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Willingness to use Public Transport in Kuala Lumpur & Manila

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Abstract

Traffic congestion is a common phenomenon in all capital cities. This study aims to examine the willingness of Malaysians and Filipinos to use public transport and the factors that influence their willingness to use public transport in Kuala Lumpur and Manila. A self-administered questionnaire was distributed to 250 respondents using purposive sampling technique. PLS-SEM analysis shows that efficiency is essential for Malaysians while Filipino transport users pay more importance to reliability. It is crucial that a holistic perspective heeding in environmental, social and governance (ESG) in transportation can assist the government conserve the environment in line with SDG 11.

Keywords: Transportation, SDGs, Efficiency, willingness

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1.0 Introduction

With better employment and educational opportunities, the phenomenon of urbanisation has increased. The high number of rural people migrating to urban areas has impacted the high demand for public transport. Thus, a proper and systematic public transport network is essential to reduce traffic jams and the number of road accidents for the convenience of the public. An inadequate public transport may lead to a high demand to own independent motorised transport for mobility regardless of the massive traffic congestion, the high risk of road accidents, higher cost to own a car and maintain a car and sacrifice a longer time in the traffic jam. Aligned with the Sustainable Development Goal 11 in making cities and human settlements inclusive, safe, resilient and sustainable transport is expected to be the primary driving force of demand for energy in sustaining a city from the perspective of infrastructure, public transport systems, good delivery networks, affordability, convenience and efficiency of transportation. In addition, sustainable transportation would improve urban air quality and health by reducing greenhouse gas emissions.

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1.1 Problem of Study

Despite the significant investment in public transport from government spending, the ridership of public transport among Malaysians is still low (Kwan, Sutan, & Hashim, 2018). Several scholars have discussed the reason for the low intention to use public transport, such as dissatisfaction with the current public transport service (Shen, Xiao & Wang, 2016); low accessibility of public transport, longer travel time, frequency and punctuality of the bus itself and safety factors expected by the passengers (Borhan, Ibrahim, Syamsunur & Rahmat, 2019). To sustain and increase the efficiency of public transport usage, it is essential for the authorities, policymakers, engineers, and public transport providers to understand strategies to enhance the willingness of the public to use public transport. In order to sustain and increase the efficiency of public transport usage, it's essential for the authorities, policymakers, engineers, and public transport providers first to understand strategies to enhance the willingness of the public to use public transport.

1.2 Objectives of Study

The aim of this study is two-fold.

- To identify whether demographic factors have a relationship on the willingness to use public transport in Kuala Lumpur and Manila cities.
- To examine the factors influencing the willingness to use public transport in the cities of Kuala Lumpur and Manila.

