



Research article

Factors affecting state railway of Thailand (SRT) passenger train service use decision: A structural equation model

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ABSTRACT

The State Railway of Thailand's (SRT) rail passenger ridership has dropped from a peak of 88 million rides in 1994 to less than 23 million in 2022, with the reasons for this collapse being numerous. Therefore, the authors set out to examine how *organizational image* (OI), *service quality* (SQ), *service motivation* (SM), and *service satisfaction* (SS) affect *SRT use decision* (SUD) making. From August–October 2022, multiple-stage random sampling was used to select a sample of 1,250 SRT passengers from five regional rail lines and their associated 25 stations. A confirmatory factor analysis goodness-of-fit was used to confirm the model's fit. A structural equation model (SEM) using LISREL 9.10 was then used to analyze the ten hypothesized relationships. The quantitative research used a 5-level questionnaire to measure the study's five constructs and 22 observed variables. The reliability of the items ranged from 0.86 to 0.93. The data analysis included calculating various statistical measures. Results showed that the model's causal variables positively affected passenger *SRT use decision*, with an R^2 of 71%. When ranked by total effect (TE) values, *service quality* (SQ = 0.89) was viewed by the surveyed passengers as most important, followed by *service satisfaction* (SS = 0.67), *organizational image* (OI = 0.63), and *service motivation* (SM = 0.53). Additionally, all ten hypotheses were supported, with *service satisfaction* judged the most essential to *SRT Use Decisions*. The study's novelty is the ever-growing requirement for the SRT to serve as a regional hub in a more extensive East Asian rail and infrastructure strategy. The paper contributes significantly to the academic literature on factors affecting rail transportation use intent.

1. Introduction

At the end of 2022, Thailand opened Asia's newest and reportedly largest passenger train terminal. The Krung Thep Aphiwat Central Terminal (KTACT) (a.k.a. Bang Sue Grand Station) is Thailand's new central railway station in Bangkok, which has replaced the old Hualamphong Train Station as the main terminal for all long-distance trains in Thailand and points beyond [1]. The station is located in the northern part of Bangkok and covers an area of approximately 300,000 square meters.

The construction of KTACT was completed in 2019 with a reported cost of around THB 34.14 billion (approximately USD 1 billion in February 2023 exchange rates). The station features modern facilities and a larger capacity than the previous central railway station, with 24 platforms (compared to Bangkok's Hualamphong station with 14 tracks) and the capacity to handle around 600,000 passengers daily [2].

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In addition, KTACTION is designed to be a transportation hub, connecting with various transportation modes, such as trains, buses, and the planned MRT Orange Line (subway). The station aims to improve the overall transportation experience for passengers in Bangkok and the larger metropolitan and regional areas.

Moreover, the new KTACTION continues a long tradition of national and royal support in providing passenger train services to Thailand's citizens and its millions of yearly foreign visitors [3]. However, the SRT has experienced significant operating difficulties recently, particularly in the quality of services it offers its passengers. Therefore, there has been a significant decline in passenger traffic and revenue [4].

Proof of these problems can be traced back to 1994 when the SRT peaked in passenger traffic with 88 million passengers. However, by 2016 this had dropped to 44 million passengers per year [5], and by the end of 2022, approximately 23 million passengers per year [6]. Various studies have also indicated that change is critical for the SRT's overhaul, but old equipment, aging infrastructure, hiring freezes, and bureaucratic personnel policies have hindered program progress [7].

The dramatic drop in SRT riders has also been attributed to the placing of safety speed restrictions on outdated equipment and infrastructure. This has made the SRT less competitive than other transportation options (e.g., vans, buses, and even low-cost carrier airlines) [8]. In an Asian Development Bank [7] 2014 study, passengers were found to be highly negative of SRT passenger train service due to punctuality and service delay problems. As 65% of its income at the time was generated from passenger traffic, this was highlighted as a significant problem moving forward, which unfortunately became a reality. Even with the opening of the new Bang Sue Grand Station, initial reports indicate that scheduling and delays are still serious problems.

The importance of change becomes even more significant when Thailand's rail system is viewed from a more extensive regional perspective. This is due to the SRT's pivotal role in the interconnection between mainland China's desire to use rail services to cheaply move freight south to Southeast Asian markets and their foreign export ports. Already, the 427-km, \$6 billion Laos section of the ASEAN (Association of Southeast Asian Nations) international connectivity grand plan has opened, with Thailand moving forward with numerous contracts to develop its internal rail infrastructures that connect to the broader ASEAN and BRI (Belt and Road Initiative) plans [3]. In addition to passenger trains, the railway is expected to carry significant cargo, supporting economic development and regional integration.

In Thailand, as in other Asian nations, trains carry passengers and freight and serve as a primary transportation medium for freight to many rural communities. Therefore, freight movement and cost by rail have been an area of intense study for many years, with one study reporting that in 2016 Thailand's total logistics value was estimated at \$86 billion, which represented 14% of Thailand's GDP [9, 10].

Therefore, logistics and freight movement by rail are critical to Thailand's overall economic well-being and competitive sustainability. Recognizing these facts, Thailand officials have developed a 20-year master rail plan [11], which in 2017 had a projected cost of about \$82 billion.

The plan discussed development plans from 2017 to 2036. During this period, Thailand hopes to have 1,726 miles of double-track lines, 1,527 miles of high-speed train standard-gauge lines, intermodal rail freight terminals, and network electrification [12,13]. The upgrade and expansion of rail infrastructure are also designed to boost tourism, help in the development of special economic zones (SEZs) [3], support local community development, and boost investor confidence [14].

1.1. Research benefits

The overall information obtained from the study can be used as a basis for management decisions, which in turn can help increase efficiency, motivation, passenger satisfaction, and service quality [15]. Additionally, with the successful implementation of these new management strategies, the State Railway of Thailand's organizational image can be improved, leading to higher passenger ridership. The study's findings will also provide a clearer understanding of a potential train passenger's decision to use SRT's rail services and make it possible to identify which factors they perceive most essential in making a favorable decision. From identifying the decision-making factors, relevant agencies and stakeholders can benefit in their planning and policy development to support and promote the quality of efficient and effective train services in the future.

1.2. Statement of the problem

The State Railway of Thailand is at a critical juncture as it attempts to move forward in a world that has placed it at the center of multiple grand plans to use rail as a competitive and sustainable mechanism for national and regional growth for decades. However, as various studies have reported, problems and challenges are deep. Legacy problems that must be overcome in superior passenger service include aging staff and pension liabilities [16]. A new generation of digitally enabled knowledge workers must also be found to run the advanced passenger reservation and logistics management systems. However, as always, politics has reared its nasty head, and like almost all large-scale infrastructure projects, corruption lurks around every corner [17]. Added to these issues over the past few years has been the destruction of world tourism due to the COVID-19 pandemic, which dropped Thailand's nearly 40 million visitors a year to almost zero at one point [18]. Although on the rebound and growing slowly, international tourists and their rail use will never be the solution to the SRT's economic recovery. With the end of the 'free-train' populist program [19,20] has come to the need for the SRT to turn to train timeliness, reliability, and safety to attract increased passenger ridership and *service satisfaction* (SS) [4].

