

The Effects of Perceived Service Quality, Perceived Safety towards Satisfaction, Loyalty and Complaints among Urban Rail Passengers

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Abstract: Rail transportation user growth has been growing rapidly every year, particularly in urban cities. As the population grows, the total number of accidents and incidents that involve urban rail services also will be increasing too. Therefore, it is also will affect service quality of urban rail. The aim of this study is to identify perception from the LRT Kelana Jaya line passengers except Malaysian disabled person designation (OKU) passengers in terms of a few factors such as perceived safety, perceived service quality, passengers' satisfaction, complaints and loyalty. Besides, descriptive analysis and Spearman correlation coefficient used as a tool to analyze the research data. There are five hypotheses discussed in this study. The results shows that service quality and safety have a significant relationship between customer satisfactions and customer satisfaction towards customer loyalty. A total of 263 valid data has been collected through the distribution of online and offline form. Other than that, the findings of this study cannot be applied to LRT Kelana Jaya line users as it only covers a very small part of the population, and the researcher cannot generalize the result as a whole. Thus, it was suggested for future studies to make an interview or observations towards the passengers to know their perception and behavior. The result of this study gives benefit to the rail operator to improvise on how they improve customer complaints. This is because, if the company can handle customer complaint nicely, they can increase their customer satisfaction and loyalty indirectly.

Keywords: Service quality, Satisfaction, Loyalty, Urban Rail, Complaints, Safety, Public transportation, Light rapid transit (LRT)

1. Introduction

Many countries around the world are experiencing rapid urbanization and population growth (Borhan *et al.*, 2019). As the population grows, the total number of trips in travelling are increase too. Therefore, the public transportation system plays a vital role in urban areas, especially rail transportation. This is because rail transportation is one of the world's driving forces in the development of the transportation sector because of the efficient, affordable, reliable, and eco-friendly travel alternative (Kwan *et al.*, 2017).

Malaysia is one of the countries where rail transportation has expanded rapidly. There are nine (9) major rail systems of train and transit services in Kuala Lumpur namely MRT Sungai Buloh-Kajang (SBK) Line, KL Monorail, Light Rapid Transit (LRT) Kelana Jaya Line, Light Rapid Transit (LRT) Sri Petaling and Ampang Line, KLIA Ekspres, KLIA Transit, KTM Komuter, KTM Intercity and KTM ETS and Skypark Link. Through this, we can see that the development of railway operations in Malaysia have become bigger day by day. Besides, Malaysia's rail system is still being developed, with upcoming projects such as the LRT3, MRT3, East Coast Rail Link (ECRL), Johor Bahru-Singapore Rapid Transit System (RTS) and KL-Singapore High-Speed Rail (HSR). This shows that by having advanced public transportation systems such as railways have been and will be introduced specifically in Kuala Lumpur and Selangor as the future backbone of the transportation network.

In this study, the researcher focusing on urban rail services based on the perception from the LRT Kelana Jaya line passengers in terms of a few factors. Such as their level of satisfaction, rail operators that provide the services, safety of the passengers, passengers' loyalty and complaints. This study is being conducted because there have been multiple accidents and incidents that involve urban rail services in this country. It can be proved by Nordin *et al.* (2014), where the researcher lists a few accidents involving rail services which have occurred in Malaysia. This can be supported by Shahrir and Manan (2021), where they mentioned that there are a lot of accidents and incidents involving rail transportation in Malaysia. Besides, this study focused on LRT Kelana Jaya line because LRT Kelana Jaya line has more stations and daily capacity of passengers rather than LRT Ampang and Sri Petaling line (Chan, 2019; Statistik, 2021). Figure 1 illustrates the ridership trend from 2011-2020. As a result, the researchers have been investigated on why the number and statistics of urban rail passengers keep changing from time to time by using several factors such as safety, service quality and complaints towards urban rail passengers' loyalty and satisfaction.

Every year there must be news about railway accidents in every country and it becomes a serious issue because the statistics are getting higher. These accidents will result in the loss of both property and life. Those accidents also will affect the loyalty, complaints, safety, satisfaction and service quality towards the urban rail passengers and the rail operator itself. Malaysia is also one of the countries that is dealing with those issues. There are several studies that have been conducted based on railway accidents that happen in Malaysia. The accidents were primarily caused by system failure, technical error, human factor, and others. The first case study is about a train accident that happened in Kuala Lumpur. It involves a Light Rail Transit or known as LRT. This train accident was caused by a malfunctioning control system and human error on October 28, 2006. Through this, it has been shown that carelessness and irresponsibility actions can cause an accident, and by creating a risk management plan may be able to prevent further tragic incidents. Secondly, a recent accident happened on May 24th, 2021, which involved a collision between two Light Rail Transit (LRT) trains in Kuala Lumpur. According to Transport Minister Wee Ka Siong, this occurred because of a mistake by the person driving the train in the wrong direction. The incident involved a total of 213 passengers of which 47 were seriously injured and 166 lightly injured. Thus, this accident became the worst urban rail accident, and it is the first crash involving the LRT since the Kelana Jaya rail line opened in 1998.