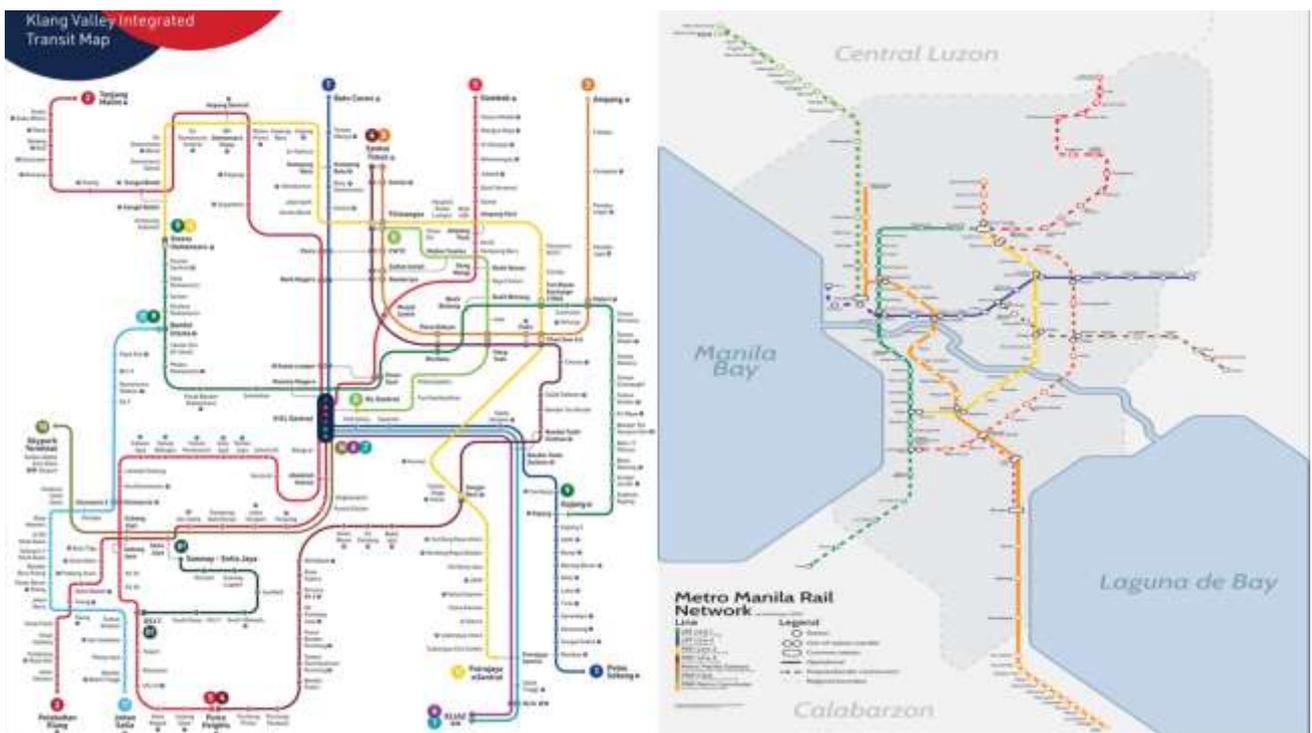


Figure 1: A Comparison between Kuala Lumpur and Manila Public Transportation System

2.0 Literature Review

2.1 Factors influencing Malaysian Public Transport Users

In Malaysia, public transport is under the management of Prasarana Malaysia Berhad, a 100% government-owned company that was set up by the Ministry of Finance Malaysia (MOF) as a corporate body under the Ministry of Finance (Incorporation). This is the largest public company in Malaysia responsible for Malaysian rail services such as Light rail transit (LRT), Mass rapid transit (MRT), KL Monorail, and Rapid Bus (PJ City Bus, Smart Selangor, GO KL Bus). This also includes Bus rapid transit (BRT), Sunway Line (Prasarana Malaysia Berhad, 2022).

Numerous studies have been conducted about types of public transport in Malaysia. A study by Das, Ladin, Ismail & Rahmat (2013) found that more users are satisfied with the effectiveness of monorail service based on Importance Performance Analysis (IPA). However, Ibrahim, Borhan, Md. Yusoff, Ismail, Mat Yazid, Mhd Yunin & Yukawa (2022) display conflicting results for quality service for LRT users. Interestingly, gender and age hold a different view on LRT quality service, where males focus on speediness while women give more importance to comfort (Ibrahim, Borhan, Md. Yusoff, Ismail, Mat Yazid, Mhd Yunin & Yukawa, 2022). For the age group, the elderly are the most experienced type of group that use public transport and emphasise signage while vice versa for the kids. The results are similar to

Ibrahim et al. (2021), where there are three main reasons for customer satisfaction in using Light Rail Transit Service (LRT) in Kuala Lumpur, namely, perceived value-based, passenger expectation and perceived quality.

Nevertheless, perceived quality was considered the most critical factor towards passenger satisfaction when using LRT. Apart from LRT and Monorail, public bus in Putrajaya is also prevalent among Malaysian researchers. A study by Borhan, Ibrahim, Syamsunur & Rahmat (2019) shows that public buses are not a popular transport method in Putrajaya (the Malaysian administrative capital) due to reliability and, customer service and safety reasons.

