

INDICATORS OF THE INTERCITY TRAIN SERVICE TO USE UNDER THE NEW NORMAL

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Abstract

This research examines the indicators of intercity train service quality that affect the intention to use the service under the new lifestyle. The objective aims to study indicators that influence the intention to travel by intercity train on the northeastern route in Thailand. A questionnaire was used as a tool to collect data on the respondents' personal characteristics and indicators related to the samples' intention to use its services. The researcher collected 600 data sets from people who used intercity train services in Nakhon Ratchasima, Khon Kaen, and Nong Khai provinces and consequently analyzed them using structural equation modeling. The study results on service quality and attitude revealed that satisfaction with the service quality and its perception were the main factors that directly affected the intention to use the intercity train service. In addition, the indicators for the 5 service quality factors showed that the factor of service was mainly of highest value, followed by vehicles, employees, terminals, and information at the 0.01 statistical significance level. Therefore, train service providers should plan and establish policies regarding services, such as a ticketing system where passengers can purchase tickets in advance and cleaning plans, as well as security guards inside the terminals where international measures for taking care of vulnerable groups of passengers are available.

Keywords: Factors in Service Development; Intention; Intercity Trains; Service Quality; Traveling Under the New Normal

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Introduction

Currently, Thailand is implementing the 20 year national strategy (2018-2027), aiming to achieve sustainable national development. The Thai government places great importance on the infrastructure enhancement as well as the transportation system, which is one of the strategies that emphasizes the integrated transport system. Its development is divided into 2 sections: infrastructure development, such as roads, bus stations, and railway lines; and transportation management, such as transportation system management and transportation service model development, of which rail transportation is the main public transportation system supported by the government. For this expansion, the Ministry of Transport has undertaken the construction, improvement, and extension of infrastructure and transportation systems in all areas of Thailand, covering both urban and regional areas. At present, in Thailand, construction and improvement of intercity railway lines, namely double-track railways and high-speed trains, are underway in various areas of every region, including the northeastern regional areas, where construction of intercity trains is underway to link the main urban areas, namely Nakhon Ratchasima, Khon Kaen, and Nong Khai. According to the study of the construction route of the high-speed rail system development project to connect the region between Bangkok and Nong Khai during Phase 1: Bangkok-Nakhon Ratchasima, the project has 253 kilometers and comprises 6 stations, namely Bang Sue, Don Mueang, Ayutthaya, Saraburi, Pak Chong, and Nakhon Ratchasima stations. The train departing frequency is every 90 minutes between 6:00 a.m. and 10:00 p.m., with a maximum speed of 250 kilometers per hour. The travel time is approximately 1 hour and 30 minutes, with the initial fare at 107 baht and the maximum price at 534 baht (State Railway of Thailand, 2019). As high-speed train travel will help reduce travel time, studies on the development of the public transport system service are significantly important in conjunction with such infrastructure enhancements as earlier mentioned.

Rail transport service provision presents a service model different from road transport as it is not a door-to-door transport but a travel that connects from the origin to the station or passenger buildings, awaiting to travel to the station or passengers' terminal near the destination. It is therefore necessary to provide various basic facilities while traveling to serve their needs during service, covering all passenger groups, such as

general passengers, elderly, and disabled people, and travel purposes, such as travel for sightseeing and relaxation, business travel, and travel for exercise activities, etc. However, at present, the world is experiencing a crisis from the spread of the COVID-19 virus. It causes changes in the way of life, causing a wide impact in every sector as well as travel. As a result, the pattern of various activities in everyday life must change, including the public transport service pattern that has changed as well. The Ministry of Public Health has determined guidelines for preventing the spread of the COVID-19 virus by maintaining the distance in a society or social distancing as a measure to stop or avoid contact with the virus from one person to another by creating distance among other people in societies (Wipulakorn, 2563). From such measures, the service setup of the public transport system has changed, such as leaving space between seats on buses, limiting the number of passengers using public transport and managing various basic facilities in public transportation system.

