RESEARCH ARTICLE

Thailand's Automotive Service Quality Customer Satisfaction: A SERVQUAL Model CFA of Suzuki Motor

Pichaipat Chaichinarat, Thanin Ratanaolarn, Krissana Kiddee, and Paitoon Pimdee
King Mongkut's Institute of Technology Ladkrabang, Thailand
php.chai@gmail.com

Abstract: Thailand's automotive industry is the 12th largest in the world and plays an important role in Thailand's economy. Under the government mandated Thailand 4.0 vision, the automotive sector has been identified as one of the 10 crucial sectors for future economic growth. Within this sector, service quality has repeatedly been identified as one of the most competitive factors amongst the major dealers. Service quality is a fundamental aspect of service provisioning, which demonstrates excellence and long-term success. The purpose of this paper is, therefore, to investigate service quality within Thailand's Suzuki Motor Company by adopting the five dimensions of the SERVQUAL model (tangibles, reliability, responsiveness, assurance, empathy) for analysis. Additionally, the study also examined the validity of the service quality model and compared service quality satisfaction amongst Thailand's Suzuki Motor Company service staff. By using multi-stage random sampling, 537 customers responded. Using both quantitative and qualitative research methods, the main research instrument was a questionnaire which used a 5-point Likert type agreement scale. An analysis was undertaken in which the mean (standard deviation (S.D.), correlation analysis, and percentage were evaluated. Furthermore, a second-order confirmatory factor analysis was performed using Mplus Version 8 software. The statistical values were Chi-square = 2572.016, df = 979, RMSEA = .07, SRMR = .051, TLI =.901, CFI =.912. Results from the five identified dimensions were in line with the hypothesized model, with the weight of all the variables being positive. These included responsiveness, empathy, reliability, tangibility, and assurance.

Keywords: assurance, empathy, reliability, responsiveness, tangibles

Thailand's automotive industry has been continuously developing for over 50 years, due in part to the strong support from both the public and private sectors. In 2016, Thailand became the 6th largest commercial vehicle producer in the world, while holding onto its status as the 12th largest automotive manufacturer (Asawachintachit, 2017). From these achievements, the Thai automotive industry now contributes approximately 12% to the country's gross domestic product (GDP; Board of Investment, 2015), and employs an estimated 550,000 workers (Phoosawad & Jones, 2017). These statistics have, thus, helped make Thailand the largest auto producer within the 10-nation ASEAN (Association of Southeast Asian Nations) community.

Despite severe shocks arising from the 1997–98 and 2008–09 financial crises, the industry bounced back strongly to export not only completed vehicles

but also parts and components. In the peak year of 2013, Thailand manufactured 2.46 million vehicles, while in 2014 Thailand's automotive industry became the largest export sector, contributing US$30 billion to the total exports for that year (Yongpisanphob, 2017).

Thailand also has a growing consumer market for all forms of transportation, including cars, light trucks, and motorcycles. It has even been recognized as the world's leader in pickup truck manufacturing. However, Thailand's domestic car ownership rate is currently at 227 cars per 1,000 people, which is relatively low when compared to advanced economies such as Germany and South Korea with 559 and 412 cars per 1,000 people, respectively (Aimpichaimongkol & Pantaweesak, 2017). This is supported by MarkLines (2017), which reported that even though Thailand is the 12th largest producer of automobiles and trucks in the world, of the 1,988,823 produced in 2017, only 871,644 were sold into the domestic market.

In this market, the automotive producers and their associated market share for domestic sales in December 2017 were Toyota (30%), Isuzu (14.8%), Honda (6.7%), Ford (6.5%), Mazda (6.0%), Suzuki (3.0%), Chevrolet (2.7%), and Mercedes-Benz (1.7%; MarkLines, 2017). All others represented another 6.2%. Obviously, these companies represent a crowded and highly competitive market.

Therefore, the automotive industry has recognized that to meet growing customer demands, there is a need to offer services together with their products, which can be implemented into their core offerings (Velimirović, Duboka, & Damnjanović, 2016). A fundamental trend in manufacturing industries is the movement from a *pure manufacturing* paradigm to a business model in which a central role is assigned to the service component of products based on the value they provide to consumers (Cohen, Agrawal, & Agrawal, 2006; Guajardo, Cohen, & Netessine, 2016). The movement towards a service-based economy has coincided with this change and has encouraged many manufacturing firms to put more emphasis on the delivery of services associated with their product offerings (Shankar, Berry, & Dotzel, 2009).

In Thailand, confirmation of scholar theory can be seen in Figure 1's results from the J. D. Power Asia Pacific 2017 Thailand Customer Service Index (CSI) study (J. D. Power, 2018). In it, the study measured new-vehicle owner satisfaction, with the after-sales service process at an authorized service center by examining dealership performance. From the five factors ranked, service quality (29%), service initiation (26%), vehicle pickup (18%), service advisor (15%), and service facility (12%) were judged to be the most important.
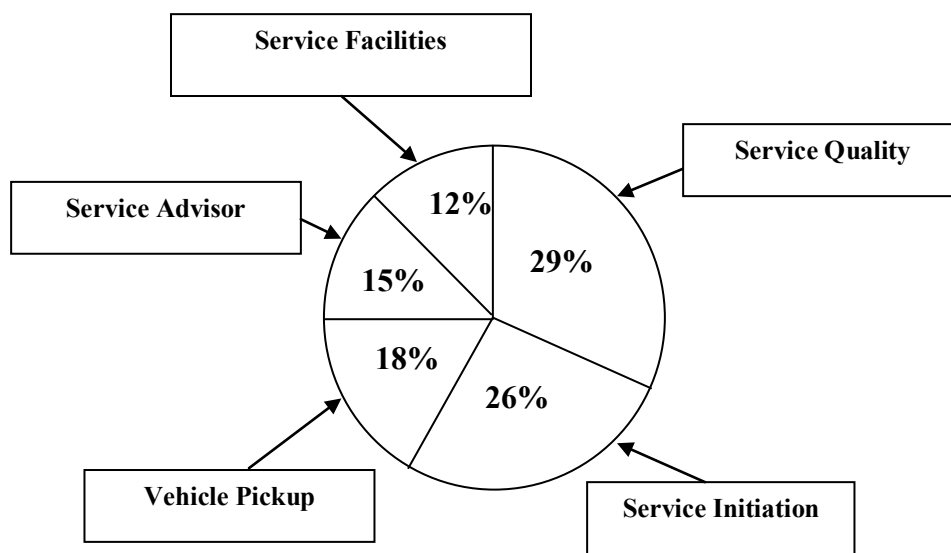
Figure 1. J. D. Power Asia Pacific 2017 Thailand Customer Service Index (CSI) study.

