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Using exploratory and confirmatory factor analysis to alleviate the standard of service quality management of coach buses provided by the inbound tour operators in Thailand

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Abstract

This research was aimed at proposing an instrument for measuring service quality management of coach buses provided by the inbound tour operators in Thailand. Quantitative method research was adopted. 415 Chinese tourists who purchased tour packages from the leading inbound tour operators in Thailand were selected with the purposive sampling method as the respondents. Self-administered questionnaire, developed on the five Likert scale, served as a research tool for data collection. Both exploratory factor analysis and confirmatory factor analyses were embraced to perform the data analysis. The results of the exploratory factor analysis showed that 28 observed variables could be organized into three factors. Those three factors included physical, service, and management. With the statistical significance of the .01 level, the results of the confirmatory factor analysis demonstrated the measurement models of these three factors perfectly fit the empirical data reported by the goodness of fit indices. Thus, those measurement models could be used to measure service quality management of the coach buses provided by the inbound tour operators in Thailand. The bottom line was that the proposed instrument could alleviate the standard of service quality management of coach buses in Thailand for the tourists of any nationalities.

Introduction

It is undeniable that the Chinese visitors have become a significant tourist segment of the Thai tourism industry (Untong et al., 2015; Wang et al., 2021). In 2018, there were 10 million Chinese tourist arrivals to Thailand, and those Chinese tourists represented the largest share of foreign visitors of the tourism industry, contributing approximately 580,699.23 million baht of tourism receipts to the country (Ministry of Tourism and Sports, 2018).

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These Chinese tourists come to Thailand in tour groups. They purchase their tour packages from inbound tour operators established in Thailand. To visit tourist attractions in various locations, the inbound tour operators provide coach bus services to those Chinese tour groups as part of their tour packages. However, coach bus accidents in Thailand are repeatedly reported, and Chinese tourists have died and been injured. The World Economic Forum (2017) revealed that Thailand's global competitive index on safety scored at the low level. Ratanavaraha et al. (2019) also pointed out that many road accidents in Thailand stemmed from tour buses for tourists. For instance, a coach of Chinese tourists overturned on the way from Chiang Mai province to Chiang Rai province in June 2019, and ten Chinese tourists were injured (ManagerOnline, 2019). An overturned tour bus was found on a downhill stretch of Patong in Phuket, which killed a 10-year-old boy (Krungthemthurakit, 2017). Despite coach bus accidents, Thailand has been ranked as one of the most preferred destinations among Chinese travelers (Bangprapa & Praprutitum, 2022). In order to create tourism confidence among and attract more Chinese visitors to Thailand, service quality should not be compromised with safety when coach buses are offered. Vehicle body condition, seat availability and size, cleanliness, and equipment are examples of service quality along with the safety standard of a coach bus. As well, the coach crew should show their honesty, politeness, and respect while they are providing services to Chinese tourists (Neamnut & Tongkong, 2013). Most importantly, safety must, nevertheless, come first in the mind of the coach drivers to prevent any road accidents (Snguanyat & Srisorn, 2018) as well as the danger to the lives of Chinese customers. SERVQUAL is a conceptual model that has been widely used as a measurement or theoretical model to investigate service quality provided by services operators in a wide variety of services industries. It covers five dimensions, namely, reliability, responsiveness, empathy, assurance, and tangibility (Parasuraman et al., 1985). Because safety, service, coach drivers, and crew are the components of coach bus services, the SERVQUAL model may not be applicable to assess service quality management of coach buses provided by the inbound tour operators. Buain (2018) also adopted the SERVQUAL model to evaluate the service quality of coach services in Phuket for foreign tourists, and the results demonstrate only common aspects of service quality. Therefore, an instrument that unambiguously assesses service quality management of coach buses provided by the inbound tour operators in Thailand should be constructed. With this justification, the current research would develop and propose an instrument that could specifically evaluate service quality management of coach buses provided by the inbound tour operators in Thailand. The results were expected to fill a tourism literature gap in measuring service quality of coach services. Besides, such measuring instrument also ensures that safety leaves no room for compromise. In particular, tourism-related agencies and inbound tour operators in Thailand would have a reliable tool for managing service quality of coach buses, leading to a reduction in road accidents and an increase in foreign visitors to the country. Because Chinese tourists are the largest number of foreign visitors of Thailand and the main source of income to the country's tourism industry, they are the focus of this research.