2.2 Factors influencing the Philippines' Public Transport Users

On the other hand, public transport in the Philippines is under the purview of the Department of Transportation (DOTr). Under DOTr, several railway projects have been initiated, such as Philippine National Railways (PNR), PNR Luzon System, Light Rail Transit Authority (LRTA), Mindanao Rail Network, Metro Manila Rail Network and others (DOTr, 2022). Public transport in the Philippines is unique compared to Malaysia due to the combination of contemporary transportation methods like railways, LRT, and MRT together with traditional methods of transport such as *jeepneys*, *multicabs*, *tricycles* and ferryboats.

This offers some diversity for public transport usage among Filipinos. Like his counterpart, research about public transport in the Philippines has gathered some attention. A study by Mayo & Taboada (2020), using a ranking factor, showed that public transport users in selected urban areas in the Philippines tend to go for safety over accessibility. They are then followed by the cost of travel, comfort and concern for the environment for their mode of choice to commute.

2.3 Light Rail as Mode of Transportation

Light rail transit (LRT) is a modern means of public transport that runs on rails and has lighter and smaller rolling stocks than the usual heavy rail systems (Balcombe, 2004). Its systems are essential aspects of the global endeavour of attaining transport sustainability and enhancing urban areas' economies (Ibrahim et al., 2022).

Users of LRT have various reasons for patronage. In Europe and North America, users become more attracted to light rails because of attention-capturing factors such as new vehicles and media exposure, perceived attributes of transit systems (reliability and comfort), neighbourhood characteristics, and higher capacity compared to buses (Scherer, 2010). Meanwhile, in Ethiopia, safety and security, ticketing system, travel information, crowdedness, frequency, cleanliness, and comfort are the most critical factors that affect the satisfaction of light rail users (Obsie, Woldeamanuel & Woldetens, 2020).

Planning for maintenance and accessibility of LRTs and LRT stations is necessary for operations. In cases of LRT having planned service disruptions (PSD), users who have LRT payment passes – seniors, low income, students and frequent users are more likely to prefer the LRT mode in case of short-term PSD (Arslan Asim et al., 2021). Even walking distance to and from LRT stations are considered in planning for pedestrian access (O'Sullivan & Morall, 1996). Commuters prefer riding the LRT over the bus, provided the former guarantees regular and frequent service at competitive rates (Dell'Olio et al., 2012).

3.0 Methodology

Using a purposive sampling technique, a self-administered questionnaire was distributed using Google Form. Two hundred and fifty respondents were given the questionnaire, but only 209 were usable; 103 were from Kuala Lumpur, and 106 were from Manila. A pilot test was conducted, and Cronbach Alpha showed that all the instruments were acceptable, with a value above 0.75.

PLS-SEM analysis was used to analyse the data to capture the factors influencing the willingness to use public transport in the cities. Based on the literature, many factors influence the public on their willingness to use public transport. However, in this study, four factors are identified: reliability, perceived quality, perceived value and efficiency. The questionnaire has six parts, and the items were adapted from Irtema, Ismail, Borhan, Das, Alshetwi (2018); Ngah, Eneizan & Gabarre (2020); Leonardi & Baumgartner (2004); Soh, Wong, Chong & Hiew (2014); and Shen, Xiao & Wang (2016).

3.1 Demographic Profile

A majority (60 %) of the respondents were in the 21- 40 years age group, with females outnumbering male participants (62%). As for occupational status, half of the participants are from the private sector (57 %), followed by academics (15 %). More than half of the respondents are single (64 %). Only about 15 percent of the respondents use public transport to the cities very often, at least 5-6 times a week. In comparison, 55 percent of the respondents seldom use public transport in both cities of Kuala Lumpur and Manila.

The most preferred mode of transport used in both Kuala Lumpur and Manila is the electric rail trains MRT/LRT at 34 percent, while the Grab car is the second most preferred at 22 percent. It was interesting to note that the main reason cited for this choice is the cost incurred (15%), followed by point-to-point service (10 %). Most of the respondents (92 %) use public transport either in Manila or Kuala Lumpur for work or official purposes (24 %).

4.0 Findings

4.1 Demographics and willingness to use public transport

The first objective of this study is to:

To identify whether demographic factors have a relationship on the willingness to use public transport in Kuala Lumpur and Manila cities.