Moreover, *service quality* (SQ) is also critical as it involves the quality of the coaches and stations, the staff, and their related services [21,22]. *Service motivation* (SM) is possible, but finding solutions is complex with an aging and highly bureaucratic workforce working under draconian hiring limitations for new staff [19]. When these items are combined and analyzed, reviewing the SRT's *organizational*

image (OI) and the methods necessary to improve an SRT user's decision to become a passenger is possible. The authors hope the study answers these questions, whose results can be used by rail transportation managers worldwide to improve their services, motivation, quality, and image.

Therefore, the authors have structured the remaining paper with a literature review (Section 2) and its five sections, which discuss organizational image (OI), service quality (SQ), service motivation (SM), service satisfaction (SS), and SRT use decision (SUD) making and their hypotheses and conceptual model. This is followed by Section 3, containing the study's methods which detail how and where the sample of 1,250 passengers was collected and the data analyzed. Section 4 is concerned with the analysis results, which are detailed in eight tables and a final model. Section 5 discusses the meaning of the results, while Section 6 offers a short but comprehensive conclusion. Additionally, section 7 presents the implications and limitations of the research. Finally, Appendix 1 shows the translated questionnaire.

1.3. Research objectives

1. After a review of the literature, identify which factors could affect an SRT train passenger's decision to use SRT passenger rail services.
2. After the construct identification, use a *goodness-of-fit* (GOF) and *confirmatory factor analysis* (CFA) to determine the model's fit before the structural equation model (SEM).
3. To develop an SEM of factors affecting the decision to use the SRT's passenger train services in Thailand.
4. To make recommendations to SRT stakeholders in an effort that leads to better strategic decision-making and planning.

2. Literature review

In this section, the authors explore which constructs and their related observed variables affect a passenger's decision to use Thailand's SRT passenger rail services.

2.1. Organizational image (OI)

In China, it has been reported that *organizational image* promotes perceived *service quality* and direct public transportation organizational value [22]. Moreover, the study determined that comfort, safety, reliability, convenience, economy, and speed are characteristics of a commuter's SQ perception and service satisfaction (SS).

In another paper concerning the aviation industry OI, the authors stated that OI is critically important in a highly competitive environment [23]. They also reported that the employees contribute the most to OI as the positive image of their organization has the greatest weight on the stakeholders and passengers.

Ideas about employee input on OI are supported by research from Keller and Richey [24], who also determined that an organization's brand personality reflects an employee's words, values, and actions. Other studies have pointed out that OI is an organization's identity, personality, and communication strategy that influences the strength of organizational/country associations in a person's mind [25–27]. The OI can also help positively improve consumers' views or public perceptions of a company, which then affects the company's marketing [28]. Therefore, public transport organizations' satisfaction promotion strategies must focus on comfort, convenience, and safety [22].

Furthermore, from this literature overview, the authors included three observed variables influencing *organizational image* (OI). These included *organizational image* (OI1), *brand image* (OI2), and *goods or services* (OI3). Finally, four hypotheses were conceptualized for OI:

- H1. Organizational Image (OI) affects Service Quality (SQ) in a positive and direct way.
- H2. Organizational Image (OI) affects Service Motivation (SM) in a positive and direct way.
- H3. Organizational Image (OI) affects Service Satisfaction (SS) in a positive and direct way.
- H4. Organizational Image (OI) affects SRT Use Decision (SUD) in a positive and direct way.

2.2. Service quality (SQ)

In Thailand, rail passenger *service quality* has been a target of various studies for many years. In a recent study, Jomnonkwo et al. [21] tackled the issue by developing 45 quality indicators, which were placed into four categories: staff, services, vehicles, and infrastructure/stations. Interestingly, the sample of 615 passenger train users felt the biggest obstacle to SQ was the SRT's train car features (e.g., age, noise, air conditioning, food services, toilets, seat comfort). In contrast, the best feature concerning SRT SQ was the staff services.

In another study concerning rail passenger services in Malaysia, the authors determined that although the perception is that rail travel is best if you wish to avoid travel congestion and reduce pollution, passenger ridership decreases because of unreliability issues and the lack of comfort in the system's rail coaches [29].

In a study from Italy, the authors analyzed the interviews of 96,763 rail service passengers. They discovered a newer SQ and passenger perceptions element and defined it as '*critical incidents*' (CI) [30]. According to the authors, CIs are particularly satisfying or

dissatisfying encounters. They also added that *added-value services* and *reliability* significantly positively contribute to passenger satisfaction.

Also in Italy, the authors arrived at the same conclusion as commuter rail planners in Thailand that increasing the use of public transportation is one of the most convenient strategies for alleviating the problems (e.g., congestion, pollution, noise) resulting from excessive use of the private vehicles in metropolitan urban areas [31]. From the survey of 16,000 North Italy rail riders, the research team reported that cleanliness, information, and service characteristics (e.g., punctuality and frequency) positively affected SQ.

In Bangladesh 1,037 rail passengers were surveyed about their opinions concerning service quality (SQ) and customer satisfaction [32]. Not too surprisingly, rail passenger SQ was determinant on security, female harassment, coach appeal, and station amenities and comfort.

These ideas find their foundation and are supported by early research on SQ by Grönroos [33], who identified SQ as having two essential and independent main elements. These were technical and functional, with technical quality referring to the tangible aspects of a service (e.g., equipment, physical facilities, and materials) used for service delivery. Technical quality also includes things like the service provider's appearance, the facilities' cleanliness, and the reliability of the equipment used.

Functional quality refers to intangible service aspects, such as the service's delivery process and the interactions between the service provider and the customer. This includes responsiveness, competence, convenience, and the overall customer experience. Grönroos also believed that technical quality creates expectations for functional quality, and functional quality reinforces or undermines the perceptions of technical quality [33].

Parasuraman et al. [34] developed the SERVQUAL Model, which became widely used and cited in the literature. According to the authors, SQ is the customers' perceptions of what they expected and received. Moreover, SQ is influenced by multiple factors including the service characteristics, the service delivery process, and the service provider and customer interactions. The authors also introduced the concept of *gaps*, which were the differences between what was expected and what was received. Finally, the authors argued that understanding and managing the five gaps was critical in improving SQ.

Later, Parasuraman et al. [35] added that SQ begins with a client or customer's expectation in using the service. Zeithaml et al. [36] then conceptualized what has become known as the RATER SQ model, which is now used to help organizations understand and manage SQ. The model stands for *Reliability, Assurance, Tangibles, Empathy, and Responsiveness* (RATER). It is based on the premise that these five elements are critical determinants of customer perceptions of SQ. Therefore, the RATER model provides a comprehensive framework for understanding the critical elements of SQ and helps develop strategies for improving SQ and customer satisfaction.

