

The Effect Of Maintenance & Operation And Transit Oriented Development Toward Sustainability Mediated By Time Utility And Occupancy

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Abstract: The purpose of this study was to determine the effect of the maintenance & operation and transit oriented development variable on the time utility variable and the sustainability variable, the effect of the time utility variable on the sustainability variable mediated by the occupancy variable. This study uses a quantitative approach. This research is for the purpose of explanation (explanatory or confirmatory). The population in this study were all employees of PT MRT as many as 520 people. The sample size taken in this study amounted to 75 people. Data analysis using the PLS (Partial Least Square) analysis model using the help of the WarpPLS. This study found several findings. First, Maintenance & Operation has a positive and significant effect on Time Utility and Sustainability. Transit-Oriented Development has a positive significant effect on Time Utility and Sustainability. Time Utility has a positive and significant effect on Occupancy. Occupancy has a positive and significant effect on Sustainability. The novelty of this research is the use of a more comprehensive model for sustainability in transportation companies involving the variables of transit-oriented development, maintenance & operation, time utility, and occupancy.

Key-Words: Sustainability; Transit Oriented Development; Occupancy; Time Utility

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1 Introduction

Transportation is a major component in living systems, government systems, and social systems. Research in the field of transportation since the 1960s has been developed with the aim of advancing research in the field of transportation which has been multidisciplinary since its inception. A multidisciplinary approach to research on transportation systems based on different disciplines such as for example; studies on economic aspects, engineering aspects and behavioral sciences (Modak et al., 2019) show that the transportation service system is part of the focus of studies that are multidimensional.

The relation between mass transportation and the dynamics of urban also expected to answer the challenges related to the importance of urban transportation that is able to improve the quality of life of its citizens by reducing impacts or problems related to the environment (Mugion et al 2018). The transportation aspect in the Indonesian context has experienced very rapid development in the last decade, especially the development of mass transportation, especially in urban areas. The Special Capital Region (DKI) Jakarta is a city that is

improving to improve quality in all aspects, including the problem of mass transportation services. This is indicated by the dynamic number of users of urban transportation modes in Jakarta, including: (a) Commuter Train; (b) Trans-Jakarta; and, (c) Mass Rapid Transit (MRT) Jakarta.

PT MRT Jakarta as a public transportation service company should maintain the balance of demand and supply by improving services both physically and non-physically. The provision of public services is part of the obligations of PT MRT Jakarta which has the status as a business entity owned by the DKI Jakarta Regional Government (BUMD). As an extension of the existence of the Public Private Partnership (PPP) as many public service activities are carried out in the East Asia Region (Chang & Phang 2017), the existence of PT MRT Jakarta as a BUMD resonates with the concept of the Local Investment Corporation as was done in Beijing (Chang 2014) in the context of procurement of infrastructure and superstructure of mass transportation services under the responsibility of the DKI Jakarta Provincial Government.

The pandemic period really pierced the land transportation sector, as a result of restrictions on

people's movement space. It can be seen from the business performance of PT Mass Rapid Transit (MRT) Jakarta during 2020 which experienced a sharp decline due to the impact of the pandemic. The company, which has only been operating since March 2019, reported an unaudited financial performance recording an operating profit of Rp 75.11 billion with Earning Before Interest, Taxes, Depreciation and Amortization (EBITDA) of Rp 416.1 billion, total operating income of Rp 1.078 trillion. The company's achievements this year are only less than half of the performance in 2019 which recorded an operating profit of IDR 172 billion with an EBITDA of IDR 416 billion. This very significant decline could threaten the sustainability of the PT MRT Jakarta company.

