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THE EFFECT OF COMPETENCE, INFORMATION TECHNOLOGY AND COMPLAINT HANDLING ON CUSTOMER SATISFACTION INTERVENING SERVICE QUALITY

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Abstract:

The public satisfaction index value for the services of the Kijang Class III Port Authority and Harbormaster Office, Riau Islands, is in the poor category, due to customer satisfaction issues related to service quality, employee competence, information technology utilization, and complaint handling. This mixed-methods study aims to examine the relationship between competence, information technology utilization, and complaint handling on customer satisfaction in the intervening period. Service quality. It was concluded that competence, complaint handling, and service quality had a significant positive effect on customer satisfaction. Furthermore, competence and complaint handling had a significant positive effect on service quality. Then, the use of information technology had a positive but insignificant effect on customer satisfaction. Furthermore, complaint handling did not have a significant positive effect on service quality. Then, service quality was able to intervene in the influence of competence and information technology utilization in a significant positive way on customer satisfaction, but was unable to intervene in the influence of complaint handling on customer satisfaction. It is recommended to the leadership elements of the agency, among others, to optimize the condition of the technology infrastructure and create a training program to improve the basic skills of officers in using technology in communicating information to customers and prioritize the main targets of service performance to be oriented towards optimizing complaint handling.

Keywords: Satisfaction, Competence, Information Technology, Complaints, Service

INTRODUCTION

Good service quality is reflected in increased customer satisfaction and provides long-term benefits for service providers. However, at the Kijang Class III Harbormaster and Port Authority Office (KSOP Kijang), the following information was found in the Public Satisfaction Survey:

Table 1. Satisfaction Survey Table KSOP Class III Kijang Community in 2024

Variables	Index	Index 100	Index 4	Predicate
Information	13.45	76.88	3.08	Good
Condition	13.71	78.33	3.13	Good
Procedure/Flow	14.22	81.25	3.25	Good
Completion Time	13.56	77.50	3.10	Good
Fee Rates	13.93	79.58	3.18	Good
Infrastructure	12.32	70.42	2.82	Not good
Response	13.65	78.00	3.12	Good
Consultation and Complaints	12.18	69.58	2.78	Not good



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Variables	Index	Index 100	Index 4	Predicate
Small and Medium Enterprises (SMEs)	13.38	76.44	3.06	Not good

Source: KSOP Kijang 2024

The data above shows that the Public Satisfaction Index (IKM) for the provision of public services by KSOP Kijang for the service infrastructure, consultation and complaints variables is in the Less Good category, while for the elements of information, requirements, procedures, completion time, cost rates and response in the Good category, with the overall IKM Value still in the Less Good category, although it is approaching the Good category scale value. Furthermore, according to the SKM report, there were respondents who submitted suggestions for improvement indicators including HR Professionalism, Consultation and Complaints, Information Systems and Public Services, Quality of Facilities and Infrastructure, to improve services to increase satisfaction to customers or service users. Then, related to optimizing the performance of KSOP Kijang services, the following data information was also found:

Table 2. Table of Kijang KSOP Performance Achievements Not Achieved in 2024

No	Indicator	Unit	Target	Realization	Achievement (%)
1	Number of Ship Accidents in the Port Work Area	Incident	0	4	0.00
2	Number of Passenger Ship Visits	Voyage	110	89	80.91
3	Number of Pioneer Ship Passengers	Passenger	5,000	2,682	53.64
4	Number of Pioneer Ship Voyages	Voyage	25	22	88.00
5	Supervision of Embarkation/Debarcation of Passenger Ships	Activity	110	88	80.00
6	Supervision and Regulation of Street Vendors and Other Activities	Activity	110	88	80.00
7	Domestic Method of Ship Measurement	Letter	30	11	36.67
8	Large Pass Publishing	Document	70	53	75.71
9	Amount of Fuel Procurement for State Ship Operations	Ton	40	21,405	53.51
10	BMN Value	Rp	338 million	256.9 million	75.92

Source: KSOP Kijang, 2024

The data above shows that there are ten main target indicators for KSOP Kijang service performance in 2024, which were not achieved as targeted.