Furthermore, from this literature overview, the authors included five observed variables influencing SRT *service quality* (SQ). These included *tangible/physical evidence* (SQ1), *reliability* (SQ2), *responsiveness* (SQ3), *assurance* (SQ4), and *empathy* (SQ5). Finally, two hypotheses were conceptualized for SQ:

- H5. Service Quality (SQ) affects Service Motivation (SM) in a positive and direct way.
- H6. Service Quality (SQ) affects Service Satisfaction (SS) in a positive and direct way.
- H7. Service Quality (SQ) affects SRT Use Decision (SUD) in a positive and direct way.

2.3. Service motivation (SM)

Many studies have pointed out the complexities of employee *service motivation* within the public sector and the rail transportation and service maintenance sectors [37–39]. In these studies, there is a consistent thread that employee *service motivation* directly affects the outcome of work, organization development, and effectiveness. Similarly, career development and the employee's work environment significantly affect work motivation and performance [40]. The work environment and career development also directly affect employee performance [41].

Motivation can also be defined as a sequence of employees' feelings, needs, and reactions when they are pressured to meet requirements and goals [42]. Also, motivation can be both extrinsic and intrinsic, with extrinsic motivation involving the pursuit of rewards and escaping punishment, while intrinsic motivation involves the satisfaction from performing a task [43].

On a more extensive, multicultural level, Schwartz [44] outlined ten fundamental values the author argued are common to most cultures worldwide. According to Schwartz, these values are relatively stable across cultures and form a hierarchical value structure in which some values are seen as more important than others. The author also argues that these values influence a person's attitudes, beliefs, and behavior and are a fundamental aspect of human motivation and culture.

Another often-cited work is *Work and Motivation* by Victor Vroom. In it, the author discusses how frontline managers can use workplace motivation models (e.g., *Expectancy Theory of Motivation-ETM*) to increase employee motivation [45,46]. ETM also suggested that certain attitudes among staff can lead to actions, and job performance is based on abilities, personalities, experiences, skills, and a worker's knowledge concerning their field [47]. Finally, Vroom added that the amount of effort an employee puts into his work was all connected to that employee's motivation [38].

Furthermore, from this literature overview, the authors included two observed variables influencing SRT employee *service motivation* (SM). These included the employee's *emotion* (SM1) and *reasoning* (SM2). Finally, two hypotheses were conceptualized for SM:

- H8. Service Motivation (SM) affects Service Satisfaction (SS) in a positive and direct way.
- H9. Service Motivation (SM) affects SRT Use Decision (SUD) in a positive and direct way.

2.4. Service satisfaction (SS)

Service satisfaction in passenger trains is influenced by several factors, which can be grouped into three main categories: *tangibles*, *reliability*, and *empathy*. *Reliability* refers to train service timeliness and consistency, including punctuality, speed, and frequency. Similarly, Dzisi et al. [48] in Ghana added that minibus taxis (trotros) passenger SQ depended on service reliability, cost variability, and service responsiveness. *Tangibles* include the physical appearance of trains and facilities, comfort, cleanliness, and other sensory aspects [22,33]. *Empathy* encompasses the attitude and behavior of railway staff, including their responsiveness, helpfulness, and overall demeanor [33,36,48]. These ideas are consistent with Pakdil and Aydin [49] in Turkey who used the SERVQUAL Model to evaluate airline SQ and reported that responsiveness was crucial to passenger SQ happiness.

These are the most commonly observed variables in passenger train SQ, SS theory, and research. However, other variables can also impact SS in passenger trains. These include *communication* which refers to providing clear and accurate information to passengers concerning train schedule updates and train delays. *The convenience* encompasses aspects such as ease of ticket purchasing, station accessibility, and availability of amenities and facilities. *Value for money* refers to a passenger’s perception of the value of the train service concerning the cost of travel [50]. Finally, *personal safety* involves the perception of personal safety and security while traveling on trains.

These concepts are consistent with Kaewwongwattana et al. [51], who evaluated the potential for a common ticketing system in Bangkok and found that personal characteristics such as ego and lifestyle significantly influenced the decision-making process.

Therefore, five observed variables were selected to influence SRT passenger *service satisfaction* (SS). These included the passenger’s feelings about SRT employee *service equality* (SS1), *timely service* (SS2), *adequate service* (SS3), *continuous service* (SS4), and *progressive service* (SS5). Finally, one hypothesis was conceptualized for SS:

H10. Service Satisfaction (SS) affects SRT Use Decision (SUD) in a positive and direct way.

2.5. SRT use decision (SUD)

According to Kaewwongwattana et al. [51], Bangkok’s most critical urban problems today relate to transportation issues and the decision to use them, with the inglorious title of the ‘world’s worst commute’ having been given to Bangkok. This is because commuters can now spend an average of up to 2 h daily commuting to and from their workplace [52]. As such, for many years now, Thai government authorities have been trying to shift commuters to more effective and efficient mass rapid transit systems with the stated goal of reducing private car use in the metropolitan area by 30% and encouraging more commuters to use mass transit as another means of commuting [53]. The strategy seems to work as new private car registrations in Bangkok have dropped from 456,510 a year in 2013 to 269,830 in 2021 [54].

Simultaneously, commuter rail systems have grown extensively, supporting the transition from private vehicles to commuter rail systems [11,51]. Interestingly, gentrification and urban resident type (condos vs. shophouses) have also been proven to be a factor in Bangkok’s commuter rail or private vehicle use [55].

Other factors related to transportation system use include ticketing prices, their form (electronic vs. paper), and ticketing speed [56]. Therefore, when developing a mass-transit passenger payment system, it is essential that passenger ease of use, types of users, and trips be considered. Other factors include revenue collection simplicity, attractiveness to commuters, intermodality, revenue sharing and clearing simplicity, revenue maximization, and the reduction of fraud [51,56]. Furthermore, an often-cited method for decision use and passenger/commuter satisfaction is applying the 7Ps marketing mix [8,57]. In a study concerning railway transportation

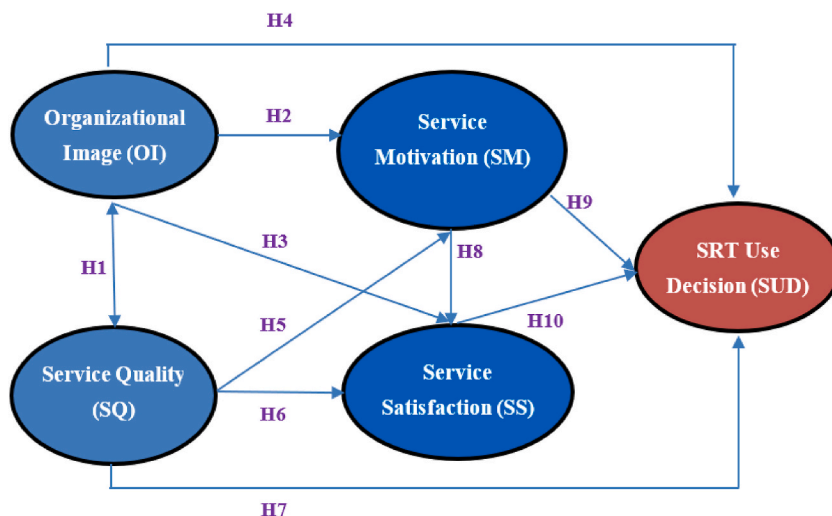


Fig. 1. The study’s conceptual model for the ten hypotheses.

services, Do and Vu [58] used the 7Ps (*price, product, place, people, promotion, process, and physical evidence*) to determine what factors impacted Vietnamese passenger satisfaction. They concluded that *price* influenced satisfaction most, thus their decision to use the service.