Note: The 2017 Thailand CSI study is based on responses from 2,770 new-vehicle owners who purchased their vehicle between January 2015 and May 2016 and took their vehicle for service to an authorized dealer or service center between July 2016 and May 2017. The study was fielded from January through May 2017. Source: J. D. Power (2018)

Additionally, service quality (SQ) is also the best metric to evaluate the satisfaction of customers in the comparison between expectations (service expectation) and the service perception. According to Angelova and Zekiri (2011), in today's competitive environment, delivering high quality service is the key to a sustainable competitive advantage. Also, according to Ross, Goetsch, and Davis (1997), SQ is a comparison between the customer's expectations in the product or service, and the actual perceived value of the customer or the customer sees that the product or service is the best and meets the expectations.

In this environment, as we had privileged access to Suzuki Motor Thailand customer service facilities, we set out to establish how important service quality is to the company's customers. Although not a dominant player such as Toyota, Suzuki in 2018 plans to sell 34,000 vehicles in Thailand, which represents 3.3% of Thailand's domestic automobile sales (Maikaew, 2018).

A 2017 survey of 2,770 Thai new-vehicle owners who took their vehicle to an authorized dealer or service center between July 2016 and May 2017 found that the most important aspect in customer service is service quality (J. D. Power, 2018). According to the survey results, overall satisfaction for mass market brands averages 866 (on a 1,000-point scale), down from 873 in 2016, with only Suzuki and Chevrolet not experiencing lower consumer ratings. Understanding the crucial importance of the domestic automotive market to Thailand's economy, we adopted the SERVQUAL model originally outlined by Parasuraman, Zeithaml, and Berry (1985, 1988) as our model to evaluate Thailand's Suzuki Motor's customer service experiences. Using the service quality (SERVQUAL) measurement tool, five dimensions were analyzed including tangibles, reliability, responsibility, assurance, and empathy. We then set out to verify that the data was consistent with the empirical data and the related hypotheses. The results of the study can be used as a guideline for creating a training curriculum for the development of more efficient and effective service center employees.

Literature Review

Service Quality (SERVQUAL)

Early conceptualization of service quality was formed by Grönroos (1983, 1984), in which service quality was defined as what consumers receive and how consumers receive the service. This Nordic model was based on a disconfirmation paradigm (Oliver, 1980) that compares perceived performance and expected service. This was one of the first attempts to measure the quality of service. The Grönroos (1983, 1984) model was general in nature and offered little technique in measuring technical and functional quality.

A few years later, Parasuraman et al. (1985) jointly published, "A Conceptual Model of Service Quality and Its Implications for Future Research," which appeared in the fall issue of Journal of Marketing. Three years later, in the Journal of Retailing, they published their approach for defining and measuring service quality, SERVQUAL. The service quality model (Parasuraman et al., 1988) indicated that service quality could be measured through five functional quality dimensions. These included tangibility, reliability, responsiveness, assurance, and empathy (Figure 1). Furthermore, the OECD (2006, par. 1) defined quality as "the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs."

In the automotive industry, Ford famously reinvented itself with the corporate slogan *Quality is Job 1* (Meredith, 1998). In more recent years, Toyota has embraced the slogan, *The best built cars in the world*, implying that quality is most important when making a purchase decision (Pope, 2016). Quality is, therefore, concerned with product longevity and strength, as well consumer satisfaction in the after-sales service process and through advertisement through word-of-mouth.

Ford's 18-year slogan is backed up by Grönroos (1984), which classified SERVQUAL into two groups: expected service and perceived service. This included technical quality, in which functional quality is seen to be a very important dimension of a perceived service. There is also the element of functional quality which is the "how" component, where technical quality is the "what" (Kang & James, 2004).

Parasuraman et al. (1985, 1988) have defined that the perceived quality of the product/service is caused by the expectation of customers or clients using the service. In Figure 2, a model for business use of the SERVQUAL model is depicted. From this model, businesses can utilize a questionnaire that measures customer expectations of service quality in terms of the five dimensions and their perceptions of the service they receive.

Service organizations are physical presences that can be seen and felt and are related to the delivery of services. Equipment providers must, therefore, should look beautiful and provide modern equipment and technology. Materials associated with the service have to be clean, service staff must have a professional personality, and organizations should facilitate both service users and service providers (Parasuraman et al., 1988). This is consistent with Haywood-Farmer (1988) study which indicated that the three most important attributes in service quality were (1) physical facilities and processes, (2) people's behavior, and (3) professional judgment.

SERVQUAL has, therefore, been widely used to study the broader service industry where the organization needs to understand the perceptions of its target audience in the service they need, and is a technique that provides quality measurement (Ladhari, 2009). According to Pongcharnchavalit and Fongsuwan (2015), the main goal of service is to reduce the difference between what is expected and what is actually delivered. This is because a higher level of customer service management increases the burden and cost on the provider. This, however, must be balanced with the perceived necessity of the service and the risk of customer dissatisfaction.

This paper, therefore, investigated previous research on SERVQUAL and the original five dimensions shown in Table 1. Some researchers have also added other dimensions to the original model, which this study has added as *skill* and *professionalism* when appropriate, as noted in Table 2.

