The Effect of Quality, Service, Time and Price on Customer Satisfaction In The Welding and Construction Services Industry Lala Modern Workshop at Ruteng Flores, NTT

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Abstract: This study aims to analyze the influence of quality, service, time, and price factors on customer satisfaction in the welding and construction services industry at LALA Modern Workshop, Ruteng, Flores, NTT. The background of this research is based on the phenomenon of increasing public needs for infrastructure and property, as well as high customer expectations for service quality, punctuality, and transparent prices. The analysis technique used is multiple linear regression analysis with SPSS, to identify the direct relationship between independent variables (quality, service, time, and price) and dependent variables (customer satisfaction). The results show that quality, service, time, and price significantly affect customer satisfaction, with quality and service as the dominant variables. In addition, this study also shows that punctuality and appropriate pricing make an important contribution in shaping a positive customer experience. This research provides theoretical benefits in the development of academic literature related to customer satisfaction in the construction and welding services sector, as well as practical benefits in the form of strategic recommendations for LALA Modern Workshop to improve their business performance. Thus, the results of the research are expected to be the foundation for companies in developing more effective strategies and increasing their competitiveness in a competitive market.

Keywords: Quality, Price, Time, Service, Customer Satisfaction

Introduction

Background

According to the Journal of Regional Economics (2023), the construction services sector in NTT is showing rapid growth, supported by increasing investment from local governments and the private sector. In addition, the NTT Regional Investment report (2022) notes that the welding service business has grown significantly to meet the needs of the people in this region, both on a small and large scale. This is triggered by the increasing need of the community for infrastructure and property development. LALA Modern Workshop, as one of the service providers in this field, faces challenges in

meeting customer expectations that are increasingly critical to service quality. Customers now not only expect high-quality work results, but also demand friendly service, on-schedule project completion time, and reasonable and transparent pricing. This shows the importance of evaluating the main factors that affect mop satisfaction, namely quality, service, time, and price.

In order to determine how these factors affect the satisfaction of LALA Modern Workshop patrons, this study will use multiple linear regression analysis in SPSS. numerous regression is a statistical method that may be used to see the relationship between a single dependent variable (such as customer satisfaction) and numerous independent variables (such as price, quality, service, and time). By using this strategy, you might potentially ascertain which factors significantly influence customer satisfaction and the manner in which each independent variable influences the dependent ones.

Research by Fahriani & Febriyanti (2022) titled "The Effect of Price and Service Quality on Customer Satisfaction" provides evidence that this issue is relevant. Proving that the price and quality of the service significantly impact the level of client happiness. When the cost is reasonable in relation to the value provided, customers are happy. Second, "Marketing Management" by Kotler and Keller (2021). Customer satisfaction is greatly enhanced by high-quality goods and services, according to this study's findings. When it comes to making a good impression on customers, being prompt is crucial. Also, there's a discrepancy in the results of a study by Priyono (2023) titled "The Role of Service Quality in Customer Satisfaction" that determines service quality doesn't significantly impact customer satisfaction in specific situations, particularly when customers prioritize cost. Additionally, a research conducted by TessiBisa (2020) titled "Do Research Results Have to Be Significant?" demonstrates that the amount of time it takes to complete a service does not significantly impact customer satisfaction, particularly when consumers value the quality of the end product more than the speed of completion.

Hence, LALA Modern Workshop may anticipate a solid empirical basis for a more focused service enhancement plan thanks to this study. so as not only to maintain customer loyalty but also to increase competitiveness in an increasingly competitive market.

