

The Impact of Automotive After-Sales Service Quality and Alternative Attractiveness on Customer Loyalty

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Abstract— *This study intends to explore the impact of an industry-specific dimension of service quality in automotive after-sales service and how it influences the level of customer loyalty towards Malaysian national carmakers. Each service industry carries different characteristics of consumer behaviour and thus, an industry-specific measure of service quality to capture the uniqueness of different service setting is required. In relation to that, this study has evaluated service quality in automotive after-sales service as a second-order construct which allows for identification of the relative importance of each dimension in influencing the level of customer loyalty. Aside from that, the fierce competition from the non-national brands in Malaysian automotive market and the attractive offers made by the alternative workshops for car service maintenance and repair have motivated this study to empirically examine the competition factor of alternative attractiveness and its influences on customer loyalty. The data collected through the technique of intercept survey in systematic sampling from 312 respondents were analysed using PLS-SEM. The findings revealed that customer service was the most important dimension of service quality that contributes to the positive relationship with customer loyalty. Meanwhile, support service was found as the impotent element of service quality dimension, however, the positive significant relationship of service quality with customer loyalty showed that support service is still important to capture a higher level of customer loyalty. Aside from that, the finding also showed that the competition variable of alternative attractiveness was not a significant contributor to influence the level of customer loyalty. Further, this study benefited the Malaysian national carmakers as it provides empirical evidence on the relative importance of service quality dimension. The role of competitors also revealed to help in strategic decision-making in which may allow the national carmakers to sustain as a market leader in the local*

automotive arena.

Keywords— *Automotive After-sales Service, Service Quality, Intercept Survey, Systematic Sampling, PLS-SEM*

1. Introduction

The loyal customer is the life for a business organization. Without the loyal customer, it is not possible for any business organizations to succeed [1]. Studies have proven that one of the reasons for the loyal customer to return is the high quality of service [2][3][4][5][6]. However, the unique features of service have made it difficult for the marketers to satisfy the customers and make them return especially under stringent competition and the high expectation on the maximum value for money. Certain characteristic of the industry, for example automotive after-sales service, has made it further difficult to measure service quality as it combines the equal parts of tangible products and intangible services [6]. Additionally, recent studies on service quality have also advocated a more dynamic measure for service quality which is more contexts specific to enhance the higher level of customer loyalty [7][8][9]. Therefore, this paper aims to examine how the new paradigm of service quality with the industry specific dimension influences customer loyalty towards Malaysian national carmakers.

Along with that, a closer look at the performance of Malaysian national carmakers specifically after-sales service shows that the customer who take in their vehicles for service maintenance and repair are expecting better quality of service and the service providers are not meeting their expectations [10]. Similarly, the observed report on the after-sales service performance of national carmakers shows that the nationals were ranked below the industry average (Figure 1).

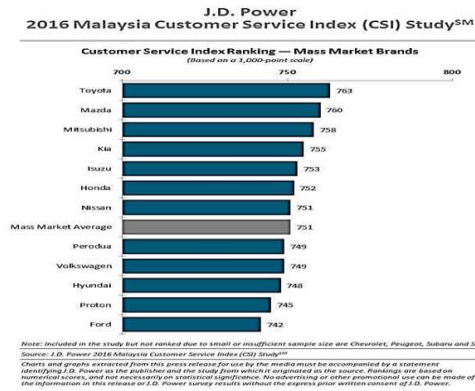


Figure 1. 2016 customer service index in automotive after-sales service

Besides selling cars, the automotive manufacturers including Malaysian national carmakers also provide free service, maintenance, and repair for each new vehicles sold. The free warranty period offers automatic existing customers and after-sales service should be the best platform to gain existing customer's loyalty [11]. Apart from that, the after-sales service is also regarded as an important stage to enhance more business opportunity because the repeated service appointments during the period of free warranty for at least three years opens up the opportunity to develop closer long-term high-quality relationship which promotes long-term business success [12]. However, issues pertaining to poor quality of after-sales service are still unresolved in some sites and industry, and that has given poor perception towards Malaysian national carmakers and directly pulls down the sales which further indicated by the level of customer loyalty.