The relationship between age and willingness to use public transport is significant, with a Pearson chi-square value of 31.229 and a significant value of 0.013. The result shows that 66.2 percent of youngsters in the age of 21-30 years agree to pay for the service because most of them are students. On the other hand, old folks tend to use more public transport because they do not drive anymore and are not working anymore. The middle generation has their own transport, so they do not use public transport so much. There is no significant relationship between gender, occupational status, income level, marital status, nationality, ethnicity and willingness to pay for public transport among the respondents from both Malaysians or Filipinos.

The second objective of this study is to:

To examine the factors influencing the willingness to use public transport in the cities of Kuala Lumpur and Manila.

To achieve this objective, PLS-SEM was used.

The findings show that both cities have a high level of composite reliability (CR) in the role of Efficiency in the willingness of the public to use the transport (Table 1). All the measurement items have similar loading except the question on fuel consumption on public transport. Malaysians seem to think that using personal transport consumes higher fuel compared to public transport. However, residents in Manila think otherwise.

Model Construct	Measurement Item	Loading	CR	AVE
Reliability of Public Transport Schedule	1. Public transport is always punctual	KL: 0.696 ML: 0.840	KL: 0.870 ML: 0.919	KL: 0.530 ML: 0.655
	2. There are more public transport shifts during peak hours	KL: 0.639 ML: 0.851		
	3. There is sufficient number of public transport services with reliable timetables during peak hours	KL: 0.833 ML: 0.834		
	4. There are immediate subsequent public transports on the same route	KL: 0.789 ML: 0.895		
	5. The waiting time for the next public transport is 10-15 minutes	KL: 0.686 ML: 0.719		
	6. There are more public transport services and stations at factories, schools, and residential areas nowadays	KL: 0.707 ML: 0.697		
Perceived Quality of Public Transport	1. I am satisfied with the cleanliness and comfort of public transport	KL: 0.786 ML: 0.837	KL: 0.923 ML: 0.966	KL: 0.574 ML: 0.757
	2. I am satisfied with the speed and convenience of public transport	KL: 0.726 ML: 0.867		
	3. I am satisfied with the safety and security of public transport	KL: 0.778 ML: 0.867		
	4. I am satisfied with the ticket service of public transport	KL: 0.725 ML: 0.822		
	5. I am satisfied with the equipment and facilities of public transport	KL: 0.836 ML: 0.911		
	6. I am satisfied with the staff service of public transport	KL: 0.677 ML: 0.898		
	7. I am satisfied with schedule details/travel information displayed on public transport	KL: 0.746 ML: 0.876		
	8. I am satisfied with the convenient facilities inside the public transport such as; seats, air condition, handrails, ticketing of public transport	KL: 0.832 ML: 0.878		
	9. I am satisfied with the facilities outside the public transport such as; the station, escalator, ticket vending machine.	KL: 0.694 ML: 0.871		
Perceived Value of Public Transport	1. The public transport fare is reasonable	KL: 0.915 ML: 0.939	KL: 0.884 ML: 0.944	KL: 0.719 ML: 0.848
	2. The quality of service is good	KL: 0.721 ML: 0.900		
	3. Public transport is affordable	KL: 0.894 ML: 0.923		
The Efficiency of using Public Transport	1. The connectivity from the last station to the destination of the user is good	KL: 0.646 ML: 0.795	KL: 0.805 ML: 0.909	KL: 0.516 ML: 0.715
	2. The fuel consumption efficiency for public transport is higher than for personal transport	KL: 0.515 ML: 0.813		
	3. The public transport information on the itinerary will help to optimise routing by reducing traffic jams and road conditions	KL: 0.824 ML: 0.875		
	4. IT-based scheduling on public transport increases the safety and comfort of the users	KL: 0.839 ML: 0.896		

Willingness to use Public Transport	1. I am willing to pay for public transport services even though I have more choices.	KL:0.956 ML: 0.952
	2. I am willing to pay for public transport because the benefits outweigh the cost.	KL: 0.899 ML: 0.940
	3. I am willing to pay for public transport services even if they cost more.	KL: 0.476 ML:0.985

