The Effects of Service Quality on Customer Loyalty for a study of Bus Air Conditioner Service Center's Customer Satisfaction using Structural Equation Modeling (SEM)

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Abstract. The purpose of this study was to investigate the impact of service quality on customer loyalty in a study of customer satisfaction of Bus Air Conditioning Service Center from customers who brought various types of vehicles for air conditioning repair and services. For this study, questionnaires were employed to collect data. The satisfaction survey was conducted with 427 questionnaires, hypothetical analysis using a statistical tool called Structural Equation Modeling (SEM) with AMOS software, which measures service quality in 3 aspects, consisting of 9 attributes, 3 aspects of customer satisfaction consisting of 9 attributes, and 2 aspects of customer loyalty consisting of 5 attributes. Cronbach alpha, CR, and AVE were also utilized to validate the reliability and validity of the verification questionnaires. The research shows that service quality has a positive impact on customer satisfaction and customer loyalty, while customer satisfaction also has a positive influence on customer loyalty. However, we discovered that quality of service is important for recognizing and building loyalty in the service center. This will be useful in the future for planning the service system to be effective and sustainable.

Keywords: service quality, customer satisfaction, customer loyalty, SEM, Bus air conditioner

1. Introduction

The Bus Air Conditioner distribution business is considered a specialized business in the automotive industry and is very important in the supply chain, especially after-sales service because service can be regarded as the heart of supporting and generating sales by building confidence in customers in making decisions to order in the future, so Bus Air Conditioners have considered it is an industrial product that requires after-sales support. Service Quality measurements help companies to assess service quality from the perspective of the customer, discover quality problems, and establish clear standards for delivering quality services (Saneva & Chortoseva, 2020). Distributors must focus on and recognize the importance of meeting the needs of their customers throughout their lifetime, which can lead to repeat purchases and increased company revenues through after-sales support. In Thailand, the Bus Air Conditioner industry follows a business model in which a global manufacturer appoints a dealer who is in charge of selling air conditioners as well as providing comprehensive after-sales services due to the flexibility with which domestic enterprises may reach customers they also understand the general characteristics of the Bus Air Conditioner market, are agile in negotiations and provide products and services that meet customers' expectations. Today's Bus Air Conditioner Service Centers face significant pricing competition from competitors, as well as increasing customer demands, particularly greater quality requirements from service to minimize the operational cost of air conditioners, causing businesses to look for ways to reduce expenses. To get the company through the various impacts of crises, it will need to study the actual needs of customers in terms of repair quality, which must be measured accurately and consistently at a high enough level until the satisfaction of customers who use the service, in the end, to become customers who have confidence in the company's service and create lasting loyalty.

The purpose of this study was to identify the relationships of the three variables in order to determine the influence of each variable change. It supports executives in understanding the context of the actual problem and can build service activities to fulfill the needs of the business's sustainability. The research is divided into three components data collecting, problem analysis using statistical tools, and research-based suggestions.

2. Literature Review

2.1. Service Quality

The quality of repair work is an important concern as a service provider Saleem & Raja (2014) explains the improvement of service quality through a variety of methods, with customer convenience as a priority, where the company strives to give every part of the business the greatest level of attention and where the satisfaction of the customers is important. According to Vigneshwaran & Mathirajan, (2021), the quality of the product has a significant impact on the

