

Service Quality and its Impact on Usage Intention in Malaysian Rail Transportation

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Abstract

The under-utilization of public transport regardless of road or rail transport is an indicator that the authorities failed to provide satisfactory level of services and thus hindered the customer intention to use them. There are studies on service quality that had been discussed extensively with regards to public transport either rail or road transport but the study on service quality and intention to use had remained unexplored. This study was conducted with two main objectives, firstly to examine the relationship between all the eight dimension in rail service quality (RAILQUAL) and its relation to intention to use and determine the most significant dimension of RAILQUAL to intention to use. The study used convenience sampling through google form to 356 respondents and only 258 were deemed suitable for analysis purposes. From the data analysis, only reliability, connection and convenience are related to intention to use, and convenience stands out as the most significant contribution to intention to use. This study proposed investigating gender-specific influences on transport preferences, particularly regarding safety perceptions.

Keywords: Railqual, Servqual, Rail Transport, Intention to Use, Dimension of Service Transport

Introduction

In developing countries such as Malaysia, scenarios such as road congestion are often among the hot issues discussed and debated. Although Malaysia has achieved independence since 1957, the issue of traffic congestion is still ongoing. Therefore, the Malaysian government has taken steps, among other things, to develop policies related to this issue by improving the public transport system in Malaysia. Even after LRT and MRT been developed, only 39.2 percent use public transport facilities including rail transport according to statistics

reports (Statista, 2024) and most users in Malaysia prefer to ride their own vehicle rather than ride public transport due to various factors, including delays in travel like in the case of commuters (Hazim et al., 2021), the ease of movement from door to door with their own vehicle because if they take rail transport, they have to find other transport to reach their final destination (Ali et al., 2022) and the poor condition of the rail terminal (Thanaraju et al, 2019). All the aforementioned problems influence the intention to use public transport facilities because when it gives more problems than solutions, potential users feel it is unnecessary to ride public vehicles and are more comfortable using their own.

The under-utilization of public transport regardless of road or rail transport is an indicator that the authorities failed to provide satisfactory level of services and thus hindered the customer intention to use them. Problems like punctuality of services in terms of Keretapi Tanah Melayu Berhad (KTMB) services and safety issue like in the case of Light Rapid Transit (LRT) are one of many examples that proved that rail services performance are poor (Hazim et al., 2021). Furthermore, the poor ticketing system is also one of the issues in rail transport (Peng et al., 2019). A study on service quality and intention to use the public transport are very limited since researchers focus more on service quality and customer satisfaction (Ali et al., 2022). There were studies on rail service quality and behavioural intention, but they only touch a little bit about intention to use public transport (Hazim et al., 2021).

The motivation for this study stems from the goal of addressing urban transportation issues by encouraging the public to use public transport. To achieve this, public transport must be efficient by improving their service quality so that potential passengers are encouraged to use the intended services. Nowadays, there are studies on service quality that had been discussed extensively with regards to public transport either rail or road transport but the study on service quality and intention to use had remained unexplored (Lin et al, 2023; Wisutwattanasak et al, 2023; Saut & Song, 2022; Hazim et al, 2021). So, this study was conducted with intention to address the existing gap with aim to:

1. examine the relationship between all the eight dimension in RAILQUAL and its relation to intention to use.
2. determine the most significant dimension of RAILQUAL to intention to use and this study employs multiple regression analysis that are suitable for the analysis of questionnaire research.

This study made a significant contribution by affirming the importance of service quality components with regards to rail transport. Furthermore, in terms of rail service quality (RAILQUAL) and intention to use, we believe, we are the pioneers. The findings in this study can provide relevant authorities such as transports service providers and government authorities with guidance on how to improve their strategies to attract passengers and encourage their intention to use the rail services. The motivation for this study derived from the intention to improve the urban transportation problems by promoting the public to use public transport and in order to do so, public transport need to be efficient by improving their service quality so that potential passengers have intention to use the intended services. The results of this study can offer valuable insights to relevant authorities, such as transport service providers and government agencies, on how to enhance their strategies to attract passengers and promote the use of rail services.