TAHUN Year	BILANGAN PENUMPANG Number of Passengers ('000)				KILOMETER PENUMPANG Passenger Kilometres ('000,000)			
	KELAS SATU First Class	KELAS DUA Second Class	KELAS TIGA Third Class	JUMLAH Total	KELAS SATU First Class	KELAS DUA Second Class	KELAS TIGA Third Class	JUMLAH Total
2011	134.0	2,199.6	1,351.6	3,685.2	59.8	1,010.6	355.3	1,425.6
2012	134.6	1,943.5	977.9	3,056.0	59.1	911.7	245.3	1,216.1
2013	124.4	1,857.2	721.2	2,702.8	52.0	856.3	172.6	1,080.9
2014	119.6	1,574.8	528.3	2,222.7	33.7	494.1	90.0	617.8
2015	81.4	1,678.5	254.8	2,014.7	24.7	346.5	56.5	427.7
2016	17.8	2,498.7	275.2	2,791.7	5.6	231.5	35.1	272.2
2017	-	2,851.5	240.8	3,092.3	-	160.3	19.4	179.6
2018	3.0	3,254.0	270.3	3,527.2	1.1	154.1	23.0	178.2
2019	5.7	3,476.4	264.3	3,746.4	2.3	159.4	21.6	183.3
2020	2.7	811.7	125.8	1,041.0	1.1	59.9	10.8	71.8

Figure 1: Number of passengers and passenger kilometres by classes, 2011-2020 (Ministry of Transport, 2021)

Thirdly, it happened on August 21, 2021 when a woman died after falling from an LRT train at Sentul Timur LRT station. Closed-circuit television (CCTV) footage showed the incident occurred at 4.30 p.m., according to ACP Beh Eng Lai, which is Sentul District Police. He also said that the woman was seen walking on a stationary train before deciding to sit on a train connector and she could not save herself because she fell as soon as the train started moving. ACP Beh Eng Lai also stated that no identification documents were found at the scene. As an outcome, the case is still being investigated to determine the identity of the dead. Due to the accident, Rapid Rail Sdn Bhd made a statement that the incident had disrupted service on its Ampang-Sri Petaling LRT line. The disruption was from Sentul Timur station to PWTC. As a result, Rapid KL shuttle buses run every 30 minutes to the Sentul Timur station and vice versa. Based on this case, it is completely obvious that the rail operators were negligent in not performing their duties properly, as they should have to monitor everyone's safety using closed-circuit television (CCTV). Following that, four passengers were slightly injured when a STAR-LRT train collided with the back of another train on September 24, 2008. In that accident, there were about 300 passengers on board for both accidents. Besides, in September 2017 where is the Kelana Jaya LRT service on the Setiawangsa-KLCC line was disrupted. It later shows passengers being trapped in the train for about 20 minutes. Both accidents recorded no heavy injury or death. Figure 3 depicts a trend analysis of Malaysian rail accidents and incidents (2000-2020).

The changes of ridership trends could be affected by the total number of accidents and incidents that happened related with LRT or other rail transportation as shown in Figure 2. This is due to the possibility that they will not use rail transportation services because their previous experience has given them trauma wherein, they were one of the victims of the accident. As a result, the level of customer satisfaction and loyalty will change and be affected based on their perception of it and how rail operators deal with it.

Based on previous study, quality of services is a major factor in understanding customer behavior and perception that can influence customers' complaints towards the products or services (Hellier, 2003). Furthermore, user loyalty is defined as users' level of satisfaction with the service provided. According to researchers, the most effective ways to maintain the user-service provider relationship are to provide an excellent and high-quality product or service. Meanwhile, Peng *et al.* (2021) mentioned that there are some factors that can affect the overall customer satisfaction of the Light Rail Transit (LRT)

because those factors have low and moderate scores. Such as, staff service, cleanliness, efficiency, and safety.

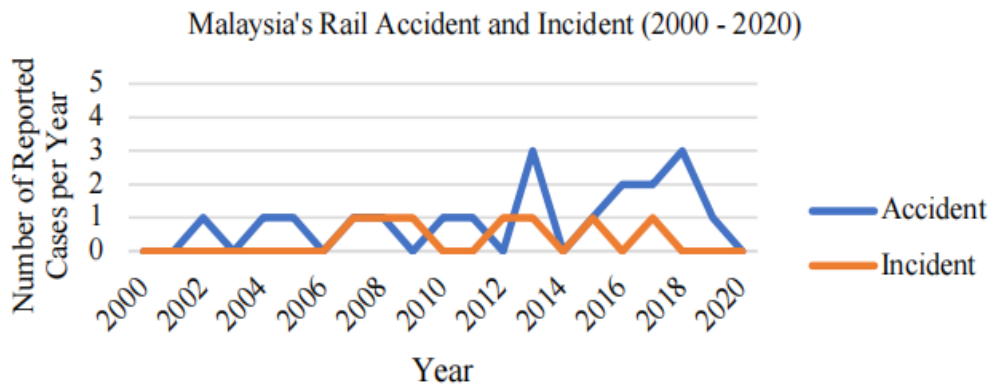


Figure 2: Trend analysis for Malaysia’s rail accident and incident for year 2000-2020 (Shahrir & Manan, 2021)

Nowadays, the expectation towards the railway system is high as the development of public transportation also keeps increasing from time to time. Furthermore, in Malaysia, public transportation is extremely competitive. Such as bus, taxi, and informal modes (Grab and Uber). This is because, with the growing population in urban areas, it also has resulted in a high demand for transportation (Ibrahim & Borhan, 2021). As a result, it will either directly or indirectly affect passenger satisfaction and loyalty to increase ridership (Ibrahim & Borhan, 2020).