Table 2
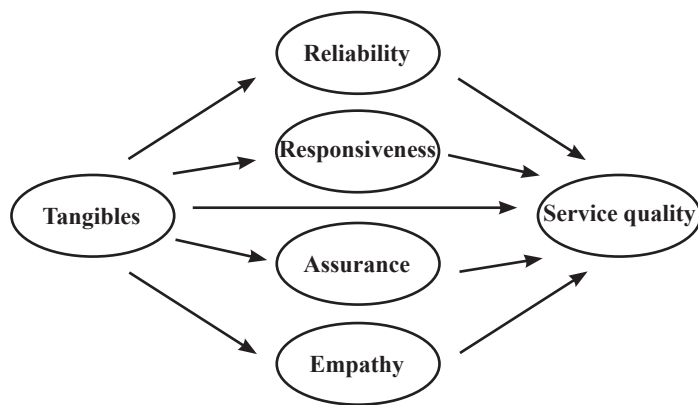
Figure 2. SERVQUAL model.

Table 1
Dimensions of SERVQUAL's RATER

Dimensions	Definition
Reliability	Ability to perform the promised service dependably and accurately.
Assurance	It includes competence, courtesy, credibility, and security. Knowledge and courtesy of employees and their ability to inspire trust and confidence.
Tangibles	According to Pillai and Bagavathi (2010), tangibles include the *appearance* of *physical facilities*, *equipment*, *personnel*, and *communication materials* that convey service quality to consumers.
Empathy	Parasuraman et al. (1988) referred to "empathy caring," which was the individual attention a firm gives to its customers. This includes access, communication, and understanding the customer.
Responsiveness	Willingness to help customers and provide prompt service.

Dimensions of Service Quality from 1980 to 2018

Year	Authors	R¹	A	T	E	R²	S	P
1980	Oliver (1980)							
1983	Grönroos (1983)							
1984	Grönroos (1984)	*		*	*		*	
1985	Parasuraman et al. (1985)	*	*	*	*	*		
1988	Parasuraman et al. (1988) (SERVQUAL)	*	*	*	*	*		*
1988	Haywood-Farmer (1988)			*	*	*		
1989	Woodside, Frey, and Daly (1989)	*	*	*		*		
1990	Zeithaml, Parasuraman, and Berry (1990)	*	*	*	*	*		
1991	Parasuraman, Zeithaml, and Berry (1991)	*	*	*	*	*		
1992	Mersha and Adlakha (1992)	*	*	*			*	*
1993	Parasuraman, Zeithaml, and Berry (1993)	*	*	*	*	*		
1994	Parasuraman, Zeithaml, and Berry (1994)	*	*	*	*	*		
1994	Ghobadian, Speller, and Jones (1994)	*				*		
1994	Rosen and Karwan (1994)	*	*	*		*	*	*
1996	Zeithaml, Berry, and Parasuraman (1996)	*	*	*	*	*		
1997	Johnston (1997)	*	*	*	*	*		
2000	Dabholkar, Shepherd, and Thorpe (2000)	*			*			
2001	Brady and Cronin (2001)		*	*				*
2004	Yang and Peterson (2004)	*	*	*		*		
2005	Choi, Lee, and Kim (2005)		*				*	*
2006	Kang (2006)	*	*	*		*	*	*
2008	Berndt (2009)	*	*	*	*	*		
2010	Pillai and Bagavathi (2010)	*	*	*	*	*		
2010	Sarathy (2010)	*	*	*	*	*		
2013	Ambekar (2013)	*	*	*	*	*		
2015	Khan and Jadoun (2015)	*	*	*	*	*		
2015	Pongcharnchavalit and Fongsuwan (2015)	*	*	*	*	*		
2016	Shahin and Nassibeh (2016)	*	*	*	*	*		
2016	Jasinskas, Streimikiene, Svagzdiene, and Simanavicius (2016)	*	*	*	*	*	*	

Note: Reliability= R¹, Assurance=A, Tangible=T, Empathy (Attitude) = E, Responsiveness = R², Skill = S, Professionalism = P

Methods

The population of the study was 3,600 individuals who were automotive service customers at Suzuki Motor (Thailand). Scholars have suggested sample sizes with the ratio of 20:1 (questionnaires collected to each observed variable used) as a strong method for determining sample size (Hair, Hult, Ringle, & Sarstedt, 2013; Schumacker & Lomax, 2004.). Also, according to Mertler (2016), in education research beyond a certain point (n = 5,000), the population size becomes irrelevant and a sample size of 400 will be adequate. Increasing the size of the sample beyond this point is not critical, but doing so will increase the confidence with which the researcher can generalize results.

Therefore, based on the various methods of determining sample size, we set out to obtain a minimum of 400 questionnaires by use of multi-stage random sampling. This process was divided into two stages which consisted of: 1) The customers were divided into four subgroups according to the age range of service recipients, and 2) simple random sampling was determined by a lottery method for each age range of the customers.

The research instrument was a questionnaire on service quality training development curriculum for employees in the automotive industry. This was divided into two parts: Part 1's consumer's basic characteristics and Part 2's measurement of employee service quality according to the model originally outlined by Parasuraman et al. (1988).

In the Parasuraman et al. (1988) model, there were five key elements identified. As such, the study used the same five elements for the consumer's questionnaire. These included tangibles with 14 items, reliability with eight items, responsiveness with 11 items, assurance with five items and finally, empathy with eight items, for a total of 46 items. Each item was rated using a 5-point, Likert type agreement scale with 5 indicating the highest quality of service, while 1 was reserved for minimal service quality.

Furthermore, five experts in their related fields were called to rate each item in the questionnaire using the index of item-objective congruence (IOC; Hambleton, 1984). IOC is a process where content experts rate individual items on the degree to which they do or do not measure the specific objectives listed by the test developer. Normally, IOCs from 0.60 to 1.00 are considered acceptable (Hambleton, 1984). Based on these criteria, all the questionnaire items were judged to be highly reliable as tangibles, had a confidence ranking of .932, reliability was .953, responsiveness was .944, assurance was .960, and, empathy was .930.