As a public service or as a business entity, PT MRT services are a capability that other services do not have due to the specific form of service and business provided, namely MRT. For this, several important aspects to be identified as part of specific capabilities by PT MRT include: Maintenance & Operation, Transit Oriented Development, Time utility, and Occupancy as attributes that can be measured in terms of performance and become the distinctive characteristics of PT MRT services. Some descriptions of PT MRT's capability attributes can be explained as follows:

1. Maintenance and Operation (M&O) is a fundamental cycle for organizations occupied with transportation administrations, for example, MRT that require complex framework. M&O guarantees that the foundation utilized in MRT tasks stays in prime condition. M&O can likewise limit the danger of mishaps because of specialized elements from bombed framework. PT MRT Jakarta anticipates the supportability of the organization's activities, and M&O can uphold this assumption on the grounds that M&O can further develop foundation unwavering quality and limit misfortunes from framework harm.
2. Time utility is the capacity to use time in activities. A transportation client certainly anticipates dependable and convenient transportation, even idealness which can be the fundamental factor for a traveler in deciding the decision of transportation mode.
3. Occupancy is the degree of satisfaction of the limit of a structure/transportation. A high inhabitance rate is positively the fantasy of all transportation specialist co-ops. PT MRT Jakarta needs a high inhabitance rate to have the option to ensure an undeniable degree of pay from tickets. The high inhabitance rate is

likewise expected to have the option to take care of MRT functional expenses

4. Transit Oriented Development (TOD). TOD is a framework created by a city in introducing an incorporated transportation framework. TOD is relied upon to have the option to lessen the utilization of private transportation since it can give public transportation that is not difficult to reach and functional.

PT MRT Jakarta as one of the public transportation service companies should improve its services both physically and non-physically. MRT as a means of transportation that greatly supports national economic growth needs to be managed properly. Thus, a review on the current improvement of Indonesian rail lines is essential. PT MRT Jakarta as a transportation specialist organization needs to consider factors that influence the supportability of its tasks. Sustainability of MRT inspired by Kumar and Anbanandam (2019) that said A reasonable business association need to think about the significance of monetary, natural and social maintainability. In spite of the fact that scientists and experts concentrate on the financial and ecological component of supportability, less consideration is paid to the social element of maintainability, especially in non-industrial nations.

Past investigations, for example, Sabatino et al. (2015), tracked down that a decent framework upkeep exertion can uphold the utility of the organization. Likewise, reducing working and upkeep expenses and keeping up with administration dependability are additionally first concerns for administrators to help utilities. Burriss and Xu (2006) tracked down that a street with an undeniable degree of time utility would have a more significant level of inhabitance. Ibem and Aduwo (2015) showed that lodging with high inhabitance would have a higher possibility of manageability contrasted with low inhabitance lodging. Johnston & Ceerla (1996) provide the idea that Transit Oriented Development can increase the utility and Occupancy of transportation modes in America. Currie (2008) provides the idea that Transit Oriented Development can increase the Occupancy of transport modes in Australia. The increase in occupancy will help increase the sustainability of the mode of transportation itself.

We did not find any previous studies that involved all of our research variables. We believe that such comprehensive research, like the one we have done, will give more precise outcomes since it sees that maintainability could be affected by a few factors to be specific Maintenance and Operation, Transit Oriented Development, Time Utility, and

Occupancy. Our concentrate additionally uncovered that Time Utility and Occupancy played as intercession variable; this extensive exploration model turns into an oddity of our review.

2 Literature Review and Hypotheses Development

2.1 Maintenance & Operation

According to Chan et al. (2001), Maintenance is characterized as a work regarding distinctive specialized and authoritative measures to keep an actual resource, or reestablish it to a condition where it can play out the necessary capacities. Abidin et al. (2009) characterizes the support of a structure as the booking system and reclamation exercises of building designs and parts which incorporate latrines, rooms, dividers, rooftops, channels, entryways, windows, floors, and furniture fixes. As per another assessment, Willmott (2000) characterizes upkeep as the administration, control, execution, and nature of these exercises which will guarantee the ideal degree of accessibility and in general execution of the plant is accomplished, to meet business targets. In view of these three assessments, it tends to be presumed that upkeep is a booking interaction or all reclamation exercises to keep up with offices or actual resources or building parts and guarantee ideal degrees of accessibility.