A prior study by previous study also has summarized of their major findings that there are 78.8% for the overall satisfaction of customer, 82.8% for their customer loyalty and 76.1% for their customer loyalty. Besides, according to social media complaints, there were 80 complaints from LRT passengers from May to December 2021. These complaints address a variety of issues such as safety, comfort, technical errors, and others. As shown in the graph, operation schedule recorded the most complaints. Most complaints concern the frequency of daily trips, especially during peak hours. Some of the complaints also concern the train's punctuality, which did not adhere to the time schedule. Furthermore, all 80 complaints that have been recorded are complaints from LRT passengers through twitter, which is one of the World's Most Popular social media (Juntunen *et al.*, 2020).

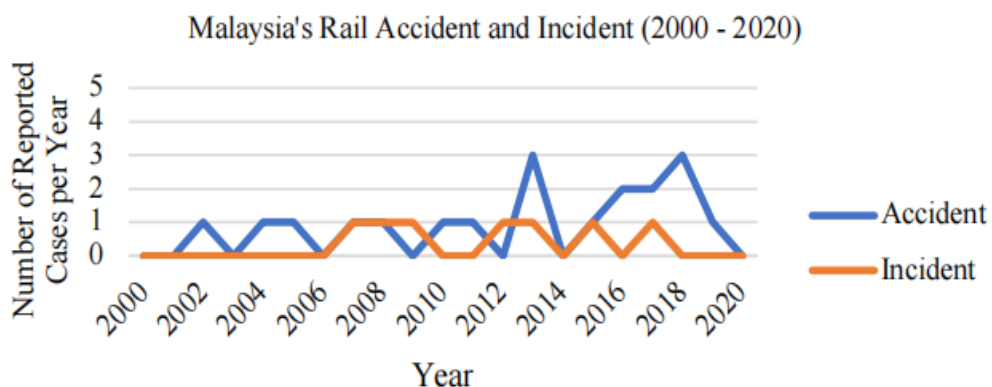


Figure 3: Total complaints (May-December 2021)

Therefore, this study has examined on how organizations deal with conflicts that happened in their operations in terms of safety, satisfaction, service quality, complaints, and loyalty of the customers. This study also examines all the factors whether it is important as stated above or not. The issues that arise are being addressed from Malaysia's point of view.

2. Literature Review

2.1 Factors Affecting Passengers Satisfaction

(a) *Perceived Service Quality*

In the service industry, service quality is a tool to measure performance and quality in meeting customer requirements and expectations (Reeves & Bednar, 1994). According to Lai and Chen (2011), service quality is the level whereby the service provided would meet the needs of the consumer. Many studies agree that when perceived service quality scores are lower than expectations, this indicates poor quality.

Accessibility: Accessibility in the transportation industry refers to the ease in which destinations can be reached from origins on a network. For example, time, cost, and convenience provided by a rail operator. It indicates the quality of the service provided by multiple transportation systems to different locations (Chen *et al.*, 2020). According to Chen *et al.* (2019), for urban rail networks, passengers typically change lines from one line to another during their trips. Therefore, the time taken at each station is very important to improve accessibility.

Ticket service: With the country's expanding train network, ticketing services play an important role. Such as ticket fare, process of booking or buying, convenience and other. Therefore, all the issues that arise should be considered because the train network is constantly improving and expanding day by day, and it may be a competitive situation contributed by different modes of transportation in the country (Xueyu & Jiaqi, 2013).

Information service: As the number of passengers using the urban rail increases daily, it proves that everyone is already knowledgeable in using the train service, but some do not especially for the first timer and elders because it is a bit confusing for them. For example, route mapping, train schedules, operating and many other features are available. Therefore, information services that the passengers can refer to, such as a service counter, person-in-charge at the platform, current information, or board of information, is essential in every station and coach since it is extremely useful for all of the passengers. Zhang *et al.* (2020) mentioned that wait time, transfer convenience, service, information, passenger comfort, station environment, and interior sanitation are one of the satisfaction factors for public transportation and railway.

Connectivity: Urban rail transit (URT) systems are key components of modern transportation services. URT systems are enlightening to the public due to their advantages in terms of speed, capacity, and comfort (Shi *et al.*, 2019). Connectivity is described as the occurrence of a connection or link between two network points, which can be either direct or indirect. The development of a location is based on connectivity between the areas' existing transportation networks, which leads to better infrastructure facilities (Rietveld, 1997).

Reliability: According to Vromans *et al.* (2006), reliability is one of the most important aspects of public transportation for both passengers and cargo. Railway service reliability is a complex issue because there are multiple causes for impacts and delays especially when it is related with time Rail transportation delays prove problematic in day-to-day operations. As a result, railway operations may become less reliable (Landex, 2012). Therefore, the railway company should take this issue seriously in order to avoid anything bad happening.