Based on a review of previous literature, there have been studies on the quality of rail transportation services. Most research typically identifies five key factors in assessing service quality, which include: (1) Crews: This factor pertains to the readiness of service providers to effectively and promptly meet passengers' needs in all situations (Abbink, 2014); (2) Information: This factor involves the availability of useful information for passengers that meets international standards (Eboli and Mazzulla, 2015); (3) Services: This factor relates to the facilitation of services provided to passengers (Eboli and Mazzulla, 2012); (4) Terminals: This factor concerns the readiness of stations to provide services (Cascetta and Carteni, 2014); and (5) Vehicles: This factor deals with the readiness of trains and the safety of the vehicles in service (Jomnonkwao *et al.*, 2020). Therefore, these factors have been compiled in this study to comprehensively examine the factors affecting the quality of rail transport services in all dimensions.

The infrastructure development and service model of present public transport requires management for all passenger groups. The concept of universal design has been applied to public transportation service facilities, such as seating arrangements and special lanes for the elderly and disabled, arranging passenger carriages for women and mothers with children, managing terminal areas, etc. Such management must be consistent with social distancing measures. Therefore, this research investigates service expectation factors that affect

intentions to use the intercity train services available on the Nakhon Ratchasima-Nong Khai route, which comprises high-speed trains and double-track railways in the areas of Nakhon Ratchasima, Khon Kaen, and Nong Khai provinces, as a guideline for planning services to meet passengers' needs. This research uses structural equation modeling to analyze the relationships between models of intercity train service patterns to set policies and plan guidelines for future intercity train services.

Concepts theories and Related research

Public Transportation System

Public transportation is a passenger transportation service that all people can use. The provision of public transportation services comes in many models based on the economic and social conditions of each area, including the service users' satisfaction. Vuchic (1981) stated that public transportation systems can be classified according to the service types into 4 types: private transportation, paratransit or for-hire transportation, urban transit, mass transit or public transportation, and common-carrier urban passenger transportation. Public transportation is a transportation system comprising various travel models, such as buses, trains, and other modes. An intercity train is one of the public transportation systems that provides intercity train services with faster speeds and longer distances than urban and suburban trains. Moreover, most intercity trains travel between cities or regions to deliver people and goods to various areas, including double-track trains and high-speed trains.

Service Theory

Service is helping or acting for the others' benefits. Good service makes service recipients be impressed and admire the organization. This is the good point beneficial to an organization. Behind the success of almost every job, service work is often found to be a tool to support various responsibilities, such as public relations, academic services, etc. Therefore, if the service is good, the service recipients will be impressed. As the service is considered the face of the organization, the organization image will also be good (Anantapak, 2011). Good service often results in providing service recipients with positive attitudes, thoughts, and feelings towards the service provider. The services are divided into 4 characteristics as follows: 1) intangibility, it is a service characteristic that cannot be seen, heard, marked, or felt before purchasing or receiving that service; 2) inseparability. It is a service characteristic that cannot be separated between the producer and the

service provider. It is the production that occurs simultaneously with consumption or service use; 3) heterogeneity is the service characteristic that is not stable. The services involve many factors, both internal and external, and 4) perishability characteristics that cannot be hoarded in producing any product. Manufacturers can predict and produce in advance to accommodate increased or decreased purchase volumes. However, services cannot be hoarded. This occurs when buying and selling occur at the same time (Lovelock and Wright, 2002).

Service Quality

Service plays a crucial role across various fields of work, as it involves providing assistance or actions that benefit others. Both government and private business sectors rely on service in their operations, including selling merchandise or products, where service is always a component. Service quality serves as a tool to measure efficiency in meeting customer needs within the service industry. Customers assess service quality based on their actual experiences compared to their expectations prior to using the service. Parasuraman *et al.* (1985, 1988) developed the SERVQUAL model, a framework for evaluating service quality, which consists of five dimensions: tangible (physical characteristics), reliability, responsiveness, assurance, and empathy.