The KSOP Kijang performance report explains that several things are problematic in realizing its main performance targets, including:

- 1) Employee competency problems, due to the lack of employee competency in the field of public services, both operational technical officers and service administration.
- 2) The problem of limited information technology infrastructure in the form of *command centers*, control rooms, public service information and maritime communication equipment, as well as old computer devices.
- 3) The less-than-optimal use of information technology, both for administrative and technical activities, is caused by, among other things, limitations in the internet network.



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Regarding the competency of KSOP Kijang employees, 58.82 % have met the minimum educational qualifications for their positions, and 41.18% have not met the minimum educational qualifications for their positions. Furthermore, regarding the use of information technology, information was obtained based on the determination of the results of the public information service assessment conducted by the Ministry of Transportation in 2024, it was determined that the Kijang Class III Harbormaster and Port Authority Office was included in the Less Informative category with a score of 54.1, this was due to the lack of human resources in the field of information technology and not maximizing the use of information technology for publication to the public or service users.

Based on the findings of the data and information above, it can be simplified that the satisfaction of customers or users of KSOP Kijang services through a survey in 2024 received a score in the less good category, because the ten main target indicators in improving service performance in 2024 were not achieved, which was caused by the less than optimal competence of service task implementers, both technical operational and service administration, as well as the less than optimal use of information technology caused by limited information technology infrastructure in the form of *command centers*, *monitoring rooms*, maritime communication tools and old computer devices as well as internet network constraints, even this agency received an evaluation from the BPK related to the electronic port service system or *inaportnet* related to the fulfillment of the time for each service not in accordance with the established SLA (*Standard Level Agreement*) and not fully calculating or billing Port PNBP through the Inaportnet system, as well as an assessment from the Ministry of Transportation regarding KSOP Kijang information and documentation services with the Less Informative category, then the IKM value from the consultation and complaint elements had the lowest value and was in the less good category.

Referring to the information above, it can be identified that there are problem phenomena, including:

1. Customer satisfaction issues, which are indicated, include:
 - a. The results of the 2024 Public Satisfaction Index (IKM) value are in the Less Good category, even though the value is approaching the Good category scale, so KSOP Kijang needs to improve customer satisfaction.
 - b. There is customer dissatisfaction with KSOP Kijang regarding the limitations of the information technology infrastructure to support public services. This is shown in the 2024 performance report and IKM; for the infrastructure element, it has a value in the Less Good category.
 - c. Then, from the SKM, there are suggestions for improvement indicators from respondents, namely HR Professionalism, Consultation and Complaints, Information Systems and Public Services, Quality of Facilities and Infrastructure, which need to be followed up on.
2. The problem of service quality, as shown in the performance report, is that there are ten main target indicators for service performance that have not been achieved optimally.
3. The lack of competence of employees in the field of public services, both operational technical officers and service administration, is due to not meeting the minimum educational standards for their positions.
4. The less-than-optimal utilization of information technology, which is caused by, among others, limitations of the internet network, limitations of information technology infrastructure in the form of *command centers*, *monitoring/control rooms*, maritime communication tools and old computer devices. Then, the electronic port service system or *Inaportnet*, has not been optimized regarding the fulfillment of the time for each service, which is not in accordance with the

established SLA (*Standard Level Agreement*) and has not fully calculated or billed Port PNBP on the Inaportnet system. Furthermore, KSOP Kijang, due to not non-optimal utilization of information technology for publishing information and documentation to the public or service users, due to the lack of human resources in the field of information technology;

5. Complaint Handling, as indicated by the IKM value in the consultation and complaints element, has the lowest value and is in the less good category, which is caused by the fact that no employees have been assigned to carry out special tasks to handle complaints (*customer service*), and the infrastructure for handling complaints is not yet optimal.

Based on the identification of the problems above, the research will be limited and aimed at finding out the answers to the following problem formulations:

1. How does employee competence directly influence customer satisfaction at KSOP Kijang?
2. How does the use of information technology directly influence customer satisfaction at KSOP Kijang?
3. How does direct complaint handling affect KSOP Kijang customer satisfaction?
4. How does employee competence directly influence the quality of KSOP Kijang services?
5. How does the use of information technology directly impact the quality of service at KSOP Kijang?
6. How does direct complaint handling affect the quality of KSOP Kijang services?
7. How does service quality directly influence customer satisfaction at KSOP Kijang?
8. How does employee competence influence customer satisfaction through service quality as an intervening variable in KSOP Kijang?
9. How does the use of information technology influence customer satisfaction through service quality as an intervening variable at KSOP Kijang?
10. How does complaint handling affect customer satisfaction through service quality as an intervening variable in KSOP Kijang?