Literature Reviews

Service Quality

When a problem or a need emerges, a customer would seek a service provider who could fix the problem or satisfy the need. In this regard, service quality would be determined by responses or solutions that the service provider had offered. By nature, quality in any services is personal and individually assessed (Sharabi & Davidow, 2010). Service quality plays an important role in shaping customer satisfaction (Jonkisz et al., 2021), which results in customer loyalty expressed through repurchases or revisits (Puangniyom & Choibamrung, 2021). Parasuraman et al. (1990) explained service quality as an evaluation of whether services that the customer had received met their expectation or went beyond their expectation. In other words, it was a comparison of services between the customers' expectation and their perception of those services. The evaluation of service quality would create an overall impression and excellence for the customers of the organizations (Lovelock, 1996). Service quality was basically grounded on three concepts: customer satisfaction, service quality, and customer value (Cronin & Taylor, 1992; Oliver, 1993; Parasuraman et al., 1988). On the other hand, service quality management refers to a managing process of delivering services expected by a customer. In this sense, it was an assessment of the extent to which a service was offered to the customers, which would lead to the future development of services and problem identification. The ultimate goal of service quality management was a search for a solution to such identified problems so that customer satisfaction could be improved and, subsequently, enhanced. Monitoring and maintaining services provided to the customers were also part of service quality management (Kalaiselvi, 2016).

Measurement of Service Quality

Although SERVQUAL became a commonly used model to measure service quality across different service sectors and industries, it received criticism and demonstrated weaknesses (Coulthard, 2004; Gulc, 2017; Moolla & Plessis, 1997). Such criticism and weaknesses included the failure to follow the SERVQUAL method, conceptual basis, process orientation, dimensionality, inclusion of expectation statements, interpretation of service quality scores, the use of Likert scale, order effects of expectation followed by perception, the questionnaire, overlapping dimensions, and performance-based concept (Haghighat, 2017). For example, Gulc (2017) reviewed the existing literature concerned with the SERVQUAL model and found that satisfaction and service quality were not separated (Cronin & Taylor, 1992). Also, it was found that the statements written in the questionnaire explained the variables of those five dimensions rather than the actual features of services when a respondent or a customer was asked to measure the service quality being provided (Cronin & Taylor, 1994). Moreover, Özkan (2016) agreed that SERVQUAL scale could measure service quality if the customers' perception was rational.

A Proposed Instrument for Measuring Service Quality Management of Coach Buses

After previous studies on service quality measurement had been reviewed, it was obvious that a service quality instrument that specifically measured service quality management of coach buses was lacking. As safety, bus driver, and crew were characterized by service quality management of coach buses, this research attempted to develop and propose a service quality management instument for the measurement of coach bus services provided by the inbound tour operators in Thailand. Related concepts, theories, and previous studies were reviewed to extract the variables that could be incorporated in the conceptual model, which are shown in Figure 1. Three factors of the measurement models of service quality management of the coach buses were obtained. 28 observed variables were used in the questionnaire. Hypotheses and conceptual model of this research were as following.

Research hypotheses

Hypothesis 1: The observed variables could be organized into three factors: management, physical, and service. These factors influenced service quality management of the coach buses provided by the inbound tour operators in Thailand.

Hypothesis 2: The measurement models of service quality management of the coach buses provided by the inbound tour operators in Thailand showed the goodness of fit with the empirical data.

Conceptual model

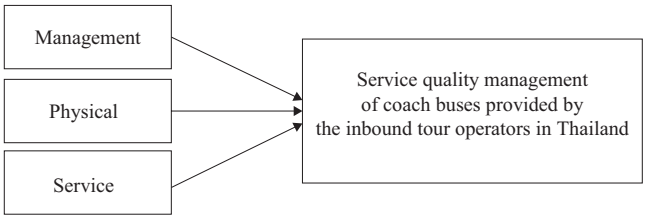

Figure 1 showing the conceptual model of service quality management of coach buses provided by the inbound tour operators in Thailand

Methodology

Population and Sample

Chinese tourists who purchased the tour packages from the inbound tour agencies operating in Thailand and who took coach buses to visit tourist attractions in Thailand were the population of this research.

In this research, the sample size was determined based on the formula of the infinite population developed by Cochran (1997) and suggested by Vanichbuncha (1995) when the population was unknown. The formula was expressed as the confidence level at 95 percent with the 5-percent precision, assuming that the maximum variability was equal to 50 percent (p = .5). Therefore, the sample size for this research was at least 385 Chinese tourists. Moreover, this research tested the measurement models of service quality management of coach buses provided by the inbound tour operators in Thailand, and these measurement models required the confirmatory factor analysis to carry out the testing. The sample size should also correspond to the assumption of the confirmatory factor analysis. 1 parameter or question item should contain at least 10 samples (Hair et al., 2010). As there were 28 question items in this research, the minimum sample size required for performing the confirmatory factor analysis was 280. In conclusion, the sample size that had been previously determined was also statistically sufficient.