Additionally, statistical analysis of the data was divided into three parts. These included:

1) The characteristics of the respondents' basic statistics (Table 3).
2) The preliminary agreement before the analysis of the constituent elements was based on the Kaiser-Meyer-Olkin (KMO) test (Kaiser, 1974). The KMO Test is a measure of how suited the data is for factor analysis, and measures sampling adequacy for each variable in the model and the complete model (Cerny & Kaiser, 1977). For reference, Kaiser put the following values on the results: 0.00 to 0.49 unacceptable, 0.50 to 0.59 miserable, 0.60 to 0.69 mediocre (acceptable), 0.70 to 0.79 middling (good), 0.80 to 0.89 meritorious (very good), and finally, 0.90 to 1.00 marvelous (excellent; Cerny & Kaiser, 1977).

   Also, Bartlett's test of sphericity is often combined with KMO testing to determine the measure of sampling adequacy, which is also a statistical test for the presence of correlation among variables (Hair et al., 2013).
3) When conducting a confirmatory factor analysis (CFA), the range of goodness of fit (GoF) in the Mplus Version 8 software statistics using commonly recognized include Chi-Square, comparative fit index (CFI), Tucker-lewis Index (TLI), root mean square error of approximation (RMSEA), and the standardized root mean square (SRMR).

The SRMR used is based on the work of Hu and Bentler (1999), who recommended SRMR as a generally unbiased measure. Further, they recommend the use of the SRMR with one other fit measure to evaluate the adequacy of an SEM, such as the Tucker

Lewis Index (TLI) (also referred to as the non-normed fit index or NNFI). Values of SRMR 0.08 correspond to a well-fitted model, while values of TLI beyond 0.90 suggest an acceptable fit (Marsh & Balla, 1994).

Results

Table 3 presents the results of the data analysis of service quality research for customers of Thailand's Suzuki Motor, and shows that 51% of the sample's 537 customers were male (274 individuals) and were between 31–40 years of age (39.40%). Customer education levels were also high, with 64.1% having at least a bachelor's degree or higher. Salaries were also quite high when compared to Thai base/educational levels, with 79.5% of Suzuki's customers earning 15,000 Thai baht per month (US$474) or more.

Table 3
Characteristics of the Respondents

General information	Number	%
1. Customer Sex		
Male	274	51.00
Female	263	49.00
Total	537	100.00
2. Customer Age		
20–30 years old	191	35.60
31–40 years old	212	39.40
41–50 years old	88	16.40
51–60 years old	46	8.90
Total	537	100.00
3. Customer Education		
Undergraduate	193	35.90
Bachelor	295	55.00
Postgraduate	49	9.10
Total	537	100.00
4. Customer Income		
Less than 15,000 Thai Baht	121	22.50
15,000–25,000 Thai Baht	210	39.10
25,000–35,000 Thai Baht	138	25.70
More than 35,000 Thai Baht	68	12.70
Total	537	100.00
5. Customer Occupation		
Government / State Enterprises	83	15.50
Private business	168	31.30
Company employee	241	44.80
Government pensioner	10	1.90
Retiree/pensioner	35	6.50
Total	537	100.00

Table 4 shows the customer's evaluation of Suzuki Motor's employee service quality. From it, overall service quality was determined to be at a high level (= 4.374, S.D. = .449). The variable at the highest level was responsibility (= 4.406, S.D. = .476). This was followed by empathy (= 4.378, S.D. = .531). The majority of respondents rated service satisfaction higher than average and when studying the distribution characteristics based on the Kurtosis (Ku) value, all variables are judged as normal. The results of the analysis were also skewed (SK) in between -0.827 to -0.647, with the Kurtosis (Ku) values between -0.215 to 0.246. Subsequently, we then analyzed the data. The data was not converted to adjust the normal curve distribution in the variables.

Table 5 shows the correlation coefficients between the five observed variables within the SERVQUAL measurement model using AMOS Version 20. From the 10 pairs of relationships between the variables, correlation coefficient values ranged from 0.697 to 0.776.

Table 4
Average Standard Deviation of Observed Variables of Service Quality Modeling for Employees in the Automotive Industry

No	Variable		S.D.	Skewness	Results	Kurtosis	Results
1	Tangibles	4.337	.481	-.764	skewed left	.161	Normal
2	Reliability	4.374	.504	-.783	skewed left	.246	Normal
3	Responsibility	4.406	.476	-.827	skewed left	.141	Normal
4	Assurance	4.373	.546	-.647	skewed left	-.215	Normal
5	Empathy	4.378	.531	-.747	skewed left	.176	Normal
	Total	4.374	.449	-.712	skewed left	-.013	Normal

Table 5
Mean (tandard Deviation (S.D.), and Correlation Coefficients of the Observed Variables (n=537)

Observable variable	Correlation				
	Tangibility	Reliability	Responsiveness	Assurance	Empathy
Tangibility	1.000				
Reliability	0.720	**1.000**			
Responsiveness	0.763	0.749	**1.000**		
Assurance	0.710	0.697	0.738	**1.000**	
Empathy	0.705	0.733	0.776	0.722	**1.000**
Mean	4.33	4.37	4.40	4.37	4.37
S.D.	0.48	0.50	0.47	0.54	0.53

Note: Kaiser-Meyer-Olkin Measure of Sampling Adequacy = 0.905
Bartlett's Test of Sphericity: Chi-Square = 2103.314, df = 10

Table 6

Indices of Harmony with Empirical Data of the Confirmatory Element Model

Criteria Index	Criteria	Values	Results	Supporting theory/comments
1. RMSEA	< 0.08	0.070	passed	(Browne & Cudeck, 1993)
2. CFI	>0.90	0.912	passed	(Hu & Bentler, 1999)
3. TLI (NNFI)	>0.90	0.901	passed	(Marsh & Balla, 1994)
4. SRMR	0.08	0.051	passed	(Hu & Bentler, 1999)

Within the relationships, the highest correlation coefficient between variables was 0.776, which was the relationship between responsiveness and empathy. Second to this was the relationship between tangibility and responsiveness with 0.763. However, at the bottom of the relationship scale was that of reliability and assurance with 0.697.

