Mostly, trains are commonly used in society to make it easier for users to reach from one destination to another. With train service, it helps to decrease traffic issues and the usage of oil and gas, improve healthier lifestyles, and make land use more efficient and suitable. All this results in positive environmental impacts because train stations decrease air pollution. The term "site suitability" is used to focus on land use planning, infrastructure and accessibility, and environmental considerations.

Using ArcGIS Pro as a based software and workplace for this case study, it can create a radius range of suitability regarding any point of interest (POI) based on your topic. In this field, buffers are used to determine whether the location of the train station is appropriate with the Malaysia Transit Oriented Development (TOD) concept or not. Next, overlays (Intersect, Union, and Erase) are used to assess the vulnerability of different areas by overlaying data on distance facilities and train stations with layers representing surrounding development, such as Agriculture, Commercial, Facilities, Infrastructure,