On another note, the high purchasing power, rapid economic growth, and sound political stability have made Malaysia as the largest passenger vehicle market in Asian. As such, to take advantage of the resilient consumer demand, some of the international giant automotive companies have set up operations and doing very well selling non-national vehicles in the local automotive market. Their existence has jeopardized the position of national carmakers and surprisingly, the last two years have seen the non-nationals have taken possession of the local automotive market when they controlled more than 50% of local vehicles market shares [13]. The growth recorded by the non-nationals shows that local consumer choice for owning a vehicle is more towards foreign makes and that was also very alarming for the survival of the national carmakers.

As depicted in Figure 2, the trend of vehicles market share in Malaysian automotive industry clearly demonstrates the down trend of loyalty towards Malaysian national carmakers as compared to the years before. One of the possible reasons for this unfavourable performance (Figure 1) might be due to the poor quality of service at the stage of after-sales service where the customers are not satisfied and expect a better quality of

service. The poor perceptions have resulted to negative word-of-mouth and subsequently deny the opportunity of the Malaysian national carmakers to take advantage of recommendation, referral, and good publicity in which promote higher sales and loyalty.

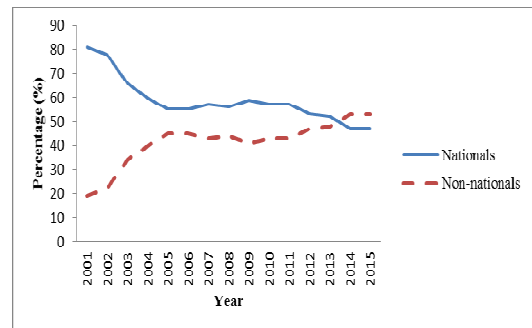


Figure 2. Malaysian vehicles market share from 2001 to 2015

Drawing upon the gap on the industry specific dimension as a better measures of service quality and the related issue of poor quality service of Malaysian national carmakers after-sales service discussed above, this paper attempts to examine on two things; firstly, the influence of industry specific multidimensional after-sales service quality towards customer loyalty and secondly, to investigate which such after-sales service quality dimension that needs more focus in gaining the higher level of customer loyalty.

Subsequently, the next section of this paper discusses the literature review related to the constructs under evaluation and followed by the discussion on research model and hypotheses development. The next sections deal with the explanation of the research method used and an assessment of the construct validity and reliability. This is followed by an explanation of data analysis and hypothesis testing. The last section is the discussion and conclusion on the findings and ends up with suggestions for future research.

2. Literature Review and Hypotheses

2.1 Customer Loyalty

Vehicle manufacturers are the business organizations that offer a tangible product (vehicle and spare parts) and intangible service (after-sales service). Each new vehicle sold is given certain warranty coverage for service, maintenance, and repair, so that each vehicle under warranty period of coverage will be sent to the manufacturer for at least three years. As such, this industry offers existing customers for the after-sales service if they are able to hold the customer after the warranty period expiry. Accordingly, studies have proven that maintaining the existing customer is five to six times more profitable than acquiring the new one [14]. That justified the importance of customer loyalty in automotive after-sales service. That also explained the concept of customer loyalty in after-sales service where it concerned on two-fold; firstly, willingness to stay loyal to the existing service provider after the expiry of vehicle's service warranty tenor, and secondly, faith in the brand that resulted in

recommendation and promotion of national makes vehicle [15].

Recent studies in after-sales service have also advocated on the importance of customer loyalty in after-sales service [16][15][6]. Its importance has made it an interesting subject to be researched further especially related to the complexities of its definition, concept and dimension. The review of the literature shows that evaluation on customer loyalty can be operationalized in many ways; uni-dimensional, bi-dimensional, composite, and multi-dimensional approach [17]. The uni-dimensional only evaluate customer loyalty from one side; either one of behavioural or attitudinal whereas for bi-dimensional, customer loyalty was evaluated using both attitudinal and behavioural dimension separately. For composite loyalty, it integrates attitudinal and behavioural dimensions together. The multi-dimensional customer loyalty involves more than two dimensions which are measured separately.