marketing performance and profitability of Service Centers when focused on competition through influencing customer satisfaction and customer loyalty. If the product meets the customer's requirements or expectations, the customer will be satisfied because the goods and services are of acceptable quality. Balinado et al., (2021) found that service quality plays an important role in customer satisfaction, especially in Automotive after-sales services, the finding showed two significant relationships between customer satisfaction: credibility and compassion, whereas concreteness, responsiveness, and confidence seem to have less of an impact on customers. Indeed, the perceived quality of service affects customer satisfaction, and the degree of customer satisfaction has a regulatory effect on service quality (Zhou & Zhang, 2019). Companies currently there is competition for the quality of products and services to meet customer demands and expectations as researchers try to develop a scientific technique to increase customer satisfaction. As a result, businesses must be empowered to retain their customers for them to eventually become loyal customers (Pirbazari & Jalilian, 2019). Marketing activity is an effort to meet the needs by providing the best quality services that the customers need with good quality service. According to Ju (2022) there are two types of service quality: actual service quality and perceived service quality. Customers will receive products and services that meet their needs (Risnawati et al., 2019). From a service perspective, the positive relationship between price and service satisfaction is more significant. Customers who pay high prices are those who are especially interested in servicing and maintaining their products.   Taherdoost & Madanchian, (2020) defined that performance includes delivery, flexibility, simplicity of use, fulfillment, and trust, which are mostly reliability, confidence, appeal, and structuring safety. The most significant factors in determining satisfaction are quality and coaching. Changes are inevitable in any business, and the bus industry is no exception. Customers are essential and very important to a business, as seen by the necessity to drive and increase the reach of a range of enterprises to investigate customer satisfaction and trust because improper service quality reduces confidence and loyalty, customer satisfaction and quality service is a significant issues for customers and business owners, as it influences customer satisfaction and determines whether the customer will return or not buy the same product or service in the future (Xu LU et al., 2017). Service centers are looking for innovative strategies to retain customers and increase earnings, such as extended repair guarantee agreements to ensure repair quality, arranging pickup and drop-off services, establishing lounges with complete utilities and special product promotions, and so on. Providing high-quality service and offering a tangible service model will create customer satisfaction. It was also found that staff empathy contributes to overall customer satisfaction (Farooq et al., 2018).

2.2. Customer Satisfaction

Customer satisfaction is one of the most important goals for a service company to achieve since it has long-term benefits such as positive word-of-mouth feedback, customer loyalty, and sustainable revenues. Companies and organizations will be more profitable if they are successful in continually improving their relationship with their customers as well as trying to create awareness of satisfaction with their products (Pirbazarid & Jalilian, 2019). In addition, studies have shown that low levels of customer loyalty with low engagement will require more specialized support and care than high engagement customers in hospitality (Shankar & Jebarajakirthy, 2019). Understanding the true needs of customers in the belief that providing high-quality products and services leads to satisfaction and, eventually, loyalty is a long-term business strategy. Since a business is understood to be dependent on its customers, the profitability of any company will fluctuate based on the needs of its customers as a consequence, it is necessary to treat customers as kings; in other words, Customer satisfaction determines the level of likelihood between a company's product and its customers' expectations. The more satisfied the customer is with the quality and type of the goods, the higher the profit (Xu LU et al., 2017). In addition to being a consumption act in which a product's and service's qualities or the achievement itself are connected to it, satisfaction is also defined as a judgment on the amount of consumption connected to the achievement with which customers are satisfied (Wan, 2022). Seung-Wan (2022) defined Satisfaction refers to more than just the aspects of the product or service or the product or service itself. It is also a level of judgment related to customer satisfaction success.

According to Takala et al. (2006) wondering if the customer satisfaction survey is still relevant after several years of use? What approaches should be used to ensure that data from customer satisfaction surveys is used more effectively? While Vigneshwaran & Mathirajan, (2021) say that customer satisfaction has become the key to success for the automotive after-sales service business as a result, any business should not ignore the significance of customer satisfaction. In order to increase customer loyalty, it's essential to retain control over the factors and variables that affect customer satisfaction and make an effort to increase customer expectations with regard to these factors and variables (Lee et al., 2016). Customer satisfaction is an important factor of any business's success. This is dependent on the service provider's actions customers are valuable assets, and their requirements, tastes, and purchasing behavior fluctuate.

