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EXAMINING INDUSTRY-SPECIFIC AFTER-SALES SERVICE QUALITY TOWARDS THE LEVEL OF CUSTOMER LOYALTY: A CASE OF MALAYSIAN NATIONAL CARMAKERS

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ABSTRACT

The intangible and elusive nature of service requires an industry-specific measures of service quality. This study is intended to assess the service quality in after-sales services by looking into each of the dimensions in SERVQUAL through modifying said dimensions tailored towards the needs of the industry. The findings show technical quality as the key driver of service quality in automotive after-sales service that determined customer loyalty, followed by other attributes such as customer service, tangibility and support service respectively. The data was collected from 312 respondents based on systematic sampling where every three customers were approached at the main entrance of the service branches to answer the self-administered questionnaire. Using PLS-SEM as the method of data analysis, the data revealed that technical quality was the most important dimension which served as measures of service quality in automotive after-sales service industry. Even though support service was found to be an impotent element to represent service quality, the significant relationship with customer loyalty showed that it is important to capture a higher level of customer loyalty and needs equal attention. This study contributes to the Malaysian automotive industry, especially national carmakers, as it provides empirical evidence on the relative importance of service quality attributes to be prioritized in developing their marketing strategy to attract more loyal customers.

Keywords: Industry-specific, service Quality, automotive after-sales service, customer loyalty, SERVQUAL, PLS-SEM.

INTRODUCTION

Scholars and marketers collectively agreed that it is impossible for an organization to succeed and sustain without support from the loyal customers. Customer loyalty is the most important aspect of automotive after-sales service (Saidin, Mohd Mokhtar, Saad, & Yusoff, 2018). In automotive after-sales service, customer loyalty is seen from two aspects. First, faith in brand that resulted in recommendation and second, willingness to stay loyal to the existing service provider (the authorized car service centres) after the expiration of the vehicle's service warranty tenor (Nordin, Yaacob, Razak, Radzi, & Saraih, 2016). The high quality of service ensures customer to return for the next subsequent service works. As such, the after-sales service may serve as a platform for the automotive service provider to retain the existing customers and attracting the new ones. However, retaining and maintaining the existing customers and attracting the new ones is increasingly

Vol. 19. No. 4 (2022), 70-93. ISSN: 1823-884x

difficult as the competition in automotive market increases locally and globally. It is worsening as the researchers were not unanimously agreed on the generic measures of service quality (Alnaser, Ghani, & Rahi, 2018; Arora & Narula, 2018; S. Ashraf, Ilyas, Imtiaz, & Ahmad, 2018). The generic measure of SERVQUAL is unable to explain service quality dimensions which supposed to be specific according to the needs of the various industries (Kashif, Altaf, Ayub, Asif, & Walsh, 2014). Eventually, there are needs for researchers to develop a unique measure to explain service quality in a specific industry (Arora & Narula, 2018; Murali, Pugazhendhi, & Muralidharan, 2016). Besides, the difficulties in defining and measuring service quality as a multidimensional concept is still aroused in the marketing literature (Arora & Narula, 2018).

In relation to that, studies have suggested various measures of service quality which are deemed applicable to the context of study (Alnaser, Abd Ghani, & Rahi, 2017; Ashraf, Ilyas, Imtiaz, & Ahmad, 2018; Gencer & Akkucuk, 2017; Kitapci, Akdogan, & Dortyol, 2014; Voon & Abdullah, 2014). A more dynamic measure for service quality which is more context specific is needed to ascertain what is the level of service quality expected by the customers and how it impacts the level of customer loyalty in after-sales service specifically towards Malaysian national carmakers. This study is focusing on Malaysian national carmakers as the national car project initiated by the government of Malaysia in 1982 has transformed Malaysia from a mere motorcar assembler into a car manufacturer that provides opportunity for thousands of ordinary Malaysians to own at least one brand new car. In fact, this industry has trained thousands of Malaysians and offer a substantial number of job opportunities for Malaysians and benefited the whole industry value chain (Malaysian Investment Development Authority [MIDA], 2012). As such, this study is intended to empirically document how the industry specific measure of service quality in automotive after-sales service secure the higher level of loyalty towards Malaysian national carmakers' brands.

Besides the measurement issue of service quality, issues pertaining to poor quality of after-sales service are still unresolved in some sites and industry (J. D. Power Asia Pacific, 2019; Malaysian Automotive Association, 2018). For example, the observed report on the after-sales service performance of national carmakers showed that the Nationals were ranked below the industry's average (Figure 1). Customers who brought in their vehicles for service maintenance and repair were expecting a better service quality, but the service providers were not meeting their expectations (J. D. Power Asia Pacific, 2014).