Even though there were studies that only focused on repeat purchase behaviour [18], however, the combination of both behavioural and attitudinal loyalty known as composite loyalty is the most selected conceptual definition to describe customer loyalty in consumer researches [19][20][21]. In the same vein, the true loyalty can only be achieved by combining repurchase behaviour and positive attitude towards the product [22].

2.2 Service Quality in Automotive After-sales Service

The high quality of service is definitely important to attract more loyal customers as the huge customer base contributes positively to the bottom-line of the firm [23]. Studies in automotive after-sales service have advocated service quality as an important variable influencing the level of customer loyalty [24][6]. Relatedly, customer's perceptions on service quality dimensions might also influence the customer's behavioral and attitudinal loyalty [25]. However, the measures for service quality are still debatable and the researchers were not unanimously agreed on one common dimension as measures for service quality [26][7][27]. Even though the SERVQUAL has been accepted as the most popular measures of service quality [28][29], it is still insufficient to fully describe service quality in all service settings [26]. Indeed, researchers are encouraged to further revisit the multi-dimensional scale of service quality [30]. On top of that, the instruments and determinants also need to be reassessed [31]. Until recently, [7] also emphasized that the literature has not fully explained on service quality especially in non-western countries and further proposed for future studies to consider the new paradigm to represent service quality that suit to the different context of the study.

With a certain modification of SERVQUAL in line with the suggestion from the studies on the automotive after-sales service industry, this study intends to examine the

influence of modified SERVQUAL and how it impacts the level of customer loyalty. This study also considers the industry-specific dimension related to the new way in telecommunication as reflected by the changes in current consumer demands and behavior. The following discussion explains on the four dimensions of after-sales service quality namely customer service, support service, tangible and technical quality.

Customer service plays a vital role in delivering high quality of service; however, little focus has been given by researchers [32]. Customer service adds more customer value to enhance customer satisfaction and consequently ensures customer to return to indicate loyalty. The finding shows that customer service able to explain both customer satisfaction and customer loyalty [33]. Along with that, the automotive industry offers both tangible products that are vehicle and spare part, together with after-sales service in almost equal ratio. Tangibility in the service industry is such an important element that cannot be ignored and must be examined accordingly [6]. Hence, measures for service quality are supposed to consider both intangible factor and tangibility element. Further to that, the measures for tangible and intangible should be examined as two separate constructs as it allows for better understanding of service quality from tangible and intangible dimension [24][6]. The similar study in car after-sales service also examined tangibility as a distinct construct [24]. Being guided by the previous literature on automotive after-sales service, this study has regrouped the five SERVQUAL dimension into the group of four namely customer service which comprises of responsiveness, assurance, empathy, and reliability; and tangibility was examined separately as one discrete dimension of service quality measures.

Besides measuring service quality subjectively from functional quality as measured by customer service dimension, the objective measure of technical quality is required [34]. Technical quality measures the outcome of the service, that is, the technical part of "what" process of service delivery [34][35]. Automotive after-sales service measures technical quality in terms of the effectiveness of repair and zero problem arises as a result of effective technical quality delivered by the service provider [36].

Support service offers more business opportunity by changing neutral customer to a highly loyal customer [37]. Besides customer service, the support system is an important element to explain service quality [32][38]. Also, technical assistance is one of the major activities in the after-sales service industry but still remain as a gap in the literature and therefore it needs to be researched further [39]. To the knowledge of the researcher, the importance of support service as measures of service quality has never been studied before; therefore, the study is needed to show the importance of effective support service system as support of customer service. The above discussion leads the authors to formulate the following hypothesis:

H1: Service quality has positive relationship with customer loyalty.

2.3 Competition Factor of Alternative attractiveness

Alternative attractiveness refers to the positive characteristics possessed by the competitors [40]. The positive characteristics or the rival's attractiveness such as better service, lower price, discounts, free service vouchers, and lucky draws may influence the customer to terminate the existing relationship with the current service providers.

