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The Effect of Bids Below 80% of the Owner Estimate on Construction Project Performance and Owner Satisfaction in Klungkung Regency

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Keywords

bids below 80% of the owner estimate; construction project performance; owner satisfaction; SEM-PLS.

Abstract

In the Klungkung Regency Government, the percentage of construction project tenders with bids below 80% of the owner estimate during the period 2021–2025 reached 34.29%. This research was conducted to analyze the effect of bids below 80% of the owner estimate on construction project performance and owner satisfaction in Klungkung Regency and to identify mitigation measures for the negative impacts of bids below 80% of the owner estimate on construction project performance and owner satisfaction. This study was carried out by distributing questionnaires to owner of construction projects procured through construction tenders conducted by the Klungkung Regency Government with bid prices below 80% of the owner estimate during the fiscal years 2021–2025. The collected data were analyzed using SEM-PLS method. The results of the SEM-PLS analysis indicate that bids below 80% of the owner estimate have a negative and significant effect on construction project performance in Klungkung Regency. Bids below 80% of the owner estimate also have a negative and significant effect on owner satisfaction. Construction project performance acts as a complementary partial mediator in the relationship. Mitigation measures include technical justification for scope changes, field verification before payment, material approval, regular site inspections, competency verification, schedule evaluation, SMK3 monitoring, BPJS membership verification, coordination meetings, and standard response times for owner instructions.

INTRODUCTION

The procurement of construction work has an important role in infrastructure development that functions as the backbone of economic growth and improvement of community welfare (Diene, 2024; Djajawinata et al., 2023; Gidigah et al., 2024; Hussain et al., 2022; LePage & Renaerts, 2023; Ololube & Nweke, 2025). The implementation of government construction work procurement in Indonesia refers to the provisions contained in Presidential Regulation Number 16 of 2018 concerning the Procurement of Government Goods/Services and its amendments. One of the methods of selecting suppliers for the procurement of construction work is through a tender for construction work.

The number of construction service providers participating in construction work tenders has resulted in bids on construction work tenders becoming more competitive (Ahmed et al., 2024; Arifuddin, Artahsasta, et al., 2025; Arifuddin, Muharram, et al., 2025; Oo et al., 2025). According to Azis et al. (2018), underestimating bidding occurs when a service provider wants to do a job at a lower cost than it should in the hope of getting the job. Construction service providers often use a quotation strategy below 80% HPS to win construction work tenders.

The phenomenon of bidding below 80% of HPS is quite common in the Klungkung Regency Government's construction work tenders. The number of constructions work tender packages that have been carried out from 2021 - 2025 based on data from LPSE Klungkung Regency is 175 tender packages. The number of tender packages with a bid value below 80% HPS is as many as 60 tender packages. So, the percentage of the number of constructions work tender packages with a bid value below 80% of the HPS at the Klungkung Regency Government from 2021 - 2025 is 34.29%.

Bidding below 80% of HPS in terms of procurement of goods and services is considered an achievement of the principle of efficiency because there are state financial savings, but from the side of service users, this raise concerns such as work that does not meet specifications or delays in work due to the inability of contractors to manage project cost budgets during the implementation of work (Dewi & Susetyo, 2022). Findia & Wiguna (2014) stated that the bid price has a positive and significant effect on the performance of construction projects, so the lower the bid price, the lower the performance of the construction project. Low performance of construction projects can have an impact on service user satisfaction. Astana et al. (2023) stated that the performance of construction projects has a positive and significant effect on the satisfaction of service users, so that the lower the performance of construction projects, the lower the level of satisfaction of service users. Farini & Nugroho (2019) stated that with the tender method, the increase in unit price is followed by an increase in the quality and satisfaction of service users. Therefore, if the unit price decreases, the quality and satisfaction of service users will decrease (Asawawibul et al., 2025; Naini et al., 2022; Saptono et al., 2023).