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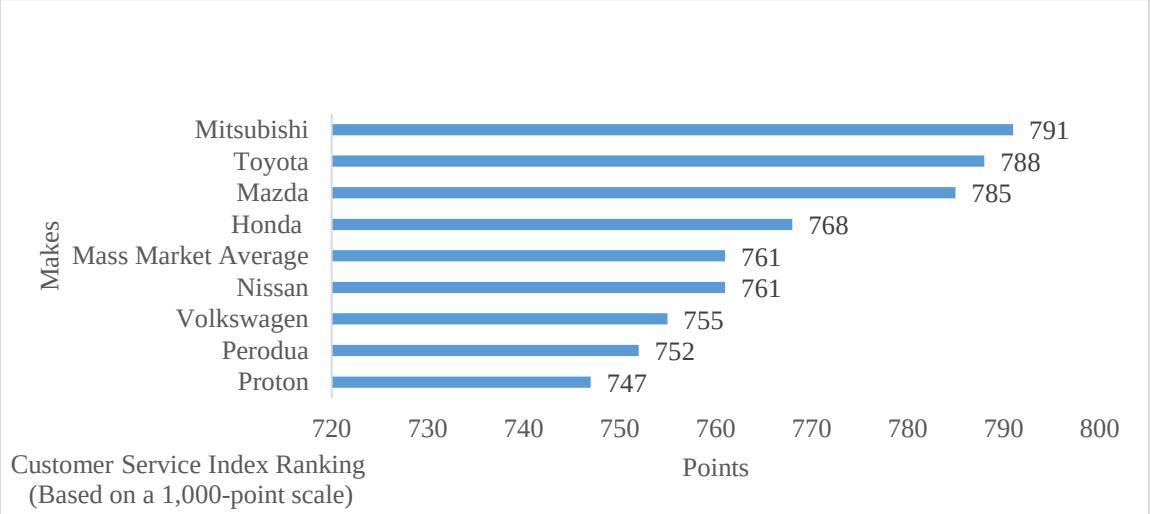
Journal of Social Sciences and Humanities
Vol. 19. No. 4 (2022), 70-93. ISSN: 1823-884x

Figure 1: Customer Service Index in Automotive After-sales Service



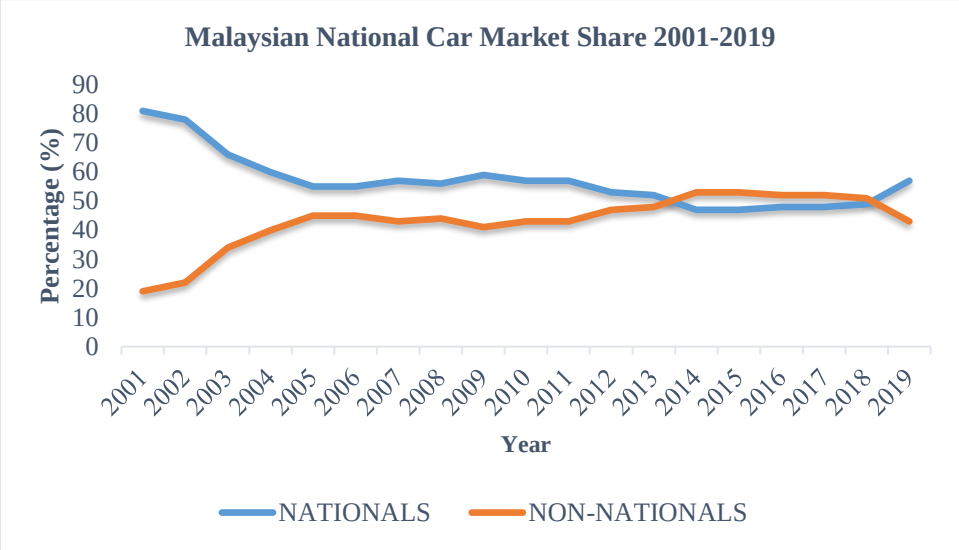
Source: J. D. Power 2019 Malaysia Customer Service Index Study

The poor after-sales service quality has given poor perception towards national carmakers and concurrently, the decreasing trend of market share recorded by the national carmakers further validates the issue of loyalty towards Malaysian national carmakers (refer Figure 2). The existence of non-national carmakers in the local market is highly influenced by the high purchasing power and rapid economic growth of Malaysia. The ratio of 200 cars for every 1000 people has recognized Malaysia as one of the countries with the high car ownership ratio in the Asian region and have made Malaysia as the largest passenger vehicle market in Asian (Malaysian Investment Development Authority [MIDA], 2012). Hence, to take advantage of the buoyant consumer demand, it is not surprising when some of the giants in global automotive companies have set up operations and become one of the sellers of non-national vehicles in the local automotive market.

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. 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 the local vehicles market shares (Malaysian Automotive Association, 2018). The demand of passenger car has shifted towards non-national instead of nationals. Figure 2 below clearly shows the trend of vehicles market share in Malaysian automotive industry. This trend of market share clearly demonstrates the lowering level of loyalty towards Malaysian national carmakers as the slice of the cake grasped by the nationals become smaller and smaller compared to the early 2000. Even though the nationals have made sudden improvement in the year 2019, it is only spurred by the introduction of their new models (NST Business, 2020; Shankar, 2020).

Vol. 19. No. 4 (2022), 70-93. ISSN: 1823-884x

Figure 2: Malaysian National Car Market Share from 2001 to 2019



Source: Malaysian Automotive Association (MAA)

The after-sales service relationship developed between the customer and the service provider is supposed to be a stepping stone towards retaining the customers for long-term profitability. In simpler words, this study aims to stress the unharnessed capability of after-sales service quality, in which it can exponentially enhance the extent of customer loyalty in Malaysian national carmakers. It perhaps is the best platform to gain customer loyalty (Saccani, Songini, & Gaiardelli, 2006). In relation to that mutually benefited relationship between the customer and the service provider, this study is drawing upon the Social Exchange Theory (SET) which explains the mutual rewards enjoyed by both parties in a relationship (Blau, 1960). Specifically, the customer is benefited from the high quality of service and in return, the service provider is rewarded by the higher level of loyalty towards the National carmakers.