The literature conceptually discussed the role of alternative attractiveness as the element that brings down the loyalty towards the current service provider. As suggested by [41], the alternative attractiveness might act as the poison that leads to relationship termination and subsequently reduces the loyalty level and retention rate. More choices and options or the more the attractive the alternatives offered by the competing service provider, the more it will lead to the higher possibility of defection by the customer from the current service provider [42].

The similar concept of alternative attractiveness was considered by [43] who suggested that the higher number of alternative with more attractive elements will cause dissatisfaction and subsequently deteriorates the level of loyalty. Being guided by the above studies and also considering the suggestions of previous academic researchers [44][45][46][47], this current study hypothesized alternative attractiveness as an exogenous variable that negatively related to customer loyalty.

H2: Alternative attractiveness has negative relationship with customer loyalty.

3. Conceptual Framework

These works of literature lend support for the development of research model that evaluates the relationship between after-sales service quality and alternative attractiveness with customer loyalty in the context of automotive after-sales service of Malaysian national carmakers (see Figure 3).

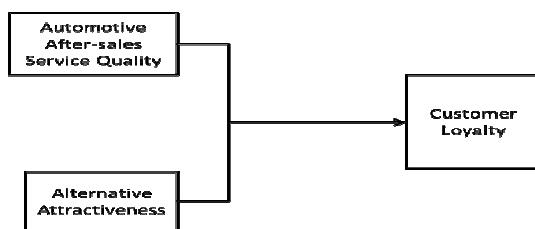


Figure 3. Proposed conceptual framework

4. Research Methodology

4.1 Sampling Design

The data in this quantitative study were collected from 312 customers of after-sales service branches of Malaysian national carmakers in the northern region of Malaysia. It is the common goal of any research to collect the data that may represent the population to be studied [48]. Following this, the selection of northern region may indicate the variation in consumer needs and behavior as the states in the northern region (Kedah, Perlis, Penang, and Perak) manifested the urban and rural consumer characteristics that increase the generalizability of studied population.

The respondents were selected based on systematic sampling in which every first of third customers were approached upon entering the service branches for car service, maintenance, and repair. In the self-administered survey, the questionnaires were distributed to customers who were intercepted using intercept survey method. The data collection was carried out in approximately one month started at the end of October and ended in the month of November 2015.

4.2 Measurements

All constructs in this study were measured by the instruments and scales adapted from the previous literature. Customer loyalty was measured using composite loyalty which integrates both attitudinal and behavioural loyalty and consists of seven items [31][19][20][49]. Back by the similar studies in automotive after-sales service [24][6] and to suit the current needs and demand in after-sales service industry, the construct of service quality was measured based on modified dimension of four; customer service, tangibility, technical quality and support service. Altogether, there are 31 items adapted from the established SERVQUAL of [28][29] except for support service as additional dimension measured using four scales adapted from studies on service quality in after-sales service [50][38][51][52]. In addition to that, alternative attractiveness was measured using six-item scales from [42] and [53].

All the items were measured by the six-point Likert scale which indicated by 1 for strongly disagree until 6 for strongly agree. As postulated in the literature, the validity and reliability of even number response scale are higher compared to odd number scale [54]. Besides, the middle point of "3" that is neither agreed nor disagree in five-point Likert scale would open for social desirability bias [55]. A study also showed that the respondents in Asian countries tend to choose middle point answer as compared to Western countries, and that middle response does not indicate any response for agreeing or disagree [56]. The above explains the use of six-point scale for all constructs measured in this study.