Bartlett's test of sphericity indicated a chi-square value = 2103.314, with the degrees of freedom (df) = 10, which is statistically significant at the 0.05 level. Further testing showed the KMO = 0.905, which is approaching a perfect 1 (Cerny & Kaiser, 1977). This shows that the variables are related and suitable to be used in the first order CFA.

Table 6 shows that the second-order CFA results of the structural integrity check of the service quality measurement model using MPLUS Version 8 are consistent with the empirical data as the chi-square = 2572.016, df = 979, RMSEA = .07, SRMR = .051, TLI =.901, CFI =.912. For the factor loading weights, the components of each variable were positive, with responsibility having the greatest value (0.891). Opposite to this was assurance = 0.829. Moreover, the reliability coefficient of variable R^2 describes the variance of service quality components valuable from 0.686 to 0.794.

Table 7 presents the relationship results of the second order CFA structural integrity check of the service quality measurement. In it, R^2 values are indicated, which are always between 0 and 100%. When there are high R^2 values and low *p*-values, the model is interpreted to mean that a lot of variation within the data and is significant (best scenario; Frost, 2017). Usually, the larger the R^2, the better the regression model fits the observations. However, studies that try to explain human behavior generally have R^2 values less than 50% (Frost, 2017).

Tangibility

The most important element was identified as a clearly marked entrance as well as location signs on adjacent roads (T9), which has a loading factor weight = 0.703 and a R^2 = 0.494, while service technician use of industry-standard tools and equipment was judged to be second in importance (T10), with a factor loading weight = 0.699 and an R^2 = 0.489. The *coefficient* of determination (R^2) describing the variance of the physical characteristics was from 0.127 to 0.494.

Reliability

Concerning SERVQUAL's reliability, customers felt that keeping service records was most important (R5), followed by their accuracy and maintenance (R6). Supporting this was R5's loading factor weight = 0.739, and a R^2 = 0.547, while R6 had a factor loading weight = 0.716 and a R^2 = 0.512. The *coefficient* of determination (R^2) describing the variance of the physical characteristics in reliability was from 0.383 to 0.547.

Responsiveness

Concerning SERVQUAL's responsiveness, the most important element was E11, which is the ability of the service staff to answer the phone in a friendly and professional way, which has a loading factor weight = 0.701, and an R^2 = 0.510. Second in importance was E6, which is service staff being able to quickly resolve problems. This was supported by a factor loading weight = 0.677 and an R^2 = 0.458. The c*oefficient* of determination (R^2) describing the variance of the physical characteristics was from 0.389 to 0.492.

Table 7
Structural Integrity Examination of Service Quality Modeling

Item	Description	Elements of service quality			
		b_{sc}	S.E	t	R^2
1st order CFA Tangibility					
T1	The service clearly shows genuine auto parts.	0.443	0.037	12.074	0.196
T2	Each employee's name and position are clearly identified.	0.357	0.040	8.988	0.127
T3	There is a customer appointment schedule.	0.377	0.039	9.667	0.142
T4	Customers are notified about the schedule of their service.	0.642	0.028	23.299	0.412
T5	The service center provides product information and brochures.	0.588	0.030	19.301	0.345
T6	The service center prominently displays product information in waiting areas as well as on the In the Internet.	0.673	0.026	25.994	0.453
T7	Technical information is available in the customer lounge.	0.620	0.029	21.481	0.384
T8	The service center organizational chart is displayed with staff details.	0.673	0.026	26.059	0.453
T9	The service center location is clearly marked on the entrance and roads.	0.703	0.024	29.100	0.494
T10	Equipment and tools used are industry standards.	0.699	0.024	28.739	0.489
T11	The service center using state of the art diagnostics tools and equipment.	0.682	0.025	26.932	0.464
T12	The service center waiting area is comfortable and allows for the customer view vehicle's maintenance.	0.641	0.028	23.213	0.411
T13	Service center staff are professionally dressed to a high standard.	0.629	0.028	22.221	0.396
T14	The service center is very attractive and well decorated.	0.567	0.031	18.006	0.321
Reliability					
R1	Service staff can tell the customer approximately when they are done and how much.	0.660	0.027	24.494	0.435
R2	Service is completed on time.	0.619	0.029	21.213	0.383
R3	Service staff are capable of providing customers the service required.	0.685	0.026	26.801	0.469
R4	Service is done correctly the first time.	0.655	0.027	24.115	0.429
R5	Customer service records and kept and can be used again.	0.739	0.022	33.098	0.547
R6	Customer service records are correctly entered and maintained.	0.716	0.024	30.083	0.512
R7	Customer service maintenance checklists are accurately followed.	0.512	0.026	25.404	0.450
R8	Customer billing is accurate and reasonable.	0.634	0.028	22.293	0.401
Responsibility					
E1	Customer service staff are quick to greet the customer and verify what needs to be done.	0.647	0.027	23.781	0.419
E2	Service staff are quick and responsive.	0.635	0.028	22.748	0.404
E3	Service staff are enthusiastic about their jobs and helping customers.	0.644	0.028	23.393	0.414
E4	Service staff are respectful and quickly greet their customers.	0.635	0.028	22.675	0.404