Problem Formulation

Along with the increasing demand for construction and welding services, LALA Modern Workshop faces challenges in meeting increasingly high customer expectations. Factors such as the quality of work results, services provided, project completion time, and prices offered are the main determinants in maintaining customer satisfaction and business competitiveness. However, without research on the influence of each of these factors on customer satisfaction, LALA Modern Workshop risks losing customer trust, which can ultimately have a negative impact on the company's sustainability. This phenomenon shows the urgent need to evaluate the role of each factor of quality, service, time, and price in shaping customer satisfaction levels. For example, inconsistent service quality can lower customers' perception of business credibility. Imoptimal punctuality of

work can reduce the overall customer experience, while unresponsive service and pricing that don't match the value of the service can create significant dissatisfaction. This study aims to answer several fundamental questions related to the relationship between these factors and customer satisfaction, namely:

- Is LALA Modern Workshop's service quality a major factor in why customers are satisfied?
- Can we say that service and client happiness go hand in hand?
- In what ways does turnaround time relate to happy customers?
- Does the relationship between price and happiness among buyers hold any water?
- Are there significant relationships between customer satisfaction at LALA Modern Workshop and Quality (X1), Price (X2), Time (X3), and Service (X4)?

Research Benefits

There are several benefits of the research conducted, namely;

- Theoretical Benefits: To increase the academic literature related to the influence of quality, service, time, and price on customer satisfaction, especially in the welding and construction services industry and to strengthen the validation of the use of SPSS multiple linear regression as an analysis method in causal relationship research.
- Practical Benefits: To help LALA Modern Workshop understand the key factors that affect customer satisfaction to improve business strategy also provide concrete recommendations for improved service quality, time efficiency, and price transparency.
- Policy Benefits: To provide empirical data for NTT local governments to support regulations that encourage local business development and encourage improved workforce training and quality of service in the welding and construction services industry.

Research Objectives

This statistical study will examine the impact of customer satisfaction on LALA Modern Workshop's turnover rate and assess the extent to which customers are satisfied with the services offered by the company. Finding Out How Satisfied Customers Are: Finding out how happy LALA Modern Workshop's clients are with the service they received. Determining the Role of Satisfaction in Employee Retention: Using the SPSS statistical test, we look at how customer satisfaction levels affect a company's turnover. Make Suggestions for Future Action: Based on the study, provide LALA Modern Workshop some concrete suggestions on how to boost customer happiness and retention. Building Simulations: Creating theoretical frameworks to elucidate the connection between welding and construction service customer satisfaction and retention. We anticipate that this study will provide light on how businesses may boost employee happiness and contentment on the work, which in turn will help them become more competitive in their respective markets.

Methodology

   This statistical study's case study analysis makes use of multiple linear regression analysis. One of the most sophisticated methods for analyzing statistical data is multiple linear regression analysis, which builds on the foundation of basic regression analysis to model data using the equations of linear lines. In order to conduct the analysis, it is necessary to first examine the relationship between a set of independent variables, often denoted as X, and a set of dependent variables, often denoted as Y, which consists of a single variable (Luthfiarta, et al. Pp, 10-17, 2020). Statistical Package for the Social Sciences (SPSS) software, which is used for statistical analysis and data management, will be utilized to process data that has already been collected through shared questionnaires. SPSS is a predictive analytical tool that is often used in the business and research fields.
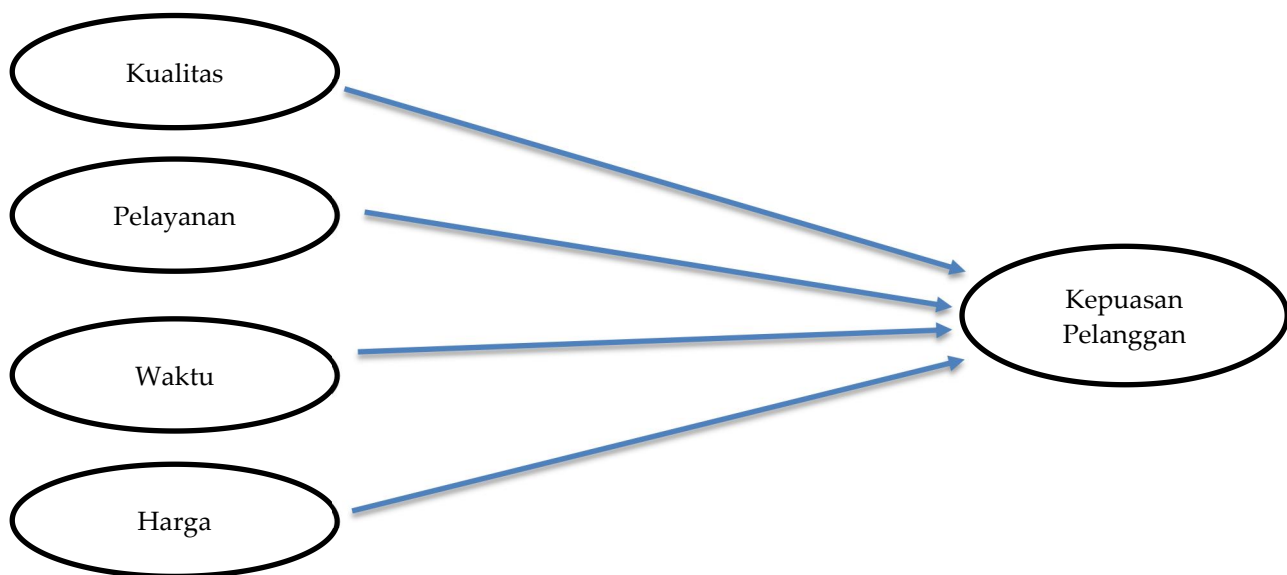