Further to that, given the important stage of after-sales service in retaining existing customers to create a long-term customer-service provider relationship, more so, with the evident issues of poor service quality in after-sales service of Malaysian national carmakers, this paper attempts to examine industry-specific multidimensional after-sales service quality and its influences towards customer loyalty. It also investigates which after-sales service quality dimension needs more focus in gaining a higher level of customer loyalty. Instead of looking upon and harmonizing the variables of service quality into one whole picture (Saidin et al., 2018), this study intends to investigate each and every dimension of service quality individually and its influence on the level of customer loyalty.

The next section of this paper discusses the research context and conceptual framework in relation to the existing literature on customer loyalty and after-sales service quality related constructs such as customer service, support service, tangibility, and technical quality. The subsequent sections explain the research method used and the assessment of construct validity and reliability. This is followed by the explanation of data analysis and hypothesis testing. The last section is on discussion and conclusion of study as guided by Social Exchange Theory (SET) and followed by suggestions for future research.

Vol. 19. No. 4 (2022), 70-93. ISSN: 1823-884x

LITERATURE REVIEW AND HYPOTHESES

This section intends to review the related previous literature that may guide this current study to contribute further in the area of study on customer loyalty and service quality, and subsequently extend the knowledge content specifically to the Theory of Social Exchange (SET). The Social Exchange Theory (SET) explains on the mutual reward enjoyed by both parties in the long-term continuous relationship between the customer and the service provider in automotive after-sales service. The high quality of service may strengthen the relationship between the customer and the service provider and subsequently contribute to a higher level of loyalty.

Customer Loyalty

Marketers and practitioners have unanimously agreed on the importance of loyal customers as their continuous support in terms of recommendation, publicity, positive word-of-mouth, and repeat purchase behaviour may contribute to the business's long-term success and survival (Abd Aziz, 2018; Ashraf & Niazi, 2018; Moretta Tartaglione, Cavacece, Russo, & Granata, 2019; Nguyen, Nguyen, Nguyen, & Phan, 2018; Xhema, Metin, & Groumpos, 2018). Recent studies in after-sales service have also advocated on the importance of customer loyalty in after-sales service (Jahanshahi, Gashti, Mirdamadi, Nawaser, & Sadeq Khaksar, 2011; Nordin et al., 2016; Saidin et al., 2018). Its importance has made it an interesting subject to receive further attention by researchers especially in relation to the complexities of its definition, concept, and dimension.

The standard measures for customer loyalty were initially focused on repeat purchase behavior (Srinivasan, Anderson, & Ponnavolu, 2002). In contrast, true loyalty can only be achieved by combining repurchase behavior and positive attitude towards the product (Day, 1969). In the same vein, loyalty measured from more than one dimension will provide a greater understanding for marketers to enhance customer loyalty (Hallowell, 1996; Jacoby, Chestnut, & Fisher, 1978). The review of the literature shows that evaluation on customer loyalty can be operationalized in many ways such as through uni-dimensional, bi-dimensional, composite, and multidimensional approach (Chiu, Cheng, Huang, & Chen, 2013). The uni-dimensional only evaluate customer loyalty from one side, either based on behavioral or attitudinal dimension whereas for bi-dimensional, customer loyalty was evaluated using both attitudinal and behavioral dimensions separately. For composite loyalty, it integrates attitudinal and behavioral dimensions together. The multi-dimensional customer loyalty involves more than two dimensions which are measured separately. However, the combination of both behavioral and attitudinal loyalty known as composite loyalty is the most selected conceptual definition to describe customer loyalty in consumer studies (Hallowell, 1996; Jacoby et al., 1978).

Service Quality in Automotive After-sales Service

Service quality is definitely important to attract more loyal customers and subsequently contribute to the bottom-line of the firm (Caruana, 2002). In addition, customers' perception on service quality dimensions might influence their behavioral and attitudinal loyalty (Anderson & Sullivan, 1993). Studies in automotive after-sales service have advocated service quality as an important variable in influencing the level of customer loyalty (Bouman & Wiele, 1992; Yieh, Chiao, & Chiu,

Vol. 19. No. 4 (2022), 70-93. ISSN: 1823-884x

2007). However, the measures for service quality are still debatable and the extant literature clearly shows that researchers were not unanimously agreeable on one established dimension of service quality measures (Arora & Narula, 2018; Kashif et al., 2014). Even though the SERVQUAL developed by Parasuraman, Zeithaml, and Berry (1985, 1988) has been accepted as the most popular measures for service quality, it is still insufficient to fully describe service quality for all service setting (Bhat, 2012; Kashif et al., 2014). Indeed, researchers are encouraged to further revisit the multi-dimensional scale of service quality (Cronin & Taylor, 1994). The instruments and determinants also need to be reassessed (Caceres & Paparoidamis, 2007). Until recently, Kashif et al. (2014) also stated that the literature has not fully explain the service quality especially with regards to non-western countries and further proposed for future studies to consider the new paradigm to represent service quality according to the different context of the study.