E5	Once an appointment has been made, there is no need to repeat the request.	0.604	0.030	20.343	0.364
E6	Service staff can quickly resolve problems.	0.677	0.026	26.454	0.458
E7	Service staff maintain a worksheet of customer maintenance details.	0.675	0.026	26.181	0.455
E8	Service staff can provide clear and accurate information about vehicle maintenance.	0.675	0.026	26.248	0.455
E9	The service facility has sufficient numbers of service staff.	0.624	0.028	21.946	0.389
E10	In the case that there is additional work to be done, service staff and ready and able to provide the information needed to the customer.	0.646	0.027	23.674	0.418
E11	Service staff quickly answer the phone and do so in a friendly and detailed way.	0.701	0.024	28.987	0.492
Assurance					
A1	The service staff are knowledgeable and professional about the advice they give.	0.753	0.021	35.285	0.567
A2	Service staff explain in detail the work that needs to be done.	0.785	0.019	40.344	0.616
A3	Service staff pay attention to detail and follow-up work carefully.	0.850	0.015	55.390	0.723
A4	Service staff give accurate information to customers.	0.789	0.019	41.213	0.622
A5	There is a clear warranty on customer service maintenance.	0.680	0.026	25.950	0.462
Empathy					
W1	Service staff take care of all customers equally.	0.690	0.025	27.238	0.476
W2	Customer service is individualized.	0.642	0.028	22.996	0.412
W3	Service staff focus on each customer.	0.677	0.026	26.198	0.458
W4	Service staff are understanding and sympathetic to each customer.	0.737	0.022	32.821	0.543
W5	Service staff keep track of maintenance and perform it according to the customer's desires.	0.757	0.021	35.466	0.572
W6	The service center maintains after service records.	0.711	0.024	29.460	0.505
W7	My customer service center makes a follow-op call 2-3 days after the service is provided.	0.732	0.023	32.371	0.536
W8	Customer service staff act like a friend or family member.	0.399	0.038	10.375	0.159
2nd order CFA		b_{sc}	**S.E**	**t**	R^2
Tangibility		0.892	0.014	62.066	0.795
Reliability		0.900	0.015	61.862	0.809
Responsiveness		0.941	0.012	80.317	0.885
Assurance		0.887	0.015	57.470	0.786
Empathy		0.916	0.014	66.814	0.838

Note: b_{sc} = Standardized loading, R^2 = *coefficient* of determination, symbol <--> = Mandatory parameters do not report values S.E. and t-values. Chi-square = 2572.016, df = 979, RMSEA = 0.070, CFI = 0.912, TLI = 0.901, SRMR = 0.51

Assurance

Concerning SERVQUAL's assurance, according to Suzuki Motor's customers, having service staff pay attention to detail and follow-up work is most important (A3), which has a loading factor weight = 0.813 and a R^2 = 0.661. Second, is the service staff's ability to provide customers with accurate information (A4), with a factor loading weight = 0.788, and a R^2 = 0.622. The *coefficient* of determination (R^2) describing the variance of the physical characteristics was from 0.460 to 0.661.

Empathy

Concerning SERVQUAL's empathy dimension, the most important element was the service staff's customer understanding and sympathetic nature (W5), which had a loading factor weight = 0.757 and an R^2 = 0.572. Second, was the service staff's ability to keep track of maintenance and perform it according to the customer's desires (W4), with a factor loading weight = 0.737, and an R2 = 0.543. The R2 describing the variance of the physical characteristics was from 0.412 to 0.572.

Discussion

Service quality is an approach to manage business processes to ensure full customer satisfaction, which helps increase the competitiveness and effectiveness of the industry. Zeithaml et al. (1990, 1996) noted that the key strategy for the success and survival of any business institution is the deliverance of quality services to customers.

Within the Indian automotive industry, technical quality, functional quality, and reputation are identified as the most frequent components of service quality. Usually, passenger car brands measure service quality by comparing initial customer expectations before the service with the perception after it has been delivered (Ambekar, 2013). The wide range of models and variants on offer, with little differentiation among products within the same price band, also encourages customers to switch from one brand to another easily. As a result, retaining customer loyalty is a key concern for automotive manufacturers in India.

From this study, the Thai consumers viewed service staff responsiveness as the most important dimension within the SERVQUAL model. According to Berndt (2009), in South Africa, SERVQUAL responsiveness (the willingness to serve) refers to the changes in service hours from only weekdays to include weekend and night services, due to the changes in the needs of customers.

In Thailand, an automotive service department's responsiveness is viewed in simpler terms, that is, answering the phone politely and professionally and with the ability to solve problems topping the list of service quality items. This result is consistent with the findings of others that argued that companies, in order to satisfy customers, must be responsive and proactive to the needs and wants of customers (Blocker, Flint, Myers, & Slater, 2010). Quality in service is very important, especially for the growth and development of service sector business enterprises (Powell, 1995).

The second most important SERVQUAL dimension from the study was judged to be an automotive service center's staff empathy towards its customer. In the case of an automotive dealership, empathy can be seen in the interactions between the organization and the customer, and the nature of this interaction. This can include communication with customers, competence of the service staff, staff demeanor, quality of the facilities, and perceived costs (Berndt, 2009). According to Zeithaml et al. (1996), favorable behavioral intentions are associated with a service provider's ability to get its customers to say positive things about them, recommend them to other customers, remain loyal to them, spend more with the company, and pay price premiums.

In Thailand, empathy entailed the center's staff having the ability to track maintenance and perform it according to the customer's wishes. It also entailed the staff's ability (as with responsiveness) to be understanding and sympathetic to each customer. This was also consistent with Shuqin and Gang (2012) who conducted an empirical study on the relationship between after-sales service qualities in China's automobile sector. It was determined that fairness, empathy, reliability, and convenience have significant positive impacts on customer satisfaction.

SERVQUAL's reliability was judged to be the next more important dimension by Thai Suzuki Motor's

customers. This included the ability of the staff to keep accurate records that are easily accessible for a follow-up visit. In India, reliability (promised delivery) was judged to be the most important dimension of service quality. This dimension, however, was focused on a dealership's ability to deliver a vehicle at a specified time (Berndt, 2009).

Concerning tangibility, both this study and Berndt's (2009) Indian study were in perfect agreement as to what factor was the most important. In Thailand, having the service center clearly marked with signs on surroundings roads was viewed the most important of the 14 items that were surveyed for tangibility. In India, signage, parking, and layout of the dealership itself were also judged to be most important. It is also interesting to note that Thai automotive service center customers place a high value on the quality of tools and equipment, as well as state of the art diagnostics equipment. However, in another study from the automotive sector in India, tangibility's most important aspect was judged to be well-dressed and neat appearing reception desk staff members (Khan & Jadoun, 2015).

Concerning SERVQUAL's assurance, according to Suzuki Motor's customers, having service staff pay attention to detail and follow-up work was most important. Second to this was the service staff's ability to provide customers with accurate information. In India, assurance (confidence and trust) at the dealership took the form of knowledge and manner of interaction by the service advisor with the customer (Berndt, 2009). When this was positive, it inspired trust in the organization.