Figure 1. Conceptual framework

Hypothesis

H1: Quality has a significant effect on customer satisfaction at LALA Modern Workshop

H2: Price has a significant effect on customer satisfaction at LALA Modern Workshop

H3: Time has a significant effect on customer satisfaction at LALA Modern Workshop

H4: Service has a significant effect on customer satisfaction at LALA Modern Workshop

H5: Quality (X1), Price (2), Time (X3), and Service (X4) have a significant effect on customer ssssatisfaction at LALA Modern Workshop

Population and Sample

   The data gathering strategy used in this research was a questionnaire. Primary data, which comes straight from the horse's mouth, is what this study relies on. A questionnaire and respondents' notes on factors affecting the study's variables constitute the main data source. In Ruteng Flores, NTT, 80 customers from the LALA Modern Workshop served as the study population.

Data Analysis Techniques

➢ Data Quality Test
- Validity Test Using SPSS

    The validity of a measuring device is defined as its ability to accurately measure the target variable. A correlation between the indicator score and the total variable score may be used to verify the validity of the instrument, according to Uno (2021). One way to determine whether a measuring device is reliable is to conduct a validity test. The questions in the questionnaire are the measurement instruments that are mentioned here. For a questionnaire to be considered legitimate, each question must be able to provide information on the variable(s) being assessed.

    ✓ Validity Testing Criteria

    In the context of SPSS, validity is tested using Pearson's product moment correlation, where the value of r is calculated compared to the r of the table to determine validity. The significance level used is 0.05.

    ✓ The test criteria are:

    Assuming the measurement instrument is legitimate, we accept H0 if r calculates > r table. Assuming r is less than or equal to the value in the r table, we may reject H0. (whether the measurement device used is legitimate or not). Methods for calculating the table's R-squared value

    The function df(N-2) is defined as the R table. In this case, N represents the total number of responses.