Expectations

The concept of expectancy theory was introduced by Vroom (1964), who explained the process of human motivation to work. To motivate employees to work further, one must firstly understand the thought process and perception of a person. Common individuals often have many expectations that arise from society, the groups of friends, or the groups in which they are members, transmitting social values to them, or their decisions to take any action to achieve what is expected, such as deciding to pursue higher secondary education in a field of interest to have a career as expected or to choose a company to transport goods to potentially deliver the goods to the correct destination, at the right place, on time, and with the least cost, etc. The previous research by Zeithaml *et al.* (1990) stated that the 5 main factors that affected service recipients' expectations included 1) being recommended by other people, 2) individual needs, 3) past experiences, 4) news from the media and service providers, and 5) price. Individual expectations are feelings that affect satisfaction. When service recipients compare the expected service level with the level of service received, the three satisfaction levels in an individual's perception are: Level 1, being dissatisfied, when

they perceive that the received service level is lower than the expected service level; Level 2, being satisfied, when they perceive that the received service level is equal to the expected service level; and Level 3, being very satisfied, when they perceive the received service level is better than the expected service level.

Sustainability

Sustainability is a concept currently receiving a lot of attention due to humans' recognition of the importance of their better quality of life and intention to create a balance in the limitations of natural energy sources. However, this concept does not only focus on the environment, but also considers the economy and society sustainability. These three elements are interconnected (Kuhlman and Farrington, 2010) (Figure 1). In addition, many organizations have adopted the sustainability concept to assess the efficiency of their operations (Slaper and Hall, 2011). Additionally, the concept of sustainability has also been applied to transportation under the concept of sustainable mobility. This concept could potentially help develop the environment regarding oil resource consumption, air pollution, and climate change (Fenton, 2017).

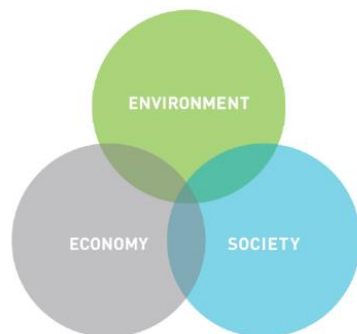


Figure 1. Main elements of the sustainability concept

Structural Equation Modeling

Structural equation modeling is a statistical model that can be applied to find answers for research studies on factual variables or physical variables, psychological variables or sociological variables, and variables with latent characteristics, namely, "latent variables". Additionally, SEM is a statistical technique used to analyze data from a research framework or conceptual framework supported by theoretical concepts. Therefore, SEM is a statistical technique used for confirmatory rather than exploratory purposes. That is, SEM is a statistical technique used to analyze data to decide how accurate a model created from a review of concepts, theories, and related research is when

compared with actual data on a phenomenon or empirical data. Structural equation modeling is the result of a synthesis of three important data analysis methods: factor analysis, path analysis, and parameter estimation in regression analysis (Wiratchai, 1999).

Methodology

Population and sample

This research studied the population in Nakhon Ratchasima, Khon Kaen, and Nong Khai provinces. The sample group in this research is people who live in Mueang Nakhon Ratchasima District, Pak Chong District, Mueang Nong Khai District, and Mueang Khon Kaen District and used to employ the intercity train service, using a questionnaire with 80 indicators for estimating values in the model. The researcher used a method for calculating the number of samples of 5-10 people per parameter (Wiratchai, 1999). The sample obtained from a sampling proportion of 7:1 consisted of 560 people. Therefore, the researcher collected data from a sample of 600 people.

Research tool

For data collection, the researcher used a closed-ended questionnaire to collect personal, expected service data, and attitude regarding service, consisting of 3 parts: Parts 1 and 2 are in the form of a rating scale, with the scoring criteria divided into 5 levels of opinions or satisfaction (Likert, 1932), as follows: expectations of using intercity train services, 69 items; opinions on using intercity train services, 33 items; and part 3, general information and behavior in using train services, 11 items including gender, age, educational level, income, and travel frequency, etc.

In this research, the researcher examined the quality of the research tool by checking its content validity. The three qualified and related experts tested the questionnaire by analyzing the question items and evaluating the scores with consideration for the index objective-item congruence (IOC). Based on its value being greater than 0.5 (Kanchanawasri, 2009), the IOC index value was equal to 0.67-1.00, so the conclusion was that the question items were consistent with the research objectives. Then, the researcher tried out 30 samples to check their reliability. To estimate the questionnaire's reliability, the researcher used Cronbach's alpha coefficient. It showed that the values obtained were 0.666-0.936 greater than 0.6, considered acceptable (Sim and Wright, 2000). However, values greater than 0.7 were considered good (Hair *et al.*, 2010a).

