

# Users' Satisfaction with Mass Rapid Transit and the Effect of Different Genders and Trip Purposes

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## Abstract

This study investigates the users' perception with mass rapid transport. It seeks to understand how users perceive MRT facility and service based on their satisfaction level between different groups. In this context, satisfaction is measured based on the different purpose of trips taken as well as gender components. Data were gathered from a survey conducted in May 2018 at 31 stations along the MRT route using five dimensions: facility, responsiveness, information system, safety, and security as well as train and ticket. The findings of this study are based on Independent t-Test, ANOVA and Turkey HSD test for comparison between groups of a stratified random sample of 155 respondents. The result shows a significant difference in satisfaction level between users with different trip purposes, however, there is no significant difference in satisfaction level between different genders. As a conclusion, users were found to be generally satisfied with the MRT facility and service provided thus far.

**Keywords:** Satisfaction, Gender, Trip Purpose, Rail Transport, Public Transport

## Introduction

Rail transportation in Malaysia comprises of intercity train services, city train services as well as funicular railway lines (for high slope attractions). The city train services include electrical train (KTM Komuter and KTM-ETS), light rapid transit (LRT), mass rapid transit (MRT), monorail and the express rail link (ERL). These transport facilities are mostly located within Klang Valley region to connect the capital city of Kuala Lumpur and the suburban residential townships. Keretapi Tanah Melayu (KTM) Komuter was introduced as the first national electric rail service in 1995 operating from Kuala Lumpur to Rawang (Mohamad, 2003). The network was later expanded to cover 153 route-km of electrified double track between Rawang and Seremban, and Sentul and Port Klang.

In 1998, the rail service was improved with the development of LRT, a fully automatic with driverless train connecting commercial and high-density residential areas in Selangor and Kuala Lumpur. This was followed by the development of ERL in 2002 which connects Kuala

Lumpur and the main international airport – Kuala Lumpur International Airport (KLIA). As a complement to other urban transport systems in the city business district, the monorail started its operation in 2003 to serve major commercial and tourist areas, followed by the electric train service (ETS) in 2010. This intercity rail service is the fastest meter gauge national train service covering from Padang Besar in Perlis (north) to Gemas in Negeri Sembilan (south). The MRT system is seen to be the latest and sophisticated rail system in Malaysia that helps passengers to ease their lifestyle since 2016.

Besides the rail transport service, other public transport systems in Malaysia include buses, taxis, ferries or boats and flights. However, according to the World Bank (2015), only 17% of commuters in Kuala Lumpur used public transport services as compared to 62% in Singapore and 89% in Hong Kong. These people spent more than 250 million hours a year stuck in traffic, resulting in a total traffic costs to be estimated at 1.1%-2.2% of GDP in 2014. The situation became worse when the number of vehicles on the road increased, as a result of a steady growth in newly registered passenger and commercial vehicles recorded since a decade ago as shown in Figure 1. Nonetheless, there was a slight decline in the year 2016 and 2017 following the introduction of Goods and Services Tax (GST) on 1 April 2015 (Malay Mail, 2015).

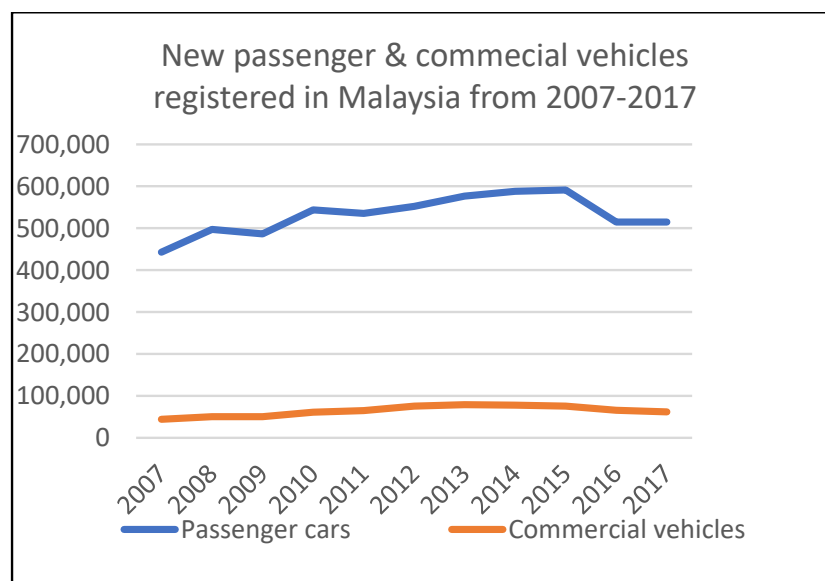


Figure 1: Vehicles registered in Malaysia from 2007 – 2017 (Malaysian Automotive Association, 2008)