In Nigeria, it was suggested that when road van/bus passengers were evaluated using the 7Ps, they felt that staff quality, skills, and attitudes shaped passenger use decisions [59]. In another transportation study using the 7Ps, the authors determined that low-cost carrier (LCC) competitiveness is dependent on promotion, place, price, and services [8].

Therefore, the authors selected the following observed variables from these studies for *SRT use decision* (SUD). These included *product* (SUD1), *price* (SUD2), *place (distribution channels)* (SUD3), *marketing promotion (promotion)* (SUD4), *people (personnel/staff)* (SUD5), *process* (SUD6), and physical appearance (physical evidence) (SUD7). Finally, Fig. 1 presents the ten hypotheses conceptual model.

3. Methods

3.1. Ethics clearance

The Research Ethics Committee at the authors' university certified that the study complied with the Helsinki Declaration's international guidelines for human research protection. Furthermore, all study participants were notified of the confidentiality of their information [60–63]. The Principal Investigator Name Study code assigned was EC-KMITL_66_006, dated November 20, 2022. The informed consent form version 1 was also dated November 20, 2022.

3.2. Population and sample

This study investigated factors influencing an SRT passenger's willingness to use the SRT's passenger train service. The survey began in August 2022 and was completed in October 2022. The population was 23 million SRT passenger train users in Thailand.

The sample size of over 1,000 when using a Structural Equation Model (SEM) is often justified based on the requirement for adequate statistical power [64–67].

It should be large enough to ensure that the model can accurately estimate the relationships between the variables of interest, which requires a sufficient number of observations. Generally, a sample size of at least 500 is considered the minimum for SEM with large population sizes. However, a sample size of over 1,000 is recommended for more complex models with multiple latent variables and indirect effects. Additionally, larger sample sizes help reduce the impact of measurement error and low response rates while increasing the precision of the parameter estimates [68–70].

Given the study's extensive geographical coverage and large population size of 23 million potential passengers, it was decided that obtaining 50 questionnaires from each time group and each regional line effectively reduced measurement error (Table 2). Furthermore, other scholarly studies have suggested that structural equation models can use 20 questionnaires for each observed variable to achieve statistical validity [71]. As there were 22 observed variables in the study, a minimum of 440 useable questionnaires was judged as the minimum target using this method.

Table 1
Study constructs, observed variables, and supporting theory.

Study Constructs	Questionnaire Observed Variables-22 total	Item	98 Items	Supporting Theory
Organizational Image (OI) 13 questionnaire items in total	organizational image	OI1	5	[22–28]
	brand image	OI2	5	
	goods or services	OI3	3	
Service Quality (SQ) 21 questionnaire items in total	tangible/physical evidence	SQ1	4	[21,29–36], [72–74]
	reliability	SQ2	4	
	responsiveness	SQ3	4	
	assurance	SQ4	5	
	empathy	SQ5	4	
Service Motivation (SM) Seven questionnaire items in total	emotion	SM1	4	[37–47]
	reasoning	SM2	3	
Service Satisfaction (SS) Ten questionnaire items in total	service equality	SS1	2	[22, 33, 36], [48–51]
	timely service	SS2	2	
	adequate service	SS3	2	
	continuous service	SS4	2	
	progressive service	SS5	2	
SRT Use Decision (SUD) 47 questionnaire items in total	product	SUD1	11	[8, 51,52–59], [75–78]
	price	SUD2	5	
	place (distribution channels)	SUD3	4	
	marketing promotion (promotion)	SUD4	3	
	people (personnel/staff)	SUD5	8	
	process	SUD6	4	
	physical appearance (physical evidence)	SUD7	12	

Table 2
SRT passenger respondent individual characteristics (n = 1,250).

Individual Characteristics	Number	%
Gender		
Male	595	47.60
Female	655	52.40
Age		
less than or equal to 20 years of age	257	20.56
21–30	362	29.36
31–40	198	15.84
41–50	175	14.00
51–60	152	12.16
61 years of age or older	106	8.08
Relationship Status		
Single	515	41.20
Married	436	34.88
Divorced/widowed/separated	299	23.92
Highest level of education		
Lower Secondary Education/Vocational Certificate	392	31.36
High school diploma or High Vocational School Certificate	306	24.48
BA/BS degree	316	25.28
Master’s degree	94	7.52
Ph.D.	32	2.56
Other (primary school education only)	110	8.80
Monthly Income		
Less than or equal to 10,000 baht (\$296)	420	33.60
10,001–20,000 baht	645	51.60
20,001–30,000 baht	62	4.96
30,001–40,000 baht	59	4.72
40,001–50,000 baht	48	3.84
More than 50,000 baht	16	1.28
The average number of times you use an SRT train per week		
Less than three times	52	4.16
3–5	272	21.76
6–8	230	18.40
8–10	254	20.32
More than ten times	442	35.36

Therefore, multiple teams of university faculty graduate assistants were assigned to a station between specific times over seven days a week and tasked to collect a minimum of 50 questionnaires. Every fifth SRT passenger was targeted to participate. Multi-stage random sampling entailed random cluster sampling with five random sampling units per station along five railway lines, namely the Northern, Northeast, Southern, Eastern, and Maeklong lines, totaling 25 stations.

3.3. The design of the questionnaire

The SRT passenger use questionnaire contained two sections with 104 items (6 + 98) (Appendix 1). Section 1 contained six personal passenger characteristics (Table 2). In Section 2, there were 98 questionnaire items developed to cover the study’s five primary constructs of *SRT use decision*, *service quality*, *service satisfaction*, *organizational image*, and *service motivation*, as well as their 22 observed variables (Table 1). Section 2 used a Likert-type agreement opinion scale where ‘5’ was used to anchor opinions indicating that the SRT passenger had the *most agreement* (4.50–5.00) with the questionnaire item, while ‘1’ was used to anchor the SRT passenger’s *least agreement* (1.00–1.49) with the questionnaire item [18]. According to common practice, Likert-type scales are used to measure attitudes and opinions [79]. Moreover, these same surveys are usually presented with five or seven response categories with strongly agree and strongly disagree used at the ends as anchors of the scale. Although Taherdoost [80] has commented that a seven-scale scale is best, many others have suggested that a five-level scale increases response rates and response quality and reduces survey respondents’ ‘frustration level’ [81].