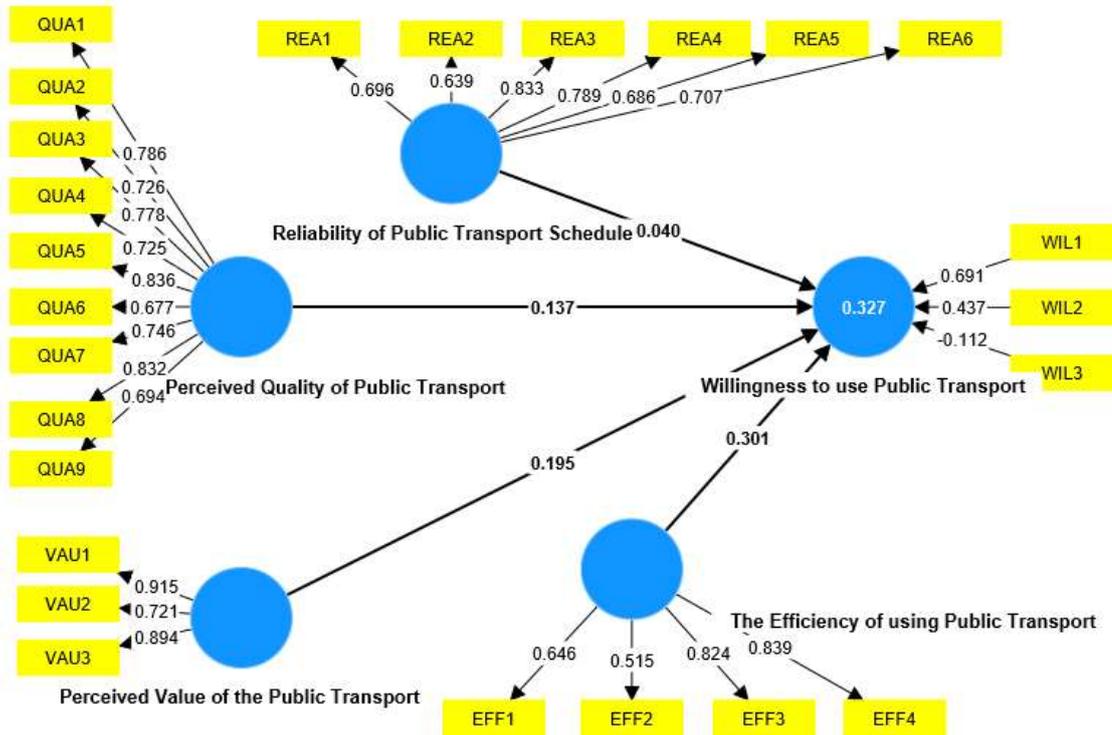


Figure 1: Results of the Path Analysis - Kuala Lumpur

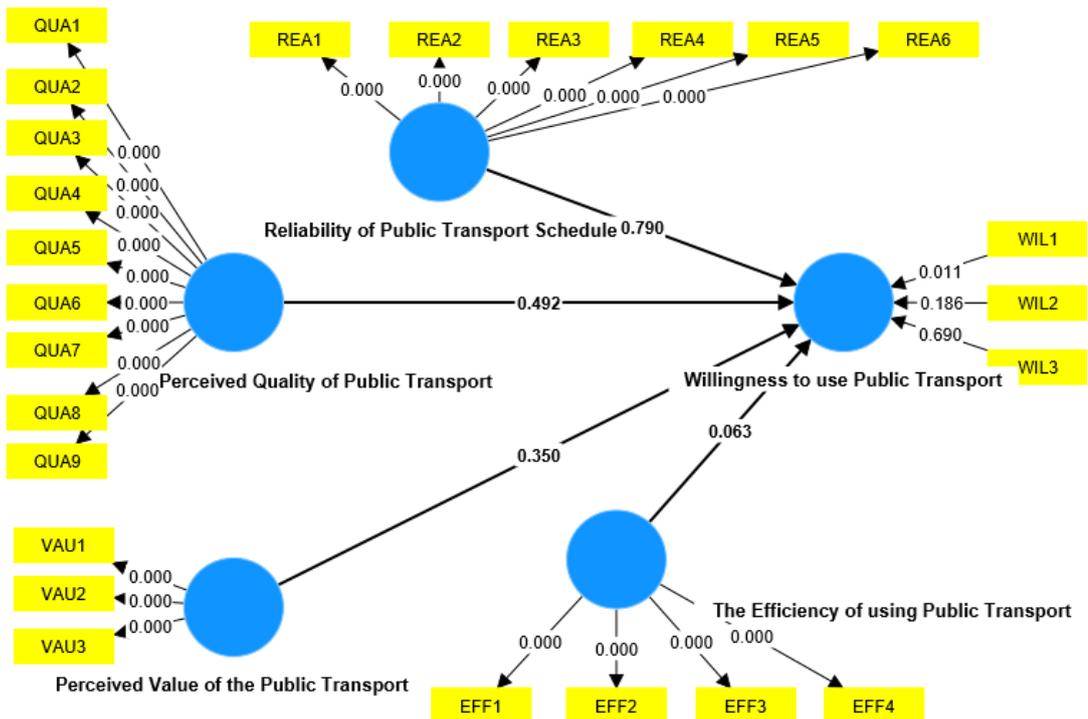


Figure 2: Results of Bootstrapping - Kuala Lumpur

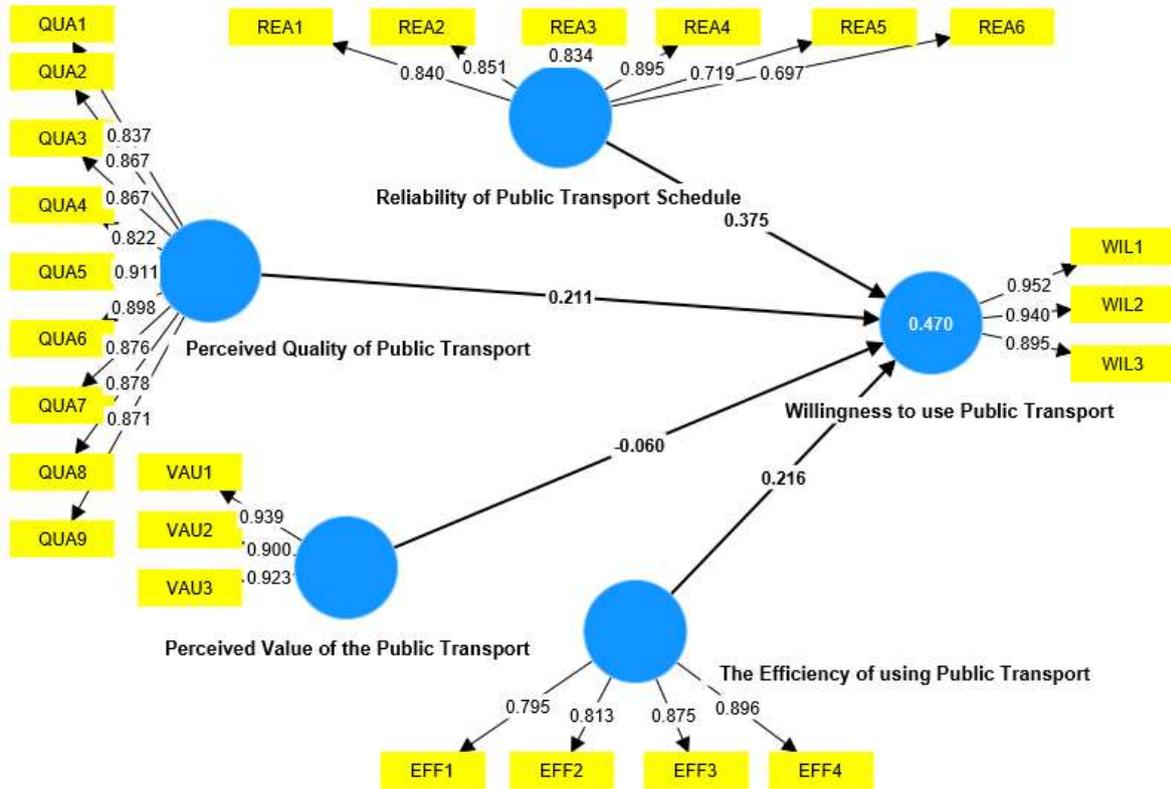


Figure 3: Results of the Path Analysis- Manila

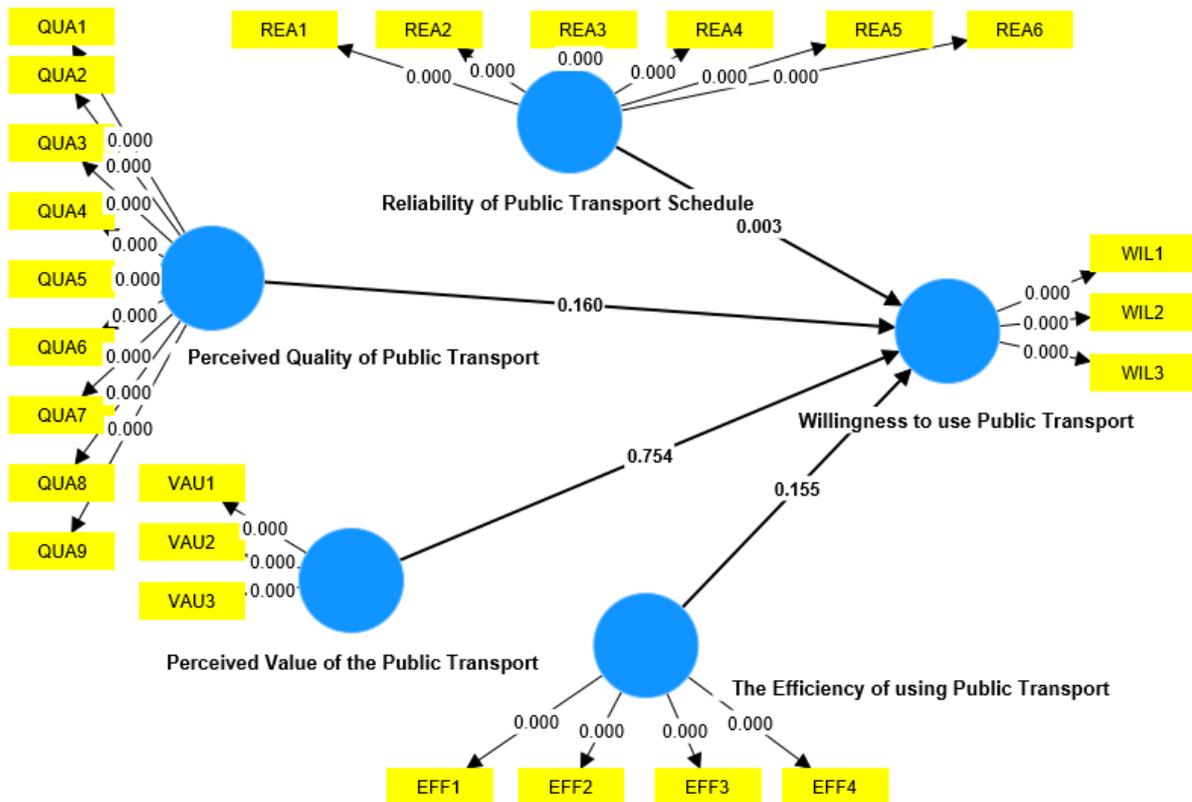


Figure 4: Results of Bootstrapping - Manila

Table 2: Results of Hypothesis Testing

Hypothesis	Relationship	Coefficient	t-value	Decision
H1	Reliability of Public Transport Schedule >	KL: 0.040	KL: 0.266	Rejected
	Willingness to use Public Transportation	ML: 0.375	ML: 2.936	Accepted
H2	Perceived Quality of Public Transport >	KL: 0.137	KL: 0.687	Rejected
	Willingness to use Public Transportation.	ML: 0.211	ML: 1.406	Rejected
H3	Perceived Value of Public Transport > Willingness to use Public Transportation.	KL: 0.195 ML: -0.060	KL: 0.934 ML: 0.313	Rejected Rejected
H4	The Efficiency of using Public Transport Schedule >	KL: 0.301	KL: 1.862	Accepted
	Willingness to use Public Transportation	ML: 0.216	ML: 1.422	Rejected