Besides, the Land Public Transport Commission (SPAD)(2013) estimated an increase in travel demand in the country from 12 million trips per day in 1991 to 70 million by 2020. This has led to the expectation of travel demand to reach 18 million trips per day in conjunction with 75% of urbanization in Klang Valley region by 2020. Consequently, Ismail, Hafezi, Mohd Nor, & Ambak (2012) discovered that high increasing motorization had caused heavy traffic, pollution, high consumption of non-renewable energy resources and traffic accidents which eventually threaten the quality of life.

Public transport enables mobility of the bulk of people which reduces problems such as traffic congestion, lack of parking space and air pollution. Therefore, Le-Klahn, Hall, &

Gerike (2014) emphasized the importance of public transportation development to alleviate these problems in many developing countries. Besides, traveling by public transport may be cheaper than driving own transport which requires one pays for car maintenance, petrol, and toll. Besides, the passengers are free from the stress of traffic jams where they can just rest and relax while riding on public transport. With this regard, Almselati, Rahmat, & Jaafar (2011) urged Malaysian government to improve the accessibility, ease, and comfort of traveling, reliability, safety, and security of public transportation as a fundamental traffic management strategy.

Since the rail network is identified as the most efficient means of providing high rapid public transport (Kuala Lumpur City Hall, 2004), there is a need to increase the rail capacity to meet the rising travel demand (Muhammad Das, Ladin, Ismail, & Rahmat, 2013) of commuters in Kuala Lumpur-Klang Valley. However, Khalid, Bachok, Osman, & Ibrahim (2014) discovered some issues of KTM Komuter in Kuala Lumpur which include long waiting time, punctuality, ticketing systems, delay at transit stop and train frequency. To overcome these problems, rail network must have a high quality of performance to fulfill a wide range of different users' needs and subsequently attract more passengers. Understanding the factors affecting users' satisfaction may help transport providers to plan and design an attractive and marketable rail transport. Therefore, the transport operators need to understand how much users' expectations have been fulfilled to improve services and increase the number of users.

Numerous studies involving satisfaction with service quality of public transport in Malaysia had been carried out (Almselati et al., 2011; Ismail et al., 2012; Zakaria, Hj Hussin, Abdul Batau, & Zakaria, 2010). Haron, Nasir, & Mohamad (2016), Kamaruddin, Osman, & Che Pei (2012), Khalid et al. (2014) and Muhammad Das et al. (2013) conducted research on passengers' satisfaction with rail transport in Malaysia specifically KL monorail, LRT, KTM Komuter and LRT. The dimensions being studied were rather focused on product attributes.

Despite the various dimensions applied in the past in an effort to understand rail transport users, there is no particular research found in accessing users' satisfaction with rail transport in Malaysia based on gender and trip purpose. Therefore, this study has two objectives. It examines the effect of different genders and trip purposes on satisfaction level and overall user's satisfaction with MRT facility and service by adapting dimensions of satisfaction mainly by Mohd Noor, Nasrudin, & Foo (2014) and Muhammad Das et al. (2013).

This study will contribute to the improvement of public rail transportation sector, in particular, the MRT service not only in Kuala Lumpur but also in different cities with similar facilities. It adds up to a new perspective on how satisfaction level can be affected by different groups and their purpose of travel using rail transport. Importantly, this study also contributes to the new profiling of MRT users which would help frame future planning and development in the city.

### ***Theoretical Background***

#### ***Users' Satisfaction***

Studies in examining customer's satisfaction were extensively conducted since the 1970s (Kozak, 2001a). According to Swan & Combs (1976), satisfaction was influenced by

expressive (psychological) and instrumental (physical) dimensions of a product. While, Klaus (1985) discovered that satisfaction was defined as a post-consumption evaluation which was affected by the relationship between one's perception and product attributes (as cited by Kozak, 2001). Therefore, satisfaction data may contain valuable information to marketing decision makers on the ability of a product or service to fulfill consumer's needs or wants.