Along with that, to ensure that the respondent understands the questionnaire, this study follows the procedure of back-translation for survey across different language as suggested by [57], and that minimizes the issue of translation. The final questionnaires were bilingual; English and Malay. In addition to that, a pilot test with a small sample of 30 respondents may allow the researcher to know the actual condition of the study, anticipate the problems

and adjust it accordingly in the full-scale study. As such, 40 copies of questionnaires were distributed to industry experts, academicians and potential respondents, and after eliminating 8 invalid questionnaires, 32 usable

Variable	Categories	Frequency	Percent
Gender	Male	169	54.2
	Female	143	45.8
Age	17 to 25 years	33	11.6
	26 to 35 years	107	34.3
	36 to 45 years	107	34.3
	46 to 55 years	48	15.4
	Above 55 years	17	5.4
	Average Cost of Service	Below RM200	68
Income	RM201- RM300	162	51.9
	RM301- RM400	56	17.9
	Above RM400	26	8.3
	Below RM1,000	15	4.8
	RM1,001- RM3,000	140	44.9
	RM3,001- 5,000	96	30.8
	>RM5,000	51	16.3
No income	10	3.2	

questionnaires were considered for pilot test. Based on the feedback from respondents, certain words were reconstructed for a better understanding of the questions. Subsequently, the result of inter-item consistency reliability test of Cronbach's alpha coefficient showed a high-reliability value ranging between 0.853 and 0.978, and that indicates reliable measurement instruments.

Table 1. Respondent's Profile

4.3 Data Analysis Technique

Prior to hypothesis testing, the analysis of validity and reliability of data was done in partial least squares structural equation modeling (PLS-SEM) namely SmartPLS 3.0. To compute the standard error and determine the t values, the bootstrapping of 500 re-samples is used [58].

5. Data Analysis

5.1 Profile of Respondents

Based on systematic sampling using intercept survey method, the data of 312 customers of after-sales service branches' of Malaysian national carmakers were

obtained. The high response rate of 95% was achieved as the questionnaires were collected just before the customer left the waiting area of the service branches [6]. The on-the-spot collection of questionnaire advocates an appropriate administration of data collection process and therefore, the non-response bias is not a major problem [59][60]. The data collected has provided information on demographic profile and presented in Table 1.

From the total of 312 respondents, a total of 169 (54.2%) were male while 143 (45.8%) were female. This result is similar to the other automotive after-sales service study [6]. The age groups of 26-35 (34.3%) and 36-45 (34.3%) accounted for the largest portion of the sample, meanwhile, the age group of more than 55 years old (17%) was the smallest in the sample. More than half of the respondents perceived that the cost of service was just between RM201-RM300 (51.9%), meanwhile, the respondents perceived the cost above RM400 (8.3%) was the smallest portion of the sample. Only 4.8% of the respondents earned below RM1,000 income.

5.2 Measurement Model Evaluation

The PLS-SEM measurement model allows evaluation of the construct's reliability and validity or in other words, it indicates the model's predictive ability to confirm the quality of the model [61]. The first quality criteria are concerned with convergent validity and reliability which mainly measured by the items loading, composite reliability values, and average variance extracted (AVE) of each construct in the model. The convergent validity is achieved when the loading of each item is at least 0.50, composite reliability value must be above 0.70 and the average variance extracted value must be greater than 0.50 [61]. The convergent validity and reliability of the constructs in this study are indicated in Table 2.

The constructs which are the alternative attractiveness recorded composite reliability value of 0.927, whereas the composite reliability for customer loyalty as the dependent variable is 0.957. These two constructs have achieved the recommended threshold of 0.70 and therefore considered valid measure of the constructs [61]. On top of that, each of the constructs under evaluation showed the average variance extracted (AVE) value above the cut-off of 0.50. It further indicates that all constructs possess sufficient convergent validity as all the items loaded to the respective constructs able to explain more than 50% of the variance of the related constructs. In this study, after-sales service quality construct is measured as second-order formative construct comprised of attributes such as customer service, support service, tangibility and technical quality, and the weight recorded values of 0.505, 0.152, 0.213 and 0.229 respectively (refer Table 2).