Operation schedule: The arrangement of the time schedule is an important factor that influences the effectiveness of the transportation system. Time scheduling is very important to passengers because it allows them to make a proper plan for their trip ahead of time and can refer to it for real-time situations. Besides, the current railway timetables are generally designed to explain minor delays by including scheduling (Ghaemi, 2018). However, rail operator will release a new timetable with the

availability of train and station information if there is long disruptions or infrastructure issues that require major repair. Other than that, the operation schedule also will show how frequent the trains are available on that day.

Comfort: Passenger ride comfort (PRC) is a key performance indicator for railway transportation (Sadeghi *et al.*, 2020). This is because ride comfort is one of the factors considered when deciding the performance of railway vehicles. There are many factors that can give an impact towards ride comfort (Sun *et al.*, 2021). Such as it can be caused by the movement of the railway vehicle such as noise, vibration, and others while others are caused by environmental factors within the vehicle such as lighting, seats, air circulation, lighting, decor, and others (Stănică & Dumitriu, 2019; Kandas-Cinal, 2010; Kim *et al.*, 2009; Kim *et al.*, 2003). Thus, all these factors are affecting the passengers' comfort directly or indirectly while using railway services.

Personalized service: Personalized service involves establishing one's customer service actions to satisfy the needs and demands of individual customers. Harley (2012) mentioned that personalized service prioritises customer experience, which is described as "how your customers perceive their interactions with your company". Furthermore, it was discovered that personalization has a positive effect on customer satisfaction a long time ago (Mittal & Lassar, 1996). A good, personalized service can help rail operators build a healthy relationship with their customer. To achieve this, rail operators should hire workers that have a good nonverbal behavior. This is because nonverbal behavior tends to have a greater effect in communication than verbal ones (Tablan, 2006).

(b) Perceived Safety

Ponnuswamy (2012) mentioned that when it comes to safety, it's often referred to public safety and security. Ensuring safety is an important requirement for every organization, especially the transportation industry. When discussing rail services and safety, the most important factor is preventing the causes of possible accidents from occurring and providing sufficient information to the potential consumers. It can be supported by having two types of safety which are visible and non-visible. For example, visible safety refers to crime or accidents while non-visible safety refers to the psychological factors.

(c) Customer's Satisfaction

Customer's satisfaction has long been acknowledged as one of the most important tools for a successful business especially for service-based businesses. According to Kotler and Keller (2006), satisfaction is related to a person's mood, whether happy or sad in which it will result from making a comparison of products or services to the customer's expectations. This is because it is one of the ways of measuring a company's performance.

(d) Customer's Loyalty

Much research has been carried out on customer loyalty, particularly in the service industry. Nevertheless, research into the loyalty of transportation passengers has been limited, with the majority of studies focusing on public transport (PT) such as bus or train services. Raphel and Raphel (1995), the cost of obtaining a new customer compared to cost to maintain an old customer was high by at least five to nine times. As a result, if the service industry wants to save money and time, it should focus on customer loyalty rather than new customers (Oliver, 1999).

(e) Customer's Complaint

Customer's complaint is very important for the organization's management control. According to Szymanski and Henard (2001), passenger complaints arise from customer dissatisfaction. This is supported by Cao and Chen (2011) where customer complaints are typically the results of dissatisfaction with products and services of the customers.

2.2 Hypotheses Development

Subheadings are generally limited to two (2) level of numbering (i.e 2.1, 2.2, etc). Contents should be concise; more comprehensive information should be given in the respective section. The subheadings should not go beyond the second level.

(a) Relationship Between Perceived Service Quality with Customer Satisfaction

According to previous research, one of the primary factors of customer satisfaction in any business is service quality. According to Parasuraman *et al.* (1994), customer satisfaction is a key result of an organization's service quality, and they can evaluate their services in the long term. As a result, service quality is a significant component of customer satisfaction. Therefore, the following hypotheses are formulated in this research:

H1: There is a significant relationship between perceived service quality towards customer satisfaction among urban rail passengers.

(b) Relationship Between Perceived Safety with Customer Satisfaction

Safety is defined as the process of dealing with the effects of unintentional failures that may occur in any process, service, or system within the organization. According to Pietre and Chaudet (2010), safety is the freedom from danger, risk, or the threat of harm, loss, or injury to personnel or property, whether intentional or unintentional. By having that kind of feeling and situation, the relationship between customers and organization can be determined by their level of satisfaction towards it. The following hypotheses are formulated:

H2: There is a significant relationship between perceived safety towards customer satisfaction among urban rail passengers.

(c) Relationship Between Customer Satisfaction with Customer Loyalty

Diab *et al.*, (2015) mentioned that improving customer satisfaction is the best way of maintaining existing customers and attract new ones because satisfied customers are more likely to recommend the services to others and be loyal to the services or products. As a result, it illustrates the customers' loyalty to the company's service or product. Based on the findings of the research, the following hypothesis is proposed:

H3: There is a significant relationship between customers' satisfaction towards customer loyalty among urban rail passengers.

(d) Relationship Between Customer Complaints with Customer Satisfaction

According to Matusitz and Breen (2009), complaints are commonly known as the customer's response to perceived dissatisfaction with a company's service or product. Besides, there are many studies done around the world to evaluate the impact of customer satisfaction on complaints and loyalty, but it is still limited due to the complex measurement of behavioral intention. Some studies argue that dissatisfaction of the customer could lead to complaints, and by having customer satisfaction can reduce the number of complaints that the company faced earlier. Therefore, the researcher formulates the following hypotheses:

H4: There is no significant relationship between customers' complaints towards customer satisfaction among urban rail passengers.