Based on the above problems, there has been no study that specifically analyzes the effect of bidding below 80% HPS on construction project performance and service user satisfaction. In addition, it is suspected that there is an indirect causal relationship, where bids below 80% of HPS affect the satisfaction of service users through the performance of construction projects. Therefore, this study was conducted to analyze the effect of bids below 80% of HPS on construction project performance and satisfaction of service users in Klungkung Regency, analyze the role of construction project performance in mediating the influence of bids below 80% HPS on the satisfaction of service users in Klungkung Regency, and examine measures to mitigate the negative impact of offers below 80% HPS on construction project performance and service user satisfaction. This research offers both theoretical and practical benefits. Theoretically, it contributes to construction project management literature by providing empirical evidence on the consequences of low bidding strategies in public procurement. Practically, it provides input for the Klungkung Regency Government and stakeholders in formulating procurement policies, improving tender evaluation systems, and implementing mitigation strategies to enhance project quality and user satisfaction.

METHOD

This research used a mixed method approach with an explanatory sequential design. The mixed method is a research approach that combines quantitative and qualitative methods in one study. Explanatory sequential design is a design that in the initial phase collects and analyzes quantitative data first and then follows up on the results with a qualitative phase (Setiawan et al., 2025).

The sampling technique of this study used non-probability sampling with a purposive sampling approach. Purposive sampling is a technique for determining samples with certain considerations. If the study will conduct a multivariate analysis, the number of sample members is at least 10 times the number of variables studied (Sugiyono, 2020). In this study, there are 3 research variables. Therefore, the minimum number of samples used in this study is 30 samples. The number of samples used in this study is 30 samples. The sample in this study is service users of construction work carried out through the Klungkung Regency Government's construction work tender with a bid below 80% of HPS in the 2021 - 2025 fiscal year. The service users in question are Budget Users (PA) / Budget User Powers (KPA) / Commitment Making Officials (PPK) / Activity Technical Implementation Officers (PPTK) / PPK Technical Team.

Data collection in this study was carried out through two stages. The first stage is quantitative data collection which is carried out through a survey method using a questionnaire with a Likert Scale that is distributed to a predetermined sample. The next stage is the collection of qualitative data through the focus group discussion (FGD) method.

In this study, the SEM-PLS (Structural Equation Modeling - Partial Least Square) method was used as a stage of quantitative analysis. The data that has been collected through the distribution of the questionnaire will be processed and analyzed using the SEM-PLS method. The SEM-PLS method was used to analyze the effect of bids below 80% HPS on construction project performance and service user satisfaction in Klungkung Regency, as well as to analyze the role of construction project performance in mediating the influence of bids below 80% HPS on service user satisfaction in Klungkung Regency. The SEM-PLS method was chosen in this study considering that the research model involves several latent variables and the existence of mediating relationships, as well as the relatively limited number of research samples.

FGD in this study is used as a qualitative stage in mixed method design with explanatory sequential design. The FGD was carried out after the results of quantitative analysis were obtained using the SEM-PLS method. The purpose of the FGD in this study is to examine measures to mitigate the negative impact of offers below 80% HPS on construction project performance and service user satisfaction.

RESULTS AND DISCUSSION

Respondent Characteristics

The characteristics of the respondents can be seen based on the age, last education, work experience, and position of the respondent. Respondent data was obtained through the results of a questionnaire that had been distributed to 30 respondents. Based on data obtained through the questionnaire, it was found that the majority of respondents were in the age range > 40 years with a percentage of 83.33%. The majority of the respondents' last education was D4/S1 with a percentage of 66.67%, and the majority of respondents' work experience was > 15 years with a percentage of 86.67%. In addition, the majority of respondents have a position as PPTK with a percentage of 43.33%.