Many research was conducted to assess satisfaction with the product attributes or physical dimensions of a product (Bei & Chiao, 2001; Hanif, Hafeez, & Riaz, 2010; Sukiman, Omar, Muhibudin, Yussof, & Mohamed, 2013). Hence, the dimensions vary. Sukiman et al. (2013) concluded that accessibility, accommodation, tourist amenities, tourist activities, food, and tourism attractions influenced tourist's satisfaction in one travel destination. While Han et al. (2010) indicated that the perceived satisfaction among subscribers of the telecom sector was different based on price fairness and customer service. Besides product quality and price fairness, Bei & Chiao (2001) added that service quality affected consumer loyalty through satisfaction. Apparently, assessing satisfaction with service quality became one of the popular research topics in many different research areas (Grönroos, 1984; Mohd Noor et al., 2014; Neal, 2003; Yarimoglu, 2014).

In fact, other researchers found that demographic or personal characteristics (Gia Thinh, 2015; Jarvis, Stoeckl, & Liu, 2016; Kabu & Soniya, 2017; Kozak, 2001b; Nguyen, 2014; Perović, Stanovčić, Moric, & Pekovic, 2012; See, Jusoh, & Khalifah, 2012; Shahrivar, 2012; Siddiqui & Khan, 2017), travel profile, travel behavior or psychological factors (Kabu & Soniya, 2017; Shahrivar, 2012; Vetitnev, Romanova, Matushenko, & Kvetenadze, 2013), cultural behavior (Kabu & Soniya, 2017; Shahrivar, 2012), social characteristics (Jarvis et al., 2016; Kabu & Soniya, 2017) and environmental factors (Jarvis et al., 2016) significantly affected satisfaction level in different context.

In this context, satisfaction with MRT is measured based on different gender components and purpose of trips taken. Gender, socioeconomic status, and education are significant determinants of demographic or personal characteristics. Meyers-Levy & Sternthal (1991) indicates that gender is easy to identify, and these segments are accessible and enough to be profitable. There were conflicting results showed by previous research on gender effect on satisfaction level. For example, Gia Thinh (2015), Mokhlis (2012) and See et al. (2012) satisfaction was affected by gender but the result was rejected by Avinash & Vidyavathi (2017), Perović et al. (2012) and Shahrivar (2012).

Motivation, perception, learning, attitudes, and beliefs are the variables that contribute to psychological characteristics or one's behavior (Kabu & Soniya, 2017). Shahrivar (2012) stated that the number of past trips, time spent to arrange travel, and travel parties did not affect the satisfaction level. In other words, there was no significant difference in overall satisfaction between travel behavior characteristics. In contrast, a study by Vetitnev et al. (2013) concluded that the purpose of travel was one of the factors affect the level of satisfaction. Thus, this study was undertaken with the following research hypotheses:

*H1: There is a significant difference in satisfaction level between different travel purposes.*

*H2: There is a significant difference in satisfaction level between different gender components.*

### ***Users' Satisfaction with Public Transport***

Measuring satisfaction with public transport service is not a new subject where numerous research has been conducted since decades ago (Felleson & Friman, 2008; Haron et al., 2016; Le-Klahn et al., 2014; Zakaria et al., 2010). In other words, it has always been a necessity in conducting such research to monitor the performance of public transport in providing facility and service to passengers.

A study conducted by Le-Klahn et al. (2014) on visitor satisfaction with public transport in Munich identified four service dimensions which were comfort, services, accessibility and others namely ticket price and information. Earlier, a study conducted on passenger's perception towards the service quality of rail transport system in Pakistan used a modified eight SERVQUAL dimensions, which were empathy, assurance, tangibles, timeliness, responsiveness, information system, food and safety and security (Muhammad Irfan, Mui, & Shahbaz, 2012).