2.3. Customer Loyalty

Depending on which business they are used to describe, there are many various definitions of loyalty. To build the customer loyalty, keep customers loyal in order to improve financial performance and ensure the company can sustain itself over the long term (Khairawati, 2020). However, if customers continue to use our service, it

will certainly be beneficial for all aspects of the business. Refer to Zhang & Kim (2021), excellent customer service demands not only technical expertise but also creativity, great tolerance, the capacity to resolve issues, and effective communication skills. Any business should maintain a positive reputation. Other factors, such as marketing, sales, customer loyalty, and a number of other factors, are also impacted by the image (Juanamasta et al., 2019). Utilizing marketing practices and products of valuable and competitive quality. The superior will succeed in the contest and win customers' loyalty (Romdonny & Rosmadi, 2019). As a result, it is essential to concentrate on how to build satisfaction until it becomes customer loyalty, which is regarded to be stable with a budget that is less costly than acquiring new customers. While Jin & Lim (2021) emphasized that trust is a very complex notion that combines integrity, dependability, and belief in order to transform trust into loyalty.

3. Methodology

3.1. Research Concept

The primary components of the research to be conducted are based on the main conceptual framework created to determine the impact of all variables using Structural Equation Modeling (SEM), which we have developed by Mulaik & Millsap, (2000) assemble the following conceptual framework of structural equations (1) Exploratory factor analysis to select important variables into the measurement model, (2) Measurement model to confirm the structure of the measurement model from the first step that latent variables studied by measurement can be confirmed with observed variables that set or not, using a tool called confirmatory factor analysis (CFA), (3) Inspect latent's variables correlated, it checks whether the correlation of latent variables in a structural equation is sufficiently relevant for structural equation analysis, (4) Structural model in this last step, the coherence of the developed model is checked with the empirical data, incorporating research-related indicators into the model conformance index. The study framework can be constructed with three factors of interest, namely Service Quality (SQ), Customer Satisfaction (S), and Customer Loyalty (L), based on the preceding procedures. The responses are evaluated by IBM SPSS AMOS 24, the statistical program extensively used to manage statistical data nowadays.
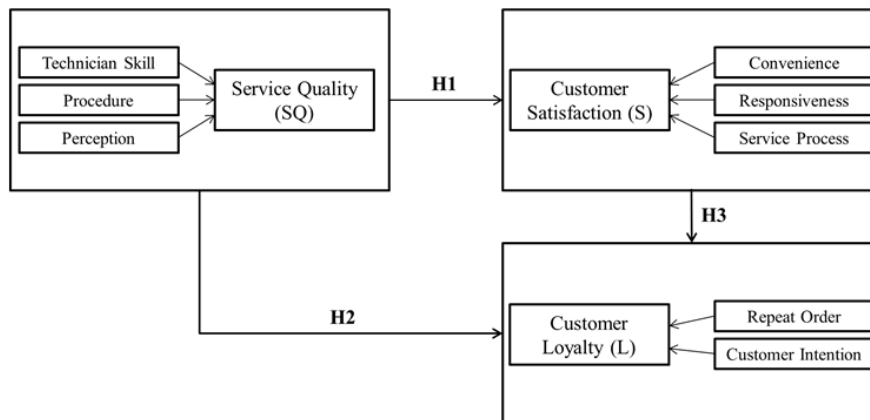
Fig. 1: Conceptual framework

Hypothesis H1, Service quality has positive significant effects on customer satisfaction in Bus Air Conditioning repair service centers. A good level of service is required to attract more customers. According to Ghobadian et al., (1994), quality problems in service companies are caused by mismatches between prior expectations and perceived quality of service. The quality service company will make a continuing effort to define its customers' needs. In this study, we examined whether variables like technician skill, operating processes, and customer perception of quality dimensions are useful for satisfaction. There is significant evidence for the impact of perceived product quality on customer loyalty after adjusting for various demographic factors, as well as some support for the impact of service satisfaction.

Hypothesis H2, the Quality of Service has a positive significant impact on Customers' Loyalty to Bus Air conditioner Service Center. Relevant experiences with superior service may lead to higher satisfaction among consumers, which translates not only to increased customer loyalty but also to these customers' willingness to pay more for a higher price for a quality product (Devaraj et al., 2001). Therefore, the most important factor is the quality of products and services.