Testing Research Instruments

The validity test is carried out by comparing the value $r_{\text{of the Calculation}}$ with the value $r_{\text{of the Table}}$, where the value $r_{\text{of the Calculation}}$ must be greater than the value $r_{\text{of the Table}}$. The number of respondents used in this study was 30 respondents. The significant rate (α) used is 5%. So that

the value of the table r is obtained as 0.361. The Calculation r value was obtained using the IBM SPSS V.27 application program. The results of the validity test can be seen in Table 1, Table 2, and Table 3.

Table 1. Bid Validity Test Results Below 80% HPS

Statement	rCount	Table	Remarks
P1	0,748	0,361	Valid
P2	0,788	0,361	Valid
P3	0,781	0,361	Valid
P4	0,747	0,361	Valid
P5	0,774	0,361	Valid
P6	0,820	0,361	Valid
P7	0,744	0,361	Valid

Source: Primary Data Processed (2025)

Table 2. Results of Construction Project Performance Validity Test

Statement	rCount	Table	Remarks
B1	0,733	0,361	Valid
B2	0,715	0,361	Valid
B3	0,741	0,361	Valid
M1	0,761	0,361	Valid
M2	0,749	0,361	Valid
M3	0,742	0,361	Valid
M4	0,737	0,361	Valid
W1	0,741	0,361	Valid
W2	0,767	0,361	Valid
W3	0,802	0,361	Valid
K1	0,758	0,361	Valid
K2	0,748	0,361	Valid
K3	0,712	0,361	Valid

Source: Primary Data Processed (2025)

Table 3. Results of the Service User Satisfaction Validity Test

Statement	rCount	Table	Remarks
KP1	0,772	0,361	Valid
KP2	0,816	0,361	Valid
KP3	0,781	0,361	Valid
KP4	0,808	0,361	Valid
KP5	0,833	0,361	Valid
KP6	0,744	0,361	Valid
KP7	0,831	0,361	Valid
KP8	0,844	0,361	Valid

Source: Primary Data Processed (2025)

The reliability test was carried out using Cronbach's Alpha (α) statistical test. A variable is considered reliable if the value of Cronbach's Alpha (α) obtained is more than 0.60. The results of reliability tests conducted using the IBM SPSS V.27 program can be seen in Table 4.

Table 4. Results of the Reliability Test of Research Instruments

Variable	Cronbach's Alpha	Remarks
Offer Under 80% HPS	0,883	Reliable
Construction Project Performance	0,930	Reliable
Service User Satisfaction	0,919	Reliable

Source: Primary Data Processed (2025)

SEM-PLS Analysis

The analysis began at the stage of evaluation of the measurement model, evaluation of the structural model, and mediation test. The SEM-PLS model of this study can be seen in Figure 1.

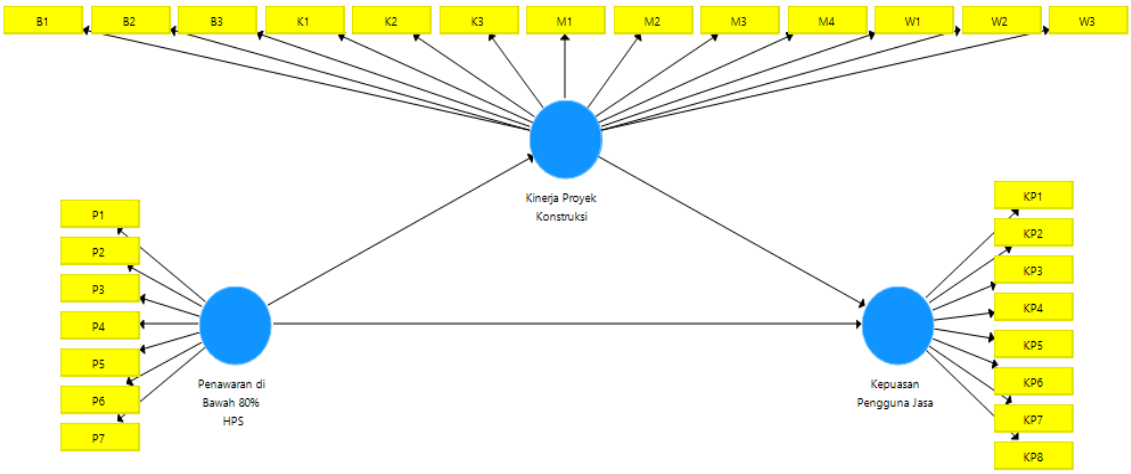

Figure 1. Model SEM-PLS

Source: Primary Data Processed using SmartPLS (2025)