Drawing on that, this study is intended to examine the dimensions of service quality obtained from the literature with certain modifications of SERVQUAL in line with the suggestion from studies on the automotive and after-sales service industry. On top of that, this study also considers the aspects of support service as another measure of service quality to manifest the changes in current consumer demands and behavior. The following sections discuss the four dimensions namely customer service, support service, tangibility, and technical quality.

Customer Service

Customer service carries an important role in delivering superior and excellent service, however, it has received few attentions by researchers (Gaurav, Sahu, & Mathew, 2018). The automotive industry which offers the tangible product that is the vehicle and spare parts together with after-sales service in an almost equal ratio is supposed to measure service quality based on the combination of intangible factor and the tangible element. Tangibility in service industry is an important element that cannot be ignored and must be examined accordingly (Yieh et al., 2007). In relation to that, service quality as perceived by customers in automotive after-sales service also comprised of four SERVQUAL dimensions namely responsiveness, assurance, empathy, and reliability whereas tangibility was examined as one separate construct (Bouman & Wiele, 1992). Service quality measured by SERVQUAL without tangible dimensions have manifested the intangible elements of service and allowed for better understanding of service quality from tangible and intangible dimensions (Bouman & Wiele, 1992; Yieh et al., 2007). Being guided by the previous literature which is mainly related to automotive after-sales service, this study has regrouped the five SERVQUAL dimensions into groups of four namely customer service which comprised of responsiveness, assurance, empathy, and reliability; tangibility is examined separately as one discrete dimension of service quality measure.

There were previous studies that examined the relationship between customer services as service quality dimension manifests the functional quality. The similar study which examined tangibility, faith, and service quality based on customer service attribute comprised of responsiveness, assurance, empathy, and reliability showed a positive influence of customer service with customer loyalty (Bouman & Wiele, 1992). A study that looked at the effects of functional and technical quality on overall service quality showed that relatively, functional quality is more dominant than technical quality (Kang & James, 2004) and excellent functional qualities are able to overcome any deficiencies caused by technical qualities (Etemad-Sajadi & Rizzuto,

Vol. 19. No. 4 (2022), 70-93. ISSN: 1823-884x

2013). Service quality has been established in the literature to influence customer loyalty positively and since this study examines functional quality as a measurement to represent service quality, this study, therefore, hypothesized the relationship between functional quality and customer loyalty as follows:

H1: Customer service has a positive effect on customer loyalty.

Support Service

Support service is capable of changing the neutral customer into a highly loyal customer (Jones & Sasser, 1995) because the support system is deemed as a necessary factor to provide excellent service quality other than customer service itself (Andreassen & Olsen, 2008). In relation to that, support system such as website availability has been measured as an important element to explain service quality in the airline industry (Llach, Marimon, Alonso-Almeida, & Bernardo, 2013). Furthermore, technical assistance is one of the major activities that must be considered in the after-sales service industry but still remain as a gap in the literature and therefore requires further research (Saccani, Johansson, & Perona, 2007). It is important that the impact of support service on customer loyalty should be studied since there is a lack of research conducted in the subject. The study thus, is needed to show the importance for the service provider to build an effective support service system as a support of customer service (Andreassen & Olsen, 2008). Drawing on the above justification, this study formulates the hypothesis as follows:

H2: Support service has a positive effect on customer loyalty.

Tangible

Service is a subjective element associated to intangibility; however, the tangible attribute is still needed to perceive the quality of service delivered (Yieh et al., 2007). The importance of tangible element in service settings has urged researchers to examine tangibility as service quality dimension and how it influenced the level of customer loyalty. For example, Etemad-Sajadi and Rizzuto (2013) have examined the impact of tangibility as one of the service quality dimensions and found that tangibility positively influenced customer loyalty. In banking industry, tangibility was found as one of the indicators of service quality (Siddiqi, 2011)). A study on restaurant's service quality also found that tangible elements which concerned with environmental quality was positively related to satisfaction (Hyun, 2010). Most importantly, there were extant studies in the context of car after-sales service have recognized the importance of tangible factor as part of the evaluation of service quality (Bouman & Wiele, 1992; Yieh et al., 2007). Further review of literature in car after-sales service also showed that study by Bouman and Wiele (1992) was one of the most referred study in car service industry. The importance of tangibility as one of the indicators to describe service quality was proven when they have examined tangibility as a separate indicator on top of intangible element of service quality and the authors found that tangibility was a significant factor that influenced customer loyalty. The most recent studies in various industries also posits that tangibility is one of the significant attributes that describe service quality (Abbas, Asim, & Irfan, 2019; Jernick, Suganthi, & Iniyan, 2018). Based on the above discussion, this study formulates the hypothesis as follows:

H3: Tangibility has a positive effect on customer loyalty.

Vol. 19. No. 4 (2022), 70-93. ISSN: 1823-884x

Technical Quality

Service evaluation is concerned with both quality aspects that is objective and subjective measures. Accordingly, Gronroos (1984) has emphasized the technical and functional quality as interrelated to each other and the existence of technical quality is a prerequisite for the success of functional quality. Technical quality measures the outcome of the service, that is, the technical part of "what" process of service delivery (Gronroos, 1984; Kang & James, 2004). The study which examines service quality in the context of after-sales service mainly described technical quality from the effectiveness of the repair and zero problem that arises as a result of effective technical quality delivered by the service provider (Ooi, Lin, Tan, & Chong, 2011). SERVQUAL offers an established instrument as measures for functional quality evaluation, however, there are no common or universal instruments for technical quality developed in the previous literature (Kang & James, 2004). Hence, to evaluate the outcome of the service objectively, researchers adapted instruments from other industries which are deemed suitable for the context of study such as effectiveness of the car service or repair (Ooi et al., 2011), competency of the financial advisor in assisting the clients to meet their financial goal (Sharma & Patterson, 1999), and the physical goods itself or the product quality (Clottey, Collier, & Stodnick, 2008).