(a) *Relationship Between Customer Complaints with Customer Loyalty*

It is important for service providers in the service industry to keep track of the total number of customer complaints. This is because the more complaints they receive from customers, the lower the performance of the company that they show to others. As a result, it will have an impact on the customer's loyalty, either directly or indirectly. According to Hansemark and Albinsson (2004), whenever a customer is unhappy with a company, they are no longer loyal to that company. Hence, the study proposes the following hypotheses:

H5: There is no significant relationship between customers' complaints towards customer loyalty among urban rail passengers.

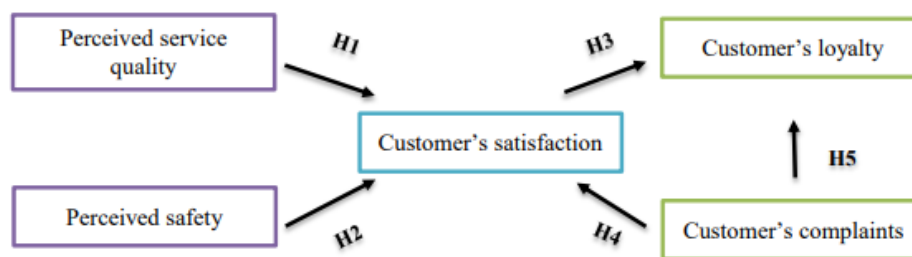


Figure 4: Research framework

3. Research Methodology

3.1 Research Design

According to Meenu & Prabhat (2015), research design is the basic framework or studies plan which provides guidance for data collection and analysis. It is one of the methods that usually will be used to collect data, measurement and as data analysis in the research. There are several types of research design that usually researchers used in their studies. Thus, in this study, quantitative approach, was used because it has characteristics and functions that will help the research run smoothly and accurately. Besides, a set of questionnaires used as the primary data collection tool. The questionnaires were distributed to respondents who frequently use the LRT Kelana Jaya line.

As the LRT is one of the most used modes of public transportation by people living in Kuala Lumpur, the scope of this study was to focus on passengers' perceptions of service quality, safety, satisfaction, loyalty, and complaints. This research also focuses on the LRT Kelana Jaya Line. This is because LRT Kelana Jaya Line has a total of 503,169 passengers from January to June 2021 which is higher than LRT Ampang Line that has a total of 430,778 passengers from January to June 2021 (Statistik, 2021). Besides, there are several accident cases involving LRT Kelana Jaya Line. Hence, the researcher wants to conduct her study in Kelana Jaya Line. Other than that, data collection process was conducted between March to May 2022 by distributing online and offline questionnaire to targeted customers which is common travelers who frequently use the services of the Kelana Jaya line except for Malaysian disabled person designation (OKU) passengers. This research carried out at 37 stations along the Kelana Jaya Line, which runs from Putra Height to Gombak. From the 37 stations of Kelana Jaya line, the researcher conducts her offline survey towards 5 stations which is KL Sentral Station, Masjid Jamek Station, Subang Jaya Station, Pasar Seni Station, and Asia Jaya Station. As a result, this study carried out for all routes on the Kelana Jaya line. This is due to an increase in the number of passengers that use the LRT service, as well as the probability of railway accidents.

3.2 Population and Sampling, Sample Size, Descriptive and Inferential Data Analysis

This research focused on urban rail passengers who use the services of the Kelana Jaya line frequently. It would cover all 37 routes of the Kelana Jaya Line. The distribution of the survey questions was held at the LRT Kelana Jaya line and social media. Moreover, this study used a non-probability sampling technique, convenience sampling, in which the sample is selected from a group of people who are easy to contact or reach. This is because the overall population of LRT Kelana Jaya line passengers was assumed to be unknown in the nature. Besides, convenience sampling is a method of sample selection in which the first available primary data collection method is used for the research with no other requirements. For example, it will obtain samples by gathering data that are easily located around a location or Internet access.

The sample size requirements are based on convenience sampling from passengers of Kelana Jaya Line. This study was focusing on the 5 factors which is perceived service quality, perceived safety, customer satisfaction, customer loyalty and customer complaints. A power analysis was using G Power software statistical program with a power of 0.80, $p < 0.05$ in which it is expected medium effect size of 0.15 that being selected to determine the desired sample size for this research. This 80% power is the bare minimum that required for social science studies (Gefen *et al.*, 2011). The G Power analysis being calculated on the basis number of the latent variable predictors in which this study was five. As a result of the G Power analysis, the minimum sample size required was 91 respondents. This is the total number of respondents that sufficient to demonstrate the study's power of the effect size. Based on the collected data for this research, a total of 263 respondents were collected which is exceeding the minimum number. All data were collected from LRT Kelana Jaya Line passengers through online survey and physical distribution of the questionnaires.

The researchers conducted preliminary testing on the questionnaire to achieve a better result. This is because the survey pre-test enables the study to ensure that the questions developed were clearly explained and understandable by the respondents to reduce error. As part of the preliminary testing for this research, a set of questionnaires were distributed to 30 LRT passengers via social media. There were 51 items tested in the reliability test. Cronbach's Alpha values for all variables ranged from 0.796 to 0.954, which was considered acceptable and excellent for ensuring the validity of this questionnaire.