The results of this study are likely useful in strengthening theories regarding the intervening role of service quality on competence, the use of information technology, and complaint handling in their influence on customer satisfaction. Practically, it is useful in providing more realistic information or a picture, especially regarding the intervening role of service quality on competence, the use of information technology, and complaint handling in their influence on customer satisfaction. Kijang, Riau Islands KSOP. It is also hoped that it will serve as a reference point for the Batam University library and enrich research findings, which can be useful as study material and references for related researchers.

METHODS

Research Design. Eriyanto (2022;1.35), Quantitative research is characterized by the use of data in the form of numbers, the use of tabulation, statistical testing, research design, data collection, to strategy. Qualitative research is research on data in the form of words, schemes, and images. (Narimawati, et.al., 2020). This research design will use a *mixed-method approach* using a questionnaire that will be distributed to customers or users of the services of the Harbormaster and Class III Kijang Port Authority Office, Riau Islands Province. The program will run from January to June 2025.

Research Variables and Operational Definitions. The variables operated in this study used five variables, with details, Employee Competence (X1), Utilization of Information Technology (X2) and Complaint Handling (X3) as exogenous variables. Then, Service Quality (Z) is an *intervening variable*, and Customer Satisfaction (Y) is an *endogenous variable*.

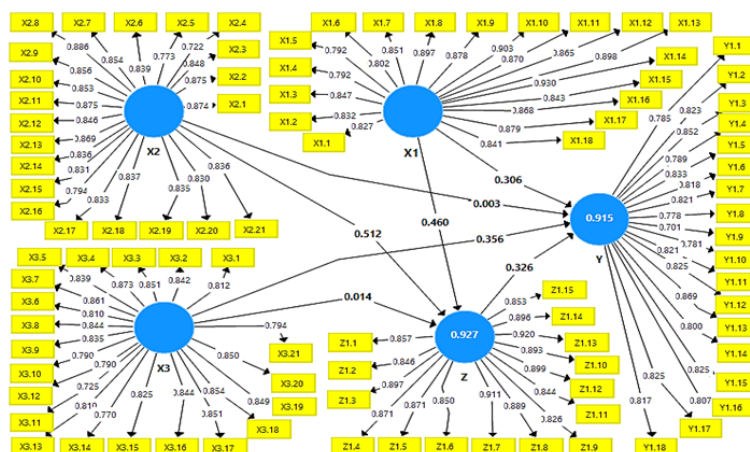


Population and Sample. The population in this study was 150 regular customers of KSOP Kijang. Due to the relatively small population, a saturated sampling technique (census) was used, namely by using the entire existing population. Therefore, from all 150 existing populations, the sample will be used.

Types, Sources, Collection and Data Analysis Techniques. Primary data was obtained directly from respondents through observation, interviews, and questionnaires. Secondary data was obtained through literature research and data related to the five variables. The data analysis techniques used to test the hypotheses in this study were Descriptive Analysis and Partial Least Squares (PLS) analysis. This was chosen because it is simpler and produces accurate results. (Duryadi, 2021:31-38).

RESULT AND DISCUSSION

Validity and Reliability Test Results



Source: Primary Data Processed Using *Smart PLS*, 2025

Figure 1. Outer Model Test Result Image

The figure above shows that all variables have values greater than 0.7, thus meeting the criteria (Duryadi, 2021:109).

Table 3. Cross Loading Value Table

	Competence (X1)	Utilization of Information Technology (X2)	Complaint Handling (X3)	Customer Satisfaction (Y)	Service Quality (Z)
X1.1	0.827	0.758	0.762	0.788	0.794
X1.2	0.832	0.694	0.810	0.826	0.769
X1.3	0.847	0.719	0.757	0.794	0.740
X1.4	0.792	0.691	0.730	0.744	0.680
X1.5	0.792	0.688	0.723	0.750	0.687
X1.6	0.802	0.690	0.709	0.716	0.702
X1.7	0.851	0.778	0.768	0.787	0.820
X1.8	0.897	0.806	0.798	0.823	0.858
X1.9	0.878	0.820	0.785	0.798	0.821
X1.10	0.903	0.812	0.761	0.811	0.846
X1.11	0.870	0.818	0.737	0.789	0.815