Research Instrument

A questionnaire was developed on the five-point Likert scale (Likert, 1932) to investigate the factors of service quality management of the coach buses operated by the inbound tour operators in Thailand for the Chinese tourists. Validity and reliability of the research instrument were performed. To do so, the draft of the questionnaire was reviewed by three experts to evaluate content validity through the index of item objective congruence (IOC). After the review of content validity, the IOC value of the research instrument of this research ranged between 0.66–1.00. The results of the IOC reflected the coverage of the content, objective congruence, the use of clear language, and appropriate scales of measurement. Prior to the pretesting of the questionnaire, the translation from English to Chinese had been carried out. Subsequently, 30 questionnaires were pretested to determine its reliability by the Cronbach's alpha coefficient. The reliability value of the research instrument was .958, which was greater than the cut-off point (> .75) (Cronbach, 1970). Hence, the questionnaire could be used for data collection.

Data Collection

With purposive sampling technique, the distribution of questionnaires to Chinese tourists was assisted by the leading inbound tour operators in Thailand. Self-administered questionnaires were distributed to Chinese tourists who bought the tour packages from the leading inbound tour operators in Thailand and who took coach buses to visit different tourist attractions in Thailand as arranged by the inbound tour operators. 639 questionnaires were returned to the researchers. There were several questionnaires that showed incomplete responses. After the data screening, only 415 questionnaires were eligible for data analysis.

Data Analysis

Both descriptive and inferential statistics were employed to analyze and test the measurement models of service quality management of coach buses provided by the inbound tour operators in Thailand. Descriptive analysis was carried out to analyze the respondents' profile information. Exploratory factor analysis was used to organize the variables into groups by means of principal component analysis. Furthermore, orthogonal rotation was performed with the varimax with the Kaiser normalization method. Then, the confirmatory factor analysis was employed to test the measurement models. This factor analysis was a statistical technique that was adopted to test the measurement model of the factor structure or a latent variable (Herman, 2016; Widhiarso & Kožený, 2013; Zainudin, 2012). The first order confirmatory factor analysis was intended to measure if the indicators could reflect the latent variables (Hair et al., 2010). Subsequently, the second order confirmatory factor analysis was carried out to test the structural validity of empirical data with the maximum likelihood method. The measurement models would be tested against the empirical data of this research.

Results

Characteristics of the respondents: 53 percent of the samples who were arranged by the inbound tour operators to visit different places in tour groups in Thailand by coach buses were female Chinese tourists whose age ranged between 22–38 years, accounting for 60.70 percent of the total respondents. 50.10 percent of the Chinese tourist respondents were married, and 39.50 percent worked for private companies. Additionally, it was found that their average monthly income fell in a range of 4,501 and 6,500 yuan, which represented 30.60 percent of the total number of Chinese tourist respondents. The results also showed that 84.80 percent of the Chinese respondents of this research had visited Thailand and used the coach buses when they travelled to tourist attractions in Thailand. 42.90 percent of all Chinese samples spent 6–8 days in Thailand.

Results of exploratory factor analysis: it was an analytical method that tested the goodness of fit of the observed variables prior to the factor analysis. The results illustrated that the Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) of the observed variables was .97, which was greater than .90 and close to 1. Moreover, the results of Bartlett's test of sphericity showed that the value of Chi-Square was 8187.327 at the statistical significance of the .00 level. Hence, all observed variables could be further used in the factor analysis (Cernny & Kaiser, 1977), as demonstrated in Table 1.

Table 1 Demonstrating the values of KMO and Bartlett's Test

Kaiser-Meyer-Olkin measure of sampling adequacy		.970
Bartlett's test of sphericity	Approx. Chi-Square	8187.327
	df	378
	p	.000

Factor extraction

At this stage, principal component analysis was employed. The results of such analysis would show only the factors with the eigenvalue of 1 or greater than 1 according to the principles of factor analysis (Guttman, 1954). It was found that three factors had the eigenvalue which ranged between 1.045 and 14.697. Their percentage of variance (% of variance) fell between 3.733–52.489 and the cumulative percentage of variance was equal to 62.524, as illustrated in Table 2.

Table 2 Illustrating the variance, percentage of variance, and cumulative percentage of variance of three factors influencing service quality management of the coach buses

Factor	Variance	% of Variance	Cumulative % of Variance
1	14.697	52.489	52.489
2	1.764	6.302	58.791
3	1.045	3.733	62.534

Orthogonal rotation

The varimax with Kaiser normalization method was used to organize the observed variables into three factors with similar characteristics. The factor loading of each observed variable should be .5 and above. Furthermore, the observed variables with high factor loadings would be organized into the same group/ factor (Tabachnick & Fidell, 2014). The results demonstrated that 28 observed variables could be categorized into three factors. However, 4 observed variables were removed since their factor loadings were less than .50. Subsequently, the new factors were named that covered the meaning of all observed variables within a factor (Kaiyawan, 2014). Those three factors were management, physical, and service. The results are shown in Table 3.