Based on Hair et al. (2021), the evaluation of reflective measurement models includes testing the reliability of indicators, internal consistency reliability, convergent validity, and discriminant validity. The results of the evaluation of the measurement model can be seen in Table 5, Table. 6, and Table 7.

Table 5. Indicator Reliability Test Results

Indicator	Nilai Indicator Loading
P1	0.733
P2	0.805
P3	0.821
P4	0.747
P5	0.735
P6	0.841
P7	0.711
B1	0.749
B2	0.729
B3	0.739
M1	0.751
M2	0.747

Indicator	Nilai Indicator Loading
M3	0.750
M4	0.731
W1	0.738
W2	0.755
W3	0.785
K1	0.763
K2	0.755
K3	0.722
KP1	0.745
KP2	0.795
KP3	0.796
KP4	0.819
KP5	0.808
KP6	0.747
KP7	0.852
KP8	0.863

Source: Primary Data Processed using SmartPLS (2025)

Table 6. Internal Consistency and Convergent Validity Reliability Test Results

Variable	Cronbach's Alpha	rhoA	Composite Reliability	Average Variance Extracted (AVE)
Offer Under 80% HPS	0,887	0,906	0,911	0,596
Construction Project Performance	0,934	0,937	0,943	0,558
Service User Satisfaction	0,922	0,931	0,936	0,647

Source: Primary Data Processed using SmartPLS (2025)

Table 7. Results of Discriminant Validity Testing (HTMT)

Variable	Construction Project Performance	Service User Satisfaction
Offer Under 80% HPS	0,674	0,715
Construction Project Performance		0,780

Source: Primary Data Processed using SmartPLS (2025)

Based on the test results, it was found that all indicators had an indicator loading value above 0.708, so as to meet the requirements for indicator reliability testing. All variables have a rhoA value in the range of 0.7 – 0.95, thus meeting the requirements of internal consistency reliability testing. The AVE value of all variables has a ≥ value of 0.50, thus meeting the requirements of convergent validity testing. And the entire HTMT value is below 0.85, which means that it has met the requirements of the discriminant validity test.

Based on Hair et al. (2021), the evaluation of the structural model includes testing for collinearity, path coefficient, determination coefficient (R^2), Effect Size (f^2), and PLS Predict. The results of the structural model evaluation can be seen in Table 8, Table 9, Table 10, Table 11, and Table 12.

Table 8. Collinearity Test Results

Variable	Construction Project Performance	Service User Satisfaction
Offer Under 80% HPS	1,000	1,723
Construction Project Performance		1,723

Source: Primary Data Processed using SmartPLS (2025)

Based on the results of the collinearity test, a VIF value was obtained below 3, which means that it has met the requirements where there is no very high relationship or multicollinearity between latent variables.

Table 9. Path Coefficient Test Results

Variable	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Value
Offer Under 80% HPS → Construction Project Performance	-0,648	-0,674	0,108	6,002	0,000
Offer Under 80% HPS Service → User Satisfaction	-0,329	-0,345	0,146	2,253	0,025
Construction Project Performance → Service User Satisfaction	0,541	0,539	0,166	3,260	0,001

Source: Primary Data Processed using SmartPLS (2025)

Based on the results of the path coefficient test, the path coefficient value was obtained from the original value of the bid sample below 80% HPS on the performance of the construction project with a value of -0.648 with a t-statistic value of 6.002 and a p value of 0.000 which means that the bid below 80% HPS has a negative and significant effect on the performance of the construction project. The value of the offer line coefficient below 80% HPS on service user satisfaction is -0.329 with a t-statistic value of 2.253 and a p value of 0.025 which means that an offer below 80% HPS has a negative and significant effect on service user satisfaction. The value of the construction project performance line coefficient on service user satisfaction is 0.541 with a t-statistic value of 3.260 and a p value of 0.001 which means that the performance of the construction project has a positive and significant effect on the satisfaction of service users.