Literature Review

Rail Transport

In the meantime, rail transport is defined as the mean of transport of freight and people using wheeled vehicles that run on a track or rail (Yusoff et al., 2019). The development of the rail industry in Malaysia has grown rapidly since it first commenced as early as 1885 in Taiping, Perak, Malaysia. The rail transport has played a major role in the economic and social development of the countries. Although it has been developed as the privately owned public utilities, it serves the purpose of gaining profits to its owner and providing services to the society in the form of an affordable transport mode both for passengers and freights. Rail transport consists of heavy rail, such as high-speed surface transport, Mass Rapid Transit (MRT), Light Rapid Transit (LRT), monorails, commuters, and railway lines. Heavy rail is used to cater for intercity passengers, freight transport, and urban public-transport usage, while the LRT is heavily used for urban public transport and between airport buildings. The monorail and Express Rail Link (ERL) both are located in Kuala Lumpur, Malaysia, which are also public transport used to transport passengers (Masirin et al., 2017). Therefore, in this study, rail transport is defined as any transportation models that use a double track with wheeled vehicles and focus on transporting passengers only.

Service Quality

Quality is something abstract to define because the quality of a product or service is often based on individual assessment. For example, some define a quality film as a film that displays heavy characters, but some define a quality film as a film that highlights the human side of humour. As for quality of service, in public transport, good service quality is where the service offered is satisfactory, passengers can reach their destination safely and the condition of the vehicle is good and provides comfort (Sama et al., 2023). As yet, service quality has five important attributes or elements, which are: i) tangibility; ii) assurance; iii) responsiveness; iv) reliability; and v) empathy. These elements have been translated into an instrument, known as SERVQUAL, which has been modified various times to increase accuracy in data analysis (Sama et al., 2023).

Tangibility

Tangibility are aspects that can be seen with the naked eye through their physical aspects. For example, in public transport services, the physical condition of the vehicle is neat, the equipment is in good condition and can function, the condition of the terminal is in a satisfactory condition and so forth. In rail transport services, this aspect is evaluated through a neat professional appearance of staff at counter ticket, clarity of information given in timetable, clarity of scheduling or timetable given at station, clean condition at terminal or in the unit of carriage or train, and modern design at terminal (Miranda et al., 2018; Vasanthi et al., 2023)

Reliability

Reliability is one of the dimensions in service quality. Some define reliability as a consistence and accurate performance to consumers and as a proof that shows passengers given full confidence that the transport operator could deliver their services as promised (Ansory & Safura, 2018; Saut & Song, 2022). In this research, reliability is measured through maintaining the frequency of trains as scheduled in timetable, providing on time train

services, dependability in handling your service problems, and performing services right the first time.

Responsiveness

Responsiveness is translated into giving a prompt response when customers request anything within the transport services offered or giving a proactive service to customers complaints and concern even before the customers voiced it out. By acknowledged that customers have their own needs and wants and communicating in the right manners and prompt services, a transport operator can be called as responsive transport operators. In this research, responsiveness is translated into: willingness to help consumers, prompt services both at trains and terminals and availability of staffs to handle customers' requests (Ansory & Safura, 2018; Saut & Song, 2022).

Assurance

In a service business, assurance is a promise made by the company to the users or consumers that their services will satisfy them as the company have the knowledge, expertise, experiences in conducting their businesses. Assurance also meaning that the company will have staffs that are capable, credentials and have courtesy when dealing with consumers, minimize all the risks of the customers so that consumers will use their services confidently and with utmost trust. In this research, assurance is defined as courtesy of the staff, customers are being informed if the services are delayed, ensure safety at train and terminal, the staffs have knowledge pertaining to customers inquiry and providing customers with all relevant information about the rail services (Nguyen-Phuoc et al., 2021; Ansory & Safura, 2018).

