

# The Advantages and Disadvantages of Transit-Oriented Development Area

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## Abstract

In recent years, Transit Oriented Development (TOD) has become a prominent land development concept in urban areas in Malaysia. TOD is a compact, mixed-use development near a transit station with high-quality walking environments. This concept offers a lot of benefits to urban dwellers but with certain trade-offs. Therefore, this paper aims to discuss the advantages and disadvantages of TOD based on systematic reviews of secondary data that include journal articles, newspaper articles and reports, as well as books. The advantages and disadvantages are discussed within the context of related variables encompassing the physical, environment, social and economic variables. Overall, it can be seen that TOD does have positive and negative implications, especially for property value.

## 1. Introduction

Since Malaysia gained its independence in 1957, it has undergone a lot of transitions in land development supported by strong economic growth over the last 30 years. Recently, Transit-Oriented Development (TOD) has become a prominent land development concept in urban areas in Malaysia. According to Yap & Goh (2017), TOD aims to promote the public transit system's usage to reduce the volume of private motor vehicles on Malaysian roads. Indirectly, it can improve the economy and quality of life (Rahmat et al., 2016) and at the same time, as a solution to the worsening road congestion, greenhouse emissions, and other environmental issues. However, previous studies also reported that TOD does have several drawbacks. Therefore, the main objective of this paper is to discuss the advantages and disadvantages of TOD from four main variables namely the physical, environment, social and economic variables. Accordingly, this paper will first explain what TOD is before it moves to its main focus.

## 2. Transit Oriented Development (TOD)

Basically, TOD relies on the public bus or rail station. To lessen reliance on automobiles, this development encourages a highly connected, cyclists and pedestrian-friendly, and public transportation-friendly environment. Figure 1 depicts the transit station, situated in the vicinity of the TOD, also referred to as the Central Business District (CBD) area. This area with the highest land values and rents due to its prime location and accessibility. It also shows that TOD refers to a type of urban development that maximizes the accessibility of public transportation, aiming to create mixed-use development around transit stations. While TOD has several benefits, including reduced traffic congestion and environmental sustainability, its effects on affordable housing prices can be multifaceted.



**Fig. 1** Concept of TOD (PLAN Malaysia, 2018)

According to Hale and Carles (2006), the working definition of TOD as a type of development characterized by a combination of various land uses, a high population density, active and walkable neighbourhoods, well-designed public spaces, and convenient access to frequent public transportation options. By publishing "The Next American Metropolis" in 1993, Peter Calthorpe introduced the idea of TOD and explained all the concepts that go into creating a sustainable urban development model. The notion of TOD is typically grounded in the principles of New Urbanism and Station Area Development programmers. In the article "The Next American Metropolis," Calthorpe (1993) posited a set of urban design ideas that are closely linked to Transit-Oriented Development. These concepts can be summarized as follows: (1) Ensures affordable housing options near transit, low-cost transit fares and tenant protection; (2) Compact development connects jobs, commerce and supports transit infrastructure; (3) Pedestrian-friendly elements create vibrant and active spaces, which lead to health, environmental and economic benefit; and (4) A mix of land uses within a building, block or neighbourhood's encourages fewer car trips and creates dynamic spaces.

On the other hand, the essential of any TOD projects incorporates the promotion of public transportation as a fundamental component. It can be achieved by strategically situating residential, office, and commercial spaces, or a combination thereof, near the transit node (Hedayatifard, 2012). However, the provision of transportation options is not the sole aspect that must be addressed in TOD. It is also crucial to enhance the overall quality of life in the neighbourhood. According to Calthorpe (1993), TOD is a mixed-use community with walking distance of a transit stop and core commercial area within an average 2,000-foot walking distance (about 10 minutes) and it provides a complimentary of public uses, jobs services and retail in a moderate and high-density housing.

According to a study conducted by Black, Tara, and Pakzad (2016), the researchers identified five key elements, namely accessibility, amenity, access, affordability, and ancestry, based on their practical experience and observations in Japanese neighborhoods that are situated near railway stations. These elements are crucial in producing design outcomes of high quality, which can be adapted and applied in the development of cultural settings. According to Ghani (2013), transit villages encompass both redevelopment and new building projects, typically characterized by a moderate to high density within the existing development scale.

In conclusion, TOD can be considered as a compact and multifunctional urban development that is conveniently located within reasonable walking distance from a transit station. The TOD region encompasses a combination of residential, office, and commercial.

### 3. The Advantages of TOD

The adoption of TOD leads to improved land use development and a more sustainable approach in land use planning. Multiple studies conducted by Pushkarev and Zupan (1977), Kuzmyak et al., (2003), and Cervero (2004) have demonstrated that TOD has a substantial impact on reducing per capita motor trips. In a recent study conducted by Arrington and Parker (2001), the potential benefits of TOD were found to be as follows:

#### {a} Provide Mobility Choice

TOD will provide important mobility options and is very important and needed in the congested metropolitan areas. It will provide the ability to get around for people who prefer not to drive and do not own any cars.