	Competence (X1)	Utilization of Information Technology (X2)	Complaint Handling (X3)	Customer Satisfaction (Y)	Service Quality (Z)
X1.12	0.865	0.852	0.748	0.813	0.857
X1.13	0.898	0.836	0.809	0.831	0.847
X1.14	0.930	0.834	0.838	0.862	0.875
X1.15	0.843	0.765	0.759	0.809	0.811
X1.16	0.868	0.798	0.767	0.800	0.837
X1.17	0.879	0.845	0.775	0.814	0.866
X1.18	0.841	0.811	0.775	0.835	0.823
X2.1	0.757	0.874	0.707	0.756	0.827
X2.2	0.736	0.875	0.719	0.733	0.795
X2.3	0.687	0.848	0.666	0.675	0.714
X2.4	0.562	0.722	0.535	0.548	0.588
X2.5	0.662	0.773	0.612	0.650	0.649
X2.6	0.732	0.839	0.663	0.703	0.741
X2.7	0.835	0.854	0.831	0.833	0.826
X2.8	0.849	0.886	0.826	0.837	0.867
X2.9	0.806	0.856	0.776	0.795	0.834
X2.10	0.749	0.853	0.689	0.751	0.810
X2.11	0.778	0.875	0.713	0.753	0.813
X2.12	0.829	0.846	0.780	0.828	0.820
X2.13	0.798	0.869	0.718	0.785	0.838
X2.14	0.770	0.836	0.712	0.768	0.793
X2.15	0.778	0.831	0.672	0.759	0.797
X2.16	0.771	0.794	0.665	0.738	0.771
X2.17	0.810	0.833	0.789	0.802	0.824
X2.18	0.738	0.837	0.674	0.685	0.757
X2.19	0.774	0.835	0.763	0.762	0.831
X2.20	0.758	0.830	0.690	0.723	0.815
X2.21	0.788	0.836	0.731	0.756	0.825
X3.1	0.684	0.626	0.812	0.716	0.695
X3.2	0.709	0.675	0.842	0.753	0.701
X3.3	0.719	0.691	0.851	0.742	0.690
X3.4	0.774	0.740	0.873	0.805	0.750
X3.5	0.758	0.721	0.839	0.783	0.719
X3.6	0.728	0.630	0.810	0.762	0.680
X3.7	0.774	0.732	0.861	0.800	0.744
X3.8	0.780	0.743	0.844	0.761	0.733
X3.9	0.762	0.721	0.835	0.765	0.730
X3.10	0.751	0.730	0.790	0.720	0.706
X3.11	0.648	0.642	0.725	0.672	0.629
X3.12	0.729	0.721	0.790	0.738	0.690
X3.13	0.712	0.703	0.810	0.744	0.705
X3.14	0.667	0.629	0.770	0.714	0.657
X3.15	0.743	0.689	0.825	0.751	0.716
X3.16	0.763	0.709	0.844	0.771	0.742
X3.17	0.751	0.719	0.851	0.764	0.715
X3.18	0.758	0.757	0.854	0.763	0.732
X3.19	0.786	0.749	0.849	0.785	0.757
X3.20	0.782	0.746	0.850	0.780	0.732