Table 1. R Table

df = (N-2)	Tingkat signifikansi untuk uji satu arah				
	0.05	0.025	0.01	0.005	0.0005
	Tingkat signifikansi untuk uji dua arah				
	0.1	0.05	0.02	0.01	0.001
51	0.2284	0.2706	0.3188	0.3509	0.4393
52	0.2262	0.2681	0.3158	0.3477	0.4354
53	0.2241	0.2656	0.3129	0.3445	0.4317
54	0.2221	0.2632	0.3102	0.3415	0.4280
55	0.2201	0.2609	0.3074	0.3385	0.4244
56	0.2181	0.2586	0.3048	0.3357	0.4210
57	0.2162	0.2564	0.3022	0.3328	0.4176
58	0.2144	0.2542	0.2997	0.3301	0.4143
59	0.2126	0.2521	0.2972	0.3274	0.4110
60	0.2108	0.2500	0.2948	0.3248	0.4079
61	0.2091	0.2480	0.2925	0.3223	0.4048
62	0.2075	0.2461	0.2902	0.3198	0.4018
63	0.2058	0.2441	0.2880	0.3173	0.3988
64	0.2042	0.2423	0.2858	0.3150	0.3959
65	0.2027	0.2404	0.2837	0.3126	0.3931
66	0.2012	0.2387	0.2816	0.3104	0.3903
67	0.1997	0.2369	0.2796	0.3081	0.3876
68	0.1982	0.2352	0.2776	0.3060	0.3850
69	0.1968	0.2335	0.2756	0.3038	0.3823
70	0.1954	0.2319	0.2737	0.3017	0.3798
71	0.1940	0.2303	0.2718	0.2997	0.3773
72	0.1927	0.2287	0.2700	0.2977	0.3748
73	0.1914	0.2272	0.2682	0.2957	0.3724
74	0.1901	0.2257	0.2664	0.2938	0.3701
75	0.1888	0.2242	0.2647	0.2919	0.3678
76	0.1876	0.2227	0.2630	0.2900	0.3655
77	0.1864	0.2213	0.2613	0.2882	0.3633
78	0.1852	0.2199	0.2597	0.2864	0.3611
79	0.1841	0.2185	0.2581	0.2847	0.3589
80	0.1829	0.2172	0.2565	0.2830	0.3568
81	0.1818	0.2159	0.2550	0.2813	0.3547
82	0.1807	0.2146	0.2535	0.2796	0.3527
83	0.1796	0.2133	0.2520	0.2780	0.3507
84	0.1786	0.2120	0.2505	0.2764	0.3487
85	0.1775	0.2108	0.2491	0.2748	0.3468

- Test Data Reliability Using SPSS

Reliability is a measure of the consistency of the measuring tool in producing the same data when used repeatedly. According to Sugiyono (2021), the reliability of the instrument can be assessed by the Cronbach Alpha coefficient, where a value of more than 0.70 indicates adequate reliability. In order to ascertain, via the reliability test, if the measuring device maintains its consistency upon repeated measurements. When repeated measurements provide the same findings, we say that the measuring device is dependable. Data validity tests are often conducted prior to data reliability tests. This is so because conducting a data reliability test requires accurate data to be measured. A data reliability test is unnecessary, nevertheless, if the measured data is inaccurate.

<div align="center">Reliability Test of Cronbach's Alpha Method</div>

$$r_{11} = \left[\frac{k}{(k-1)}\right]\left[1 - \frac{\Sigma\sigma_b^2}{\sigma_t^2}\right]$$

Keterangan :

r_{11} = koefisien reliabilitas instrument (total tes)
k = jumlah butir pertanyaan yang sah
$\Sigma\sigma_b^2$ = jumlah varian butir
σ_t^2 = varian skor total

Cronbach's Alpha is used to assess the extent to which items in a research instrument are correlated with each other, so that they can be considered to measure the same concept. In this method, the following formula is used:

Calculations using Cronbach's Alpha formula are accepted, if the calculation r calculates >R of the 5% table. Cronbach's Alpha values range from 0 to 1, with higher values indicating better reliability and if above 0.7 is considered good enough for social research, while values below 0.6 indicate low reliability. The researcher should also consider the number of items in the instrument, as too few items can affect the Alpha value.

- Multiple Linear Regression Equation

By using multiple linear regression analysis, we can find out how much influence the independent variables, namely X1 (quality), X2 (price), X3 (time), and X4 (service) on the Dependent variable, namely Y1 (customer satisfaction level). The influence of independent and dependent variables was simultaneously and partially measured. The current multiple linear regression equation is as follows:

$Y = \alpha + \beta1X1 + \beta2X2 + .. + \beta nXn + \varepsilon$

Where:

Y = the first observation on the bound variable

A = observation of constant variable parameters

B1X1 = parameter of the regression coefficient of the independent variable

βnXn = parameter of sample number of independent variable regression coefficient

ε = first observation of the error variable

➢ Hypothesis Test

- Coefficient of Determination

To find out the percentage of variation of the free variables used in the model, the Determination coefficient analysis is used. The results of the determination analysis can be seen in the output of the summary model from the multiple regression analysis.