Table 3 Showing the results of exploratory factor analysis of service quality management of the coach buses provided by the leading inbound tour operators in Thailand for the Chinese tourists

Items	Observed variables	Factor Loadings		
		Management	Physical	Service
Q30	For safety management: the GPS system is installed in the coach bus. (MAN2)	.755		
Q32	For customer relationship management, tourist satisfaction survey of drivers and crews is provided after the service. (MAN1)	.728		
Q27	For safety management: two drivers are responsible for the trip with the distance of over 400 kilometers in compliance with the law. A driver is not allowed to drive for more than 4 hours. (MAN5)	.693		
Q31	For customer relationship management: the travel company provides a good contacting system when a problem arises. The system is easily accessible, such as a call center. (MAN7)	.691		
Q24	The coach crew can handle an emergency effectively and correctly. (MAN8)	.669		
Q28	For safety management: car accident insurance policy covering all passengers is made. (MAN3)	.657		
Q29	For safety management: you can feel the safety for your life and belongings while in your tour bus. (MAN9)	.646		
Q26	For safety management: safety demonstration video of equipment and emergency procedure is provided. (MAN6)	.642		
Q25	For safety management: complete safety equipment is installed in the coach bus, such as emergency car hammers, seatbelts, emergency doors, and fire extinguishers with the attachment of usage directions. (MAN11)	.627		
Q22	The crews are determined to provide services even if they confront difficulty and problems. (MAN10)	.624		
Q23	The crews are attentive, listening to the customers about the problems and giving solutions to the problems. (MAN4)	.619		
Q5	The air-conditioner is efficient, providing suitable temperature in the bus continuously. There are no water leaks and smell. (PHY3)		.727	
Q12	The coach driver and crews are smartly dressed while on duty. Their name tags are clearly shown. (PHY2)		.701	
Q1	You are not disturbed by the noise of the bus engine during the trip. (PHY7)		.691	
Q3	The coach bus is new and in good condition. The engine does not break down during the trip. (PHY5)		.686	
Q7	The bus seats are clean and adjustable. The gap between seats is not too close. (PHY1)		.664	

Table 3 Continued

Items	Observed variables	Factor Loadings		
		Management	Physical	Service
Q14	The drivers are polite and possess driving skills. They drive the coach bus smoothly, not making the driving terrifying or careless. The drivers do not overtake the front car closely and follows the traffic rules and regulations strictly. (PHY4)		.640	
Q16	The drivers start out and stop the bus smoothly. (PHY6)		.625	
Q9	The perfect car audio including entertainment equipment is installed in the bus and functions well. (PHY9)		.589	
Q11	Security camera is installed in the bus. (PHY8)		.559	
Q15	The drivers show expertise in driving and know the routes well. (SER5)			.664
Q6	Interior car equipment and accessories are in good condition. For example, the seat cover is not torn, and the seats do not collapse. (SER2)			.658
Q13	The drivers and crews are punctual with their duty. (SER6)			.631
Q8	Seatbelts are provided in every seat and are found in good condition. (SER4)			.617
Q4	The bus's toilet is clean with no smell. (SER1)			.596
Q19	The drivers and crews provide friendly services, willing to give services, and show beautiful faces and smiles to the customers. (SER8)			.588
Q2	The bus is clean and neat for services. (SER3)			.570
Q10	Wi-Fi is provided in the bus. (SER7)			.543

Results of the first order confirmatory factor analysis: Through the results of the first order confirmatory factor analysis, 28 observed variables could measure three factors. Those three factors were management, physical, and service item statements shown in Table 4.

In addition, all 28-item statements had positive standardized factor loadings of .694–.793 at the statistical significance of the .01 level. The value of standard error (*SE*) fell between .020 and .027 and the covariance of the observed variables was equivalent to 48.10–62.80 percent. Table 4 demonstrates the results of the first order confirmatory factor analysis of service quality management of tour buses provided by the inbound tour operators in Thailand through the eyes of Chinese tourists.