Data analysis

The researcher has determined criteria for selecting samples from the population who live in Mueang Nakhon Ratchasima District, Pak Chong District, Mueang Nong Khai District, and Mueang Khon Kaen District and experience using the intercity train service. To make the comprehensive survey and reach the target group, the researcher used a non-probability method by haphazard or accidental sampling of 600 people, then proceeded to examine the obtained data and check its correctness and completeness of the questionnaire. The analysis of the obtained data came in two parts: 1) Descriptive statistics analyze the general characteristics of the sample group using the frequency distribution and percentage values to explain the distribution of gender, status, occupation, income, educational level, and samples' behavior in service use; 2) find the average standard deviation, skewness, and kurtosis to know the distribution characteristics of the observed variables; and 2) structural equation modeling (SEM) analysis consists of two main parts: the measurement model and the path structural model. To check the model fit with the empirical data, the researcher analyzed the variables using the ready-

made program of Pearson's product moment correlation coefficient and checked the correlation matrix of the data by considering the following values: 1) Bartlett's Test of Sphericity; 2) Kaiser-Miye-Olkin measure of sampling adequacy; and 3) Chi-square statistics, goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), comparative fit index (CFI), standardized root mean squared residual (SRMR), and root mean square error of approximation (RMSEA) to consider the model fit between the hypothetical model and the empirical data.

Results

General information and personal characteristics of the sample group

Frequency analysis and percentage of general information of intercity train users, including gender, status, occupation, income, educational level, frequency of service use, experience of service use during the epidemic, travel purpose, access to the terminal, age, and travel expenses of 600 intercity train users. Details are shown in Table 1.

Table 1. General information of intercity train service users

General information	Category/Type	Number (people)	Percentage
Gender	1) Male	295	49.17
	2) Female	305	50.83
Status	1) Single	325	54.17
	2) Married/ Live together	245	40.83
	3) Widowed/Divorced/Separated	30	5.00
Occupation	1) Pupil/Student	142	23.67
	2) Government officer/State enterprise	116	19.33
	3) Farmer/Agricultural organizations	115	19.17
	4) Private company employees	57	9.50
	5) Manufacturers/Personal business owner	118	19.67
	6) Others	52	8.67
Income	1) Less than 5,000 baht	97	16.17
	2) 5,001 - 10,000 baht	161	26.83
	3) 10,001 - 15,000 baht	138	23.00
	4) 15,001 - 20,000 baht	100	16.67
	5) 20,001 - 25,000 baht	80	13.33
	6) more than 25,000 baht	24	4.00
Educational level	1) Primary education	50	8.33
	2) Secondary education	156	26.00
	3) Vocational education/ Certificate/ Diploma	141	23.50
	4) Bachelor's degree	214	35.67
	5) Master's degree	32	5.33
	6) Doctoral degree	7	1.17
Frequency of service use	1) 1-2 times/week	276	46.00
	2) 3-4 times/week	158	26.33
	3) 5-6 times/week	76	12.67
	4) Everyday	20	3.33
	5) Others	70	11.67
Service use during the spread of epidemics	1) Yes	509	84.83
	2) Never	91	15.17
Travel purpose	1) Study/work	144	24.00
	2) Travelling	149	24.83
	3) Personal matters	162	27.00
	4) Shopping	82	13.67
	5) Returning home	61	10.17
	6) Others	2	0.33
Age	1) 18-25 years old (Gen Alpha)	165	27.50
	2) 26-43 years old (Gen Y)	295	49.20
	3) 44-58 years old (Gen X)	119	19.80
	4) Over 58 years old (Baby Boomer)	21	3.50

Table 1, when considering the frequency analysis results and the percentage of general information of 600 intercity train users, the sample group was female, 305 people (50.83 percent), single status, 325 people (54.17 percent), and 142 people were pupils and students. (23.67 percent), having an income of 5,001-10,000 bahts per month; 161 people (26.83 percent), use the service 1-2 times per week 276 people (46.00 percent), having experience using the service during the COVID-19 epidemic, 509 (84.83 percent). Moreover, most of the samples have travel purposes for personal business, accounting for 162 people (27 percent). The majority of the respondents are aged between 26 and 43 years old (Gen Y), totaling 295 people (49.20 percent).