	Competence (X1)	Utilization of Information Technology (X2)	Complaint Handling (X3)	Customer Satisfaction (Y)	Service Quality (Z)
X3.21	0.725	0.678	0.794	0.731	0.712
Y1.1	0.687	0.648	0.796	0.785	0.673
Y1.2	0.747	0.669	0.785	0.823	0.704
Y1.3	0.810	0.779	0.806	0.852	0.770
Y1.4	0.781	0.747	0.759	0.789	0.723
Y1.5	0.802	0.739	0.757	0.833	0.773
Y1.6	0.780	0.699	0.747	0.818	0.738
Y1.7	0.785	0.727	0.744	0.821	0.755
Y1.8	0.758	0.719	0.667	0.778	0.740
Y1.9	0.655	0.654	0.568	0.701	0.655
Y1.10	0.714	0.655	0.691	0.781	0.711
Y1.11	0.764	0.705	0.780	0.821	0.753
Y1.12	0.774	0.736	0.735	0.825	0.773
Y1.13	0.814	0.783	0.749	0.869	0.839
Y1.14	0.758	0.767	0.705	0.803	0.800
Y1.15	0.763	0.757	0.722	0.825	0.788
Y1.16	0.699	0.714	0.746	0.807	0.744
Y1.17	0.737	0.732	0.762	0.825	0.745
Y1.18	0.771	0.768	0.781	0.817	0.764
Z1.1	0.831	0.800	0.846	0.823	0.857
Z1.2	0.784	0.798	0.714	0.770	0.846
Z1.3	0.831	0.843	0.785	0.838	0.897
Z1.4	0.790	0.821	0.736	0.818	0.871
Z1.5	0.798	0.811	0.755	0.829	0.871
Z1.6	0.780	0.827	0.709	0.763	0.850
Z1.7	0.861	0.863	0.786	0.842	0.911
Z1.8	0.855	0.855	0.751	0.817	0.889
Z1.9	0.775	0.753	0.733	0.772	0.826
Z1.10	0.870	0.830	0.764	0.833	0.893
Z1.11	0.809	0.801	0.689	0.772	0.844
Z1.12	0.846	0.844	0.770	0.819	0.899
Z1.13	0.853	0.855	0.771	0.842	0.920
Z1.14	0.833	0.851	0.746	0.798	0.896
Z1.15	0.808	0.828	0.764	0.778	0.853

Source: Primary Data Processed Using Smart PLS, 2025

In the table above, all cross-loading values on the intended constructs are greater than the other values, and the standard value for each construct is greater than 0.7, thus indicating that all manifest variables are valid (Duryadi, 2021:125)

Table 4. Construct Reliability and Validity Table

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Competence (X1)	0.979	0.979	0.980	0.735
IT Utilization (X2)	0.979	0.980	0.980	0.704
Complaint Handling (X3)	0.976	0.977	0.978	0.681
Customer Satisfaction (Y)	0.978	0.978	0.980	0.766



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Service Quality (Z)	0.969	0.970	0.972	0.656
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Source: Primary Data Processed Using Smart PLS, 2025

The table above shows that all variable values in the reliability test are good, with Cronbach's Alpha and composite reliability values above 0.7, and AVE values above 0.5. Therefore, it is concluded that the tested variables are valid and reliable, allowing for structural model testing (Duryadi, 2021:126).

Table 5. R Squares Table

	R Square	R Square Adjusted
Customer Satisfaction (Y)	0.915	0.912
Service Quality (Z)	0.927	0.926

Source: Primary Data Processed Using Smart PLS, 2025

The table shows that the R Square value of Customer Satisfaction (Y) is 0.915 or 91.5% influenced by the variables of competence, utilization of information technology, complaint handling and service quality, while other factors outside the variables studied influence 8.5%. The R Square value of Service Quality (Z) is 0.927 or 92.7% influenced by the variables of competence, utilization of information technology and complaint handling, while other factors outside the variables studied influence 7.3%.

Table 6. Construct Cross-Validated Redundancy Table

	SSO	SSE	Q² (=1-SSE/SSO)
Competence (X1)	2700,000	2700,000	
IT Utilization (X2)	3150,000	3150,000	
Complaint Handling (X3)	3150,000	3150,000	
Customer Satisfaction (Y)	2700,000	1102,369	0.592
Service Quality (Z)	2250,000	664,279	0.705

Source: Primary data processed with Smart PLS, 2025

The table shows the Q2 value for the Customer Satisfaction (Y) variable of 0.592 and Service Quality (Z) of 0.705, so this research model has good predictive relevance because the Q2 value of both variables is more than zero (Duryadi, 2021:116).