The relationship between technical quality and customer loyalty has been studied. Kang and James (2004) have researched the relationship between technical service quality and functional service quality with overall service quality. Bell, Auh, and Smalley (2005) has conducted a study to examine the relationship between technical service quality, functional service quality, expertise, and switching cost with customer loyalty in the stockbroking industry. A positive result was found for both technical service quality and functional service quality, however, technical service quality has a relatively greater effect on customer loyalty. The same finding was found for a study on service quality in a Nigerian bank (Maiyaki, 2013). The above discussion leads the authors to formulate the following hypothesis:

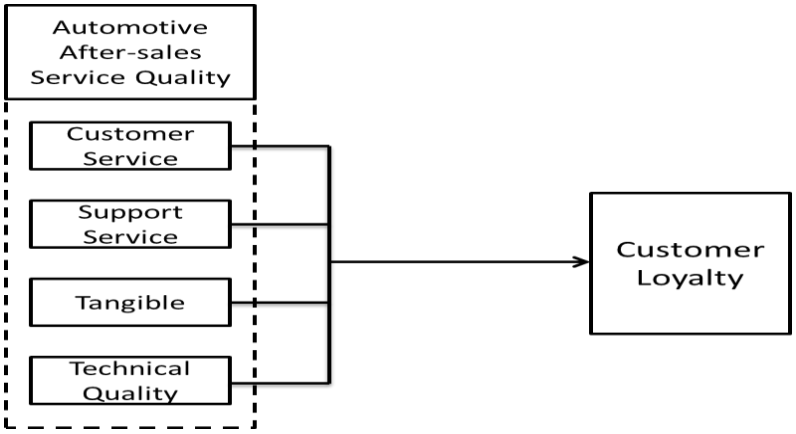
H4: Technical quality has positive effect on customer loyalty

RESEARCH MODEL

The above literature and hypotheses lend support for the development of a research model that evaluates the relationship between service quality attributes comprised of customer service, support service, tangibility and technical quality, and customer loyalty in the context of automotive after-sales service of Malaysian national carmakers (see Figure 3).

Vol. 19. No. 4 (2022), 70-93. ISSN: 1823-884x

Figure 3: Research Model



METHODOLOGY

This quantitative study using a self-administered survey was carried out at 3S' branches of national carmakers in the Northern region of Malaysia. The branches with 3S' status are those selling the cars, providing complete services and spare parts as a one-stop centre. The 3S' branches may provide the full-service experience to the customers and this is the justification for selection of 3S's branches for data collection in this study. All these branches are operating with the similar SOP and that may ensure consistency of service process and service delivery to the customers which may influence the customers in their evaluation of service quality delivered by the service provider. Prior to data collection, this study needs to determine the sample size which obtained from the population of study.

Each car sold or registered is given at least three years free warranty service, maintenance and repair. Within the period, the car is going for pre-schedule service at the national carmakers service centre. As such, the population of this study is taken based on the number of cars registered for the last three years from 2017, 2018 until 2019. According to the report from Malaysian Automotive Association (MAA), the total number of national cars registered for the last three years was somewhat of 896,430 in total. Drawing upon Krejcie and Morgan (1970), the population above 75,000 requires 384 respondents as the sample. Therefore, based on the number of populations of 896,430 cars registered which is above 75,000, the required sample as suggested is 384 respondents. Next, the data was obtained from 384 customers who visited the service branches of national carmakers for car service, maintenance, and repairs. For selection of respondents, this study employed systematic sampling method in which every first of three customers entering the service branches were approached at the main entrance. The chosen customers were given the self-administered questionnaire to attend to while waiting for their cars to be serviced or fixed.

All constructs in this study were measured by adapting the instruments and scales validated in these extant literatures. First, customer loyalty in this study was measured using composite loyalty which integrates both attitudinal and behavioral loyalty and consists of seven items (Caceres & Paparoidamis, 2007; Hallowell, 1996; Jacoby et al., 1978; Prasad & Aryasri, 2008). Second, the total of twenty-six instruments for service quality dimension namely customer service,

Vol. 19. No. 4 (2022), 70-93. ISSN: 1823-884x

tangibility and technical quality were adapted from the establish SERVQUAL introduced by the service quality Guru, Parasuraman et al. (1985, 1988). Meanwhile, support service as an additional dimension of service quality was measured using four scales adapted from the studies in the similar context of service quality in after-sales service (Cronin, Brady, & Hult, 2000; Llach et al., 2013; Parasuraman & Zeithaml, 2005). On another note, SERVQUAL scale was slightly modified to suit the objective and context of this study. Items of each dimension of modified SERVQUAL are in the Table 2. Five items mainly explaining about reliability adapted from SERVQUAL scales were deleted as the items were found to be irrelevant and redundant. This is consistent with the previous study measuring service quality in automotive after-sales service that using modified SERVQUAL in which it also excluded reliability dimension to avoid redundancy (Yieh et al., 2007).