Other than that, this study used quantitative data because it enables the validity of numerical data which can be converted into useful statistical data such as Statistical Package for the Social Sciences (SPSS) (DeFranzo, 2011). SPSS was used to manage the statistical tests because it has a broad range of functions for constructing and converting all indicators. It is an effective and adaptable statistical and data management tool for managing and analyzing large amounts of data.

3.3 Construct Measurement

The questionnaire for this study is divided into seven (7) sections. Section A collected the respondent's demographic information. For section B, collected information about the purpose and behaviour travelling of the respondents when using urban rail services. Furthermore, for section C, D, E, F and G, collected all of the information related to the factors used in this study which is perceived service quality, perceived safety, customer's satisfaction, loyalty and complaints. Besides, the measurement that used in this study is a five-point Likert Scales. Likert Scales were ranked from 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree for all variables. Babakus and Mangold (1992) mentioned that a 5-point Likert-type scale was used to improve response rate and quality while reducing respondents' "frustration level". Besides, the literature suggests that the five-point scale appears to be less confusing and to increase response rate (Babakus and Mangold, 1992; Devlin *et al.*, 1993). Appendix A shows the instruments that were used in each section of the survey questionnaire. The questionnaire is based on self-administered data as well as previous research.

4. Results and Discussion

4.1 Reliability Test of Real Study

The reliability test of the result of the actual study within the reliable range value (. The findings show that the data collected was all reliable for both dependent and independent variables. There are 51 items being measured in which 30 items for perceived service quality, 5 items for perceived safety, 4 items for customer's satisfaction, 6 items for both customer's loyalty and complaints. There are three result interpretation for reliability test for actual study which is excellent, good and acceptable. This is due to the fact the Cronbach's Alpha value shows that if the items were greater than 0.7 was considered as acceptable (George and Mallery, 2003). Thus, the overall reliability result concludes all the questionnaire being used in this study is appropriate to ensure the validity of this study.

Appendix B shows the respondent's profile and their background. Such as their purpose, frequency, time, experience of using urban rail, which ticketing method that use and lastly which route that they usually use.

4.2 Descriptive Analysis

Descriptive result shows the mean scores for every item for all variables that being measured in this study. Based on the central tendency level, most of the items have a high mean score except for perceived customer service (personalized service) and customer complaints. The highest mean score was customer loyalty which is at 4.24 while the lowest mean score was customer complaints which is at 3.23. The result also shows all the variable are not normally distributed.

Table 1 shows the normality test results by using Kolmogorov-Smirnov. This is because the total number of respondents in this study exceeded 50 which is the total number of respondents for this study is 263 respondents. Based on the table below, the significant value for all variables is 0.000, indicating a $P < 0.05$ ($0.000 < 0.05$). According to Mishra *et al.* (2019), data with a significant value less than 0.05 is not normally distributed. Since the dataset for this research is considered as not normally distributed, a Spearman correlation analysis was used to test the hypotheses of this research.

Table 1: Mean score for all variable

Variables	Mean	Cronbach's Alpha	Normality
Perceived Service Quality			
Operation Schedule	3.93	0.787	
Ticket Service	4.06	0.939	
Information Service	3.73	0.918	
Connectivity	4.02	0.895	Not-normal
Reliability	3.88	0.918	
Operation Schedule	4.10	0.939	
Comfort	4.12	0.928	
Personalized Service	3.57	0.957	
Perceived Safety	4.20	0.948	Not-normal
Customer Satisfaction	4.19	0.894	Not-normal
Customer Loyalty	4.24	0.943	Not-normal
Customer Complaints	3.23	0.885	Not-normal

4.3 Correlation Analysis

Rubin (2010) mentioned that correlation analysis is used to measure and analyze the strength of the relationships between variables in this study. The Spearman's Rho correlation analysis was used to meet the researcher's objectives. This analysis was chosen because the data is not normally distributed.

Therefore, if the significance value is below 0.05, it will indicate there is a significant relationship but if the significance value is above 0.05, it will indicate there is no significant relationship between all variables in this study. According to Bryman and Cramer (2005), the strength of the Spearman correlation coefficient can be measured. Those result can be referred to Table 2, it shows that there is significant relationship between 4 variables which is perceived service quality, perceived safety, customer satisfaction and customer loyalty meanwhile there is no significant relationship between perceived service quality and customer complaints. Other than that, the result also shows the highest correlation between perceived service quality and customer satisfaction.

Table 2: Summary of correlation test result

		Correlations (Spearman's rho)				
		PSQ	PS	CS	CL	CC
PSQ	Correlation Coefficient	1.000	0.703**	0.736**	0.659**	0.046
	Sig. (2-tailed)	.	0.000	0.000	0.000	0.457
	N	263	263	263	263	263
PS	Correlation Coefficient	0.703**	1.000	0.790**	0.760**	0.120
	Sig. (2-tailed)	0.000	.	0.000	0.000	0.051
	N	263	263	263	263	263
CS	Correlation Coefficient	0.736**	0.790**	1.000	0.704**	0.012
	Sig. (2-tailed)	0.000	0.000	.	0.000	0.850
	N	263	263	263	263	263
CL	Correlation Coefficient	0.659**	0.760**	0.704**	1.000	0.082
	Sig. (2-tailed)	0.000	0.000	0.000	.	0.184
	N	263	263	263	263	263
CC	Correlation Coefficient	0.046	0.120	0.012	0.082	1.000
	Sig. (2-tailed)	0.457	0.051	0.850	0.184	.
	N	263	263	263	263	263