Empathy

In service businesses like rail transport, having empathy will ensure that the company will give better services to their customers as they can put customers feeling into their own shoes because customers always have desired to feel valued as human being and not just as cash cow or merely just being regarded as commodity and business transaction. Employees who develop empathy to the customers with sincerity will surpass the customers expectation and hence can develop customer loyalty in engaging with the business. Empathy associate with concerns, addressing the customers worriedness, and hence, empathy become crucial for rail transport service provider. In our research empathy means staffs are dealing with customers in caring manners, understand customers' needs and wants and having customers best intention at employees' heart (Hamzah et al., 2023; Ansory & Safura, 2018).

Overall, the five elements of the SERVQUAL model are interconnected and play a vital role in shaping passengers' experiences during difficult situation in rail transport service. By addressing these dimensions and adapting their service approach accordingly, rail service providers can foster trust, enhance customer satisfaction, and ensure the safety and well-being of their passengers thus making customers wants to experience the service again and have intention to use it continuously. However, Cavana et al. (2007, as cited in Miranda et al., 2018) have added three more elements in SERVQUAL, namely: comfort, connection, and convenience, known as RAILQUAL, because the traditional measures in the public-transportation industry have lacked information about the underlying perception of customers while the SERVQUAL model is too service-oriented and has also lacked information

about service-offering in the transportation industry. By combining both, the quality construct of the rail-transit sector can have a better understanding of customers' needs.

Comfort

Riding the train with comfort are one of many elements in evaluating the performance of the rail services. Comfort not only during their journey from origin to destination but also customers feeling comfort when they are waiting at the terminal as their safety aspect being the company's top priority (Heng & Hamid, 2021). Some researchers stated that comfort has been considered one of the main variables that affects the loyalty and satisfaction of rail transit passengers (Ercan et al., 2023). According to Heng & Hamid (2021), the train comfort factors have the potential on influencing passengers' satisfaction thus increase intention to use. Other studies found comfort level was assessed based on factors such as seat size, cleanliness, and the noise level are bearable, and the findings strongly indicated that the level of comfort significantly influences passengers' intention to use the services again (Ercan et al., 2023; Akhuan et al., 2024). In this study comfort are measured in terms of availability of seats in the train, comfortable seats in the unit of carriage, comfortable temperature in the unit of carriage, smoothness of ride in the rail services and comfortable travelling time on train.

Connectivity

Connectivity or in this case, accessibility is an important aspect of rail journeys and with influence on passengers' intention to use again the services if the connectivity is on satisfactory level (Akhuan et al., 2024). Connectivity is one of the important factors in train services as it can bring changes to transport, economy and social life (Jamaludin et al., 2022). The dimension of the study focuses on the stations and the vehicle itself. According to Ercan et al (2023), using screen displays for schedules, train departures/arrivals, route information, route maps, announcements in stations during and after breakdowns, and announcements in trains during travel can increase the accessibility or connectivity of rail service (Akhuan et al., 2024). However, this study measures connectivity in terms of adequacy of parking facilities, ease of access to passengers' home station, ease of access to the nearest station at passenger working or school place, frequency of train that meet passengers need and trains running at suitable time so that passengers can catch their connecting transport services.

Convenience

According to a study, convenience is another service dimension, and it contains the requirements for vehicles such as easy access to travel information and convenience in buying ticket either online or offline (Miranda et al., 2018). A study by Mohamad (2022), showed that the comfort, cleanliness of trains and convenience in buying ticketing system had an impact on the most attractive feature of using the rail transport system. In this study, convenience is measured by three elements: easy access to travel information, ease of buying tickets and convenience in buying ticket online or offline.

Intention to Use

There is number of researchers that have done research and probed a different definition to the terms "intention to use" for example behavioural intention or loyalty intention. In this study, intention to use has been defined as the expectation of passengers'

rail transportation mode for trip to reach their destination. It also included the goal of consumer to re-use their services and the intention of the consumer to suggest the services to other people. In this study, all the eight dimension of RAILQUAL will be linked to intention to use, thus which elements proved to be the most significant to intention to use will be discussed in the analysis (Khoo,2022; Wantara & Irawati, 2021; Zhang et al., 2021;Peng et al., 2019; Saut & Song, 2022).