Hypothesis H3, Satisfaction has a positive significantly impacts the Loyalty of Bus Air Conditioner customers. To generate a loyal attitude toward consumers, any company must work hard to preserve its market share potential by fostering loyalty. The variety of consumer wants influences the company's products because competition provides a variety of marketing strategies, and the support of loyal consumers produces a suitable long-term relationship between the company and the consumer, loyalty is important in characterizing marketing (Lie al et., 2019). Therefore, we are interested in exploring on how satisfaction influences service loyalty in a positive way.

3.2. Sesearch Instrument

To collect data for this study, service users who bring air-conditioned buses to be repaired or inspected at a service center must be asked for their comments. As a result, it can be used as a first step in gathering information. A questionnaire is a type of survey that has been put together methodically and systematically. To acquire facts about the past, present, and future occurrences predicted by measuring what the researcher intends to measure from the sample group or target population. Questionnaires are mostly employed in quantitative market research and social research, according to Roopa & Rani, (2001), as a conclusion, a questionnaire is a set of questions that individuals are asked to answer to acquire statistically meaningful information about a specific issue. There were a total of 23 questions depending on the criteria investigated and in table 1, they are listed.

Table 1: Details of questionnaires

Aspect	Details of Questionnaires
Service Quality (SQ)	SQ1: Knowledge and skills of technicians SQ2: Service staff prompt serve all customers SQ3: Service staff appearance SQ4: Stat of the art equipment in service SQ5: Explanations of the work performed on your vehicle SQ6: Provide service warranty SQ7: Follow up after repair SQ8: Provided gunnies spare parts SQ9: Overall satisfaction of quality service
Customer Satisfaction (S)	S1: Cost of service S2: Speed of Technician Service S3: Facility (waiting for area/TV/WIFI/coffee/ etc.) S4: Staff's communication S5: Vehicle cleanliness after repair S6: When requesting an appointment, please rate the success of the service appointment S7: Location of Service Center S8: Quote before repair S9: Overall Satisfaction, five questions of Customer
Customer Loyalty (L)	L1: Repeat purchases L2: How likely are you recommended to other? L3: How confident are you in the quality of service? L4: Would you be willing to try our other products? L5: if the prices increase, would you continue to do business with us?

3.3. Data Correction and Sampling Design

3.3.1. Data correction

The data was collected from Sahamontol Solutions (Thailand) Co., Ltd., which is located at 90/26 Moo 12 Khongsong Sub-district, Khongluang District. Pathumthani Province Thailand is a DENSO bus air conditioner service center and distributor in Thailand. Data collection using a specific questionnaire from customers who used vehicles in this service center throughout the research period and must have used the service at least once in the service workshop.

3.3.2. Sampling design

As for the sample sizes to be analyzed by Kline (2015), it is suggested that a total of 200 sample sizes can be analyzed for SEM. In particular, there are a large number of latent variables; there is a large number of correlations between variables. Furthermore, researchers, Wolf et al., (2013) highlighted that the sample size evaluated in SEM has no particular criterion. Kline (2015) eventually, the number of samples depends on the complexity of the model and the number of indicators used to evaluate latent variables, most experts recommends at least 200 samples. Although there are no fixed rules regarding sample size in general Schumacker & Lomax (2010), suggested that for SEM the ratio is 20 times per observed variable (20 cases per predictor). Therefore, when we multiply 23 observed variables by 20 times, we get 460 samples representing the entire population. In addition, 427 respondents are counted after deleting incorrect data and checking for missing data.

3.4. Questionnaire Preparation

The questionnaire in this research is divided into 4 parts. The respondents' basic information is included in the first part. 23 questions about service quality, customer satisfaction, and customer loyalty are presented in the next section. Respondents can choose from a sequence of linear responses that increase or decrease the intensity using the Likert 5-point scale Nemoto & Beglar, (2014); Barua (2013), allowing researchers to collect data that provides differences and insight into the participants' perspectives. This data is quantitative and can be statistically analyzed.