The results of the research show that the communications skills of the service staff play a significant role in how the service center is perceived. Service customers judge promptness, knowledge, and professionalism as necessary characteristics for a service department's staff. Therefore, service departments should develop programs and processes to enhance their staff's abilities at answering the phone in a professional and friendly manner. It is also important that the staff has quick access to customer records, and are knowledgeable about the status of their vehicle.

We would also like to note that numerous studies have been conducted that use the SERVQUAL model

in other sectors such as tourism, health care, public transport, telecommunication, and banking, whereas within the automobile service sector, published research is very limited concerning service quality and customer satisfaction. This study, therefore, can form the basis for follow-up research within the sector and can be used as an important guideline for an organization's management in setting strategies for managing customer expectations, perceptions, and operations.

References

Aimpichaimongkol, S., & Pantaweesak, N. (2017, June 20). *What's in store for the future of Thai auto industry?* SCB Economic Intelligence Center. Retrieved from https://www.scbeic.com/en/detail/product/3645

Ambekar, S. (2013). Service quality gap analysis of automobile service centres. *Indian Journal of Research in Management, Business and Social Sciences, 1*(1), 38–41. doi: 10.13140/2.1.1023.0407

Angelova, B., & Zekiri, J. (2011). Measuring customer satisfaction with service quality using American customer satisfaction model (ACSI Model). *International Journal of Academic Research in Business and Social Sciences, 1*(3), 232–258. doi: 10.6007/ijarbss.v1i2.35

Asawachintachit, D. (2017). *Opportunity Thailand*. Thailand Board of Investment. Retrieved from https://tinyurl.com/ybvxvr4r

Berndt, A. (2009). Investigating service quality dimensions in South African motor vehicle servicing. *African Journal of Marketing Management, 1*(1) 01–09. Retrieved from https://tinyurl.com/yc332gdz

Blocker, C. P., Flint, D. J., Myers, M. B., & Slater, S. F. (2010). Proactive customer orientation and its role for creating customer value in global markets. *Journal of the Academy of Marketing Science, 39*(2), 216–233. doi: 10.1007/s11747-010-0202-9

Board of Investment. (2015). *Thailand: Global green automotive production base*. Retrieved from https://tinyurl.com/nedbs8o

Brady, M. K., & Cronin, J. J., Jr. (2001). Some new thoughts on conceptualizing perceived service quality: A hierarchical approach. *The Journal of Marketing, 65*(3), 34–49. doi: 10.1509/jmkg.65.3.34.18334

Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.), *Testing structural models* (pp. 131–162). Newbury Park, NJ: Sage Publications Inc.

Cerny, C. 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. doi: 10.1207/s15327906mbr1201_3

Choi, Y. K. S., Lee, H., & Kim, C. (2005). Service quality dimensions and patient satisfaction relationships in South Korean: Comparisons across gender, age and types of service. *Journal of Service Marketing, 19*, 140–149. doi: 10.1108/08876040510596812

Cohen, M. A., Agrawal, N., & Agrawal, V. (2006). Winning in the aftermarket. *Harvard Business Review, 84*(5) 129–138. Retrieved from https://tinyurl.com/ybx96opk

Dabholkar, P. A., Shepherd, C. D., & Thorpe, D. I. (2000). A comprehensive framework for service quality: An investigation of critical conceptual and measurement issues through a longitudinal study. *Journal of Retailing, 76*(2), 139–173. doi: 10.1016/S0022-4359(00)00029-4

Frost, J. (2017, April 15). How to interpret R-squared in regression analysis. Retrieved from https://tinyurl.com/ydygpckw

Ghobadian, A., Speller, S., & Jones, M. (1994). Service quality: Concepts and models. *International Journal of Quality & Reliability Management, 11*(9), 43–66. doi: 10.1108/02656719410074297

Grönroos, C. (1983). Strategic management and marketing in the service sector. *Marketing Science Institute*, 83–104. Retrieved from https://tinyurl.com/y8cq3agc

Grönroos, C. (1984). A service quality model and its marketing implications. *European Journal of Marketing, 18*(4), 36–44. doi: 10.1108/EUM0000000004784

Guajardo, J., Cohen, M. A., & Netessine, S. (2016). Service competition and product quality in the U.S. automobile industry. *Management Science, 62*(7), 1860–1877. doi: 10.1287/mnsc.2015.2195

Kaiser, H. (1974). An index of factor simplicity. *Psychometrika 39*, 31–36.

Kang, G.-D., & James, J. (2004). Service quality dimensions: An examination of Grönroos's service quality model. *Managing Service Quality: An International Journal, 14*(4), 266–277. doi: 10.1108/09604520410546806

Khan, M. T., & Jadoun, R. S. (2015). Evaluation of service quality in two wheeler automobile industries using SERVQUAL model. *International Journal of Innovative Research in Science, Engineering and Technology, 4*(5). Retrieved from https://tinyurl.com/ybw7w2u5

Hambleton, R. K. (1984). Validating the test scores. In R. A. Berk (Ed.), *A guide to criterion-referenced test construction* (pp. 199–230). Baltimore, MD: The Johns Hopkins University Press.

Hair, J. F., Jr., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2013). *A primer on partial least squares structural equation modeling (PLS-SEM)* (2nd ed.). Thousand Oaks, CA: Sage.

Haywood-Farmer, J. (1988). A conceptual model of service quality. *International Journal of Operations & Production Management, 8*(6), 19–29.

Hu, L-T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal, 6*, 1–55.