Intention to use is an important method for measuring customer behavior in marketing studies. In the past few years, the intention of reusing has received a significant stream of attention from researchers. Furthermore, it has been extensively used in studies on customer loyalty concerning different industries, such as food delivery, mobile bookstore applications, e-commerce, and smart tourism (Lin et al., 2023) For transportation service providers, the re-use intention of customers is very important from a long-standing perspective, which ensures that both receivers and providers of transportation services have a constructive relationship (Sana & Song, 2022; Lin et al., 2023). The intention to re-use a transport service can be defined as the customer's belief and willingness to make up a product and express it as a specific future behaviour i.e., willing to use or recommend other about the service providers in future when needed to use. To some extent, transport service re-use intention is critical to the success of sellers, not only from the viewpoint of the sellers but also from that of the consumers (Lin et al., 2023: Saut & Song, 2022).

Relationship between Service Quality Dimensions and Intention to Use Rail Service

Reliability is one of the strongest predictors of an intention to use rail services. This factor is found as the most influential factor to predict the intention of using rail transport in Malaysia (Chia et al., 2019). Likewise, Wang et al (2020), found that service planning and reliability had the greatest influence on customer satisfaction and intention to reuse urban rail transit in Tianjin, China. Similarly, reliability has a significant influence on bus riders' loyalty in Vietnam (Nguyen-Phuoc et al., 2021) showing its significance for transport systems. Therefore, we hypothesize that:

H1: Reliability has a significant effect on the intention to use rail services.

Responsiveness can lead to customer satisfaction which in turn influences switching intention and word of mouth (Hamzah et al. 2023). Similarly, responsiveness influences perceived accessibility to public transportation which indirectly influences the intention to use public transportation (Watthanaklang et al., 2021). Considering the importance of timely service in public transportation, we hypothesize that:

H2: Responsiveness significantly influences the intention to use rail services.

Assurance, especially regarding safety and security, is another important factor influencing passengers' intention to use public transport. Chia et al (2019) and Hizam et al (2021), highlighted the importance of safety in promoting customer loyalty and influencing behavioural intentions in rail services. Similarly, Nguyen-Phuoc et al (2021), particularly noted that bus female passengers in Vietnam showed higher loyalty when they felt the service was safe. Also, Wisutwattanasak et al (2023), emphasized the growing importance of hygiene and safety concerns in the post-pandemic era. Therefore, we hypothesize:

H3: Assurance significantly influences the intention to use rail services.

Empathy, which refers to the ability of service providers to care for and meet the needs of customers, is a strong predictor of customer satisfaction and behavioral intentions. Wisutwattanasak et al. (2023) found empathy to be a significant predictor of intention to use rail transport. Likewise, Hamzah et al (2023), found that empathy is the strongest predictor of satisfaction in public transport services, which in turn influenced switching intention and word of mouth. Considering the significance of empathy in public transport services, we hypothesize that:

H4: Empathy significantly influences the intention to use rail services.

Tangible, especially cleanliness and hygiene, has gained even more importance in the post-pandemic era. Wisutwattanasak et al (2023), highlighted tangible as a significant factor influencing rail passengers' intention to use services post-COVID-19 era. Similarly, Nguyen-Phuoc et al (2021), also identified tangible as crucial for maintaining bus passengers' loyalty in Vietnam, especially when combined with reliability. Given the increasing demand for a clean public transport environment, we hypothesize that:

H5: Tangibility significantly influences the intention to use rail services.

Comfort plays a significant role in influencing passengers' intentions to use rail services. Kwan et al (2020), noted the value of comfort in rail services especially for older individuals. Likewise, Kaffashi et al (2016), highlighted that improved comfort will increase the likelihood of people switching from private car use to public transport. Therefore, we hypothesize:

H6: Comfort significantly influences the intention to use rail services.