- t Test Results

The T test was used to evaluate the size of the impact of the free variables on the partly or individually bound variables. The findings may be seen in the coefficients table of the SPSS program (R.F. Jannah. Pp. 1-10, 2021a). The T count can't be less than the T table if we want a statistically meaningful result. Not only that, but we use the T test to see whether X1, X2, X3, and X4 partially affect Y. The test is performed with a significance level of 0.05; if the result is more than 0.05, the null hypothesis is rejected; and if the value is less than or equal to 0.05, the alternative hypothesis is accepted. Since the p-values for Quality (X1), Price (X2), Time (X3), and Service (X4) are all less than 0.05, we may conclude that these factors do not partially influence Customer Satisfaction (Y).

- F Test

Basically, the statistical test F shows whether all the independent variables in the model affect the bound variables simultaneously. By comparing the values of the F of the table and the F calculation or by comparing the values of sig and $\alpha = 0.05$, it can be known whether the regression model used is a fixed model. The results of the F test are as follows based on the results of calculations with SPSS.

Result and Discussion

The results of the research were obtained as follows:

➢ Data Quality Test

- Validity Test

Table 2. Results of the Validity Test of Variable X1

Correlations		X1.1	X1.2	X1
X1.1	Pearson Correlation	1	,683**	,917**
	Sig. (2-tailed)		,000	,000
	N	80	80	80
X1.2	Pearson Correlation	,683**	1	,918**
	Sig. (2-tailed)	,000		,000
	N	80	80	80
X1	Pearson Correlation	,917**	,918**	1
	Sig. (2-tailed)	,000	,000	
	N	80	80	80
**. Correlation is significant at the 0.01 level (2-tailed).				

Table 3. Results of the Validity Test of Variable X2

Correlations		X2.1	X2.2	X2
X2.1	Pearson Correlation	1	,666**	,911**
	Sig. (2-tailed)		,000	,000
	N	80	80	80
X2.2	Pearson Correlation	,666**	1	,914**
	Sig. (2-tailed)	,000		,000
	N	80	80	80
X2	Pearson Correlation	,911**	,914**	1
	Sig. (2-tailed)	,000	,000	
	N	80	80	80
**. Correlation is significant at the 0.01 level (2-tailed).				

Table 4. Results of the X3 Variable Validity Test

Correlations		X3.1	X3.2	X3
X3.1	Pearson Correlation	1	,662**	,917**
	Sig. (2-tailed)		,000	,000
	N	80	80	80
X3.2	Pearson Correlation	,662**	1	,906**
	Sig. (2-tailed)	,000		,000
	N	80	80	80
X3	Pearson Correlation	,917**	,906**	1
	Sig. (2-tailed)	,000	,000	
	N	80	80	80
**. Correlation is significant at the 0.01 level (2-tailed).				

Table 5. Hasil Uji Validitas Variabel X4

Correlations		X4.1	X4.2	X4
X4.1	Pearson Correlation	1	,347**	,820**
	Sig. (2-tailed)		,002	,000
	N	80	80	80
X4.2	Pearson Correlation	,347**	1	,821**
	Sig. (2-tailed)	,002		,000
	N	80	80	80
X4	Pearson Correlation	,820**	,821**	1
	Sig. (2-tailed)	,000	,000	