Section 2’s 98 items were divided into five parts. These included 47 items for Part 1’s *SRT use decision* (SUD). Part 2 focused on the *organizational image* (OI) with 13 items. Part 3 was focused on *service quality* (SQ) with 21 items. Part 4 focused on *service motivation* (SM) with seven items, and finally, Part 5 probed opinions about *service satisfaction* with ten items (Table 1). Table 5 details each

Table 3
The statistical indices used in establishing the GOF fit.

	χ^2	α	χ^2/df	CFI	NFI	GFI	AGFI	RMSEA	RMR	SRMR
Criteria	$p \geq 0.05$	≥ 0.70	≤ 2.00	≥ 0.95	≥ 0.90	≥ 0.90	≥ 0.90	≤ 0.05	≤ 0.05	≤ 0.05
Values	2.23	0.86–0.93	0.14	0.99	0.98	0.99	0.99	0.00	0.00	0.00
Results	–	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Excellent

construct’s Cronbach Alpha (α) reliability values [82].

3.4. Research instrument validity and reliability

Five experts undertook content validity (CV) assessment on Parts 2–5 to assess the questionnaire’s design. This is essential to establish the accuracy of the variables selected and measured [83]. The index of item-objective congruency (IOC) was used as the CV measurement tool [60].

The five experts included two senior SRT executives and three professors with at least five years of teaching experience and a PhD. in business administration or innovation research. Items with ≤ 0.50 were either deleted or revised [84]. After this, the pilot test of 30 questionnaires had each item examined for reliability, usability, and accuracy independent of the 1,250 questionnaires collected for the final analysis. A *pilot test* is usually accomplished before the survey as it helps researchers determine each questionnaire’s item clarity and relevance [85].

Furthermore, internal consistency from the pilot test was calculated using Cronbach’s α , which according to Hair et al. [82], $\alpha \geq 0.8$ is good, and $\alpha \geq 0.9$ is excellent. Results revealed that the pilot test α was 0.86–0.93 for the five constructs, indicating excellent reliability. The data analysis then used descriptive statistics (mean, standard deviation, kurtosis, and skewness) [86], and an SEM to assess the ten hypotheses.

3.5. Data collection

Step 2 used systematic random sampling to select every fifth passenger until 50 train passengers’ questionnaires from each randomly selected station along five routes were obtained. In order to facilitate data collection, the researcher used five time periods, which were 06:00–08:00, 09.01–11:00, 11.01–13.00, 13.01–15.00, and 15.01–17.00. Ten passengers were selected from each of these five-time slots until 1,250 passenger questionnaires were obtained.

4. Results

This section details the results from the sampling process and the LISREL 9.10 SEM.

4.1. Results for SRT passenger information (n = 1,250)

Section 1’s responses from the 1,250 SRT rail passengers indicated that 52.40% were female, with 29.36% between 21 and 30. This was followed by those who were less than or equal to 20 (20.56%). Also, 41.20% indicated they were single, while 64.64% indicated their education level was below a BA/BS degree. Also, 51.60% had monthly salaries between 10,001–20,000 baht (\$296–\$592), while another 33.60% were making 10,000 baht (\$296) per month or less. Interestingly, a majority of 35.36% of the SRT passengers were riding the train ten times per week or more (Table 2).

Table 4
Construct and observed variable analysis results.

Constructs	α	AVE	CR	Observed/Manifest Variable Name	Item	R ²	Loading
SRT Use Decision (SUD)	0.93	0.33	0.75	product	SUD1	0.54	0.52
				price	SUD2	0.56	0.58
				place (distribution channels)	SUD3	0.50	0.50
				marketing promotion (promotion)	SUD4	0.58	0.64
				people (personnel/staff)	SUD5	0.60	0.52
				process	SUD6	0.52	0.55
				physical appearance (physical evidence)	SUD7	0.46	0.53
Organizational Image (OI)	0.91	0.41	0.68	organizational image	OI1	0.66	0.63
				brand image	OI2	0.60	0.60
				goods or services	OI3	0.75	0.69
Service Quality (SQ)	0.93	0.43	0.79	tangible/physical evidence	SQ1	0.38	0.62
				reliability	SQ2	0.37	0.61
				responsiveness	SQ3	0.58	0.76
				assurance	SQ4	0.38	0.61
				empathy	SQ5	0.54	0.66
Service Motivation (SM)	0.86	0.54	0.70	emotion	SM1	0.52	0.63
				reasoning	SM2	0.70	0.83
Service Satisfaction (SS)	0.87	0.47	0.82	service equality	SS1	0.43	0.65
				timely service	SS2	0.55	0.74
				adequate service	SS3	0.49	0.70
				continuous service	SS4	0.44	0.67
				progressive service	SS5	0.46	0.68

Table 5
Construct values for direct effect (DE), indirect effect (IE), and total effect (TE).

Exogenous Latent Variables	R ²	Effects	Endogenous Latent Variables			
			SS	SM	SQ	OI
Service Quality (SQ)	0.42	DE	–	–	–	0.59 ^a
		IE	–	–	–	–
		TE	–	–	–	0.59 ^a
Service Motive (SM)	0.50	DE	–	–	0.28 ^a	0.53 ^a
		IE	–	–	–	0.25 ^a
		TE	–	–	0.28 ^a	0.78 ^a
Service Satisfaction (SS)	0.64	DE	–	0.35 ^a	0.56 ^a	0.42 ^a
		IE	–	–	0.26 ^a	0.26 ^a
		TE	–	0.35 ^a	0.82 ^a	0.68 ^a
Service Use Decision (SUD)	0.71	DE	0.67 ^a	0.27 ^a	0.54 ^a	0.36 ^a
		IE	–	0.26 ^a	0.35 ^a	0.28 ^a
		TE	0.67 ^a	0.53 ^a	0.89 ^a	0.63 ^a

^a Sig.<.01.

4.2. Goodness-of-fit testing (GOF) results

A goodness-of-fit test is used when doing a structural equation model to measure how well a given set of data fits a predetermined model. Goodness-of-fit tests help determine whether the model adequately represents the data, which in turn tells us whether the model captures all the relevant information. Based on the GOF results presented in Table 3 [71,87–91], it can be interpreted that the model’s fit was excellent [89].