Table 7. Model Fit/Model Goodness of Fit Table (NFI Value)

	Saturated Model	Estimated Model
SRMR	0.059	0.059
d_ ULS	15,416	15,416
d_ G	32,756	32,756
Chi-Square	14637.396	14637.396
NFI	0.506	0.506

Source: Primary Data Processed Using Smart PLS, 2025

The data shows an NFI value of 0.506, or close to 0.67 (good/strong), thus concluding that the model has a good and strong fit. Furthermore, after meeting the above requirements, it can be concluded that the model can be continued to the next test, namely the hypothesis test. The results of the hypothesis test using the bootstrapping procedure are shown below:



Table 8. Path Coefficient Test Results Table

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
X1 -> Y	0.306	0.295	0.129	2,372	0.018
X2 -> Y	0.003	-0.003	0.135	0.026	0.979
X3 -> Y	0.356	0.377	0.097	3,662	0.000
X1 -> Z	0.460	0.461	0.109	4,209	0.000
X2 -> Z	0.512	0.510	0.090	5,685	0.000
X3 -> Z	0.014	0.015	0.069	0.207	0.836
Z -> Y	0.326	0.322	0.142	2,292	0.022

Source: Primary Data Processed Using Smart PLS, 2025

From the data of the direct relationship test results above, it is shown that the value of the influence of Competence (X1) on Customer Satisfaction (Y) with a positive original sample value of 0.306, with a T-statistic value of 2.372 and a P-Value value of 0.018. The value of the influence of Information Technology Utilization (X2) on Customer Satisfaction (Y), with a positive original sample value of 0.003, a T-statistic value of 0.026 and a P-Value value of 0.979. The value of the influence of Complaint Handling (X3) on Customer Satisfaction (Y) with a positive original sample value of 0.356, a T-statistic value of 3.662 and a P-Value value of 0.000. The influence value of Competence (X1) on Service Quality (Z) with a positive original sample value of 0.460, a T-statistic value of 4.209 and a P-Value value of 0.000. The influence value of Information Technology Utilization (X2) on Service Quality (Z) with a positive original sample value of 0.512, a T-statistic value of 5.685 and a P-Value value of 0.000. The influence value of Complaint Handling (X3) on Service Quality (Z) with a positive original sample value of 0.14, a T-statistic value of 0.207 and a P-Value value of 0.836. The influence value of Service Quality (Z) on Customer Satisfaction (Y) with a positive original sample value of 0.326, a T-statistic value of 2.292 and a P-Value value of 0.022.

Table 9. Specific Indirect Effects Test Results Table

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
X1 -> Z -> Y	0.150	0.147	0.072	2,089	0.037
X2 -> Z -> Y	0.167	0.165	0.082	2,036	0.042
X3 -> Z -> Y	0.005	0.005	0.025	0.185	0.853

Source: Primary Data Processed Using Smart PLS, 2025

From the indirect relationship test results data above, it is shown that the value of the influence of Competence (X1) on Customer Satisfaction (Y) through Service Quality (Z) with a positive original sample value of 0.150, a T-statistic value of 2.089 and a P-Value value of 0.037. The value of the influence of Information Technology Utilization (X2) on Customer Satisfaction (Y) through Service Quality (Z) with a positive original sample value of 0.167, a T-statistic value of 2.036 and a P-Value value of 0.042. The value of the influence of Complaint Handling (X3) on Customer Satisfaction (Y) through Service Quality (Z) with a positive original sample value of 0.005, a T-statistic value of 0.185 and a P-Value value of 0.853.

CONCLUSION

1. Employee competence directly has a significant positive effect on customer satisfaction at the Kijang Class III Harbormaster and Port Authority Office.



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2. The direct use of information technology has a positive but insignificant effect on customer satisfaction at the Kijang Class III Harbormaster and Port Authority Office.
3. Handling complaints directly has a significant positive effect on customer satisfaction at the Kijang Class III Harbormaster and Port Authority Office.
4. Employee competence directly has a significant positive effect on the quality of service of the Kijang Class III Harbormaster and Port Authority Office.
5. The use of information technology directly has a significant positive impact on the quality of service of the Kijang Class III Harbormaster and Port Authority Office.
6. Handling complaints directly has a positive but insignificant effect on the quality of service of the Kijang Class III Harbormaster and Port Authority Office.
7. Service quality directly has a significant positive effect on customer satisfaction at the Kijang Class III Harbormaster and Port Authority Office.
8. Employee competence has a significant positive effect on customer satisfaction through service quality as an intervening variable at the Kijang Class III Harbormaster and Port Authority Office.
9. The use of information technology has a significant positive effect on customer satisfaction through service quality as an intervening variable at the Kijang Class III Harbormaster and Port Authority Office.
10. Complaint handling has a positive but insignificant effect on customer satisfaction through service quality as an intervening variable at the Kijang Class III Harbormaster and Port Authority Office.

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