Correlations

		X4.1	X4.2	X4
	N	80	80	80

**. Correlation is significant at the 0.01 level (2-tailed).

Table 6. Results of the Y1 Variable Validity Test

Correlations

		Y1.1	Y1.2	Y1.3	Y1
Y1.1	Pearson Correlation	1	,710**	,704**	,912**
	Sig. (2-tailed)		,000	,000	,000
	N	80	80	80	80
Y1.2	Pearson Correlation	,710**	1	,605**	,874**
	Sig. (2-tailed)	,000		,000	,000
	N	80	80	80	80
Y1.3	Pearson Correlation	,704**	,605**	1	,868**
	Sig. (2-tailed)	,000	,000		,000
	N	80	80	80	80
Y1	Pearson Correlation	,912**	,874**	,868**	1
	Sig. (2-tailed)	,000	,000	,000	
	N	80	80	80	80

**. Correlation is significant at the 0.01 level (2-tailed).

Based on the image of the validity test results of the X1, X2, X3, X4, and Y1 variables above, it can be seen that all question items starting from the Quality, Price, Time, and Service indicators have an R value R Calculation > Table where the R value of the Table is 0.2199 and the significance value of < 0.05. So it can be concluded that all the existing question indicators are valid.

- Reliability Test

Table 7. Variable Reliability Test Results X1

Reliability Statistics

Cronbach's Alpha	N of Items
,812	2

Table 8. Variable Reliability Test Results X2

Reliability Statistics	
Cronbach's Alpha	N of Items
,799	2

Table 9. Results of Variable Reliability Test X3

Reliability Statistics	
Cronbach's Alpha	N of Items
,795	2

Table 10. Variable Reliability Test Results X4

Reliability Statistics	
Cronbach's Alpha	N of Items
,515	2

Table 11. Results of Y1 Variable Reliability Test

Reliability Statistics	
Cronbach's Alpha	N of Items
,861	3

Based on the table above, it can be seen that all variables have Cronbach's alpha values, respectively, of 0.812, 0.799, 0.795, 0.515, 0.861, where the value is > R Table 5%, which is 0.220, thus it can be said that all variables are reliable or can be trusted and consistent.

➢ Multiple Linear Regression Equation

Table 12. Multiple Linear Regression Coefficient Test Results

Coefficients^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	,735	,928		,792	,431
	X1	,917	,137	,628	6,696	,000
	X2	-,354	,122	-,246	-2,901	,005
	X3	,469	,123	,327	3,818	,000
	X4	,381	,118	,222	3,223	,002
a. Dependent Variable: Y1						

The results of the test The multiple linear regression coefficient above if implemented in the multiple linear regression equation will be: Y1 = 0.735 + 0.628-0.246 + 0.327 + 0.222 Furthermore, with the results that have been obtained, it can be concluded that if the value of the free variables used, namely quality, price, time, and service is in a state of zero value, then the bound variable used, namely the level of customer satisfaction, has a value of 0.735. Furthermore, for the X1 variable, namely quality, if there is an increase in each unit, then there will be an increase in the value of the quality variable value of 0.628. Then for the X2 variable, namely the price if it increases each unit, then there will be a decrease in the value of the price variable value of 0.246. Then for the variable X3, which is the time if it increases per unit, so later there will be an increase in the value of the time variable value of 0.327. Then for the variable X4, namely services, if there is an increase in each unit, then there will be an increase in the value of the service variable value of 0.222. So it can be seen that from the results of the regression coefficient value of 4 existing independent variables, so it can be obtained that the four variables have a significant influence on the customer satisfaction variable.

➢ Hypothesis Test
• Coefficient Determination Test

Table 13. Determination Coefficient Test Results

Model Summary^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,860^a	,740	,726	1,374	1,999
a. Predictors: (Constant), X4, X2, X3, X1					
b. Dependent Variable: Y1					

From table 8 above, it can be seen that the resulting R Square value is 0.740 or 74%. The value of the coefficient shows that the variables of quality, price, time, and service are able to explain the value of the customer satisfaction variable of 74% and while the remaining value of 26% is obtained from other variables that are not used in this study.