Table 4 Showing the results of the first order confirmatory factor analysis

Factors	β	*SE*	*t*-value	R^2
Management (α = 0.935, CR = 0.936, AVE = 0.572)				
MAN2: For safety management: the GPS system is installed in the coach bus.	.783	.021	37.429*	.613
MAN3: For safety management, car accident insurance policy covering all passengers is made.	.780	.022	36.102*	.608
MAN4: The crews are attentive, listening to the customers about the problems, and giving solutions to the problems.	.772	.022	35.649*	.596
MAN1: For customer relationship management, tourist satisfaction survey of drivers and crews is provided after the service.	.764	0.022	34.661*	.584
MAN9: For safety management, you can feel the safety for your life and belongings while in your tour bus.	.756	.023	32.757*	.572
MAN8: The bus crew can handle an emergency effectively and correctly.	.752	.023	32.960*	.565
MAN7: For customer relationship management, the inbound tour operator provides a good contacting system when a problem arises. For example, a call center is easily accessible.	.751	.023	32.932*	.565
MAN5: For safety management, two drivers are shown and responsible for the trip with the distance of over 400 kilometers in compliance with the law. Also, one driver is not permitted to drive for more than 4 hours.	.750	.023	32.110*	.562
MAN6: For safety management, safety demonstration video of equipment and emergency procedure is provided.	.748	.023	32.614*	.559
MAN11: For safety management, complete safety equipment is installed in the tour bus, such as emergency car hammers, seatbelts, emergency doors, fire extinguishers with the attachment of usage directions.	.737	.024	31.085*	.544
MAN10: The crews are determined to provide services even if they confront difficulty and problems.	.725	.025	29.243*	.526

Table 4 Continued

Factors	β	*SE*	*t*-value	R^2
Physical (α = 0.924, CR = 0.922, AVE = 0.570)				
PHY1: The bus seats are clean and adjustable. The gap between seats is not too close.	.793	.020	39.366*	.628
PHY4: The drivers are polite and possess driving skills. They drive the tour bus smoothly, not making the driving terrifying or careless. The drivers do not overtake the front car closely and follows the traffic rules and regulations strictly.	.780	.021	37.128*	.609
PHY2: The bus driver and crews are smartly dressed while on duty. Their name tags are clearly shown.	.777	.021	36.503*	.603
PHY3: The air-conditioner is efficient, providing suitable temperature in the bus continuously. There are no water leaks and smell.	.769	.022	35.033*	.591
PHY6: The drivers start out and stop the bus smoothly.	.760	.022	33.861*	.578
PHY8: Security camera is installed in the bus.	.728	.025	29.365*	.530
PHY9: The perfect car audio including entertainment equipment is installed in the bus and functions well.	.723	.025	28.613*	.523
PHY7: You are not disturbed by the noise of the bus engine during the trip.	.706	.027	26.624*	.498
Service (α = 0.911, CR = 0.911, AVE = 0.563)				
SER2: Interior car equipment and accessories are in good condition. For example, the seat cover is not torn, and the seats do not collapse.	.786	.021	38.214*	.618
SER4: Seatbelts are provided in every seat and are found in good condition.	.774	.021	36.043*	.598
SER3: The bus is clean and neat for services.	.771	.022	35.651*	.595
SER1: The bus's toilet is clean with no smell.	.767	.022	34.711*	.588
SER8: The drivers and crews provide friendly services, willing to give services, and show beautiful faces and smiles to the customers.	.742	.024	31.236*	.551
SER6: The drivers and crews are punctual with their duty.	.737	.024	30.603*	.543
SER5: The drivers show expertise in driving and know the routes well.	.731	.025	29.763*	.534
SER7: Wi-Fi is provided in the bus.	.694	.027	25.540*	.481
Goodness of Fit Indices:				
χ^2 = 1184.787, *df* = 445, CFI = .922, TLI = .914, SRMR = .043, RMSEA = .040				

Results of the second order confirmatory factor analysis

Subsequently, the second order confirmatory factor analysis was performed with the maximum likelihood method to test the structural validity of empirical data. The results of the second order confirmatory factor analysis were also reported through the goodness of fit indices, which are illustrated in Table 5.

The results of the second order confirmatory factor analysis revealed that management, physical, and service had positive standardized factor loadings of .847–.979 at the statistical significance of the .01 level. The value of standard error (*SE*) was between .012 and .018. Furthermore, the covariance of the observed variables ranged between 71.80 and 95.80 percent. Besides, it was also found that the goodness of fit indices of all 28 observed variables showed the following values: χ^2= 874.200, *df* = 346, χ^2/df = 2.520, *p* = .01, CFI = 0.934, TLI = 0.928, RMSEA = 0.041, and SRMR = 0.036. The results of these fit indices corresponded to the cut-off points. Thus, it could be concluded that the measurement models of service quality management of coach buses provided by the leading inbound tour operators in Thailand indicated the goodness of fit against the empirical data through the direct evaluation by Chinese tourists visiting Thailand in tour groups.