5.0 Discussion

Figures 1 and 3 show that the model fit for the Manila model is higher with an R^2 of 47 percent (0.470) compared to Kuala Lumpur with an R^2 of 32.70 percent (0.327). This proposed model seems more suited for the Philippines than Malaysia. The reasons might be different government policies, economic factors, and other economic determinants. Infrastructure development might be one of the factors too. Such assumptions require future research for more concrete empirical evidence.

Table 2 shows that transport reliability plays a more significant role in Manila compared to Kuala Lumpur. It might suggest that the level of reliability of public transport in Malaysia has achieved its reliability threshold and is no longer a concern for the users. Worth noticing is the factor of perceived quality of public transport which is not significantly related to the willingness to use the transport in both cities. This might be probably due to the public transport users having no alternative but to use it regardless of the condition of the public transport. As for the perceived value of public transport, such consideration is irrelevant to their willingness to use it.

On the contrary, only the public transport users in Manila consider the transport schedule an essential factor in choosing public transport. In contrast, users in Kuala Lumpur do not consider transport schedules an issue while using public transport. Such implications might be caused by the punctuality of public transport and others.

Worth noticing in the results is the perceived quality of public transport which is not significantly related to the willingness to use the transport in both cities. Such behaviour of passengers maintains that identified factors in riding public transport remain as preferences but do not affect their behaviour towards public transport. Although there are alternative public transport services, passengers still choose to ride the LRT regardless of the condition of the service and experience. Arslan Asim et al. (2021) provide a scenario wherein commuters still prefer riding the LRT despite planned service disruption. A general impression of LRT users being loyal passengers of this transport service without regard to quality presents other factors beyond the facilities, which can be highly influential for having this kind of perception and behaviour.

The perceived value of public transport is not relevant to their willingness to use it. On the contrary, Manila LRT users consider transport schedules essential in choosing public transport. This result implies the impact of peak hours and seasons on the waiting time for following LRT cars and the overall riding experience of commuters. Meanwhile, Kuala Lumpur LRT users' are quite satisfied with the transport schedule which shows that there are enough LRT cars even during peak hours and seasons, as well as a consistent system of transport schedule in stations. With these insights, the availability and punctuality of public transport services play significant roles in a commuter's perceived value.

6.0 Conclusion & Recommendations

Two major conclusions from this study are:

Firstly, only age has a significant relationship on the willingness to use public transport to cities where it is noticed that most millennials use public transport to the cities. Secondly, it is fascinating to note that efficiency is a significant factor among public transport users in their willingness to use public transport in Kuala Lumpur. While in Manila, the dominant factor which influences the users is reliability.

Thirdly, even though cars provide point-to-point service, the citizen's preferred choice of transport is MRT/LRT trains. This might be due to safety and reliability. This shows the change in the conventional transport systems and the preferred choice by the millennials. The contribution of these findings should facilitate improvements to aspects of public transport in the cities of Kuala Lumpur and Manila. It also shows that there is a need to rethink passengers' needs and requirements. The current work should also assist service providers and policymakers in identifying and specifying which practical approaches should be introduced to enhance public transport, especially in the preferred mode.

As MRT/LRT is the preferred mode of public transport to cities, the government and service providers should focus on improving the services by increasing the frequencies, making them more reliable and efficient. Secondly, interconnectivity from point to point should be given due consideration.

7.0 Suggestions for Future Research

This study on willingness to use public transport took a quantitative approach; future research should be done from a qualitative approach with in-depth interviews to explore what will encourage users to shift from private vehicles to public transport.

Acknowledgement

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Paper Contribution to Related Field of Study

This study shows that MRT/LRT is the preferred mode of transport in the two main cities in the Asia region. Hence policymakers should focus on facilitating the more efficient use of this mode of public transport.

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