4.3. CFA results

The CFA results shown in Table 4 first indicate that the α values were good to excellent (0.86–0.93) [82]. The AVE (average variance extracted) is also used to assure model fit validity. In this case, values ranged from 0.33 to 0.54. It should be noted that if CR values are ≥ 0.6 and AVE ≤ 0.5 , convergent validity (CV) is considered acceptable [91]. Also, composite reliability (CR) values from 0.60 to 0.90 in more complex models are acceptable [92]. Also, the observed variable loading factors are acceptable, as each is ≥ 0.5 [93]. The coefficient of determination (R²) values represents the *effect size*, which is the strength between the dependent and independent variables [94]. Therefore, the model’s strength is further established with R² values 0.37–0.75 and CR values 0.68–0.82 [95].

4.4. Analysis results of the standard coefficient of influence

The model’s causal variable analysis determined that all variables positively affected SUD, with a coefficient of determination R² of 71% [96] (Table 5). Additionally, the construct TE values were ranked from highest to lowest, with SQ (0.89) being the highest, then SS (0.67), then OI (0.63), and the lowest was SM (0.53) [97]. Additionally, there were very strong relationships between SS and SQ (TE = 0.82), SUD and SQ (TE = 0.89), and SM and OI (TE = 0.78).

4.5. Descriptive analysis

Table 6 shows the descriptive analysis results [98]. Moreover, Curran et al. [99] have reported that values for kurtosis $\leq |7|$ and skewness $\leq |2|$ are acceptable.

4.6. Construct correlation coefficients testing results

In Table 7, five strong correlations were found based on commonly accepted interpretations ($r = 0.50$ – 1.00) [60].

Table 6
Descriptive statistics of the research constructs.

Construct	Mean	SD	Skewness	Kurtosis	Interpretation
SRT Use Decision (SUD)	4.37	0.58	–2.17	0.98	Agree
Organizational Image (OI)	4.54	0.59	–1.94	0.07	Strongly Agree
Service Quality (SQ)	4.54	0.57	–2.33	1.62	Strongly Agree
Service Motivation (SM)	4.61	0.52	–1.85	0.82	Strongly Agree
Service Satisfaction (SS)	4.62	0.51	–2.17	0.69	Strongly Agree

Table 7
Correlation coefficients (r) between latent variables (beneath the diagonal).

Study Constructs	SUD	OI	SQ	SM	SS
SRT Use Decision (SUD)	1				
Organizational Image (OI)	.45**	1			
Service Quality (SQ)	.54**	.52**	1		
Service Motivation (SM)	.43**	.70**	.59**	1	
Service Satisfaction (SS)	.42**	.46**	.47**	.68**	1
Mean	4.37	4.54	4.54	4.61	4.62
SD	0.58	0.59	0.57	0.52	0.51
Skewness	-2.17	-1.94	-2.33	-1.85	-2.17
Kurtosis	0.98	0.07	1.62	0.82	0.69

Note. **Sig.<0.01.

4.7. Testing results for the ten hypotheses

The ten hypotheses were all determined to be supported by varying degrees of strength (Table 8). Furthermore, the most significant relationship strength was determined to be in H10 between service satisfaction (SS) and SRT use decision (SUD) (r = 0.67, t-value = 8.24, p ≤ 0.01), followed by H1’s relationship between organizational image (OI) and service quality (SQ) (r = 0.59, t-value = 6.94, p ≤ 0.01), and then H6’s relationship between service quality (SQ) and service satisfaction (SS) (r = 0.56, t-value = 6.62, p ≤ 0.01) (Fig. 2). Hair et al. [82] also states that a 95% confidence level is achieved when t-values ≥ 1.96.

5. Discussion

Testing results from the LISREL 9.10 SEM determined that all ten hypotheses were supported. Moreover, the model’s causal variable analysis determined that all variables positively affected SUD, which had a coefficient of determination R² of 71%. The following sections explore the hypotheses, testing strengths and weaknesses and their interrelationships.

5.1. Organizational image (OI)

The four hypotheses test results for OI were all direct and positive, with H1’s relationship between OI and SQ being strong with r = 0.59, the t-test value = 6.94, and p ≤ 0.01. This was followed by H2’s moderately strong relationship between OI and SM (r = 0.53, t-test value = 5.42, p ≤ 0.01), and H3’s relationship between OI and SS was also moderate (r = 0.42, t-test value = 4.96, p ≤ 0.01). Finally, there was a weak relationship in H4 between OI and SUD (r = 0.36, t-test value = 3.84, p ≤ 0.01).

Confirmation of an OI’s importance to a passenger’s decision to use commuter services can also be found in a study from China. The authors determined that commuter rail SQ significantly contributed to a passenger’s reuse intention [100].

5.2. Service quality (SQ)

The three hypotheses test results for SQ were all positive and direct, with H5’s relationship between SQ and SM being weak but supported with r = 0.28, the t-test value = 3.26, and p ≤ 0.01. This was followed by H6’s moderately strong relationship between SQ and SS (r = 0.56, t-test value = 6.62, p ≤ 0.01). Finally, H7’s relationship between SQ and SUD was moderate (r = 0.54, t-test value = 4.50, p ≤ 0.01).

These findings are consistent with research from Seville, Spain, in which 3,211 light rail passengers voiced their opinion that the system’s quality SQ led to their satisfaction with the metro’s service [72], Byun et al. [73] have also reported that low-cost carriers (LCC) airline services are made up of both intangible and tangible elements, with SQ being a critical factor in achieving strategic value and competitive advantage within a highly competitive LCC global marketplace [74].

Table 8
Hypotheses testing results.

Hypotheses Statements	r	t-value	Supported	Order
H1 Organizational Image (OI) affects Service Quality (SQ) in a positive and direct way.	0.59	6.94**	Supported	2
H2 Organizational Image (OI) affects Service Motivation (SM) in a positive and direct way.	0.53	5.42**	Supported	5
H3: Organizational Image (OI) affects Service Satisfaction (SS) in a positive and direct way.	0.42	4.96**	Supported	6
H4: Organizational Image (OI) affects SRT Use Decision (SUD) in a positive and direct way.	0.36	3.84**	Supported	7
H5: Service Quality (SQ) affects Service Motivation (SM) in a positive and direct way.	0.28	3.26**	Supported	9
H6: Service Quality (SQ) affects Service Satisfaction (SS) in a positive and direct way.	0.56	6.62**	Supported	3
H7: Service Quality (SQ) affects SRT Use Decision (SUD) in a positive and direct way.	0.54	4.50**	Supported	4
H8: Service Motivation (SM) affects Service Satisfaction (SS) in a positive and direct way.	0.35	3.79**	Supported	8
H9: Service Motivation (SM) affects SRT Use Decision (SUD) in a positive and direct way.	0.27	3.21**	Supported	10
H10: Service Satisfaction (SS) affects SRT Use Decision (SUD) in a positive and direct way.	0.67	8.24**	Supported	1

*p ≤ 0.05, **p ≤ 0.01.