Table 2. Internal consistency and convergent validity of constructs

Construct	Items	Loadings	CR	AVE	Convergent Validity				
AA	AA1	0.845	0.927	0.679	Yes				
	AA2	0.878							
	AA3	0.792							
	AA4	0.882							
	AA5	0.764							
	AA6	0.775							
CL	CL1	0.875	0.957	0.763	Yes				
	CL2	0.919							
	CL3	0.905							
	CL4	0.903							
	CL5	0.886							
	CL6	0.898							
	CL7	0.708							
SQCS	SQCSA 1	0.867	0.963	0.685	Yes				
	SQCSA 2	0.873							
	SQCSA 3	0.838							
	SQCSE1	0.811							
	SQCSE2	0.783							
	SQCSE3	0.870							
	SQCSL4	0.787							
	SQCSL5	0.838							
	SQCSR1	0.767							
	SQCSR2	0.854							
	SQCSR3	0.860							
	SQCSR4	0.773							
	SQSS	SQSS1				0.843	0.911	0.720	Yes
		SQSS2				0.924			
SQSS3		0.891							
SQSS4		0.721							
SQTAN	SQTAN 1	0.901	0.953	0.802	Yes				
	SQTAN 2	0.852							
	SQTAN 3	0.919							
	SQTAN 4	0.884							
	SQTAN 5	0.921							
SQTQ	SQTQ1	0.890	0.940	0.760	Yes				
	SQTQ2	0.891							
	SQTQ3	0.900							
	SQTQ4	0.888							
	SQTQ5	0.784							

Second order formative	Items	Weight	t-value	VIF	Convergent Validity
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Construct	Items	Loadings	CR	AVE	Convergent Validity
SQ	SQCS	0.505	55.120	4.053	NA
	SQSS	0.152			
	SQTAN	0.213			
	SQTQ	0.229			

Next, the second quality checking in measurement model involved assessment of discriminant validity of each construct under investigation. Establishing discriminant validity infers that each construct is exclusive and strictly distinct from other constructs [61]. This validity was assessed using Fornell Larcker criterion [62] and Henseler's heterotrait-monotrait (HTMT) (2015) criterion [63]. In order to achieve discriminant validity, the average variance shared between each construct and its measures must be greater than the variance shared between the construct and other constructs (correlation) [62]. Therefore, as illustrated in Table 3, this study has achieved discriminant validity as all the values in the diagonal which are the square root of AVE for each constructs are higher than the off diagonal values.

Table 3. Fornell and Larcker criterion

	AA	CL	SQCS	SQSS	SQTAN	SQTQ
AA	0.824					
CL	0.183	0.873				
SQCS	0.211	0.826	0.828			
SQSS	0.126	0.721	0.742	0.848		
SQTAN	0.269	0.718	0.744	0.557	0.896	
SQTQ	0.254	0.835	0.824	0.753	0.737	0.872

Note: Bold values in the diagonal represent the square root of AVE while the other entries in off-diagonal represent the correlation between the constructs.

CL – Customer Loyalty; SQCS – Customer Service; SQSS – Support Service; SQTAN – Tangibility; SQTQ – Technical Quality; AA – Alternative Attractiveness.

In addition to that, Heterotrait-Monotrait criterion (HTMT criterion) also offers another alternative in assessing discriminant validity where it permits a systematic assessment of construct validity [63]. This HTMT criterion involves comparison with a recommended threshold, which is 0.90. According to [63], the HTMT above the cut-off value of 0.90 signifies that there is lack of discriminant validity. Thus, as depicted in Table 4, the measurement model demonstrated sufficient discriminant validity as all constructs are distinctly different at HTMT0.90 threshold [63].

Table 4. Heterotrait-monotrait criterion (Htmt criterion)

	AA	CL	SQCS	SQSS	SQTAN	SQTQ
AA						
CL	0.179					
SQCS	0.212	0.865				
SQSS	0.140	0.797	0.813			
SQTAN	0.271	0.756	0.782	0.620		
SQTQ	0.258	0.892	0.876	0.845	0.791	

5.3 Assessment of Formative Second Order Construct

On another note, this study evaluates after-sales service quality as a second-order formative construct. In assessing the formative second-order, it is crucial to ensure that collinearity for all service quality (SQ) dimensions are assessed. As shown in Table 5, the variance inflation factor (VIF) values for each of service quality dimensions are lower than the threshold of 5 [61]. It suggests that each of the dimensions is distinct and is measuring different aspects of service quality.