** . Correlation is significant at the 0.01 level (2-tailed).

Table 3 illustrates H1, H2 and H3 were accepted since their p-value is lower than 0.05 meanwhile H4 and H5 were rejected because their p-value is above 0.05. Hence, there is no significant relationship between customers' complaints towards customer satisfaction and customer loyalty among urban rail passengers. This can be proved by Njei (2018) where the researcher stated that passengers will be loyal to the company if they able to satisfy them. Besides, Andreassen (1999) also agrees that the passengers would not be loyal if the company cannot handle customer complaints. According to some studies, even though there are many complaints which will affect to customer satisfactions, most passengers are loyal to the services provided by the rail operator due to some factors such as time, frequency, availability, and many more. Based on the findings of this study, passengers will be loyal because they have no or few options since Malaysia has only one rail operator that are currently available. Nonetheless, rail operators always take customer complaints seriously through the right platform. The passengers can make their complaints through rail operator's official website, email, hotline number, customer service counter or any of their social media accounts.

4.4 Discussion

The first objective of this study was to determine the effect between safety, customer's satisfaction, complaints, and loyalty with urban rail transportation. Three research hypotheses being used to assist to achieve the first objective. Based on the summarized results in Table 2, there are two hypotheses were accepted while the other one hypothesis was being rejected. According to the first finding, there is a significant relationship between perceived safety towards customer satisfaction among urban rail passengers, it shows that a strong relationship between perceived safety and customer satisfaction. This result can be supported by (Pantouvakis & Bouranta, 2013) in which they mentioned that perceived

safety is one of the main factors to achieve customers' satisfaction especially in the transportation industry. Next, this study also found a significant relationship between customers' satisfaction towards customer loyalty among urban rail passengers. This can be supported by a study (Njei, 2018) in which they also mentioned that the customer will be loyal to the company if the company being able to satisfy them. Finally, this study shows that there is no significant relationship between customers' satisfaction and customer complaints. This whole situation happened when the customers were dissatisfied with the service or product that being serve to them. Matusitz and Breen (2009) also mentioned in their study that usually complaints were made because it is one of the ways on how customers give their responses when they felt dissatisfied with the product or service of the company.

Table 3: Results of hypotheses testing

Hypotheses	Alternative Hypotheses	Results
H1	There is a significant relationship between perceived service quality towards customer satisfaction among urban rail passengers.	Accepted since p-value = 0.000 is lower than 0.05
H2	There is a significant relationship between perceived safety towards customer satisfaction among urban rail passengers.	Accepted since p-value = 0.000 is lower than 0.05
H3	There is a significant relationship between customers' satisfaction towards customer loyalty among urban rail passengers.	Accepted since p-value = 0.000 is lower than 0.05
H4	There is no significant relationship between customers' complaints towards customer satisfaction among urban rail passengers.	Rejected since p-value = 0.850 is above 0.05
H5	There is no significant relationship between customers' complaints towards customer loyalty among urban rail passengers.	Rejected since p-value = 0.184 is above 0.05

The second objective of this study was to determine the effect between service quality, customer's satisfaction, complaints and loyalty with urban rail transportation. There are three research hypotheses were developed to achieve the second objective. According to the Table 3, there are two hypotheses were accepted and one of the hypotheses was being rejected in this study. Firstly, there is a significant relationship between perceived service quality towards customer satisfaction among urban rail passengers. It is also shows that a strong relationship between the two factors which is perceived service quality and customer satisfaction. Christian (2000) mentioned in their study that usually customers will evaluate the quality service of the company and their level of satisfaction while using the services provided by the company. Besides, this research also found a significant relationship between customers' satisfaction towards customer loyalty among urban rail passengers. Njei (2018) mentioned that customer satisfaction is an important aspect that every company must take into consideration when they trying to have a better performance of their business and to increase customer loyalty. Lastly, this study shows that there is no significant relationship between customers' satisfaction and customer complaints. Jumaryadi (2019) stated that it is very important for the company to complete the customer complaints to fulfill customer satisfaction. In other words, if the company cannot handle customer complaints professionally, they also cannot achieve customer satisfaction towards their products or services.

5. Conclusion

This research has presented the ways of the study be conducted in terms of population, sampling, questionnaires, factors and many more. This study also identifies and investigate the major factors that influencing customer's perception towards urban rail services. There are five factors that influencing each other such as perceived service quality, perceived safety, satisfaction, loyalty and complaints. From the result obtained, all objectives have been achieved in this study. Hence, all the hypotheses have been validated and found that H1, H2 and H3 were accepted meanwhile H4 and H5 were rejected. The developed survey was based on Service Quality Theory, Loyalty and Satisfaction models. The questionnaire is based on research instrument that used to collect data from the chosen and targeted respondents which are urban rail passengers who frequently use the 37 routes of Kelana Jaya line for online distribute and 5 routes which is KL Sentral Station, Subang Jaya Station, Masjid Jamek Station, Asia Jaya Station and Pasar Seni Station for offline distribute.