3.5. Content Validity Test

The questionnaire body validity measure was delivered to 7 experts for study using the index of item-objective congruence (IOC), normally, IOCs from 0.60 to 1.00 are considered acceptable. The aim of determining the questionnaire's objective or objective content or identify the consistency index between each question and the desired objective or objective temple (Turner & Carlson, 2003). To facilitate the review, researchers must collaborate with experts in content validity judgment (Taherdoost, 2016). When creating questionnaires, it is important to collect study designs that include ready-to-use, valid, and established measures. The way the items in the query represent the structure from the underlying concept is how

validity is created. Factor analysis is a statistical technique for defining an appropriate query structure. This method can help to determine the validity of the query structure (Rattray & Jones, 2007; Woby et al., 2005).

3.6. Reliability Assessment

Verification of the reliability of the questionnaire with Cronbach's Alpha, a statistic cited by the authors to show that the test created or used for a research project is suitable for its purpose (Taber, 2018). According to a popular interpretation of the coefficient, values below 0.50 indicate low reliability, between 0.50 and 0.80 indicate moderate (acceptable) dependability, and values above 0.80 indicate high (excellent) reliability (Ekolu & Quainoo, 2019). There are reliability test results for this study. Convergent validity is the examination of the level of agreement between various indicators of the same construct. To determine convergent validity, use the indicator's factor loading, composite reliability (CR), and average variance extracted (AVE). The value is between 0 and 1, AVE value should be more than 0.50 to ensure convergent validity (Hamid et al., 2017). As shown in the table, the reliability test results for this study were Cronbach alpha ranging from 0.70 to 0.87, CR ranging from 0.40 to 0.57, and AVE ranging from 0.66 to 0.72.

Table 2: Construct reliability and validity

Reliability Assessment	Constructs		
	Service Quality (SQ)	Customer Satisfaction (S)	Customer Loyalty (L)
Cronbach's Alpha (α)	0.73	0.70	0.87
Composite Reliability	0.40	0.57	0.53
Average Variance Extracted	0.66	0.72	0.69

We can accept 0.40 if the Average Variance Extracted (AVE) is greater than 0.5, according to the CR value for Service Quality is 0.40. Because Fornell & Larcker, (1981) said that the construct's convergent validity is still sufficient if the AVE is less than 0.50 but the composite reliability (CR) is better than 0.60.

4. Results

4.1. Structural Model

The instrument used in the analysis of this research uses Structural Equation Modeling (SEM) to test hypotheses that must assess the suitability of the model. To be prepared for the assessment of suitability as a criterion for assessing the comparison of the hypothesis testing index. The correlation findings of vehicle air conditioning repair service centers' service quality, customer satisfaction, and customer loyalty are presented in table 2, of the suitability criteria following.

Table 3: Goodness of fit evaluation

Criteria	Recommended values	Model values	Evaluation	Reference
χ^2	P > 0.05	53.04	Supported	Schumacker & Lomax, (2010)
Chi-Square/df	$2.00<\chi^2/df < 5.00$	4.82	Supported	
AGFI	≥0.80	0.91	Supported	Schumacker & Lomax, (2010); Diamantopoulos & Siguaw, (2000)
GFI	≥0.95	0.96	Supported	
CFI	≥0.90	0.95	Supported	Kaplan, (2000); Lai & Green, (2016)
TLI	≥0.90	0.90	Supported	Schumacker & Lomax, (2010)
NFI	≥0.95	0.93	Not Supported	
RMR	≤0.08	0.01	Supported	Diamantopoulos & Siguaw, (2000)
RMSEA	≤0.08	0.09	Not Supported	Kenny et al.,(2015); Chen et al., (2008)

Note: Chi-square test (χ^2), degrees of freedom, Adjusted Goodness-of-fit Index (AGFI), Goodness-of-fit Index (GFI), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Normed Fit Index (NFI), Root Mean Square Residual (RMR), Root Mean Square Error of Approximation (RMSEA)