Convenience is also cited as a determinant of passengers' choice of rail services. Jing and Rooze (2023), emphasized convenience in passengers' choice of high-speed rail over air travel, particularly in the post-pandemic era. Similarly, Kwan et al. (2020) highlighted comfort as a determinant of intention to use rail services. Therefore, we hypothesize:

H7: Convenience significantly influences intention to use rail services

Connection plays a critical role in influencing passengers' intention to use rail services. Studies have shown that better access to stations, both in terms of parking and proximity to passengers' starting and destination points, significantly boosts the likelihood of rail usage (Kaffashi et al., 2016; Hizam et al., 2021). Frequent trains and well-coordinated schedules with other transport modes further enhance the travel experience, impacting satisfaction and intention to use rail (Wang, et al. 2020). Consequently, we hypothesize:

H8: Connection significantly influences intention to use rail services.

Methodology

This study used quantitative research by using survey questionnaire that had been distributed for data collection method.

Research Hypothesis

H1: there is a significant relationship between rail service quality and intention to use towards rail transport in Malaysia.

Data Collection Method

The survey questionnaire is distributed via online Google Form, which allows respondents to complete the questionnaire at their convenience.

Sampling Design

The sampling technique used in this study is a non-probability sampling namely convenient sampling as it is not difficult to adopt, and the survey could be answered by the person convenient in answering the survey.

Sample Size

From 356 responses, 258 (72.4%) were deemed suitable for analysis as they completed the survey questionnaire without any missing values.

Research Questionnaire

In this study, a structured questionnaire was employed to collect data from the respondents. This questionnaire was organised into three sections. The first section collected the personal details of the respondents; the second section solicited respondents' evaluations of rail service quality; and the third section measured respondents' satisfaction with the rail service provider. Instruments for measuring rail service quality were adapted from Cavana et al. (2007) and utilised a seven-point Likert scale (1 = extremely poor, 7 = very excellent). On the other hand, intention to use measures were adapted from (Chia et al, 2019) and used a similar scale (1 = strongly disagree, 7= strongly agree).

Data Analysis

Data analysis was conducted using SPSS version 27, encompassing the reliability test, Pearson correlation coefficient, and multiple regression analysis.

Findings and Analysis

The reliability of the questionnaire items was evaluated using Cronbach's alpha, and the results showed that all the items were reliable, displaying strong internal consistency with values between 0.89 and 0.95. According to Sekaran and Bougie (2016), this range indicates strong reliability. The descriptive analysis of respondents' demographic profiles revealed that the majority, 65.1% were female, while the remaining were male. Most respondents reported using various forms of rail transport, including MRT, LRT, ERL, Monorail, ETS and Commuter services.

A significant portion of respondents, 69.4%, stated that they used rail transport mostly for leisure, while only 3.9% used it for business. The rest of the respondents cited reasons such as education, visiting relatives, or vacation. In terms of frequency, 41.9% of respondents used rail transport a few times a year, 22.1% used it at least once a year, 10.5% used it once a month, and 8.5% used it almost daily. Another 7.0% used it at least once a week. A small number of respondents selected 'other' regarding their frequency of use but did not specify further details.

Table 1

Summary of Pearson Correlation Analysis

	INT	RE	TG	AS	RP	EM	CF_	CN	CV
Intention to Use (INT)	1.000								
Reliability (RE)	.511	1.000							
Tangible (TG)	.545	.658	1.000						
Assurance (AS)	.531	.668	.811	1.000					
Responsiveness (RP)	.559	.686	.770	.882	1.000				
Empathy (EM)	.527	.599	.738	.854	.900	1.000			
Comfort (CF)	.486	.632	.711	.796	.706	.688	1.000		
Connection (CN)	.562	.564	.660	.735	.727	.708	.679	1.000	
Convenience (CV)	.557	.552	.705	.811	.755	.736	.740	.698	1.000

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

Table 1 shows that there are positive significant correlations between the intention to use rail service and service quality dimensions of rail transits, which consist of reliability ($r=0.511$), tangible ($r=0.545$), assurance ($r=0.531$), responsiveness ($r=0.559$), empathy ($r=0.527$), comfort ($r=0.486$), connection ($r=0.562$), and convenience ($r=0.557$).