Table 5 Illustrating the results of the second order confirmatory factor analysis of service quality management of coach buses in Thailand

The second order confirmatory factor analysis					
Second order of observed variables	First order of observed variables	β	*SE*	*t*-value	R^2
Service quality management of coach buses provided by the inbound tour operators in Thailand for the Chinese tourists	Management	.847	.018	46.144*	.718
	Physical	.936	.014	68.841*	.876
	Service	.979	.012	78.643*	.958
Goodness of fit indices					
χ^2 = 874.200, *df* = 346, CFI = 0.934, TLI = .928, SRMR = .041, RMSEA = .036					

Discussion

An attempt to develop and propose a new instrument was made in this paper. Based on the results of the orthogonal rotation, 28 observed variables could be grouped into three factors. Those three factors were service, physical, and management, and hypothesis 1 was accepted. The three factors could measure service quality management of coach buses provided by the inbound tour operators in Thailand as reported through the results of the first order confirmatory factor analysis. In addition, the results of the second order confirmatory factor analysis confirmed that the measurement models of the service quality management of the coach buses showed the goodness of fit with the empirical data collected from Chinese tourists who were the customers of the leading inbound tour operators in Thailand. As a result, hypothesis 2 was accepted. By nature, safety, service, bus body condition, coach drivers, and coach crew were essential to coach bus services, which made the proposed instrument accepted. In this research, the proposed instrument to measure service quality management of coach buses provided by the inbound tour operators in Thailand presented the dimensions and attributes that were most important to tourist customers. In order of importance, service still played the most important role in service quality management of coach services, followed by the dimensions of physical and management, respectively.

In this research, service was the dimension that was not that similar to that of SERVQUAL. It was measured by the ability of the coach crew and coach drivers to provide quality services to inspect external and internal condition of the bus body. Physical in the proposed instrument emphasized the perfect bus body condition, skillful coach drivers, and professional coach crew, which would overlap in the SERVQUAL model if adopted. Although management demonstrated the least important dimension, it could influence service quality management of coach buses. Safety management and customer relationship management were the prerequisites of service quality management of coach buses that resulted in the acceptance of the proposed instrument. These findings were also in line with the theory of urban transportation (Vuchic, 1981), stating that transportation was the management of service quality, safety, and convenience for the passengers. Chaengwetchai (2016) found that safety in life, belongings, and companions was what the customers expected from the services providers. The customers would avoid the service providers that did not show safety management; they were willing to pay more for those with a high level of safety.

A high level of service quality management of coach services ensures that the number of road accidents in Thailand including injuries and fatality is reduced. The proposed instrument presented in this research provides a conceptual model and its factors that could be applied for further studies.

Conclusion and Recommendation

The measurement models of service quality management of coach buses provided by the inbound tour operators in Thailand were tested and the results obtained from the first order confirmatory factory analysis indicated that those newly developed scale of 28-item indicators could measure service quality management of tour buses in three dimensions. These three dimensions were management, physical, and service. In terms of construct validity, the second order confirmatory factor analysis was carried out, and the results revealed that the measurement models of service quality management provided by the inbound tour operators in Thailand showed the goodness of fit indices against the empirical data that had been collected from Chinese tourists visiting Thailand in tour groups, which also supported the research hypothesis. Hence, the measurement models of service quality management of coach buses provided by the inbound tour operators in Thailand could serve as a scale for measuring service quality management of coach buses or tour buses in Thailand.

For practice, it is highly recommended that the proposed instrument be further adopted to evaluate service quality management of coach buses operated by any other travel agencies that offered coach bus services as part of the tour packages to tourists of any nationalities. In this respect, although service quality helped enhance customer satisfaction, safety, coach drivers and crew, and vehicle should not be neglected. Additionally, the Ministry of Transport, the Tourism Authority of Thailand, and related agencies should establish a reliable measuring tool with valid construct for assessing service quality management of coach buses provided by the tour companies operating in Thailand. Such measuring tool would be expected to improve and upgrade the standards of service quality together with road safety in Thailand, minimizing the road accidents, injuries, and death of tourists visiting Thailand.

For future research, this research has laid the foundation for those interested in conducting research on the variables that examine service quality management of coach buses in Thailand. Those three variables include management, physical, and service to be applied to other groups of tourists or other segments of tourism-related businesses with the same methodology. The results could be compared with the current research.

Conflict of Interest

The authors declare that there is no conflict of interest.

References

Bangprapa, M., & Praprutitum, K. (2022). *Chinese rate Thailand no 4 as tourists return. Bangkokpost*. https://www.bangkokpost.com/thailand/general/2367618/chinese-rate-thailand-no-4-as-tourists-return

Buain, T. (2018). *แนวทางการพัฒนาคุณภาพการบริหารรถโดยสารไม่ประจำทางเพื่อรองรับนักท่องเที่ยวชาวต่างชาติในจังหวัดภูเก็ต* [Guidelines for the service quality improvement development of coach service to support foreign tourists: A case of Phuket] [Master's thesis, National Institute of Development Administration]. https://repository.nida.ac.th/bitstream/handle/662723737/4470/b204842.pdf?sequence=1&isAllowed=y [in Thai]

Cerny, B. A., & Kaiser, H. F. (1977). A Study of a measure of sampling adequacy for factor-analytic correlation matrices. *Multivariate Behavioral Research*, *12*(1), 43–47. https://doi.org/10.1207/s15327906mbr1201_3

Chaengwetchai, B. (2016). *คุณภาพการให้บริการที่ส่งผลต่อความพึงพอใจของผู้โดยสารรถไฟฟ้า BTS ในกรุงเทพมหานคร* [Service quality affecting passengers' satisfaction toward BTS skytrain in Bangkok] [Master's independent study, Bangkok University]. http://dspace.bu.ac.th/jspui/bitstream/123456789/2844/3/benchapa_chan.pdf [in Thai]

Cronbach, L. J. (1970). *Essentials of psychological testing*. Harper & Row.