As per Waziri (2016), the reason for completing support is to keep up with the worth of the venture, making the structure in ideal condition in introducing a decent appearance. Support can be characterized as everything that should be done to safeguard the structure with its completion and gear so it keeps on giving something similar or almost similar offices and conveniences and capacity as in the past when it was constructed. Support and Operation of an office ordinarily incorporates the everyday exercises needed for building frameworks and hardware to play out their planned capacities. Support and Operation is joined into a nonexclusive term on the grounds that an office can't work at top effectiveness without being kept up with.

Over time, the existing facilities in the company will be damaged slowly and gradually. However, the life of the facilities and infrastructure can be extended as long as they are properly maintained. Infrastructure maintenance aims to keep the facilities functioning properly to support the manufacture of goods or services as planned. Damage to infrastructure including equipment can endanger the health and safety of workers. Damage to company assets can also affect product quality. Therefore, the company faces many losses if the

infrastructure supporting the processes is not well maintained. Maintenance management is a significant piece of the quality administration framework. As per ISO, the Organization will set up, give and keep up with the foundation important to accomplish adjustment to item necessities. Framework incorporates: structures, work areas and related gear; measure hardware (both equipment and programming) and backing administrations (like transportation, correspondence or data frameworks). Upkeep of foundation in the rail route industry incorporates support of rails, scaffolds, flagging and broadcast communications, rail organizations, working courses, and so forth.

2.2 Transit Oriented Development

Travel Oriented Development is a procedure to make urban areas more productive in their transportation framework for individuals and merchandise by creating blended capacity regions in metropolitan movement revolves around stations that have mass public vehicle frameworks, with protected and agreeable regions for people on foot (Bruce, 2012). . This Transit Oriented Development-based city arranging model is a type of bearableness and the supportability of the urbanization cycle identified with home, work, and other metropolitan exercises that can be reached by walking that is lovely, protected, simple and agreeable to and from stations that have a framework. mass public transportation, as a substitute for venture out by private vehicle to the objective (Cervero, 2007). Go without a mechanized vehicle is firmly identified with a maintainable transportation framework (Raha and Taweessin, 2013). Through the clarification of the hypothesis, Transit Oriented Development can be deciphered as an advancement that incorporates the plan of metropolitan space to make urban areas more effective in the transportation framework fully intent on diminishing the utilization of mechanized vehicles (Car Oriented Development).

A similar view of the rapid urbanization process and economic growth, resulting in the high use of motorized vehicles in urban areas, has the opportunity for the application of Transit Oriented Development with the concept of regulating city development on the Transit line which has the characteristics of mixed use, compact, walkable zone, and focuses on the use of Transportation System modes. General Mass (Hasibuan et al., 2014). To develop a mass public transport system and to maximize access to walking or cycling in accordance with the principles of Transit Oriented Development, it is necessary to carry out spatial

planning with the concept of a mixed land use pattern for residence, work place, office and shopping area (Cervero & Guerra, 2013).

Transit Oriented Development has been widely recognized as a concept that addresses the needs of the transit area. Among the benefits of Transit Oriented Development are reduced car use and family spending on transportation, increased pedestrian and transit users, revitalized downtown areas, increased density and intensity, reduced development costs for parking, and increased property values and various activities around transit. to improve the quality of the environment and community.

Transit Oriented Development refers to the centers of residential and commercial areas, with a cycling-scale radius, 1.25~1.5 miles or approximately 1.75~2.1 km, with the core area being an open space near the station surrounded by buildings for work, shopping and leisure. housing, with a relatively high population and building density. This density gradually decreases according to the distance from the center of Transit Oriented Development. Behind the circle of housing blocks are placed social facilities such as schools, worship buildings, multipurpose meeting buildings, play ground, parks. Transit Oriented Development is designed to maximize access to the mass public transport system and non-motorised vehicles, thereby encouraging the use of the mass public transit system, bicycles and walking.