Felleson & Friman (2008) conducted a comparison study on the perceived service satisfaction with public transport in nine European cities (Stockholm, Barcelona, Copenhagen, Geneva, Helsinki, Vienna, Berlin, Manchester and Oslo) and found similar satisfaction dimensions namely system (with supply and reliability items), comfort, staff behavior and safety/security. Nevertheless, they highlighted that public transport services were perceived differently in different geographical settings.

Another study conducted on public transportation in Malaysia concluded that frequency, comfortable travel experience, security on board and travel time have a significant relationship with overall satisfaction (Ismail et al., 2012). At the same time, they discovered other functional factors namely frequency, price, punctuality and travel time were also crucial in bringing higher satisfaction. An earlier study in Klang Valley summarized that time, speed, fare, accessibility, reliability, communication, comfort and safety affected user's preference in choosing public transport (Kamaruddin et al., 2012). Generally, Zakaria et al. (2010) concluded service quality of Malaysian public transport with three dimensions were namely tangibility (cleanliness/comfortability of physical facilities), responsiveness (attitude / willingness of employees) and reliability (punctuality/frequencies).

Indeed, previous researchers adapted dimensions from SERVQUAL model which consists of access, communication, competence, courtesy, credibility, reliability, responsiveness, security, tangible and understanding/knowing the customer developed by Parasuraman, Zeithaml, & Berry (1985) in measuring service quality (Haron et al., 2016; Yarimoglu, 2014). To add, all these dimensions mirrored the psychological and physical dimension of a product which supported the definitions of satisfaction developed by Kozak (2001) and Swan & Combs (1976).

Notably, Haron, Noor, & Sadullah (2015) developed a TRANSQUAL model consisting ten similar factors namely accessibility, reliability, responsiveness, understanding, physical facilities, safety and security, environment, image, time and fare to measure service performance index for urban public transport based on the SERVQUAL model (as cited by Haron et al., 2016). It was claimed that this model was most applicable to determine all urban public transport service quality in Malaysia.

### ***Users' Satisfaction with Rail Transport***

In the context of rail transport, Wu, Lin, & Hsu (2011) indicated that outcome (valence and waiting time) is the most important dimension of service quality in Taiwan high-speed rail, followed by physical environment (cleanliness, availability of facility, information, ambiance and design and convenience) and interaction (employees' conduct, employee' expertise, and employees' problem solving). Agarwal (2008) proposed a model of customer satisfaction with Indian railways where employee behavior showed the highest effect on satisfaction level, followed by customer-oriented basic platform services, reservation counter, tangible platform amenities, services in train and lastly availability of trains and tickets. Further, Geetika & Nandan (2010) identified refreshments, behavioral factors, information system, basic facilities and safety, and security as the determinants of customer satisfaction on railway platforms service quality in India.

In Malaysia, several studies on rail transport have been conducted on KTM Komuter, LRT and monorail. One study revealed average satisfaction indicated by monorail users with the cleanliness of station and surroundings, ticket price, ticket counters, information boards, train punctuality, comfort in the train, cleanliness in the train, safety/installation of CCTV and traffic. However, improvements need to be made in terms of waiting area and escalator, quality and quantity of seats in trains, additional coach and other routes, additional parking and public transport, comfort in trains during especially peak hours. conducted by Muhammad Das et al. (2013).

Following that, Khalid et al. (2014) discovered that majority of the users perceived that KTM Komuter service was not punctual and frequent enough especially during peak hours and weekends. In addition, they suggested to the operator to provide clear announcement and update information at platform, station and onboard trains as well as display detailed, accurate and timely information as a necessary improvement. Besides, Haron et al. (2016) conducted a comparison study on service quality indicators between KTM Komuter and LRT in the Klang Valley region. They summarized that environment, reliability, physical facilities and safety and security were the common indicators shared by KTM Komuter and LRT. On one hand, KTM Komuter passengers were also concern about responsiveness, on the other hand, accessibility was another service quality indicator for LRT. These studies provided significant insights into how passengers evaluate public transport performance, and what is satisfying.