Table 2

Summary of Multiple Regression Analysis

Summary		Anova			Collinearity Statistics				
R	R Square	F	Sig.	Dimensions	Beta	t	Sig	Tolerance	VIF
.646 ^a	.418	22.344	<.001 ^b	Reliability	.193	2.693	.008	.454	2.201
				Tangible	.169	1.921	.056	.302	3.309
				Assurance	.242	1.797	.074	.129	7.728
				Responsiveness	.127	.932	.352	.127	7.892
				Empathy	.043	.369	.713	.168	5.948
				Comfort	.040	.456	.649	.308	3.244
				Connection	.242	3.118	.002	.389	2.569
				Convenience	.261	2.937	.004	.297	3.367

a. Dependent Variable: INT_Mean

Table 2 shows that the service quality of rail transit accounts for 64.6% of the variation in intention to use the rail transit ($F=22.344$, $P<0.001$). Among all the rail service quality dimensions, convenience ($\beta=0.261$) stands out as the most significant contributor to the intention to use rail transit. The table also reveals that only three dimensions of rail service quality, namely reliability, connection, and convenience have a significant influence on the intention to use rail transits, with t-values of 2.693, 3.118, and 2.937, respectively ($P<0.05$). As a result, only hypotheses 1,7 and 8 are supported by the data (Refer to Table 3). Additionally, there are no concerns about multicollinearity in this study, as the tolerance values are above 0.1 and the VIF values are below 10, in line with Pallant's (2016) guideline.

Table 3

Overall finding of the Study

Hypothesis	Description	Sig.	Result
H1	Reliability significantly influences the intention to use rail services	P=< 0.05	Supported
H2	Tangibility significantly influences the intention to use rail services	P= 0.056	Not Supported
H3	Assurance significantly influences the intention to use rail services	P= 0.074	Not Supported
H4	Responsiveness significantly influences the intention to use rail services	P= 0.352	Not Supported
H5	Empathy significantly influences the intention to use rail services	P= 0.713	Not Supported
H6	Comfort significantly influences the intention to use rail services	P= 0.649	Not Supported
H7	Connection significantly influences the intention to use rail services	P=< 0.05	Supported
H8	Convenience significantly influences the intention to use rail services	P=< 0.05	Supported

Discussion

The findings of this study confirm that the service quality dimension, namely reliability, tangibility, assurance, responsiveness, empathy, comfort, connection, and convenience, are significantly correlated to the intention to use rail transit in Malaysia. This aligns well with various studies (e.g., Wang et al., 2020; Hizam et al., 2021; Hamzah et al., 2023) that highlight the significant influence of service quality on shaping passengers' behavioural intentions and satisfaction.

The overall reliability of the questionnaire items was excellent, with Cronbach's alpha values ranging from 0.89 to 0.95. This strong internal consistency supports the validity of the measured constructs, as noted by Sekaran and Bougie (2016). Moreover, the demographic profile of respondents, where the majority were female (65.1%) and mostly used rail services for leisure (69.4%), offers a broader understanding of the user base in Malaysia. These findings suggest that the factors influencing leisure travelers may be slightly different from those for business users, who represented a much smaller proportion (3.9%).

Convenience emerged as the most significant predictor of the intention to use rail services ($\beta = 0.261$). This finding aligns with existing literature, which identifies convenience as a key determinant of public transport usage (Jing & Rooze, 2023; Kwan et al., 2020). In Malaysia, improving the convenience of rail services, such as through better access to travel information, easier ticket purchasing, and extended office hours at ticketing counters, plays an essential role in making rail transport more appealing. This focus on convenience highlights the necessity of user-friendly systems and efficient scheduling to increase the use of rail services.

Connection also showed a significant influence on the intention to use rail services ($t = 3.118$), aligning with the findings of Hizam et al. (2021), which emphasized the importance

of inter-modality in promoting rail usage and enhancing commuter loyalty. Improving intermodal connections, such as connecting different transportation modes, is crucial to enabling passengers to move seamlessly between services. This reflects a global trend in transport studies, where better station access and coordinated transport schedules are essential to building a comprehensive, integrated transport system (Hasselwander et al., 2023). The adequacy of parking facilities and ease of access to stations, as highlighted by Kaffashi et al (2016), also plays a significant role in increasing the likelihood of rail usage, particularly for passengers who need to drive to the station. Frequent trains that align with passengers' schedules further enhance service planning (Wang et al., 2020), which influences satisfaction and the intention to use rail services.