2.3 Time Utility

The definition of utility is that every good and service is a means of satisfying human needs, it must be able to provide satisfaction to humans (satisfaction). Henrich Gossen, considers that the high and low value of an item depends on the subject giving the assessment. A new item has meaning for a consumer if the item has utility, and the size of the usability depends on the consumer concerned, the more goods he consumes, the greater the total utility he gets, but the rate of the increase in utility (marginal utility) obtained due to consuming a single unit of goods is getting lower and lower, even the amount of the increase can be zero and if the additional consumption is continued in amount, the increase in usefulness can even become negative due to the increase in the amount of consumption, this is commonly referred to as the law of diminishing marginal utility or Gossen's law I.

According to Nitisemito (1981), time utility or use due to time is to increase the usefulness of an item due to the time process or time difference. According to Nelson et al. (2015), time utility or

usability because of time is adding to the usefulness of an item due to the time process or time difference. According to Nasrudin & Azizah (2010), time utility or can be called the use of time occurs when a product is available when needed by potential customers. Transportation will lead to the creation of the ability of goods to meet human needs by providing the goods concerned not only where they are needed, but also at the right time when needed. This is in connection with the creation of utility which is time utility. Time utility means that with this transportation it will be possible to make efforts so that everyone can move from one place to another quickly.

2.4 Occupancy

Occupancy is the consequence of creation or preparing volume (throughput), or the quantity of units that can be dealt with, got, put away, or delivered by an office in a specific timeframe (Heizer and Render, 2009). Inhabitation regularly directs capital prerequisites and subsequently influences a huge piece of fixed expenses. Inhabitation likewise decides if request can be met, or regardless of whether existing offices will be excess. On the off chance that the office is excessively huge, a portion of the office will be inactive and extra costs will be charged to existing creation. In the event that the office is excessively little, clients and the market in general will be lost. Consequently, determined to accomplish a significant degree of usage and a high pace of profit from venture, the assurance of the size of the office is vital. Inhabitation is the degree of ideal creation ability of an office, generally communicated as the measure of yield in a specific timeframe (Rangkuti, 2005). Operations managers pay attention to occupancy because, (1) they want to have sufficient occupancy to meet consumer demand, second, (2) Occupancy affects operating cost efficiency, (3) Occupancy is very useful in knowing output planning, occupancy maintenance costs, and is very decisive in the analysis of investment needs. Occupancy is an output level of an output quantity in a certain period and is the highest possible output quantity during that time period (Handoko et al., 1999).

In order for the company to produce efficiently and effectively, the company must implement the production occupancy planning function. The purpose of planning is to ensure that the factory facilities consisting of machines, labor, and materials can be used efficiently and to ensure that the company's activities are maintained so as to enable the factory to deliver products on time. The

company tries to utilize the factors of production in order to produce the maximum level of output. This level of output is limited by production occupancy. On this basis, the company needs to consider the concept of product combination when compiling a production plan, namely by detailing the Occupancy of each type and size of the product. Good production planning will be able to maintain a balance between demand and the company's limited production factors.

2.5 Sustainability

Solow (1991) states that maintainability because of society permits people in the future to basically have a similar normal abundance as the current age. In any case, at present, the idea of supportability doesn't just focus on natural issues yet is more extensive than that. Consequently, the supportability of an organization isn't simply restricted to focusing on the effect of the organization's procedure on the climate and society. Manageability is a coordinated way to deal with organization execution in the ecological, social and financial fields on the grounds that these three angles are interrelated with one another to accomplish reasonable turn of events.