### **Research Method**

This research applied a quantitative survey by distributing questionnaire for data collection purpose. Stratified random sampling was adopted in selecting respondents from the MRT users at 31 stations located from Sungai Buloh to Kajang. These include stations at



Sungai Buloh, Kampung Selamat, Kwasa Damansara, Kwasa Sentral, Kota Damansara, Surian, Mutiara Damansara, Bandar Utama, TTDI, Phileo Damansara, Pusat Bandar Damansara, Semantan, Muzium Negara, Pasar Seni, Merdeka, Bukit Bintang, Tun Razak Exchange, Cochrane, Maluri, Taman Pertama, Taman Midah, Taman Mutiara, Taman Connaught, Taman Suntex, Sri Raya, Bandar Tun Hussein Onn, Batu 11 Cheras, Bukit Dukung, Sungai Jernih, Stadium Kajang and Kajang. 5 questionnaires were distributed at each station that led to a total of 155 completed questionnaires collected.

The questionnaire consisted of three sections. The first section comprised of the demographic profile such as gender, age, nationality, employment status, and monthly income as well as the frequency and reason of using MRT. Based on the literature review, five dimensions of a user's satisfaction with rail transport had been adapted for the research paper. These include physical facilities (station with adequate facility, station with good condition facility, display accurate information at station, user friendly ticket vending machine, well-planned station with disabled facilities, clean station), responsiveness (efficient staff, friendly staff, helpful staff), safety and security (safe train, clear security signage, sufficient installation of CCTV), information system (clear announcement at platform, updated information at platform), train and ticket (cheap fare, easy to obtain ticket, train on time, comfortable train, not crowded train) with a total of 19 attributes. While the last section dealt with the visitor's overall satisfaction towards MRT.

Apart from respondent information measured by a categorical scale, all items were measured by a 5-point Likert-type scale from strongly disagree (1) to strongly agree (5). A pilot study was conducted to ensure the reliability of the research tool based on 20 samples before the fieldwork took place. The result of the reliability coefficient was acceptable ranging from 0.65 to 0.90 as shown in Table 1.

Table 1  
*Cronbach alpha coefficient of the research instrument*

Dimension	No. of items	Cronbach Alpha
Physical facility	6	0.81
Information System	2	0.65
Safety and Security	3	0.80
Train & ticket	5	0.79
Responsiveness	3	0.90

## Data Analysis and Discussion

### *Respondent's Profile*

Table 2  
*Respondent's details and trip profiles (n=155)*

Respondent's Demographic	Frequency (f)	Percent (%)
Gender		
Male	49	31.6
Female	106	68.4

Age		
18-24 years old	112	72.3
25-34 years old	30	19.4
35-44 years old	5	3.2
45-54 years old	4	2.6
55 years and above	4	2.6
Employment status		
Employed	44	28.4
Unemployed	9	5.8
Self-employed	7	4.5
Student	95	61.3
Monthly Income (RM)		
Less than RM1 000	102	65.8
RM1 001 – RM5 000	44	28.4
RM5 001 – RM10 000	7	4.5
RM10 001 and above	2	1.3
Frequency of travel		
Daily	32	20.6
Weekly	33	21.3
Monthly	90	5.8
Occasionally	81	52.3
Trip purpose		
Business	35	22.6
Leisure	99	63.9
Study	21	13.5

According to Table 2, 31.6% were male respondents while 68.4% were female. The men tend to drive as compared to the women who prefer to use public transport. MRT service is convenient and connected to tourist attractions, shopping malls, and education institutions. Thus, 52.3% were occasion users and 63.9% respondents used MRT for leisure besides work and study purposes.

65.8% of the respondents had monthly income less than RM1,000 while 61.3% respondents were students. According to The Star Online (2015), Kuala Lumpur is no longer affordable to the low-income earners with the increasing rent and high cost of living. Thus, students may not afford to own a private transport but instead rely heavily on public transport for daily travel. Due to the similar reason, respondents below 24 years old, accounted for 72.3%, followed by 19.4% of 25-34 years old respondents and others.

Table 3 shows that out of the total amount of employed respondents, 22% of them earns between RM1,000 to RM5,000 per month. Ideally, this income group may afford to own a car. Perhaps, commuting to work is not the reason for owning a car. Instead, the car is only



used for leisure purposes while public transportation is used when commuting to work. This is especially ideal for those living and working in big cities where road traffic can be heavy during peak hours of the day. Besides, such practice is also encouraged towards saving the planet earth from harmful carbon emissions.