Subsequently, the analysis of validity and reliability of data as well as hypothesis testing was done in partial least squares structural equation modeling (PLS-SEM) namely SmartPLS 3.0.

FINDINGS

Of the 384 questionnaires distributed, 364 were collected but only 312 questionnaires were considered complete and good for further analysis. The data of 312 customers of Malaysian national carmakers were obtained using the intercept survey method. The high response rate of 95% was achieved because the completed questionnaires were collected just before the customer left the waiting area of the service branches (Yieh et al., 2007). The immediate collection of questionnaire advocates a proper supervision of data collection process and hence, the non-response bias is not a major problem (Nulty, 2008; Richardson, 2005). From the data collected, the information on the demographic profile of 312 customers is presented in Table 1.

Table 1: Respondent's Profile

Variable		Frequency	Percent
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
Gender	Male	169	54.2
	Female	143	45.8
Income	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
Average Cost of Service	Below RM200	68	21.8
	RM201-RM300	162	51.9
	RM301-RM400	56	17.9
	Above RM400	26	8.3

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Journal of Social Sciences and Humanities
Vol. 19. No. 4 (2022), 70-93. ISSN: 1823-884x

Measurement Model Evaluation

The measurement model of PLS-SEM allows evaluation of the construct's reliability and validity. The measurement indicates the model's predictive ability to ensure its quality (Hair, Hult, Ringle, & Sarstedt, 2014). The first quality criterion is concerned with convergent validity which is measured by the composite reliability values, items loading, and average variance extracted (AVE) from each construct in the model.

According to Hair, Hult, Ringle, & Sarstedt (2014), the composite reliability value is more appropriate to measure internal consistency compared to the traditional Cronbach alpha that is sensitive to the number of items in the scale and inclines to underestimate the internal consistency reliability. Due to the Cronbach alpha's limitation, this study applied a different measure of internal consistency reliability referring to composite reliability.

The constructs which are the after-sales service quality attributes comprising of customer service, support service, tangibility, and technical quality recorded composite reliability values of 0.963, 0.911, 0.953, and 0.940 respectively whereas the composite reliability value for customer loyalty as the dependent variable is 0.957. Drawing upon Hair et al. (2014), the composite reliability value above 0.70 is considered satisfactory and these constructs possess an adequate level of internal consistency and therefore is considered a valid measure of the constructs. It is important to note that even though the values are above 0.90, it is not related to the possibility of constructs measuring the same phenomenon (Hair et al., 2014). This is because the collinearity shows that the VIF values are all below five which according to Hair et al. (2014), the collinearity is not a major problem (Table 5). On top of that, the average variance extracted (AVE) for each of the constructs studied are all above the cut-off value of 0.50. This confirms that all constructs possess adequate convergent validity as all the items loaded to the respective constructs are able to explain more than 50% of the variance of the related constructs (Hair et al., 2014).

Table 2: Internal Consistency and Convergent Validity of Constructs

Construct	Items	Loadings	CR	AVE
Customer Loyalty	I say positive things about the service provider to other people.	0.875	0.957	0.763
	I recommend the service provider to someone who seeks my advice.	0.919		
	I encourage friends and relatives to service and repair their car	0.905		

Vol. 19. No. 4 (2022), 70-93. ISSN: 1823-884x

Construct	Items	Loadings	CR	AVE
	to this service provider.			
	I consider this service provider as my first choice in the next visit.	0.903		
	I have a very strong relationship with this service provider.	0.886		
	The chances for me to stay in this relationship are very good.	0.898		
	I do not mind to pay more in exchange of the good relationship with the service provider.	0.708		
Service Quality-Customer Service	The service provider is consistently courteous with me.	0.865	0.963	0.685
	I have confidence in dealing with the service provider.	0.872		
	The service provider has optimal knowledge to answer enquiries about vehicle.	0.839		
	The service provider is sympathetic and supportive towards my problems.	0.814		
	The service provider does	0.787		

Vol. 19. No. 4 (2022), 70-93. ISSN: 1823-884x

Construct	Items	Loadings	CR	AVE
	provide me with individual and personalized attention.			
	The service provider knows and understands my specific needs.	0.872		
	The service provider keeps me informed on when the service will be performed.	0.789		
	The service provider provides accurate information (e.g itemised invoice).	0.839		
	The service provider provides prompt services.	0.764		
	The service provider shows willingness to help the customer.	0.851		
	The service provider is respectful and polite.	0.856		
	The service provider never looked too busy to respond to my requests.	0.770		
Service Quality-Support Service	Support service staff quickly response to me even during the busy hours of the day or during late night time (e.g	0.852	0.911	0.720

Vol. 19. No. 4 (2022), 70-93. ISSN: 1823-884x

Construct	Items	Loadings	CR	AVE
	emergency breakdown during late night time).			
	It is easy to contact the support service staff during emergency breakdown.	0.926		
	It is easy to get through to customer support service for any information or assistance (e.g customer call centre, website).	0.892		
	The site for online booking must be consistently available as it is important for my convenient and saves my time.	0.707		
Service Quality-Tangibility	The service provider provides clean and comfortable lounge for customers.	0.900	0.953	0.802
	The service provider provides up-to-date physical facilities and equipment (e.g customer's parking, computer, wifi, television, refreshment and etc.)	0.854		
	The service provider	0.918		