J. D. Power. (2018). Satisfaction declines as new-vehicle owners expect more of service centers, J. D. Power finds [Press release]. Retrieved from https://tinyurl.com/yal6ketj

Jasinskas, E., Streimikiene, D., Svagzdiene, B., & Simanavicius, A. (2016). Impact of hotel service quality on the loyalty of customers. *Economic Research-Ekonomska Istraživanja, 29*(1), 559–572. doi:10.1080/1331677X.2016.1177465

Johnston, R. (1997). Identifying the critical determinants of service quality in retail banking: Importance and effect. *International Journal of Bank Marketing, 15*(4), 111–116. doi: 10.1108/02652329710189366

Kang, G-D. (2006). The hierarchical structure of service quality: Integration of technical and functional quality. *Journal of Managing Service Quality, 16,* 37–50. doi: 10.1108/09604520610639955

Ladhari, R. (2009). A review of twenty years of SERVQUAL research. *International Journal of Quality and Service Sciences, 1*(2), 172–198. doi: 10.1108/17566690910971445

Maikaew, P. (2018, February 9). Suzuki seeks HEV privileges from BoI. *Bangkok Post.* Retrieved from https://www.bangkokpost.com/print/1409810/

MarkLines. (2017). *Thailand - Flash report, Sales volume, 2017*. Retrieved from https://tinyurl.com/y7m4gu2u

Marsh, H. W., & Balla, J. R. (1994). Goodness of fit in confirmatory factor analysis: The effects of sample size and model parsimony. *Quality and Quantity, 28*(2), 185 – 217. doi: 10.1007/BF01102761

Meredith, R. (1998, May 4). The media business: Advertising; Ford is jettisoning its 17-year-old 'quality is job one' tagline for 'Better ideas. Driven by you.' *New York Times*. Retrieved from https://tinyurl.com/y9ngablt

Mersha, T., & Adlakha, V. (1992). Attributes of service quality: The consumers' perspective. *International Journal of Service Industry Management, 3*, 34–45.

Mertler, C. A. (2016). *Introduction to educational research*. Thousand Oaks, CA: Sage.

OECD. (2006). Quality – ISO. Retrieved from https://tinyurl.com/y8k7pvrd

Oliver, R. L. (1980). A cognitive model of the antecedents and consequences of satisfaction decisions. *Journal of Marketing Research, 17*, 460–469. doi: 10.2307/3150499

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1985). A conceptual model of service quality and its implication. *Journal of Marketing*, *49*(Fall), 41–50.

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). SERVQUAL: A multi-item scale for measuring consumer perception of service quality. *Journal of*

Retailing, 64(1), 12–40. Retrieved from https://tinyurl.com/yb3mj7a7

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1991). Refinement and reassessment of the SERVQUAL scale. *Journal of Retailing*, 67, 420–450. Retrieved from https://tinyurl.com/ya33gp8m

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1993). Research note: More on improving service quality measurement. *Journal of Retailing*, 69(1), 140–147.

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1994). Reassessment of expectations as a comparison standard in measuring service quality: Implications for future research. *Journal of Marketing*, 58, 111–124. doi: 10.2307/1252255

Phoosawad, S., & Jones, C. (2017). Antecedents affecting Thai auto parts enterprise organization performance. *Asian International Journal of Social Sciences, 17*(2), 4–40. doi: 10.29139/aijss.201700201

Pillai, R. S. N., & Bagavathi, V. (2010). *Marketing management*. New Delhi, India: S. Chand & Company.

Pongcharnchavalit, S., & Fongsuwan, W. (2015). Thai information technology customer loyalty perceptions: A structural equation model. *Research Journal of Business Management, 9*, 188–202. doi:10.3923/rjbm.2015.188.202

Pope, C. (2016, April 20). Toyota, the 'best built cars in the world'? Ad watchdog not so sure. *The Irish Times*. Retrieved from https://tinyurl.com/yby7ys43

Powell, T. C. (1995). Total quality management as competitive advantage: A review and empirical study. *Strategic Management Journal, 16*(1), 15–37.

Rosen, L. D., & Karwan, K. R. (1994). Prioritizing the dimensions of service quality: An empirical investigation and strategic assessment. *International Journal of Service Industry Management, 5*(4), 39–52. doi: 10.1108/09564239410068698

Ross, D. F., Goetsch, D. L., & Davis S. B. (1997). *Quality Management: Introduction to total quality management for production, processing and services* (3rd ed.). New Jersey: Prentice-Hall.

Sarathy, V. P. (Ed.). (2010). *Service quality: An introduction.* Hyderabad, India: ICFAI University Press.

Schumacker, R. E., & Lomax, R. G. (2004). *A beginner's guide to structural equation modeling* (2nd ed.). Mahwah, NJ: Lawrence Erlbaum Associates.

Shahin, A., & Nassibeh, J. (2016). Estimation of customer dissatisfaction based on service quality gaps by correlation and regression analysis in a travel agency. *International Journal of Business and Management, 6*(3), 99–108. Retrieved from http://tinyurl.com/zyfwov2

Shankar, V., Berry, L., & Dotzel. T. (2009). A practical guide to combining products and services. *Harvard Business Review, 87*(11), 94–99. Retrieved from https://tinyurl.com/ycfna4y2

Shuqin, W., & Gang, L. (2012). An empirical study of after-sales service relationship in China's auto industry. *International Conference on Mechanical Engineering and Material Science, 10*(2), 175–178. doi: 10.2991/mems.2012.123

Velimirović, D., Duboka, C., & Damnjanović, P. (2016). Automotive maintenance quality of service influencing factors. *Technical Gazette, 23*(5), 1431–1438. doi: 10.17559/TV-20140402074657

Woodside, A. G., Frey, L. L., & Daly, R. T. (1989). Linking service quality, customer satisfaction, and behavioral intention. *Journal of Health Care Marketing, 9*(December), 5–17.

Yang, X., & Peterson, R. T. (2004). Customer perceived value, satisfaction, and loyalty: The role of switching costs. *Psychology & Marketing, 21*(10), 799–822. doi: 10.1002/mar.20030

Yongpisanphob, W. (2017). Thailand industry outlook 2017–19: Auto parts industry. *Krungsri Research.* Retrieved from https://tinyurl.com/y9leyzdb

Zeithaml, V., Parasuraman, A., & Berry, L. L. (1990). *Delivering quality service: Balancing customer perceptions and expectations*. New York, NY: Free Press.

Zeithaml, V. A., Berry, L. L., & Parasuraman, A. (1996). The behavioral consequences of service quality. *Journal of Marketing*, *60*(April), 31–46.