Table 4: Details of latent and observe variables

Latent Variables	Observe Variables	Questionnaires
Service Quality (SQ)	Tech. Skill	SQ1 – SQ3
	Procedure	SQ4 – SQ7
	Perception	SQ8 - SQ9
Customer Satisfaction (S)	Convenience	S1 – S2
	Responsiveness	S3 – S5
	Service Process	S6 – S9
Customer Loyalty (L)	Repeat Order	L1 – L3
	Customer Intention	L4 – L5

As of Table 4 shows how we divided the Service Quality variables into 3 groups, Customer Satisfaction into 3 groups, and Customer Loyalty into 2 groups for the model analysis procedure. In Structural Equation Modeling, we can develop a model based on the above grouping, as shown in Figure 2.
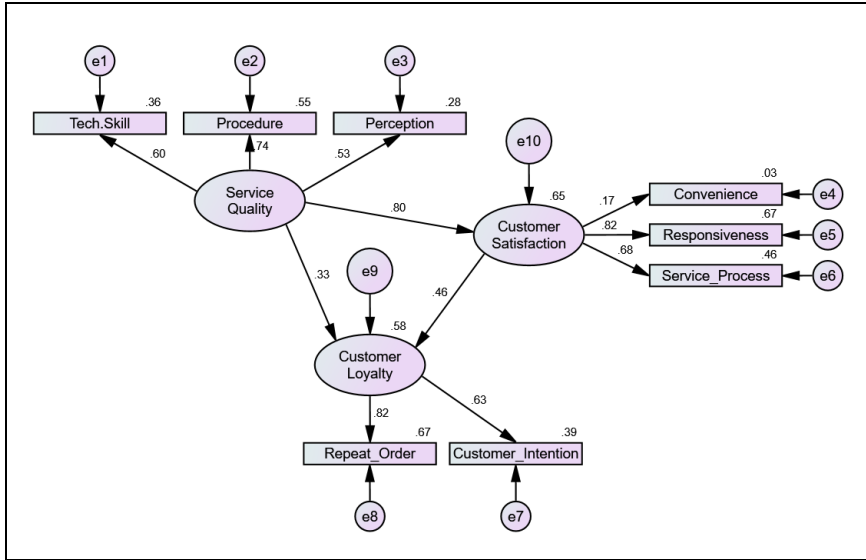
Fig. 2: Original model of the impact on relationship of service quality, customer satisfaction and customer loyalty

According to Figure 2, CFA tests for each element were used to determine the compatibility of the factors concerned. The major criterion for evaluating compatibility is the loading factor value, which should be ≥ 0.50, not be ≥ 1.00 and must be positive. We therefore removed the convenience variable from the model after checking for low loading (deleting loading < 0.0) (Lock & Seele, 2017), shown in Figure 3.
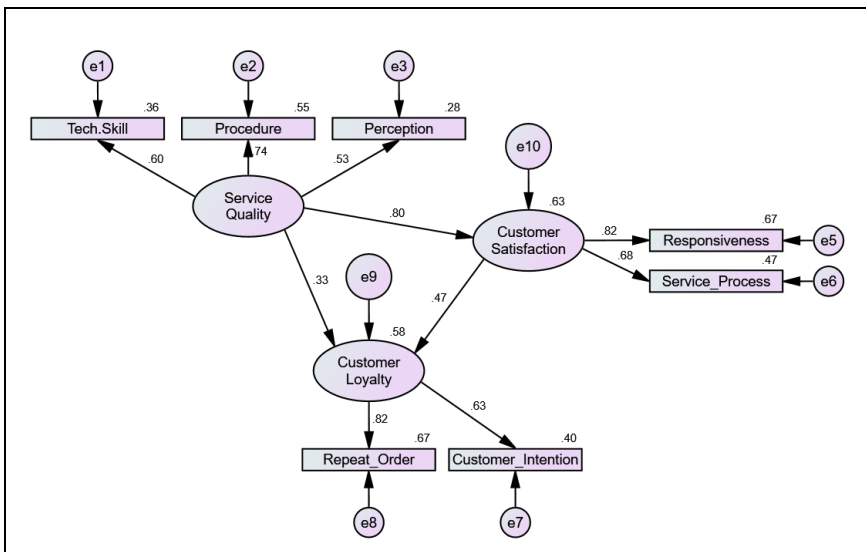