Chandler in Rangkuti (2006) explains that sustainability is a specific activity developed by a company to be superior to other competitors by means of cost leadership, differentiation and focus. David (2006) describes sustainability as a situation where a company can survive compared to other companies, or has something that its competitors want. Grant (1991) states that the meaning of supportability is when at least two organizations contend (in a similar client market), where one organization has a more significant level of benefit and potential to make due than different organizations. As indicated by Dubé and Renaghan (in Mostert et al., 2008), supportability is a worth made by an organization to separate itself to be more practical from contenders. This worth can be estimated by the value that customers will pay for the administrations gave. Maintainability gives an outline to organizations in choosing and executing general techniques to improve and keep up with the organization (Porter, 2007). In light of the definitions from a portion of these sources, it tends to be inferred that manageability is a procedure to make a condition of an organization that gets by in contest with different organizations occupied with a similar field or market, where the organization has a distinctive worth from different organizations.

3 Research Method

This study uses a quantitative approach. In accordance with the research objectives, this research is for the purpose of explanation (explanatory or confirmatory), which is to explain the causal relationship between the variables studied through empirical hypothesis testing. Population is the whole group of people, events or items of interest by researchers to study (Maholtra, 1996). Thus the population is the entire collection of elements that can be used to make some conclusions. The population in this study were all employees of PT MRT as many as 520 people. The sample size taken in this study amounted to 75 people, directors (5 people), division heads (24 people), and department heads (46 people)). The board of directors is divided into several divisions who understand the overall condition of PT MRT related to the variables in this study. So the sampling technique used is purposive sampling. Data analysis using the PLS (Partial Least Square) analysis model using the help of the WarpPLS package computer program (Solimun et al., 2017)

3.1 Conceptual model of research

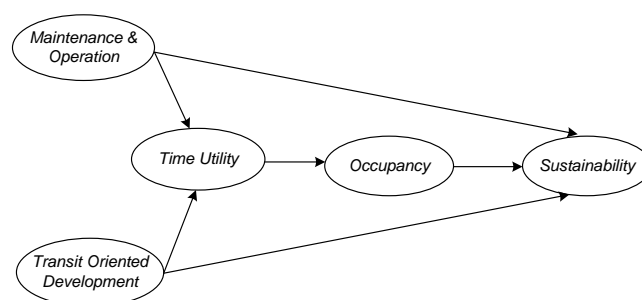


Figure 1. Conceptual Model

Conceptual model of research

The hypotheses in this study are as follows:

- H1: Maintenance & Operation significantly affects Time Utility
- H2: Maintenance & Operation significantly affects Sustainability
- H3: Transit-Oriented Development significantly affects Time Utility
- H4: Transit-Oriented Development significantly affects Sustainability
- H5: Time Utility significantly affects Occupancy
- H6: Occupancy significantly affects Sustainability

4 Findings

4.1 Sustainability

The following is a summary of the average

Variable	Indicator	Outer Loading	p-value
Maintenance & Operation (X1)	Productivity Improvement (X11)	0.352	<0,001
	Maintenance Cost (X12)	0.361	<0,001
	Equipment Life Extension (X13)	0.305	<0,001
	Safety and Environmental Protection	0.338	<0,001
TOD (X2)	Mix (X21)	0.545	<0,001
	Accessability (X22)	0.545	<0,001
Time Utility (Y1)	Time Awareness (Y11)	0.420	<0,001
	Time Accuracy (Y12)	0.407	<0,001
	Service Accuracy (Y13)	0.464	<0,001
Occupancy (Y2)	Ability (Y21)	0.424	<0,001
	Numbers of unit (Y22)	0.202	0.006
	Power (Y23)	0.342	<0,001
	Time (Y24)	0.388	<0,001
Sustainability (Y3)	Economics (Y31)	0.266	0.004
	Transportation service (Y32)	0.266	0.004
	Environment (Y33)	0.345	<0,001
	Safety (Y34)	0.314	<0,001
	Social Culture (Y35)	0.224	0.010

indicator and outer loading of each indicator.