Cronin Jr, J. J, & Taylor, S. A. (1992). Measuring service quality: A reexamination and extension. *Journal of Marketing*, *56*(3), 55–68. https://doi.org/10.2307/1252296

Cronin Jr, J. J., & Taylor, S. A. (1994). SERVPERF versus SERVQUAL reconciling performance-based and perceptions-minus expectations measurement of service quality. *Journal of Marketing*, *58*(1), 125–131. https://doi.org/10.2307/1252256

Cochran, W. G. (1997). *Sampling techniques* (3rd ed.). John Wiley & Sons.

Coulthard, L. J. (2004). A review and critique of research using SERVQUAL. *International Journal of Market Research*, *46*(4), 479–497. https://journals.sagepub.com/doi/pdf/10.1177/147078530404600401

Gulc, A. (2017). Models and methods of measuring the quality of logistic service. *Procedia Enginerring*, *182*, 255–264. https://doi.org/10.1016/j.proeng.2017.03.187

Guttman, L. (1954). A new approach to factor analysis: the radex. in P.F. Lazarsfeld (Ed.), *mathematical thinking in the social science*. Free Press.

Haghighat, N. (2017). Airline service quality evaluation: A review on concepts and models. *Economics, Management and Sustainability*, *2*(1), 31–47. https://doi.org/10.14254/jems.2017.2-2.4

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis: A global perspective*. Pearson Prentice Hall.

Herman, D. R. (2016). CFA first order and CFA second order (measurement model) of the special education teachers' readiness on the implementation of sexuality and health education for students with learning disabilities in special education (integration program) in Malaysia. *International Journal of Current Research*, *8*(10), 40165–40172. https://www.journalcra.com/article/cfa-first-order-and-cfa-second-order-measurement-model-special-education-teachers%E2%80%99-readiness

Jonkisz, A., Karniej, P., & Krasowska, D. (2021). SERVQUAL method as an "Old New" tool for improving the quality of medical services: A literature review. *International Journal of Environmental Research and Public Health*, *18*(20), 10758. https://doi.org/10.3390/ijerph182010758

Kaiyawan, Y. (2014). *Multivariate statistical analysis* (2nd ed.). Chulalongkorn University Press.

Kalaiselvi, K. T. (2016). Service quality: Measurement and management. *IOSR Journal of Business and Management*, 23–25. https://www.iosrjournals.org/iosr-jbm/papers/Conf-ICSMTSA/Volume%203/8.%2023-25.pdf

Krungthemthurakit. (2017). *Tour bus with tourists overturned while downhill at Patong in Phuket, 10-year-old boy dead*. https://www.bangkokbiznews.com/news/detail/763835

Likert, R. (1932). A Technique for the measurement of attitudes. *Archives of Psychology*, *22*(140), 55.

Lovelock, C. H. (1996). *Adding value to core products with supplementary services in service marketing*. (2nd ed.). Prentice Hall.

ManagerOnline. (2019). *อุบัติเหตุรถบัสนักท่องเที่ยวจีนคว่ำกลางดอยเชียงใหม่ เจ็บ 10 ราย พบไหปลาร้าหัก 2 หัวกระแทกต้องตรวจละเอียด 3* [Overturned tour bus with 10 Chinese tourists injured, 2 broken collarbone, 3 head crashed at Chiang Mai's mountain]. Author. https://mgronline.com/local/detail/9620000061916 [in Thai]

Ministry of Tourism and Sports. (2018). *สถิติด้านการท่องเที่ยว ปี 2561* [Tourism statistics 2018]. https://www.mots.go.th/more_news_new.php?cid=528 [in Thai]

Moolla, M., & Plessis, P. B. (1997). Service quality management: A critical review of the SERVQUAL model. *SBL Research Review*, *1*(8), 64–74. https://journals.co.za/doi/pdf/10.10520/AJA1561896X_259

Neamnut, D., & Tongkong, S. (2013). พฤติกรรมและการเปรียบเทียบคุณภาพการบริการของสถานขนส่งผู้โดยสารกรุงเทพฯ (จตุจักร) และสถานีขนส่งผู้โดยสารกรงเทพฯ (ถนนบรมราชชนนี) [Behaviors and a comparison of service quality between Bangkok Bus Terminal (Chatuchak) and Bangkok Bus Terminal (South)]. *RMUTT Research Repository*, 336–346. http://www.repository.rmutt.ac.th/xmlui/handle/123456789/2381 [in Thai]

Oliver, R. L. (1993). A conceptual model of service quality and service satisfaction: Compatible goals, different concepts. In T. A. Swartz, D. E. Bowen, & S. W. Brown (Eds.), *Advances in marketing and management* (vol. 2, pp. 65–85). JAI Press.