Fig. 3: Model of the impact on relationship of service quality, customer satisfaction and customer loyalty (modified)

4.2. Analysis of Standardized Regression Coefficient (β)

The statistics obtained by dividing an estimate by its standard error are easily described by the Critical Ratio value. The crucial ratio resembles a normal distribution with a large enough sample size. A result of 1.96 suggests two-sided significance at the "standard" 5% level in this circumstance simply defined when the critical ratio (C.R.) for a regression weight is greater than 1.96, the path is significant at the 0.05 level or higher (Byrne, 2013).

Table 5: Results of standardized regression coefficient

	β	C.R.	P	Results
Customer Satisfaction < --- Service Quality	0.80	9.39	< 0.001	Supported
Customer Loyalty < --- Service Quality	0.33	2.40	0.016	Supported
Customer Loyalty < --- Customer Satisfaction	0.47	2.38	< 0.001	Supported

Table 5 shows that the statistically significant regression coefficients with a level of significance of p< 0.05 strongly support the three hypotheses, H1 (Service Quality → Customer Satisfaction), H2 (Service Quality → Customer Loyalty), and H3 (Customer Satisfaction → Customer Loyalty). Service Quality has a significant positive impact on Customer Satisfaction 0.80 (β = 0.80), Service Quality has a significant positive impact on Customer Loyalty 0.33 (β = 0.33) and Customer Satisfaction has a significant positive impact on Customer Loyalty 0.47 (β = 0.47). As a result, we decided that the relationship of all variables was supported.

4.3. Evaluation of R^2

The structural method estimates the R^2, covariance test, and hypothesis test values. The R^2 test is evaluated by focusing on the value of R^2. That seems to be, the higher the value of R^2, the better the prediction of exogenous constructs towards endogenous constructs. Service Quality describes 63.0% of the R^2 value of Customer Satisfaction, whereas other constructs explain 37.0% and Customer Loyalty has an R^2 value of 58.0%. In the meantime, the remaining 42.0%, which is explained by other structures, is not explored in this research.

4.4. The Direct Effect (DE), Indirect Effect (IE), and Total Effect (TE)

Service Quality in the relationship between Customer Satisfaction and Customer Loyalty are presented in Table 6.

Table 6: The direct effect, indirect effect, and total effect results

Relationship	Direct Effect(DE)	Indirect Effect(IE)	Total Effect(TE)
Service Quality → Customer Satisfaction	0.80	-	0.80
Service Quality → Customer Loyalty	0.33	0.37	0.70
Customer Satisfaction → Customer Loyalty	0.47	-	0.47

Concerning to Table 6., when considering the direct influence of the Service Quality (SQ) variable, the direct effect on Customer Satisfaction was 0.80., the direct influence of the Service Quality (SQ) variable had a positive effect on Customer Loyalty (L) of 0.33, indirect effect is 0.37, resulting in a total effect of 0.33 + 0.37 = 0.70 and the direct influence of the Customer Satisfaction (S) variable had a positive effect on Customer Loyalty (L) of 0.47.

5. Limitation and Future Study

There are a variety of limitations to this study, and each one creates new opportunities for further research. First, the process of gathering data from customers is challenging because the person supplying the information is just the driver, who in some cases is unable to make a choice. As a result, it is required to screen the responses in the analysis. Following that, it was discovered that customer relationships can generate innovations in service work, such as the use of applications for making repair appointments, the use of innovation in service quality control, and so on. According to Rasheed & Jianhua (2021), corporate executives must innovate based on customer needs in order to respond rapidly to employee learning and create more opportunities for open-minded work. Considering that there are additional factors besides those covered in this research that will add value to future learning, it is imperative to investigate the relationship between customers and service centers.

6. Conclusion

According to the research hypothesis, the conclusion of the study's findings and the relationship between variables are as follows.