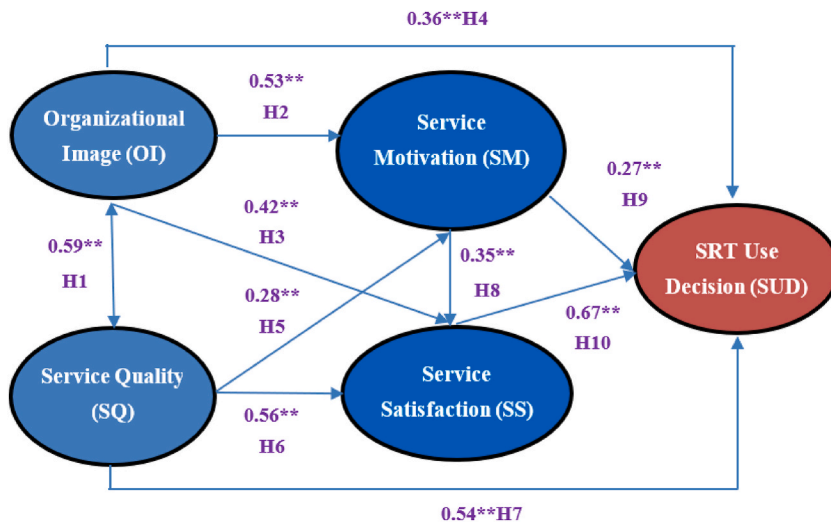


Fig. 2. Structural equation model testing results for SRT passenger train use decision in Thailand.

5.3. Service motivation (SM)

The two hypotheses test results for SM were positive and direct, with H8’s relationship between SM and SS being weak but supported with $r = 0.35$, the t -test value = 3.79, and $p \leq 0.01$. This was followed by H9’s weak but positive relationship between SM and SUD ($r = 0.27$, t -test value = 3.21, $p \leq 0.01$).

Literature for public service motivation (PSM) has grown in recent decades, with a notable increase in non-Western studies [101]. Perry and Wise [102], p. 368 identified PSM as "an individual’s predisposition to respond to motives grounded primarily or uniquely in public institutions and organizations." More recent research has added that PSM significantly contributes to positive work outcomes, with Homberg et al. [103] noting the significant positive effect SM plays in employee job satisfaction. However, Prysmakova [104] found that regular contact with citizens mediated SM and job satisfaction relationships in Poland.

5.4. Service satisfaction (SS)

SS’s final hypothesis test results were positive, direct, and strong, with H10’s relationship between SS and SUD having an $r = 0.67$, a t -test value = 8.24, and $p \leq 0.01$. Moreover, multiple studies have pointed out the essential nature of reliability on SS [4,22,29]. Baker [105] added more confirmation by stating that reliability is a function of correctly providing customers with promised service. Reliability also involves performing services dependably, accurately, and with punctuality. These ideas are essential in SS when making reservations and ticketing [106]. With the end of the SRT’s ‘free-train’ populist program [19,20] has come to the need for an era of train timeliness, reliability, and safety to attract increased passenger ridership and SS [4].

5.5. SRT use decision (SUD)

As reported thus far, all ten hypotheses were supported, with four of the ten investigated having a direct influence on SUD. When these four hypotheses were ranked in order from most influential to least influential, H10 (service satisfaction) had the greatest influence on SUD, followed by H7 (service quality), then H4 (organizational image), and finally, H9 (service motivation).

In Holland, an interesting study showed that even though the government was behind a push to implement light rail to mitigate congestion and support mobility, surprisingly, plans slowed due to local decision-making and the national government’s detachment from the local processes [75]. In a similar study in the US city of Memphis, Tennessee, the US Federal Transit Administration (FTA) used a sensitivity analysis. It determined that a change in the criteria importance or participant group priority influences the trade-offs between the criteria and the outcome [76].

On the other hand, Baker [77] suggested that newness is vital in transportation decision-making. When the author examined airline low-cost carrier SQ and customer satisfaction, it was determined that newness wins over older, more established, legacy airlines (e.g., national carriers). Thus, OI plays a backseat role in transportation SQ and SS.

In Taiwan, high-speed rail (HSR) passengers’ acceptance of mobile ticketing services was investigated [78]. Results of the SEM showed that perceived risk, perceived usefulness, and perceived ease of use all influence QR code adoption. In Thailand, according to Sivalai and Rojniruttikul [107], rail passenger use decision depends on the safety and efficiency of the rail system’s facilities.

6. Conclusion

The study examined how *organizational image*, *service quality*, *service motivation*, and *service satisfaction* affected the State Railway of Thailand's passenger use decision-making. A sample of 1,250 SRT passenger questionnaires was collected from August 2022 to October 2022 from five regional SRT rail lines and their associated 25 stations.

Using a CFA goodness-of-fit to confirm the model's 22 observed variables fit using 98 questionnaire items, a structural equation model using LISREL 9.10 was then used to analyze the ten hypothesized relationships. The quantitative research used a 5-level questionnaire to measure the study's five constructs and 22 observed variables. The reliability of the data ranged from 0.86 to 0.93. The data analysis included calculating various statistical measures and using structural equation modeling (SEM) with LISREL 9.10 software.

Results showed that all the model's causal variables positively affected the *SRT use decision*, which had an R^2 of 71%. The analysis also revealed that *service quality* was most significant when ranked by total effect (TE) values, followed by *service satisfaction*, *organizational image*, and *service motivation*. Additionally, all ten hypotheses were supported, with *service satisfaction* judged the most essential to an SRT passenger's use decision. Also, four of the ten investigated hypotheses directly influenced SUD. Ranked in order from most influential to least influential were H10 (service satisfaction) had the greatest influence on SUD, followed by H7 (service quality), then H4 (organizational image), and finally, H9 (service motivation).

7. Implications and limitations

The importance of the study is its contribution to an ever-growing requirement for Thailand's SRT to serve as a regional hub in a larger Southeast Asian/China rail infrastructure development strategy [108]. The paper also contributes significantly to the academic literature on factors affecting rail transportation use intent.

However, the study is limited as it only represents the passengers who used the SRT passenger train services. The study did not survey the other Thai commuter rail services, such as the BTS (Bangkok Transportation System), the MRT (Metropolitan Rail Transport) in Bangkok's metropolitan area, or other regional transportation systems.

Production notes

Author contribution statement

Chalernsap Lieophairot, Doctoral student: Conceived and designed the experiments; Performed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Nuttawut Rojniruttikul, PhD.: Conceived and designed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data.

Data availability statement

Data included in article/supp. material/referenced in article.

Declaration of interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix 1. Research Questionnaire

Subject: Factors Affecting State Railway of Thailand (SRT) Passenger Train Service Use Decision: A Structural Equation Model

Explanation: This questionnaire is divided into two main sections:

Section 1: General information of the respondents.