Structural equation modeling of service quality and attitude influencing intercity train passengers' intention to use the service.

This research was conducted to study the service expectation factors that affect the intention

to use the intercity train service on the Nakhon Ratchasima-Nong Khai route using structural equation modeling analysis. Considering the maximum likelihood estimation (MLE) values to test the data set contribution. With the requirement that the data must have a normal distribution, the skewness values of the data were negative between -1.014 and -0.079, and the kurtosis value was between -1.011 and 2.377. The results showed that the skewness value was less than 3.0 and the kurtosis value was less than 10. This shows that the data has a normal distribution (Kline, 2011). In addition, an index value of Kaiser-Meyer-Olkin (KMO) was close to 1 (KMO = 0.925), showing that the correlation matrix of observed variables is not a unit matrix at statistical significance with enough correlation between the variables to conduct factor analysis.

In addition, according to the analysis results of the model fit of structural equation modeling with statistical methods using the Mplus version 7.2

Table 2. Results of the first confirmatory factor analysis of the model (Quality of service)

Variable	Factor	Loading	t-value	Error
Crews (Cronbach's Alpha = 0.846 AVE=0.636 CR=0.827)				
C01	Crews provide service quickly and energetically.	0.661**	25.819	0.026
C02	Crews have the knowledge and ability to provide services, information, and report incidents	0.626**	23.045	0.027
C04	Crews dress politely and provide service in a good manner.	0.564**	18.962	0.03
C05	Crews have knowledge, understand, take care of, and pay attention to general and vulnerable passengers.	0.653**	25.518	0.026
C06	Security crews are available inside the terminals.	0.722**	33.142	0.022
C07	Security crews are available inside the carriages.	0.667**	26.486	0.025
C08	Crews have knowledge about first aids when the dangerous situations occur.	0.557**	18.401	0.03
Information (Cronbach's Alpha = 0.824 AVE=0.664 CR=0.706)				
I01	Travel information is useful for passengers.	0.660**	24.837	0.027
I02	Travel information is useful for vulnerable passengers (disabled group)	0.668**	25.152	0.027
I03	Clear advice and guidelines for practice are available about epidemics (document, personnel, notices, or others).	0.551**	16.992	0.032
I04	Channels for providing actual and accurate information are available.	0.641**	23.542	0.027
I06	There are international measures for taking care of vulnerable passengers.	0.679**	26.878	0.025
I08	There are clear maps, signposts, and travel connection symbols.	0.671**	26.071	0.026
Services (Cronbach's Alpha = 0.852 AVE=0.621 CR=0.834)				
S04	The passengers can buy tickets through various channels	0.525**	16.903	0.031
S05	The procedure and methods of buying tickets are practical and comprehensible.	0.592**	21.154	0.028
S06	The passengers can reserve the tickets in advance.	0.685**	29.312	0.023
S07	The passengers can know the real-time of the train status or examine the real running time on websites and applications.	0.607**	22.117	0.027
S08	There are measures for taking care of passengers in the case of train delays.	0.672**	27.391	0.025
S10	There are preventive measures for taking care of passengers in the case of dangerous situations such as crimes and sexual abuse.	0.579**	19.444	0.03
S13	The process of stopping and releasing trains is safe for passengers.	0.667**	26.6	0.024
S15	The travel time is punctual.	0.640**	27.88	0.026
Terminals (Cronbach's Alpha = 0.797 AVE=0.610 CR=0.781)				
T01	The terminals are clean and tidy.	0.553**	17.449	0.032
T02	The seats and waiting spaces in the terminal areas provide adequate distance for passengers.	0.597**	20.048	0.03
T03	The terminal areas are regularly cleaned and sterilized for the passengers during the spread of epidemics.	0.627**	21.933	0.029
T05	There are enough parking buildings for service users.	0.548**	17.454	0.031
T15	There are public transport systems serving terminal areas, such as tricycles, motorbikes for hire, taxis, vans, public buses, etc.	0.643**	23.836	0.027
T16	The terminals are situated in a convenient location to connect to other modes of transport.	0.690**	28.314	0.024
Vehicles (Cronbach's Alpha = 0.851 AVE=0.580 CR=0.803)				
V01	The passenger trains are modern, clean, and tidy.	0.603**	21.362	0.028
V02	The passenger carriages are separated according to the passenger groups, such as vulnerable groups and those where children travel together, etc.	0.570**	19.193	0.03
V03	The carriage for smoking is separately arranged.	0.546**	17.451	0.031
V05	The comfortable seats or beds in the carriage contribute to vulnerable passengers.	0.578**	19.456	0.03
V08	Direction signs and stopping points are easily visible while traveling on the train.	0.609**	21.93	0.028
V09	There is cleanliness on trains, such as in seats, restrooms, and pathways.	0.645**	24.869	0.026
V12	There are safety measures when traveling.	0.574**	19.393	0.03
V13	The trains have equipment and systems for protecting and taking care of passengers in dangerous situations for general and vulnerable passengers.	0.516**	16.09	0.032