Vol. 19. No. 4 (2022), 70-93. ISSN: 1823-884x

Construct	Items	Loadings	CR	AVE
	provides environment free from danger, risk, or doubt.			
	The service provider is well dressed and appears neat to show professionalism.	0.884		
	The service provider used proper material and documentation during performing the service.	0.921		
Service Quality-Technical Quality	The service provider has assisted me to solve problems associated with my vehicle.	0.890	0.940	0.760
	The service provider has performed well in doing their job resulting in free problems to my vehicle.	0.893		
	The service jobs normally completed successfully without interruption.	0.901		
	The service jobs performed by the service provider portray good image of the company.	0.888		
	The spare parts offered by this service centre	0.781		

Vol. 19. No. 4 (2022), 70-93. ISSN: 1823-884x

Construct	Items	Loadings	CR	AVE
	are genuine and of best quality.			

The second quality checking in the measurement model involved assessment of the construct's discriminant validity. Establishing discriminant validity infers that each construct under investigation is unique and truly distinct from other constructs (Hair et al., 2014). This validity was assessed using Fornell Larcker (Fornell & Larcker, 1981) and Henseler's heterotrait-monotrait (HTMT) (2015) criterion. As depicted in Table 3, Fornell Larcker discriminant validity is achieved when the values in the diagonal which are the square root of AVE for each construct are higher than the off-diagonal values (correlation).

Table 3: Fornell and Larcker Criterion

	CL	SQCS	SQSS	SQTAN	SQTQ
CL	**0.873**				
SQCS	0.827	**0.828**			
SQSS	0.722	0.744	**0.848**		
SQTAN	0.719	0.743	0.553	**0.896**	
SQTQ	0.835	0.825	0.753	0.736	**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.

Heterotrait-Monotrait criterion (HTMT criterion) offers another alternative in assessing discriminant validity where it permits a systematic assessment of construct validity (Henseler, Ringle, & Sarstedt, 2015). This HTMT criterion involves comparison with a recommended threshold, which is 0.90. According to Henseler et al. (2015), the HTMT above the cut-off value of 0.90 signifies that there is a lack of discriminant validity. Table 4 below depicts the HTMT criterion discriminant validity where it suggests that all constructs are distinctly different at HTMT0.90 threshold (Henseler et al., 2015). Thus, in total, the measurement model demonstrated sufficient convergent validity and discriminant validity.

Table 4: Heterotrait-Monotrait criterion (HTMT criterion)

	CL	SQCS	SQSS	SQTAN	SQTQ
CL	-				
SQCS	0.865	-			
SQSS	0.797	0.813	-		
SQTAN	0.756	0.782	0.620	-	

Vol. 19. No. 4 (2022), 70-93. ISSN: 1823-884x

	CL	SQCS	SQSS	SQTAN	SQTQ
SQTQ	0.892	0.876	0.845	0.791	-

Structural Model Evaluation

Prior to evaluating the structural model, it is vital to ensure that the inner model of the study is free from the issue of collinearity. As such, Table 5 depicts the result of the collinearity test. The VIF values between 2.542 to 4.133 were all smaller than 5, suggesting the collinearity is not the major problem (Hair et al., 2014).

Table 5: Determination of Co-efficient (R^2), Predictive Relevance (Q^2) and Effect Size (f^2)

	Co-efficient	Predictive Relevance	Effect Size f^2		VIF values
	R^2	Q^2	CL	Effect size	
CL	0.768	0.544			
SQCS			0.12	Small	4.085
SQSS			0.02	Small	2.642
SQTAN			0.03	Small	2.542
SQTQ			0.15	Medium	4.133

Table 5 also shows the assessment on co-efficient of determination (R^2), the predictive relevance (Q^2), and the effect size (f^2). As shown in the table, the R^2 value for customer loyalty is 0.768. This suggests that the exogenous variables in this study, namely customer service, support service, tangibility, and technical quality explain 76.8% of the variance in customer loyalty. Next, in assessing the predictive relevance (Q^2) of after-sales service quality attributes over customer loyalty, the value of 0.544 which is greater than zero suggests that all after-sales service quality attributes which are customer service, support service, tangibility, and technical quality possess predictive capacity over customer loyalty (Hair et al., 2014). On another note, the table also demonstrates the importance of exogenous variables in explaining customer loyalty through evaluation of effect size (f^2). Following Hair et al. (2014), f^2 values of 0.35, 0.15, and 0.02 are considered large, medium, and small respectively. The result showed that technical quality (f^2 = 0.15) has a medium effect on customer loyalty than the other after-sales service quality attributes. This indicates that the former is more important than the others in explaining and predicting customer loyalty.

Next, Table 6 illustrates the assessment of structural model using bootstrapping procedure for results of path-coefficient for the hypothesized relationship. A closer look shows that customer service is positively related to customer loyalty and is found to be significant (SQCS → CL, β = 0.332, $p < 0.01$), hence, the H1 is supported. H2 is also supported based on the support service which showed a positive relationship with customer loyalty (SQSS → CL, $\beta = 0.120$, $p < 0.01$). Subsequently, H3 that hypothesized the positive relationship (SQTAN → CL, $\beta = 0.128$, $p < 0.01$)

Vol. 19. No. 4 (2022), 70-93. ISSN: 1823-884x

between the extent of tangibility and customer loyalty was also supported. The last hypothesis, H4 is also positively related (SQTQ → CL, $\beta = 0.376$, $p < 0.01$) between the extent of technical quality and customer loyalty. In this study, it was found that technical quality as one of the after-sales service quality attributes, was the most significant predictor of customer loyalty. This indicates that the higher the extent of technical quality, the better is the level of customer loyalty towards national carmakers.