#### {b} Increase Transit Ridership

The utilization of transit near to transit stations has been found to enhance the efficiency and efficacy of investments in transit services. This increase in utilization ranges from ranges from 20% - 40% at the local level, and up to 5% when considering the whole regional context.

{c} Increase Public Safety

Enhancing the safety of pedestrians, transit-users, and other individuals by creating a vibrant environment that is busy throughout the day, hence promoting the concept of “eye on the street.”

{d} Reduce Rates of Vehicle Miles Travel (VMT)

In the state of California, the rate of vehicle travel has consistently outpaced the growth of the population over a sustained period. For individuals residing in, engaging in commercial activities, or employed inside transit station vicinities, the implementation of TOD has the potential to reduce annual household driving rated by approximately 20–40%.

According to Cervero, et al., (2002), TOD has become a means to resolve urban problems which includes air pollution, traffic congestion, shortage in affordable housing and constant sprawl. This study highlights that the TOD may increase the land value is an issue surroundings the TOD, Kuala Lumpur. When land value is high, it may affect the property price. The rising land value has the potential to attract new commercial and industrial activity in the station areas, thereby contributing to a further increase in land value, stimulating employment, and influencing the development of the city.

#### 4. The Disadvantages of TOD

Development surrounding transportation stops is most common in cities' core sections, where land prices are highest. According to Erick Villagomez (2023), transit-oriented development, like any large-scale urban development initiative, can have both positive and negative impacts; whilst TOD can provide numerous benefits. TOD can have negative impacts on the communities, which are all too frequently deliberately avoided by municipalities, developers, and other interested parties.

Previous research findings reported that low-income groups of society may continue to dominate many transit-served neighborhoods, as public transportation stations may discourage wealthy citizens from moving in due to congestion, a lack of spacious and comfortable residences, restricted parking alternatives, and crime. According to Litman (2017), even if housing costs rise because of the in-migration of wealthier citizens, decreased transportation costs from newly built stations may offset declining affordability problems in other locations, resulting in relatively low total housing and transportation costs. Among other drawbacks are as follows:

(a) Declining affordability and rising property values {as cited by HongWei Dong (2021)}

A nearby train stop is expected to attract additional investment and redevelopment, increasing gentrification. Gentrification can occur as an effect of TOD by raising property values and drawing higher-income individuals to formerly low- income families. This could have led to a decline in affordable housing.

(b) Increasing impact on existing infrastructure {source: Market Intelligence, (2023)}

TOD projects may raise demand for public services such as schools, parks, and health care, which the authorities may find difficult to fulfil. Existing parks may become overcrowded, and there could be pressure to create additional green spaces to accommodate the larger population.

(c) Cultural and social homogeneity {source: Market Intelligence, (2023)}

New companies, infrastructure, and residents can all change the character of a community. TOD might result in the loss of local character and cultural variety as neighborhood's are transformed (sometimes dramatically) by new developments and the entry of new people and businesses.

(d) Inequitable benefits distribution {source: Market Intelligence, (2023)}

TOD can benefit some areas more than others, with more affluent towns frequently enjoying most of the benefits, while low-income communities may suffer more intensely from the negative effects of TOD. Affluent areas may have easier access to newly created transit infrastructure, providing people with increased mobility and convenience. Low-income populations may still encounter difficulties in accessing and affording the new transit services.

## Conclusion

TOD is increasingly popular as an urban planning strategy for creating sustainable and dynamic communities based on efficient public transportation infrastructure. The concept encourages mixed-use developments, increasing density, and easy access to public transportation to reduce reliance on private transportation. TOD has shown promise in many areas, but understanding its impact on urban environments requires an examination of both its benefits and drawbacks. TOD provides a great potential for managing urbanization related to the development sustainability, connected, and accessible communities. However, thorough planning and evaluation of potential drawbacks are essential for the successful implementation of TOD initiatives. Achieving a balance between economic, environmental, and social aspects is critical to ensuring that TOD benefits all members of the community and adds value to the entire urban landscape. As cities develop, TOD remains a crucial instrument in determining the future of urban living, requiring efforts to address its obstacles and optimize the benefits of TOD.

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## Conflict of Interest

Authors declare that there is no conflict of interests regarding the publication of the paper.

## Author Contribution

The authors confirm contribution to the paper as follows: **study conception and design:** Emily Yong Li Yu, Ainur Zaireen Zainudin; **data collection:** Emily Yong Li Yu; **analysis and interpretation of results:** Emily Yong Li Yu; **draft manuscript preparation:** Emily Yong Li Yu, Ainur Zaireen Zainudin. All authors reviewed the results and approved the final version of the manuscript.

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