Table 1. Model Measurement

Table 1 confirm that all markers of inner factors in this examination are significant. For the Maintenance & Operation variable, Based on the outer loading coefficient, it is obtained that Maintenance Cost (X1.2) is the main measure of Maintenance & Operation (X1) because it has the largest outer loading value. That is, Maintenance & Operation (X1) at PT MRT depends on Maintenance Costs as Maintenance & Operation. For the TOD variable, Based on the outer loading coefficient, it is obtained that the two indicators of Mix (X3.1) and Accessability (X3.2) as the main measure of Transit Oriented Development (X3) because they have the same outer loading value. This means that the level of Transit Oriented Development at PT MRT depends on Mix and Accessability. For the Time Utility Variable, Based on the magnitude of the outer loading coefficient, it is obtained that the service accuracy (Y1.3) is the main measure of Time Utility (Y1) because it has the largest outer loading value. That is, Time Utility (Y1) at PT MRT depends on the service accuracy. Based on the outer loading coefficient, it is obtained that Ability (Y2.1) is the main measure of Occupancy (Y2) because it has the largest outer loading value. That is, Occupancy (Y2) at PT MRT depends on managing capabilities as Occupancy. For the Sustainability variable, Based on the outer loading coefficient, it is obtained that the environment (Y3.3) is the main measure of sustainability (Y3) because it has the largest outer loading value. That is, sustainability (Y3) at PT MRT depends on the environment as sustainability.

4.2 Sustainability

The results of the direct effects are presented in Table 3.

Table 2. SEM Analysis Result

Variable Effect	Path Coefficient	P-value	Conclusion
Maintenance & Operation towards Time Utility.	0.323	<0.001	Significant
Maintenance & Operation towards Sustainability	0.300	<0.001	Significant
Transit Oriented Development towards Time Utility.	0.366	<0.001	Significant
Transit Oriented Development towards Sustainability	0.374	<0.001	Significant
Time Utility towards Occupancy	0.327	<0.001	Significant
Occupancy towards Sustainability.	0.265	0.004	Significant

5 Discussion

H1: Maintenance & Operation significantly affects Time Utility

Table 2 shows that the impact of Maintenance and Operation (X1) on Time Utility (Y1) acquired a

primary coefficient of 0.323 and p-esteem <0.001. Since the p-esteem <0.05, and the coefficient is positive, it shows that there is a critical and beneficial outcome between Maintenance and Operation (X1) on Time Utility (Y1). This implies that the higher the Maintenance and Operation (X1), the higher the Time Utility (Y1) esteem. Consequently, speculation 1 of this review is acknowledged.

This study is in line with the research of Sabatino et al. (2015) which discusses system reliability and reducing operation and maintenance (M&O) costs in maintaining enterprise utility. As framework gear proceeds to age and steadily fall apart, the probability of administration interferences because of part disappointment increments. A powerful upkeep procedure is fundamental in offering protected and solid support to clients in an affordable way. The consequence of this exploration is that a decent framework upkeep business can uphold the utility of the organization. In addition, cutting operating and maintenance costs and maintaining service reliability are also top priorities for managers in order to support utilities. The results of this study develop and provide complete information regarding maintenance & operations that can be carried out by PT MRT to support Time Utility.

H2: Maintenance & Operation significantly affects Sustainability

The impact of Maintenance and Operation (X1) on Sustainability (Y3) got an underlying coefficient of 0.262 and a p-worth of 0.008. Since the p-esteem <0.05, and the coefficient is positive, it demonstrates that there is a critical and positive impact between Maintenance and Operation (X1) on Sustainability (Y3). This implies that the higher the Maintenance and Operation (X1), the higher the Sustainability (Y3) esteem. Consequently, theory 2 of this review is acknowledged.

The results of this study are in line with the theory proposed by Chan et.al. (2001) and the concept of Waziri (2016) which explains that efforts are made to maintain assets and return them in accordance with functions that aim to maintain investment value and keep a product or service optimal. The importance of Maintenance & operation (X1) to support the sustainability of PT MRT to continue to provide optimal service to passengers. Damage to company assets can also affect product quality. This greatly affects the Sustainability of PT MRT.