• t Test Results

Table 14. T Test Results

Coefficients^a			
Model		t	Sig.
1	(Constant)	,792	,431
	X1	6,696	,000
	X2	-2,901	,005

Coefficientsᵃ			
Model		t	Sig.
	X3	3,818	,000
	X4	3,223	,002
a. Dependent Variable: Y1			

From table 9, it can be seen that the effect of the free variable on the partially bound variable is as follows:

- o T value Calculate the quality variable is 6.696 > from the T value of the Table which is 1.992 and the significance value is 0.000 < 0.05 then Ho is rejected and Ha is accepted. So it is obtained that the quality variable partially has a significant effect on the level of customer satisfaction.
- o The T value of calculating the price variable is 2.901 > of the T value of the Table which is 1.992 and the significance value is 0.005 < 0.05 then Ho is rejected and Ha is accepted. Therefore, it is found that the price variable partially has a significant effect on the level of customer satisfaction.
- o The T value of calculating the time variable is 3.818 > of the T value of the Table which is 1.992 and the significance value is 0.000 < 0.05 then Ho is rejected and Ha is accepted. So it is found that the time variable partially has a significant effect on the level of customer satisfaction.
- o The T value of calculating the service variable is 3.223 > of the T value of the Table which is 1.992 and the significance value is 0.002 < 0.05 then Ho is rejected and Ha is accepted. Therefore, it was found that the service variable partially had a significant effect on the level of customer satisfaction.
- • F Test

Table 15. F Test Results

ANOVAᵃ						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	402,153	4	100,538	53,233	,000ᵇ
	Residual	141,647	75	1,889		
	Total	543,800	79			
a. Dependent Variable: Y1						
b. Predictors: (Constant), X4, X2, X3, X1						

The significance value in the F test is 0.000 which can be interpreted that the independent variables of quality (X1), price (X2), time (X3), and service (X4) affect the dependent variables of customer satisfaction (Y) simultaneously because the significance value is less than 0.05. And the value of the F Value of Calculation of 53,233 was found based on table 17 which shows that the value of F Calculation is greater than the F value of the Table of 2.73.

Conclusions

As a result of this research, several conclusions and recommendations were obtained that should be carried out, namely;

a. Independent Variables of Quality (X1), Price (X2), Time (X3) and Service (X3) have a Partial Effect on Customer Satisfaction, because they have a T value that is greater than the T Table and a significant value of less than 0.05.

b. Consistent with a significance level just over 0.05, the F-Hitung value of 53,233 is more than the F-Table value of 2.73, indicating that the Quality, Price, Time, and Service variables all have an effect on Customer Satisfaction. This is why it is recommended to always optimize the Price, Time, and Service that has a significant effect on Customer Satisfaction, either alone or in combination with other factors. Among the other things that may be done:

   • Offer more competitive pricing options or hold discount programs according to customer segmentation.
   • Reduce service waiting time with more efficient work process management.
   • Improve customer experience through friendly, responsive, and innovative service.

c. Quality Variable (X1) has been proven to have a significant influence on Customer Satisfaction (Y) and is one of the dominant factors compared to other factors. Therefore, it is recommended for companies to focus on Quality because the Quality variable (X1) exerts a significant influence and is the dominant factor on Customer Satisfaction, LALA Modern Workshop can consider continuously improving the quality standards of services and products. Examples:

   • Conduct periodic evaluations of the quality of welding and construction results.
   • Implement additional training for workers to ensure they are proficient in their jobs.

d. The results of 74% of the influence of the variables Quality, Price, Time and Service on customer satisfaction were obtained, so that 26% of the influence was caused by other factors that were not studied in this study. Therefore with only 74% of the variation in Customer Satisfaction explained by this study variable, there is room to examine other factors that may be relevant, such as:

   • Product Innovation: Will the introduction of new features impact customer satisfaction?
   • Reputation and Trust: How does brand image and relationships of trust with customers contribute?
   • Working Environment and Sustainability: Involving eco-friendly elements as an added value.

e. Continue for further research recommendations by conducting regular surveys to customers to get input on what can be improved, so that businesses can continue to adapt to market needs.

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