Özkan, A. H. (2016). Weakness of SERVQUAL which resources from cognitive differences. *International Journal of Business and Social Research*, *6*(11), 34–41. https://doi.org/0.18533/ijbsr.v6i11.1004

Parasuraman, A. P., Zeithaml, V. A., & Berry, L. L. (1985). A conceptual model of service quality and its implication for future research (SERVQUAL). *Journal of Marketing*, *49*(4), 41–50. https://doi.org/10.2307/1251430

Parasuraman, A. P., Zeithaml, V. A., & Berry, L. L. (1988). SERVQUAL: A multiple item scale for measuring consumer perceptions of service quality. *Journal of Retailing*, *6*(1), 12–40. https://doi.org/10.1111/j.1549-9584.1988.tb00222.x

Parasuraman, A., Berry, L. L., & Zeithaml, V. A. (1990). *Delivering quality service:balancing customer perceptions and expectation*. The Free Press.

Puangniyom, P., & Choibamrung, T. (2021). ความสัมพันธ์เชิงสาเหตุของการจัดการประสบการณ์ในร้านสปา คุณภาพการบริการของร้านสปา และความพึงพอใจของลูกค้าที่ส่งผลต่อความภักดีของผู้ใช้บริการเดย์สปา ในเขตกรุงเทพมหานคร [The causual relationship between spa experience management, spa service quality, customer satisfaction, and customer loyalty toward day spas in Bangkok]. *Business Review*, *13*(2), 286–304. https://so01.tci-thaijo.org/index.php/bahcuojs/article/view/247571 [in Thai]

Ratanavaraha, V., Jomnonkwao, S., Chonsalasin, D., Sangphong, O., & Uttra, S. (2019). *Deploying of the Prototype of Sightseeing Bus Services in Chiang Mai*. National Research Council of Thailand. https://digital.library.tu.ac.th/tu_dc/frontend/Info/item/dc:150298

Sharabi, M., & Davidow, M. (2010). Service quality implementation: problems and solutions. *International Journal of Quality and Services Sciences*, *2*(2), 189–205. https://doi.org/10.1108/17566691011057357

Snguanyat, O., & Srisorn, V. (2018). ปัจจัยที่ส่งผลต่อความปลอดภัยในการใช้บริการรถโดยสารสาธารณะของนักศึกษา มหาวิทยาลัยสวนดุสิต [Factors affecting public transport service safety of students in Suan Dusit University]. *Journal of Multidisciplinary in Social Sciences*, *14*(3), 101–122. https://www.tci-thaijo.org/index.php/sduhs/article/view/186634 [in Thai]

Tabachnick, B., & Fidell, L. (2014). *Using multivariate statistics* (6th ed.). Pearson Education.

Untong, A., Ramos, V., Kaosa-Ard, M., & Rey-Maquieira, J. (2015). Tourism demand analysis of Chinese arrivals in Thailand. *Tourism Economics*, *21*(6), 1221–1234. https://doi.org/10.5367/te.2015.0520

Vanichbuncha, K. (1995). *Statistical analysis for business: statistics for business decision making*. Chulalongkorn University Press.

Vuchic, V. R. (1981). *Urban public transportation system and technology*. Prentice-Hall.

Wang, X.-C., Wang, C.-Y., & Kim, H.-H. (2021). Research on the characteristics of Chinese tourists flow to Thailand: Application of the social network analysis (SNA) method. *Journal of Asian Finance, Economics and Business*, *8*(11), 243–251. https://doi.org/10.13106/JAFEB.2021.VOL8.NO11.0243

Widhiarso, W., & Kožený, J. (2013). Applying confirmatory factor analysis to evaluate the fit of measurement models in education and psychological assessment. *Journal of Educational Sciences & Psychology*, *3*(65), 78–88. https://www.proquest.com/docview/1746587012?sourcetype=Scholarly%20Journals

World Economic Forum. (2017). *The travel & tourism competitiveness report 2017*. Author. https://www3.weforum.org/docs/WEF_TTCR_2017_web_0401.pdf

Zainudin, A. (2012). *A handbook on SEM: structural equation modelling using Amos Graphics* (2nd ed.). University Technology MARA Press.