Reliability ($t = 2.693$) was another significant dimension in influencing rail usage intention. The importance of reliability in public transportation has been repeatedly confirmed in many studies (Chia et al., 2019; Wang et al., 2020; Hizam et al., 2021; Nguyen-Phuoc et al., 2021; Deka & Liu, 2024). When rail services are reliable, they promote trust and satisfaction, which, in turn, increases the likelihood of reuse. However, it should be noted that while reliability is important, other dimensions such as convenience and connection had stronger predictive power in this study. This finding could suggest that although passengers value reliability, they prioritize factors that make their journey easier and more seamless.

The study also found that other rail service quality dimensions namely, responsiveness, empathy, assurance, comfort, and tangibility were positively correlated to the intention to use rail services but did not significantly influence it in the regression model. This finding aligns with some previous studies that also found these dimensions to be less critical in directly influencing behavioral intentions. For example, Hamzah et al (2023), found empathy to be a strong predictor of satisfaction but not necessarily of usage intention. Likewise, Wisutwattanasak et al (2023), noted that while tangible (especially cleanliness) is important post-pandemic, it may not be as influential as reliability in directly influencing intentions to use public transport.

Interestingly, Nguyen-Phuoc et al (2021), emphasized the role of perceived safety, which is related to assurance, in fostering loyalty, particularly among female passengers. While assurance showed a positive correlation in this study, it was not a significant predictor in the final model, suggesting that safety may be a basic expectation rather than a key determinant of rail usage intention in Malaysia. However, it may still play a critical role in specific passenger segments, such as female or vulnerable users.

The descriptive analysis highlighted that the majority of respondents were female, indicating that gender may influence rail usage patterns. Although gender did not moderate the influence of service quality dimensions in this study, other research, such as Nguyen-Phuoc et al (2021), has found that female passengers are more sensitive to safety and security. Additionally, in this study, most respondents used rail for leisure rather than business purposes, which could explain the stronger emphasis on convenience and connection over more functional dimensions like reliability. This could indicate the need for targeted strategies to improve rail services based on travel purposes, as leisure travelers might have different expectations compared to daily commuters or business travelers

Practical Implications

The findings of this study suggest several practical implications for rail service operators in Malaysia. Since convenience was the strongest predictor of rail usage, efforts should focus on providing a more user-friendly system, such as better access to travel information, easier ticket purchasing, and extended office hours. Enhancing intermodal connections, including parking facilities and station access, is also crucial for enhancing rail service usage. While reliability remains important, greater emphasis on convenience and seamless connections is needed. Strategies should be developed to address the needs of various passenger segments, particularly female passengers who prioritize safety, and cater to the large leisure traveler base through flexible scheduling and targeted promotions. Addressing these factors can significantly improve service quality and increase rail usage, supporting sustainable urban mobility.

Conclusion

This research corroborates that specific service quality dimensions—notably convenience, connectivity, and reliability—significantly influence rail service utilization intent in Malaysia. These results align with established literature, which identifies these factors as primary drivers of public transit adoption. To effectively attract and retain ridership, rail transit authorities should prioritize enhancing these critical service aspects.

Future Research, Recommendation and Limitations

This research contributes valuable insights to the expanding literature on rail service quality and user intentions in Malaysia, while acknowledging certain limitations. Future studies should address these by:

1. Examining diverse passenger segments beyond leisure travelers.
2. Investigating gender-specific influences on transport preferences, particularly regarding safety perceptions.
3. Assessing the long-term impact of post-pandemic concerns on rail usage.
4. Employing larger sample sizes and probability sampling methods to enhance generalizability.

These approaches will further advance our understanding of factors influencing rail transit utilization in Malaysia.

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