H3: Transit-Oriented Development (TOD) significantly affects Time Utility

Table 3 shows that the impact of Transit Oriented Development (X2) on Time Utility (Y1) acquired an underlying coefficient of 0.323 and p-esteem <0.001. Since the p-esteem <0.05, and the coefficient is positive, it shows that there is a huge and constructive outcome between Transit Oriented Development (X2) on Time Utility (Y1). This implies that the higher the Transit Oriented Development (X2), the higher the Time Utility (Y1) esteem. Along these lines, speculation 3 of this review is acknowledged.

The results of this study support the research conducted by Johnston & Ceerla (1996) provide the idea that Transit Oriented Development can increase Time utility and Occupancy of transportation modes in America. The findings in this study are roads with a high level of Transit Oriented Development will have a higher Time utility rate. It is hoped that PT MRT can work together with the government to improve Transit Oriented Development so that it has an impact on Time utility.

H4: Transit-Oriented Development (TOD) significantly affects Sustainability

Table 3 shows that the impact of Transit Oriented Development (X2) on Sustainability (Y3) got a primary coefficient of 0.323 and p-esteem <0.001. Since the p-esteem <0.05, and the coefficient is positive, it demonstrates that there is a critical and constructive outcome between Transit Oriented Development (X2) on Sustainability (Y2). This implies that the higher the Transit Oriented Development (X2), the higher the Sustainability (Y2) esteem. Hence, speculation 4 of this review is acknowledged.

The results of this study support the research conducted by Currie (2008) provides the idea that Transit Oriented Development can increase the Occupancy and Sustainability of transport modes in Australia. The findings in this study are roads with a high level of Transit Oriented Development will have a higher sustainability rate. It is hoped that PT MRT can work together with the government to improve Transit Oriented Development so that it has an impact on sustainability.

H5: Time Utility significantly affects Occupancy

The impact of Time Utility (Y1) on Occupancy (Y2) acquired an underlying coefficient of 0.347 and p-esteem <0.001. Since the p-esteem <0.05, and the coefficient is positive, it shows that there is a huge and constructive outcome between Time Utility (Y1) on Occupancy (Y2). This implies that

the higher the Time Utility (Y1), the higher the Occupancy (Y2) esteem. Hence, theory 5 of this review is acknowledged.

The results of this study support the research conducted by Burris & Xu (2006) which aims to determine the occupancy and utility levels of heavy traffic in the United States. Most roads in America have reached the Occupancy limit for such a long time that the potential for transportation growth is diminished. The findings in this study are roads with a high level of time utility will have a higher occupancy rate. It is hoped that PT MRT can increase time utility so that it has an impact on occupancy.

H6: Occupancy significantly affects Sustainability

The impact of Occupancy (Y2) on Sustainability (Y3) got an underlying coefficient of 0.276 and a p-worth of 0.005. Since the p-esteem <0.05, and the coefficient is positive, it demonstrates that there is a huge and beneficial outcome between Occupancy (Y2) on Sustainability (Y3). This implies that the higher the Occupancy (Y2), the higher the Sustainability (Y3) esteem. Along these lines, theory 6 of this review is acknowledged.

The results in this study which states that occupancy has a significant positive effect on sustainability support the research findings of Ibem & Aduwo (2015). Ibem & Aduwo (2015) conducted a study that aims to measure the level of sustainability of public housing projects in Nigeria as measured by the level of housing occupancy. 517 villages in Nigeria were sampled in this study. This paper provides a theoretical framework especially relating to the relationship between occupancy and sustainability. The results show that housing with high occupancy will have a higher chance of sustainability than housing with low occupancy.