Section 2: Questionnaire on the constructs and their observed variables concerning the decision to use the SRT passenger train service in Thailand

Part 1

General information about the respondents

1. Gender

- (.) Male (.) Female
- 2. Age
 - (.) Twenty years old or less. (.) 21–30 years of age
 - (.) 31–40 (.) 41–50
 - (.) 51–60 (.) Over 60 years of age.
- 3. Relationship status
 - (.) Single (.) Married (.) divorced/widowed/separated
- 4. Highest level of education
 - (.) Lower Secondary School/Vocational Certificate
 - (.) Upper Secondary School/Vocational Certificate
 - (.) Bachelor’s degree
 - (.) Master’s degree
 - (.) Doctoral degree (.)
 - Other, please specify (.....)
- 5. Monthly Income
 - (.) 10,000 Thai baht per month or less (.) 10,001–20,000 Thai baht per month
 - (.) 20,001–30,000 Thai baht per month (.) 30,001–40,000 Thai baht per month
 - (.) 40,001–50,000 Thai baht per month (.) Ober 50,000 Thai baht per month
- 6. Average number of times per week you use an SRT passenger train
 - (.) Less than three times a week
 - (.) 3–5 times a week
 - (.) 9 - 10
 - (.) More than ten times a week

Section 2

Questionnaire on the decision to use the SRT passenger train service in Thailand

Instructions: Place a checkmark in the box that best corresponds to your train opinion about using the SRT passenger train service.

- Five points indicate a user’s *most agreement* with the item.
- Four points indicate a user’s *high agreement* with the item.
- Three points indicate a user’s *moderate agreement* with the item.
- Two points indicate a user’s *low agreement* with the item.
- One point indicates a user’s *least agreement* with the item.

SRT use decision – 47 items	Decision Level				
	5	4	3	2	1
Product-11 items					
1. There are sufficient trains, routes, and schedules for me and other passengers to use.					
2. The train coach size is comfortable for other passengers and me.					
3. The SRT passenger train coaches maintain a comfortable temperature when the coach is air-conditioned.					
4. The SRT passenger train coaches are clean.					
5. An adequate number of trains and routes serve each central station.					
6. The SRT train system has no problems.					
7. The SRT train system is safe.					
8. The SRT maintains enough service routes covering essential areas.					
9. The SRT is continuously expanding its service routes.					
10. There is an adequate amount of hand washing soap, water, and alcohol gel at all SRT service points.					
11. All passengers are screened using Thai Save Thai (TST) or other APPs.					
Price-5 items					
12. The price is reasonable for the distance.					
13. The price is reasonable for the speed of travel.					
14. The price is reasonable for the convenience of traveling.					
15. The price is reasonable for the quality of the railway system.					
16. The price is at an acceptable level.					
Place (Distribution Channels)-4 items					
17. There are a sufficient and convenient number of ticket offices and counters for SRT passengers.					
18. There are sufficient ticket vending machines for SRT passengers.					
19. Each automatic ticket vending machine clearly explains the ticket purchase process in foreign languages and Thai.					
20. The SRT system provides various convenient and alternative advance ticketing channels such as by phone, website, and smartphone applications, reducing personal contact risk.					
Marketing Promotion (Promotion)-3 items					
21. SRT passenger train promotional prices are reasonable.					
22. The benefits obtained from using the card are appropriate.					

(continued on next page)

(continued)

SRT use decision – 47 items	Decision Level				
	5	4	3	2	1
23. The SRT business partner benefits, such as special discounts from their mobile network provider when topping up their ticket cards, are appropriate.					
People (Personnel/Staff)-8 items					
24. SRT station staff provides sound advice and public relations.					
25. SRT station platform security personnel provide good service.					
26. SRT station staff are appropriately dressed.					
27. SRT station staff are polite and courteous.					
28. All SRT station staff are given full-dose vaccination and ATK screening every seven days.					
29. All officers or employees comply with UP-DMHTA measures with a person responsible for strictly monitoring and supervising the implementation of the measures.					
30. Every SRT officer or employee is screened using the Thai Safe Thai employee screening program.					
31. All SRT station staff strictly follow DMHTA measures.					
Process-4 items					
32. The SRT system has a convenient E-Ticketing system.					
33. The SRT system uses a fast-ticketing system.					
34. The SRT system service uses a first-come, first-served basis, which does not discriminate between passengers.					
35. SRT staff are quickly able to solve train system failures and delays.					
Physical Appearance (Physical evidence)-12 items					
36. The SRT stations and platforms are safe.					
37. SRT stations provide a pleasant and comfortable environment.					
38. SRT station staff clean and disinfect each facility frequently.					
39. There are convenient shops and services within each SRT station.					
40. Each SRT station and platform displays an appropriate number of signs for things such as train fares, exit and entrance signs, and local area maps.					
41. Each SRT station provides facilities for the disabled or passengers with large or numerous bags.					
42. Each SRT station provides easy connection points to other public transportation systems such as buses, taxis, and light rail.					
43. Each SRT station provides easy connections to other commercial facilities such as shopping malls and hotels.					
44. Each SRT station provides a method in which passengers can avoid congestion and have appropriate distances between passengers when waiting for service.					
45. Each SRT coach only allows a maximum capacity of 75%.					
46. SRT train coach benches are correctly arranged for spacing measures in order not to cause congestion.					
47. Station staff efficiently organize the flow of passengers, baggage claim, and proper spacing.					
Organizational Image Items					
Organizational Image-5 items					
1. The SRT is transparent, verifiable, and reliable.					
2. The SRT is well known and widely accepted mode of transportation in Thailand.					
3. The SRT is well known for its world-class standards.					
4. The SRT is a leader in domestic travel and transportation.					
5. The SRT benefits a wide range of individuals from different social and economic classes. It also provides scholarships and promotes culture, religion, and community activities.					
Brand Image-5 items					
6. The SRT brand reflects the train system’s uniqueness.					
7. The SRT is well-known among travelers.					
8. The SRT brand gives a feeling of security when using the service.					
9. The SRT brand impresses passengers.					
10. The SRT system uses high-quality materials and equipment.					
Goods or Services-3 items					
11. The SRT projects a modern, clean, and safe image.					
12. SRT staff project an image that is courteous, professional, non-discriminatory, honest, friendly, and helpful.					
13. SRT service is in accordance with established standards.					
Service Quality Items-21 items					
Tangible/Physical Evidence-4 items					
1. Each SRT coach is clean and suitable for service.					
2. SRT staff uniforms are neat.					
3. SRT facility passenger service signs and symbols are beautiful.					
4. SRT facilities and trains meet passengers’ needs.					
Reliability-4 items					
5. SRT trains are reliable and on schedule.					
6. SRT trains are safe.					
7. SRT train service is consistent.					
8. SRT facilities and trains adequately notify rules and regulations at all levels.					
Responsiveness-4 items					
9. SRT personnel provide prompt passenger service requests.					
10. SRT personnel are friendly and courteous.					
11. SRT personnel provide services to passengers willingly.					
12. SRT personnel are enthusiastic about solving passenger problems.					

Decision Level
5 4 3 2 1

Decision Level
5 4 3 2 1

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