program, the models were goodness-of-fit (Chi-square = 5303.560, df = 1445, $p < 0.001$, CFI = 0.787, TLI = 0.773, SRMR = 0.087, RMSEA = 0.067), and the TLI and CFI values were fitted with empirical data (Lee *et al.*, 2021). The SRMR value was between 0-1.00, indicating that the model reasonably fit the empirical data. For the RMSEA value was between 0-1.00, showing the model fit with empirical data. (Bollen and Long, 1993; Pavlov *et al.*, 2021).

Table 2, the results of the first confirmatory factor analysis of the modeling (quality of service). The indicators of service quality consisted of crews (Cre), 7 items, information (Inf), 6 items, services (Ser), 8 items, terminals (Ter), 6 items, and vehicles (Veh), 8 items, had standard factor loading values between 0.516 and 0.722 with statistical significance at the 0.01 level. All indicators of the structural equation modeling for service quality and attitude that influence intercity train passengers' intention to use the service (quality of service) with a standard factor loading value of more than 0.5 are considered acceptable (Hair *et al.*, 2010a). However, in the case of a value of more than 0.6 or more, it is considered good (Kline, 2004), and when considering the value of the average variance extracted (AVE), the values were 0.580-0.834, or greater than 0.5, indicating that the factors were highly reliable with a total reliability (CR) of 0.706-0.834, greater than 0.5 (Hair *et al.*, 2014). It shows that the factor of quality of service consists of good indicators with measure of internal consistency.

Table 3 shows the results of the second confirmatory factor analysis of the model (Quality of service). It was found that the indicators of quality of service included crews (Cre) = 0.975, information (Inf) = 0.910, services (Ser) = 0.998, terminals (Ter) = 0.949 and vehicles (Veh) = 0.976 can confirm the factor of Quality of service indicators of the intercity train service quality measurement model with statistical significance at the 0.01 level with a value of factor loadings greater than 0.6 are considered good (Kline, 2004), and AVE=0.962 greater than 0.5, showing that they are highly reliable factors, with the value of CR=0.984 greater than 0.5 service quality consists of good indicators with internal consistency (Hair *et al.*, 2014).

Table 4, the results of the first confirmatory factor analysis of the model (attitude), including environmental awareness, 3 items; intention, 2 items; perceived value, 3 items; and satisfaction, 2 items, had a standard factor loading value between 0.554 and 0.931 with statistical significance at the 0.01 level. All indicators of the structural equation modeling regarding service quality and attitude influence the intention to use the services of intercity train passengers (attitude) with the standard loading value greater than 0.5, it is considered acceptable (Hair *et al.*, 2010b). However, if the value is greater than 0.6 or higher, it is considered good (Kline, 2004). The AVE value had a value of 0.580 - 0.834 with a value greater than 0.5, indicating that it is a highly reliable factor, and the CR value was 0.706 - 0.834, which is greater than 0.5 (Hair *et al.*, 2014).