Table 6: Path Co-efficient and Hypothesis Testing

Hypothesis	Relationship	Coefficient(β)	Standard Error	T Value	P Values	Supported
H1	SQCS -> CL	0.332	0.060	5.497*	0.000	Yes
H2	SQSS -> CL	0.120	0.050	2.393*	0.008	Yes
H3	SQTAN -> CL	0.128	0.055	2.331*	0.010	Yes
H4	SQTQ -> CL	0.376	0.059	6.392*	0.000	Yes

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

DISCUSSION

The arguments on the SERVQUAL as a common measures of service quality together with the suggestions to have an industry-specific dimension of service quality have motivated the researcher to evaluate the relationship between automotive after-sales service quality dimensions and customer loyalty. This is to further identify which such dimensions or attributes that need more focus to increase loyalty towards Malaysian national carmakers. When validating the dimension, it is important to understand how the different dimensions indicate service quality and subsequently contribute differently to influence the level of customer loyalty.

Each service quality dimensions are found to have a significant positive relationship with customer loyalty. The findings further pointed out that technical quality has a greater impact to represent service quality and is the most significant dimension that influence customer loyalty. Customers have invested quite a large amount of money for the purchase of the vehicle and the vehicle is considered valuable to them. Thus, they would expect the very best outcome for their vehicle when they send it for service, maintenance, and repair. The result indicates the importance of service outcome as the prerequisite for functional service quality that explains the service delivery process. The findings correspond to the previous findings (Bell, 2005; Kang & James, 2004; Saidin et al., 2018). Relatively, support service was found to be the lowest contributor to represent service quality. However, the significant findings indicate that it is important as a service quality measure in the context of automotive after-sales service. The findings also demonstrate that functional quality measured as customer service was the second important attribute of automotive after-sales service quality in influencing the level of customer loyalty. This is because the process of service delivery also matters in gaining customer's loyalty. These findings on the importance of functional quality in explaining service quality corresponds to previous studies (Bouman & Wiele, 1992; Kang & James, 2004; Yieh et al., 2007). On top of that, the findings also show the relative importance of intangible and tangible service when the functional quality that

Vol. 19. No. 4 (2022), 70-93. ISSN: 1823-884x

explains the intangible element of service is relatively more important than tangible attributes. The result on the positive significant relationship of tangibility as a service quality measure with customer loyalty is consistent with the recent study in after-sales service (Murali et al., 2016).

Further to that, service quality and customer loyalty have somewhat reciprocal relationship. Following the social exchange theory (SET), the mutual relationship between the customer and the service provider has promises rewards for both parties (Blau, 1960; Homans, 1958). It happens in such a way when the repeated transactions for service, maintenance and repair during the warranty period has develop a long-term relationship between the customer and the service provider. In the relationship, both expects to be rewarded in the sense that the service provider expects an undivided loyalty for the high-quality services given to the customer, and in return, the customer expects to receive tip top quality of service from the service provider. In their long-term relationship, the high-quality of service may serve as the precursor for the customer to return for the next subsequent service after the expiry of their vehicle's free warranty service period. On top of that, the high-quality of service may animate the positive word-of-mouth by the customer and that act of loyalty might influence the public to have a positive perception towards national carmakers and further engaged more loyal customers.

Implication, Limitation and Recommendation of Study

This study provides useful insight and information related to factors that national carmakers need to consider in order to increase the level of customer loyalty and guide them in prioritizing their limited resources based on the needs and expectation of customers in automotive after-sales service. Furthermore, this study also guides the non-nationals as well as they are operating in the same industry.

This study has its limitation as it only examined customer loyalty in the context of after-sales service where the evaluation was only on the recommendation and positive words of mouth as a result in faith towards national carmakers and the willingness to continue the service after the warranty expired. A different context of study might see customer loyalty from a broader perspective suitable to the context under investigation. Secondly, this study is limited to only Malaysian national carmakers and future studies are suggested to extend the richness of the data by examining both, national and non-national carmakers.

In relation to the limitation, this study suggests for the future research to have a bigger sample to portray higher generalizability and the enrich findings could also broaden and deepen the understanding of service quality concept in customer loyalty research.

CONCLUSION

This study employed PLS technique for data analysis. The statistical data analysis confirms generally accepted views that service quality does influence customer loyalty. However, the service quality measures need industry-specific attributes or dimensions which contribute differently to the level of customer loyalty. This adds to the body of knowledge in terms of uni-dimensionality, the validity and reliability of the so-called automotive after-sales service quality construct that comprises of customer service, support service, tangibility, and technical quality.

Vol. 19. No. 4 (2022), 70-93. ISSN: 1823-884x

Besides, the findings of this study also have contributed to the Social Exchange Theory (SET) as it shows the relative importance of individual automotive after-sales service quality attributes that can influence the level of customer loyalty towards the national carmakers.

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Vol. 19. No. 4 (2022), 70-93. ISSN: 1823-884x

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