Table 5. Collinearity assessment

	SQ
SQCS	4.053
SQSS	2.627
SQTAN	2.549
SQTQ	4.126

The bootstrapping results in Table 6 show the significance path co-efficient of each first-order constructs of service quality. The significant results indicate that each dimension is significantly related to service quality. Apart from that, this study is evaluating service quality as a formative second-order construct, thus, it allows the researcher to identify the most influential dimension of after-sales service quality that contributes to the positive relationship with customer loyalty. The path co-efficient assessment further indicates that customer service was the most important dimension of after-sales service quality indicated by the weight of 0.505 whereas technical quality with the weight of 0.229 was the second important dimension of after-sales service quality followed by tangibility (weight of 0.213). Relatively, support service was the least important dimension of after-sales service quality as its weight was only 0.152. However, the positive result still shows that it was also one of the important contributors to the positive relationship between after-sales service quality and customer loyalty.

Table 6. Path co-efficient assessment

Relationship	Coef(β)	Standard Error	T Value	P Values
SQCS-> SQ	0.505	0.009	55.120	0.000
SQSS-> SQ	0.152	0.006	25.572	0.000
SQTAN->SQ	0.213	0.006	34.137	0.000
SQTQ->SQ	0.229	0.006	37.038	0.000

5.4 Structural Model Evaluation

Before proceed with evaluating the structural model, the researcher needs to ensure that the inner model of this study is free from collinearity issue. As such the result of collinearity test is depicted in Table 7. The VIF values smaller than five suggests that the collinearity is not the major problem [61].

Table 7. Collinearity assessment

	CL
AA	1.062
SQ	1.062

* CL – Customer Loyalty; AA – Alternative Attractiveness; SQ – Service Quality

Subsequent to that, the bootstrapping procedure of PLS-SEM is used to assess the structural model and the results of path-coefficient for the hypothesized relationship are shown in Table 8. A close look shows that after-sales service quality was positively related to customer loyalty and found to be a significant predictor of customer loyalty (SQ \rightarrow CL, $\beta = 0.878$, $p < 0.01$), hence, the H1 is supported. Contradictory, the hypothesis H2 is not supported as there is no significant relationship between alternative attractiveness and customer loyalty (AA \rightarrow CL, $\beta = -0.028$, $p < 0.01$).

Table 8. Path co-efficient and hypothesis testing

Hypothes.	Relation.	Coef(β)	Stand. Error	T Value	P Values	Supported
H1	SQ \rightarrow CL	0.878	0.017	51.495	0.000	Yes
H2	AA \rightarrow CL	-0.028	0.027	1.052	0.146	No

* $p < 0.05$, ** $p < 0.01$ (one-tailed)

Table 9 shows the co-efficient of determination (R^2), the predictive relevance (Q^2), and the effect size (f^2) of the respective endogenous variable of this study i.e customer loyalty. As shown in the table, the R^2 value for customer loyalty is 0.759. This advocates that the exogenous variables in this study, namely after-sales service quality

and alternative attractiveness can explain 75.9% of the variance in customer loyalty. Next, in evaluating the predictive relevance (Q^2) of after-sales service quality and alternative attractiveness over customer loyalty, the value of 0.538 which is greater than zero suggests that both exogenous variables in this study possess predictive capacity over customer loyalty [61]. On top of that, Table 7 also exhibits the importance of exogenous variables in explaining customer loyalty through estimation of effect size (f^2). As indicated by [61], f^2 values of 0.35, 0.15, and 0.02 are considered large, medium, and small respectively. The result shows that after-sales service quality possess higher effect size ($f^2 = 3.013$) compared to alternative attractiveness which only has small effect on customer loyalty. This indicates that the former is more important than the latter in explaining and predicting customer loyalty.

Table 9. Determination of co-efficient (R^2), predictive relevance (Q^2) and effect size (f^2)

	Co-efficient	Predictive Relevance	Effect Size f^2	
	R^2	Q^2	CL	Effect size
CL	0.759	0.538		
AA			0.003	Small
SQ			3.013	Substantial

6. Conclusion and Discussion

The purpose of this study was to examine how the industry-specific dimensions of service quality and competition factor of alternative attractiveness influence the level of customer loyalty towards Malaysian national carmakers. Further to that, this study also aims to identify which dimensions are the major contributor to indicate service quality.