Table 3. Results of the second confirmatory factor analysis of the model

Variable	Factor	Loading	t-value	Error
Quality of service (AVE=0.962 CR=0.984)				
Cre	Crews	0.975**	86.534	0.011
Inf	Information	0.910**	57.781	0.016
Ser	Services	0.998**	99.587	0.01
Ter	Terminals	0.949**	61.157	0.016
Veh	Vehicle	0.976**	89.097	0.011

Table 4. Results of the first confirmatory factor analysis of the model (attitude)

Variable	Factor	Loading	t-value	Error
Environmental (Cronbach's Alpha = 0.696 AVE=0.664 CR=0.706)				
E02	Old train wrecks should be managed with safety and the environment in mind, according to international standards.	0.554**	16.153	0.034
E04	Electric trains reduce noise pollution better than diesel engines.	0.679**	23.253	0.029
E06	Trains should use renewable energy instead of fuel.	0.760**	28.239	0.027
Intention (Cronbach's Alpha = 0.821 AVE=0.833 CR=0.824)				
Int01	If I can choose, I will first take intercity trains.	0.735**	33.908	0.022
Int02	On my next trip, I will use the intercity train.	0.931**	55.743	0.017
Perceived Value (Cronbach's Alpha = 0.782 AVE=0.741 CR=0.786)				
PeV03	The fare for the route service I use is acceptable.	0.677**	24.777	0.027
PeV04	I think the fare and service are worth the money.	0.734**	28.929	0.025
PeV05	I can accept the value of the money I paid for the fare.	0.811**	36.556	0.022
Satisfactions (Cronbach's Alpha = 0.703 AVE=0.741 CR=0.786)				
Sat03	Intercity train travel is the best mode of travel.	0.849**	47.933	0.018
Sat04	Overall, I am satisfied with the train travel.	0.676**	25.715	0.026

Table 5, when considering the direct influence of indicators that affect the intention to use the service, the model found that service quality has a direct influence on perceived value and satisfaction with regression coefficients equal to 0.750 and 0.177, with statistical significance at the 0.05 and 0.1 levels. In addition, there are indicators that have a direct influence on satisfaction: perceived service quality and environmental awareness, with a regression coefficient of 0.694 and -0.492 with statistical significance at the 0.05 level. Satisfaction has a direct influence on the intention to use the service. The regression coefficient is 0.873, with statistical significance at the 0.05 level, indicating that this indicator influences the intention to use the services of the service quality model and the attitude of intercity train passengers, as shown in Figure 2.

Discussion and Conclusions

Summary of the model of factors affecting intention to use intercity train services.

According to the results of the structural equation modeling consisted of: 1) quality of service; the main service factor is process and service with the greatest value, followed by vehicles, employees, stations, and information, respectively. The important sub-factors of service quality included: 1) the passenger can reserve tickets in advance (Wonglakorn *et al.*, 2021);

2) there is cleanliness on the carriages, such as in seats, restrooms, and pathways; 3) security crews are available inside the terminals; 4) the terminals are situated in a convenient location to connect to other modes of transport; and 5) there are international measures for taking care of vulnerable passengers. Therefore, train service contributors should manage a ticket sales system where passengers can purchase tickets in advance, prepare a plan to maintain the cleanliness of the train carriages, such as in seats, restrooms, and pathways, and arrange security crews to take care of safety inside the terminal. In addition, they should provide international measures for vulnerable passengers, such as a lift system and up-down ramps for their wheelchairs, as well as a specific walkway with Braille blocks or guiding blocks for visually impaired passengers, etc. Moreover, the location of the terminal should be convenient for traveling to and connecting with other travel modes. and 2) satisfaction is the main factor that directly affects the intention to use intercity train services. Service quality affects satisfaction (Cronin Jr and Taylor, 1992; Caceres and Paparoidamis, 2007; Kim, 2013; Namukasa, 2013; Wonglakorn *et al.*, 2023), and perceived value directly affects satisfaction (Chen, 2008; Chiou and Chen, 2010; Park *et al.*, 2004). This means that if the quality of service and perceived service quality increase, they will subsequently result in greater satisfaction. Contrary to environmental awareness, it results in decreased satisfaction.