The following figure illustrated the results of the direct effects:

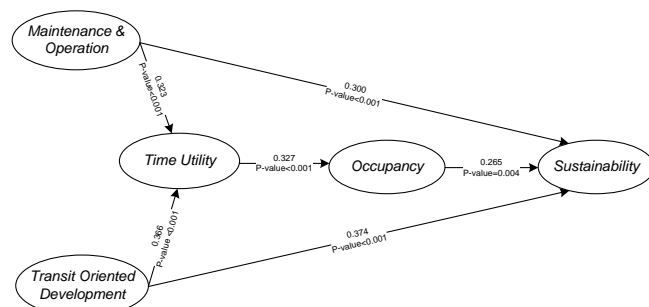


Figure 2. Direct Effect

Table 4. Estimated Results and Testing of Indirect Effects

Effect between Latent variables		Path coefficient	p-value	Conclusion
Predictor Variable	Response Variable			
Maintenance & Operation (X1)	Occupancy (Y2)	0.106	0.013	Significant
Transit Oriented Development (X2)	Sustainability (Y3)	0.120	0.005	Significant
Time Utility (Y1)	Sustainability (Y3)	0.087	0.043	Significant

Indirect Effect of Maintenance & Operation on Occupancy mediated by Time Utility

Table 4 shows that Maintenance & Operation has a positive and significant effect on Occupancy mediated by Time Utility; the p-value is <0.05 showing a significant effect of Maintenance & Operation on Occupancy mediated by Time Utility. The positive coefficient indicates that the higher the level of Maintenance & Operation mediated by Time Utility, the higher the increase in Occupancy will be.

This is an interesting note for MRT, that Maintenance & Operation also helps in increasing MRT occupancy. In line with the goals of the MRT to make routine schedule in Maintenance & Operation, it is expected that will also be able to increase the occupancy of the MRT.

Indirect Effect of Transit Oriented Development on Occupancy mediated by Time Utility

Table 4 shows that Transit Oriented Development has a positive critical impact on Occupancy interceded by Time Utility. The positive coefficient shows that the higher the degree of Transit Oriented Development intervened by Time Utility, the higher the increment in Occupancy will be. The p-esteem is <0.05 showing a critical impact of Transit Oriented Development on Occupancy intervened by Time Utility.

Transit Oriented Development which directly has a significant effect on influencing sustainability does not have a significant effect on indirect effect. This certainly becomes an evaluation for the MRT in improving Transit Oriented Development by considering its effect on sustainability.

Indirect Effect of Time Utility on Sustainability mediated by Occupancy

Table 4 shows that Time Utility has a positive yet non-significant effect on Sustainability mediated by Time Utility. The positive coefficient indicates that the higher the level of Time Utility mediated by Occupancy, the higher the increase in Sustainability will be. The p-value is >0.05 showing a non-significant effect of Time Utility on Sustainability mediated by Occupancy.

The insignificant effect of indirect time utility on sustainability is an evaluation for the MRT. MRT needs to consider whether the development of time utilities in operations has considered occupancy as one of the determining factors or not.

6 Conclusion and Recommendation

From the conversation, the accompanying ends are drawn. To begin with, Maintenance and Operation has a positive and critical impact on Time Utility. Second, Maintenance and Operation has a positive and critical impact on Sustainability. Third, Transit-Oriented Development has a positive huge impact on Time Utility. Fourth, Transit-Oriented Development has a positive huge impact on Sustainability. Fifth, Time Utility has a positive and huge impact on Occupancy. 6th, Occupancy has a positive and critical impact on Sustainability.

PT MRT Jakarta needs to improve and coordinate Maintenance and Operation, Transit Oriented Development, Time Utility, and Occupancy to work on the supportability of its activities. These factors have been demonstrated to significantly affect the degree of Sustainability of MRT.

This research contributes to the development of sustainability models especially in the transportation sector by considering Maintenance & Operation and TOD as an independent variables, Time Utility and Occupancy as a mediating Variable. The theoretical implications in this research are the development of the concepts of sustainability and transportation theory, as well as managerial implications in providing findings and recommendations for the MRT in developing operational strategies for sustainable transportation. This research is limited

to city scale transportation (Jakarta MRT) and only internally reviewed by the company. In the future, researchers are expected to be able to examine on a larger and more comprehensive scale of transportation by examining externally to the transportation customers directly.

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