1. In order to confirmed the model fits. As of Table 3, the model is consistent with the empirical data. Based on Chi-square = 53.03, relative chi-square = 4.82, AGFI = 0.91, GFI = 0.96, CFI = 0.95, TLI = 0.90, NFI = 0.93, RMR = 0.01 and RMSEA = 0.09 where the p-value exceeds the hypothesis that the measurement model is structurally consistent, with NFI and CFI measurement indices closer to 1 refer to Kaplan, (2000); Schumacker & Lomax, (2010), and the RMR is lower 0.08 refer to Diamantopoulos &

Siguaw, (2000), indicating that the theoretical model fits the empirical data. As a result, it is an appropriate model for our interest-driven factors in correlation analysis.

2. The quality of service has a positive significant impact on customers' satisfaction in Bus Air conditioner Service Center. As shown in Table 5, which has a loading factor of 0.80, service quality has a positive impact on satisfaction of 80% at a P-value of 0.001. While the findings from Table 6 show that service quality has a direct impact on satisfaction = 0.80, this highlights the importance of service quality. Service quality focused more on the strong relationship between quality and the customers. It was shown that effective work procedures have a direct impact on service quality therefore management should concentrate on designing and monitoring the service department's work processes. Customers are involved at every level of the service process so that their needs can be identified and met (O'Neill & Palmer, 2003) Furthermore, customers are particularly interested in the skills or expertise of repair technicians because quality assurance is dependent on the maintenance technicians' abilities. So, therefore, we accept Hypothesis H1, Service quality has positive significant effects on customer satisfaction in Bus Air Conditioning repair service centers.

3. According to Hypothesis H2, the Quality of Service has a positive significant impact on Customers' Loyalty to Bus Air conditioner Service Center. As the results, the quality of service has a significant impact on customers' loyalty to Bus Air conditioner Service Center, a few aspects of the response, such as the cleanliness of the vehicles after repair, the accuracy of appointments before and after repair, explaining the quotation are significantly affect customer satisfaction. At a P-value and factor loading of 0.016 and 0.33 respectively, we can conclude that Hypothesis H2 has an impact of about 33%. We can also explain that service quality influences customer loyalty somewhat positively, even though it only has a small indirect impact of 0.37 on loyalty. However, there is a larger indirect effect, with a total effect of 0.70 or 70%, as shown in Table 6, so top management cannot ignore this issue. Service excellence is connected with intuitive aspects like comfort, cheerful laughter, and kindness (Ju, 2022). The quality of service must be very significant in the service center since it is the starting point for creating satisfaction over competitors as a weapon and strategies to compete for customers to have long-lasting loyalty in service centers. Finally, in order to build long-lasting loyalty, we must design services with the best quality system. Finally, in order to build long-lasting loyalty, we must design services with the best quality system.

4. The study also found that satisfaction has positive significantly impacts the loyalty of Bus Air Conditioner customers, figure 3 shows that most

customers want to use the service again and again and that they are delighted to suggest our service center to friends because they are confident in the quality of services as the results 0.82(82%). We can see that in the experiment, the convenience factor was eliminated because the majority of our customers showed no interest in or concern for the expertise and service capabilities of qualified technicians. Whether behavior can be measured by intention or not, it has a significant impact on actual behavior (Lee & Kim, 2022). The multiplicative valuation of services enables managers to recognize the level of customer satisfaction from the structural model in which quality operations are performed such as explaining the details of repair work clearly, providing suitable warranty conditions, including the use of genuine parts will lead to satisfaction in service to customers. Based on the results from Table 5, satisfaction affects loyalty by 47% (0.47, P-value <0.001), confirming that Hypothesis H3 is acceptable.

However, those important variables have a direct impact on each other; for example, starting with the quality service that customers can obtain as soon as they come into the service center and receiving excellent assistance from the staff will result in satisfaction and loyalty. Furthermore, there is still opportunity for future research, whether it is the impact of the three variables that fluctuate over time or the market situation in this industry. This is an excellent time to conduct more research to determine customer needs in conjunction with the modifications.

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