All the information gained through this study is expected to give benefits to the Malaysian government, rail operators and passengers, especially Light Rapid Transit (LRT). The predicted outcome can determine the relationship between five factors as mentioned earlier. From an educational standpoint, this research will strengthen the relationship between academic research and rail providers while also adding to the existing literature. Firstly, this study is expected to help the government reduce the number of common complaints on websites or social media. This is because if there is too much negative feedback from customers, it will show that the country's urban rail system is inadequate, incapable, and poor in providing good services to them. If a country receives far more positive feedback than negative feedback, it will have a favorable view, perception, and image from other people.

Besides, the result of this study will help the rail operator to make a lot of people that live in urban areas choose urban rail services as their main transportation. Such as in terms of safety, service quality at the station or in the coach. It has also helped the rail operator in better understanding how to handle, maintain, and resolve customer satisfaction, loyalty, and complaints. Other than that, with the assurance of quality service and safety, they can attract more passengers to use urban rail services again. Lastly, this research also can give benefits to the passengers because passengers can feel and discover the differences in quality of service while also new security and safety systems. Therefore, the passengers do not have to worry when they are boarding the train and when they are in the surrounding area such as at the train station. This is due to the implementation of a new, more efficient system that has been introduced for customers to use.

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Appendix A: Construct Measurement

Content and Variables	Items	Measurement	Scale of measurement
Demographic	Gender	Nominal	-
	Age	Ordinal	-
	Race	Nominal	-
	Current employment status	Nominal	-
	Education level	Nominal	-
Purpose and behaviour travelling	Why do you use urban rail services?	Nominal	-
	Frequency of using urban rail services?	Ordinal	-
	When do you usually take the urban rail?	Ordinal	-
	Have you experienced an urban rail accident/incident?	Nominal	-
	If yes (question 4), what kind of situation are you in?	Nominal	-
	Which ticketing payment methods do you usually use?	Nominal	-
	Which LRT Kelana Jaya line route do you use frequently?	Nominal	-
Independent variables	Service quality	Ordinal	5-point likert scales
	Safety	Ordinal	5-point likert scales
Dependent variables	Customers' Satisfaction	Ordinal	5-point likert scales
	Customers' Loyalty	Ordinal	5-point likert scales
	Customers' Complaints	Ordinal	5-point likert scales

Appendix B: Demographic Analysis

		Frequency	Percentage (%)
Gender	Male	138	52.5
	Female	125	47.5
Age group	Under 20 years old	6	2.3
	21 - 30 years old	140	53.2
	31 - 40 years old	57	21.7
	41 - 50 years old	32	12.2
	50 years old and above	28	10.6
Race	Malay	198	75.3
	Chinese	36	13.7
	Indian	27	10.3
	Bumiputera Sabah	1	0.4
	Foreigner	1	0.4

Current employment status	Employed full time	137	52.1
	Employed part time	13	4.9
	Unemployed	21	8.0
	Student	82	31.2
	Businessman	1	0.40
	Retirement	6	2.3
	Pension	1	0.40
Education level	Freelance	2	0.80
	Sijil Pelajaran Malaysia (SPM)	33	12.5
	Diploma	54	20.5
	Degree	159	60.5
	Master	12	4.6
Purpose of using Urban Rail	Sijil Rendah Pelajaran (SRP)	5	1.9
	Working	91	34.6
	School, College or University	33	12.5
	Holiday	126	47.9
	Housewife	1	0.4
	Personal Matter	6	2.4
	Job Seekers	2	0.8
	Alternative Transportation	1	0.4
	Avoid Traffic Jammed	1	0.4
	Shopping	2	0.8
Frequency of using Urban Rail Services	Yearly	109	41.4
	Daily	79	30.0
	Monthly	43	16.4
	Weekly	32	12.2
Time of using Urban Rail Services	7 AM to 9 AM	73	27.8
	10 AM to 3 PM	126	47.9
	4 PM to 7 PM	46	17.5
	8 PM to 12 AM	18	6.8
Experience of Urban Rail accident/incident	No	235	89.4
	Yes	28	10.6
Kind of situation they are in?	Falling on tracks	2	7.4
	Slip/caught accident related on train	4	14.8
	Electric shock	3	11.1
	Pickpocket	6	22.2
	Minor collision	9	33.3
	Sexual harassment	1	3.7
	Train shaking	1	3.7
	Train makes a sharp braking	1	3.7
Ticketing method	Cash	47	17.9
	Cashless	213	81
	Both (cash and cashless)	2	0.8
	KTM card	1	0.4
Which LRT Kelana Jaya line route do you use frequently?	KL Sentral Station	134	51
	Subang Jaya Station	12	4.6
	Masjid Jamek Station	63	24
	Asia Jaya Station	11	4.2
	Pasar Seni Station	24	9.1
	Putra Heights Station	1	0.4
	Gombak Station	2	0.8
	Sri Petaling line	3	1.1
	Ampang line	1	0.4
	Kerinchi Station	3	1.1
	Sungai Besi Station	1	0.4
	KLCC Station	2	0.8
	Taman Paramount Station	1	0.4
	Setiawangsa Station	1	0.4
	Wangsa Maju Station	1	0.4
	Universiti Station	1	0.4
MRT	2	0.8	