Table 5. Results of the analysis of the direct influence of indicators

Item	Description	Estimates	t-value	Error
H01	Quality of service → Perceived value	0.750**	28.696	0.026
H02	Quality of service → Satisfaction	0.177*	1.653	0.107
H03	Perceived service quality → Satisfaction	0.694**	8.677	0.08
H04	Environmental awareness → Satisfaction	-0.492**	-6.517	0.079
H05	Satisfaction → Intention to use service	0.873**	39.546	0.022

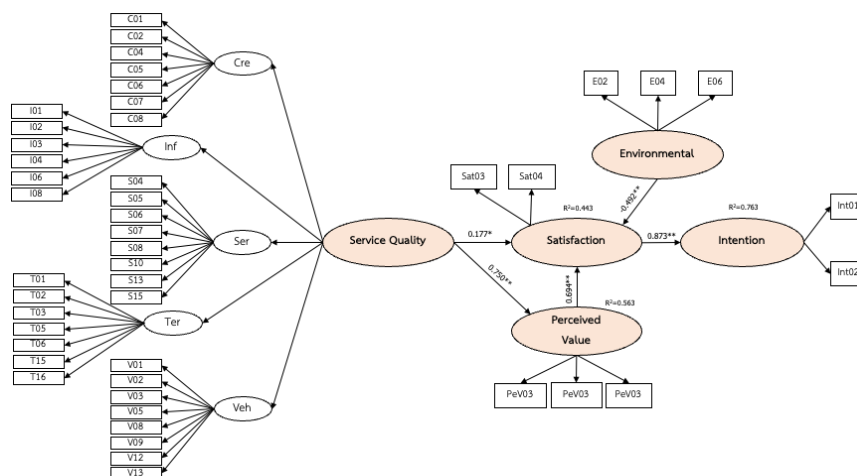


Figure 2. Structural equation modeling

Summary of guidelines for developing a sustainable intercity train service model.

From the research results and the sample, 50.83% were female, 26.83% had an income of 5,001-10,000 baht per month, 27.00% had the travel purpose for personal business, and 38.17% had an average train travel expense of 82.54 baht per trip. Due to the cheaper train fares than those of other public transport modes, it is easy for users to access public transportation. It also revealed that the quality of service and perceived service quality directly affect service users' satisfaction, which directly influences their intention to use the service. To respond to the needs and satisfaction of users in the New Normal era, relevant agencies should establish service guidelines that:

1. **Personnel Management Guidelines:** All employees must strictly adhere to hygiene measures. Additional equipment or protective gear should be provided for employees who need to be in close contact with passengers. Employees are to be trained on emergency measures to prevent the spread of the pandemic, including the development of skills in using new technologies such as online ticket booking systems or digital customer service channels, to align with the provision of services under the new normal conditions.

2. **Information Management Guidelines:** Clear communication regarding train status, accidents, and delays, along with bus route maps, should be provided. Notifications and announcements of various measures should be disseminated through online platforms to reduce direct contact while ensuring operational efficiency in uncertain situations.

3. **Process and Service Management Guidelines:** Promote the use of digital services to reduce gatherings and minimize contact between passengers and staff, such as through online ticket booking systems or contactless fare cards. Additionally, limiting the number of passengers is another approach to reduce crowding and maintain appropriate social distancing.

4. **Terminal Station Management Guidelines:** Increase the frequency of cleaning at stations, particularly in high-touch areas such as doors, seats, and handrails. Provide handwashing stations within the terminal. Implement strict control over station entry and exit to prevent large gatherings of passengers. The use of sensors or CCTV systems may be employed to monitor passenger density and enable service adjustments according to real-time situations.

5. **Vehicle Management Guidelines:** Increase the frequency of vehicle cleaning, especially in high-touch areas such as seats, doors, handrails, and buttons. Thorough cleaning should be

conducted before and after each service run. Additionally, the ventilation system inside the train should be inspected to ensure good air circulation, reducing the risk of disease transmission. Implementing spaced seating arrangements is another suitable vehicle management strategy in the New Normal era.

These management guidelines focus on ensuring safety and building passenger confidence to enhance satisfaction with rail services. They also emphasize adapting to changes in the New Normal era, ensuring that rail services can continue to operate efficiently in uncertain conditions. therefore, involved government agencies, the State Railway of Thailand, and private joint venture agencies should determine guidelines and develop the service model of the public transport system to be consistent with service users' needs to attract more users to choose or change from traveling by personal car to public transportation.

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