Table 3

*Employment status and monthly income*

Income / Employment status	Samples (n=40) 100%	Employed (n=44) 28.4%	Unemployed (n=9) 5.8%	Self-employed (n=7) 4.5%	Student (n=95) 61.3%
RM1000 and below	65.8	1.9	5.8	0	58.1
RM1001 - RM5000	28.4	22.0	0	3.9	2.6
RM5000 - RM10000	4.5	3.2	0	0.6	0.6
RM10001 and above	1.3	1.3	0	0	0

***Users' Satisfaction with MRT***

All average means are close to "4". This shows that users were generally satisfied with the MRT service and facility. They showed the highest satisfaction on the physical facility, followed by the information system, safety, and security, train and ticket and responsiveness. The standard deviation (SD) is consistently dispersed as shown in Table 4.

Table 4

*User's satisfaction with MRT*

Dimension	Mean	SD
Physical facility	4.26	0.91
Information System	4.18	0.93
Safety and Security	4.08	0.92
Train & ticket	4.00	1.02
Responsiveness	3.87	0.98

ANOVA was employed to compare the satisfaction level by trip purpose. According to Table 5, hypothesis H1 is accepted, which implies that there is a significant difference on satisfaction level between MRT users who travel for work, leisure and study ( $F = 6.09$ ;  $p < .05$ ). Subsequently, post hoc comparisons using Turkey HSD test indicated that MRT users who travel for study ( $M = 3.4$ ,  $SD = 1.14$ ) show significantly differ from whom travel for work and leisure.

Table 5

*Comparison of satisfaction level by trip purpose*

Variables	n	Mean	SD	F	p
Trip purpose				6.087	0.003
Work	35	4.2	0.58		
Leisure	100	3.9	0.81		
Study	20	3.4	1.14		

However, Independent Sample t-Test result displays that the hypothesis H1 is rejected because there is no significant between different genders on satisfaction level among MRT users ( $F = 0.63$ ;  $p > .05$ ) as shown in Table 6.

Table 6  
*Comparison of satisfaction level by gender*

Variables	n	Mean	SD	<i>T</i>	<i>p</i>
Gender				-.795	0.428
Male	49	3.84	0.94		
Female	106	3.95	0.80		

### Limitations, Conclusion and Recommendations

Limitations of the study refer to those influences the researchers are not able to control. They include the shortcomings, conditions or influences that place restrictions on our methodology and conclusions. For this study, time and uneven spread of demographic data were found to be its main limitation. Since the study is conducted at the waiting area of MRT, most respondents were rushing to chase the next train and they were in hesitation to answer the questionnaire. As a result, they may have responded to the questions without properly understanding the whole meaning.

The users of MRT train comprises of different genders, ages, employment status, income, frequency using MRT and the main purpose of using MRT train. Most respondents were among the students as compared to other components. Hence, the study was limited to its demographic data in this context.

This paper is aimed at investigating users' satisfaction on MRT and the effects of different groups. Although there is no significant difference found between gender groups, lower satisfaction rate is reported among student users as compared to other groups who travel for work and leisure. This was probably due to cost (price), space allowing them to bring their school belongings as well as time and punctuality for them to reach their school in time. The findings of this study can be used to guide public policy makers to develop effective and efficient marketing and positioning strategies for rail transportation in Malaysia. Additionally, the study also calls for a stronger institutional support for the management of public transport and the provision of its service and monitoring. Finally, the findings also provide an insight into an array of satisfaction attributes of MRT users which contributes to the sustainability of the rail public transportation, particularly within the Klang Valley.

Several suggestions can be extracted from this research. The first suggestion is to have more seating allocation at the waiting area. However, due to the high frequency of trains arriving at the stations, having more seats in the waiting area is probably not viewed as necessary. Another suggestion is to have a special coach for women users. This is already a practice for KTM Komuter for many years. Such practice helps to provide convenience and safety among women users.

The increasing motorization in Malaysia has caused many problems such as traffic congestion, environmental pollution, high consumption of non-renewable energy resource, a

threat to the quality of life and a high number of traffic accidents (Kamaruddin et al., 2012). A good and effective public transportation system is determined to overcome these issues. Additionally, having a clear understanding of different user groups will eventually help determine future planning and provision for adequate marketing strategies to keep the users happy and satisfied.

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