The finding of this study found that after-sales service quality has a significant positive relationship with customer loyalty. This empirical evidence supports the findings in the previous literature from different research context, that service quality has positive significant effects on customer loyalty [2][3][4][5]. This indicates that the higher the quality of service delivered by the Malaysian national carmakers, the better is the level of customer loyalty towards national carmakers.

Along with that, after-sales service quality was examined as a second-order formative construct, and the finding further pointed out that each after-sales service quality dimensions are significantly related to after-sales service quality. Apart from that, the finding further demonstrates that customer service which indicates the functional dimension of service quality has the greatest impact on after-sales service quality that contributes to the positive significant relationship with customer loyalty. Next, the result also indicates the second importance of service outcome of technical quality that explains the service

delivery process as the pre-requisites for functional service quality. Vehicle is a valuable product that requires high investment. As such, besides excellent customer service, the customer expects a favorable and the very best outcome for their vehicle when they send for service, maintenance, and repair. On another note, even though the tangibility and support service carries the smaller weight, the significant path co-efficient to service quality indicates their important contribution as after-sales service quality dimensions.

Besides evaluating the effect of after-sales service quality on customer loyalty, this study also examines the alternative attractiveness as the competition factor and how it affects loyalty. The alternative attractiveness was hypothesized as negatively related to customer loyalty as it is a poison that reduces the loyalty towards the Malaysian national carmakers. The empirical finding shows that as hypothesized, the alternative attractiveness is negatively related to customer loyalty but there is no significant relationship between them. This explains that Malaysian national carmakers tend to retain their existing customer and increasing their sales by delivering the high quality of after-sales service. The high quality of service promise longer term of relationship after the warranty expiry and the positive word-of-mouth, recommendations, referrals and good publicity may attract new customer and retain the existing customers as well. However, the attractive offers from the competitors were not an influential element to increase the level of customer loyalty.

6.1 Implications

The findings provide empirical evidence theoretically to the literature of the relationship between automotive after-sales service quality and alternative attractiveness with customer loyalty. The literature has suggested for the service quality to be measured with dimensions according to the specific characteristics of the industry and context of study [7][8][9], so that it will contribute differently to the literature on service quality and customer loyalty. To the knowledge of this study, this is a new empirical discovery that tested the dimension of support service with instruments adapted from other industry as measures of service quality. Besides, this study also examined the competition factor of alternative attractiveness as an exogenous variable in relation to customer loyalty. The findings have contributed to the social exchange theory on the mutual rewards gained by both parties in a continuous relationship between customer and the service provider.

From the practical view, the significant positive relationship of after-sales service quality and customer loyalty suggest that the Malaysian national carmakers should emphasize on delivering high quality of service to increase more loyal customer. The customer-service provider relationship developed during the repeated service encounter within the free warranty schedule should be the platform to maintain the existing customer for a longer term of business even after warranty expiry. The finding also offers empirical evidence to the automotive carmakers that the functional quality is the most influential dimension to indicate service quality and subsequently increase higher

loyalty. Other than that, the managers must improve the activity of support service as the findings show that it is significantly related to after-sales service quality. This study also helps the national carmakers to prioritize and strategize their limited resources according to the needs and current demand of customers in after-sales service.

6.2 Limitation and Future Research

This study only focused on customer loyalty in the context of after-sales service where the evaluation was only limited to the recommendation and positive word-of-mouth related to faith towards national carmakers; also the willingness to return to Malaysian national carmakers for service maintenance, and repair even after the warranty expiry. A future study in a different context might see customer loyalty from a broader perspective suitable to the context under investigation. Next, this study is limited to the sample from the population of Malaysian national carmakers and future studies are suggested to extend the richness of the data by examining both, national and non-national carmakers and making a comparison between them. The bigger and diverse sample may reveal higher generalizability and the enrich findings could also broaden and deepen the understanding of the concept of service quality in customer loyalty research.

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