Table 10. Determination Coefficient Test Results (R^2)

Variable	R Square	R Square Adjusted
Construction Project Performance	0,419	0,399
Service User Satisfaction	0,631	0,604

Source: Primary Data Processed using SmartPLS (2025)

Based on the results of the determination coefficient test, it can be seen that the performance variable of the construction project obtained an R^2 value of 0.419, which is included in the weak category. These results show that the bid variable below 80% of HPS is able to explain the performance variable of the construction project of 41.9%. The variable of service user satisfaction obtained an R^2 value of 0.631, which is included in the medium category. These results show that the performance variables of construction projects and bidding below 80% of HPS are able to explain the variable of service user satisfaction of 63.1%.

Table 11. Test Results Effect Size (f^2)

Variable	Construction Project Performance	Service User Satisfaction
Offer Under 80% HPS	0,723	0,170
Construction Project Performance		0,462

Source: Primary Data Processed using SmartPLS (2025)

Based on the results of the effect size test, it can be seen that the value of the f^2 bid below 80% HPS on the performance of the construction project is 0.723, which means that the bid below 80% HPS has a high influence in affecting the performance of the construction project. The f^2 value of the offer below 80% HPS on service user satisfaction is 0.170, which means that the offer below 80% HPS has a moderate influence on the satisfaction of the service user. The value of f^2 of construction project performance on service user satisfaction is 0.462, which means that construction project performance has a high influence on service user satisfaction.

Table 12. PLS Predict Test Results

Model PLS			Model LM		
Indicator	**RMSE**	**IT IS**	**Indicator**	**RMSE**	**IT IS**
B1	0.435	0.338	B1	0.545	0.424
B2	0.537	0.402	B2	0.639	0.487
B3	0.673	0.506	B3	0.842	0.616
M1	0.713	0.531	M1	0.839	0.581
M2	0.751	0.563	M2	0.874	0.721
M3	0.694	0.543	M3	0.852	0.630
M4	0.702	0.495	M4	0.922	0.679
W1	0.836	0.622	W1	1.058	0.842
W2	0.856	0.713	W2	1.067	0.892
W3	0.818	0.643	W3	0.905	0.677
K1	0.880	0.673	K1	1.001	0.831
K2	0.778	0.540	K2	0.983	0.732
K3	0.598	0.513	K3	0.627	0.472
KP1	0.747	0.548	KP1	0.915	0.718
KP2	0.660	0.462	KP2	0.815	0.627
KP3	0.543	0.430	KP3	0.541	0.461
KP4	0.691	0.606	KP4	0.810	0.653
KP5	0.910	0.757	KP5	1.087	0.878
KP6	0.565	0.501	KP6	0.745	0.643

Model PLS			Model LM		
Indicator	**RMSE**	**IT IS**	**Indicator**	**RMSE**	**IT IS**
KP7	0.665	0.456	KP7	0.847	0.598
KP8	0.575	0.361	KP8	0.780	0.485

Source: Primary Data Processed using SmartPLS (2025)

Based on the results of the PLS predict test, it was found that the majority of indicators in the SEM-PLS analysis had lower RMSE or MAE values compared to LM. This shows that the model has moderate predictive ability.

The mediation test was carried out to determine the role of construction project performance in mediating the influence of bids below 80% HPS on service user satisfaction. The results of the mediation test can be seen in Table 13.

Table 13. Mediation Test Results

	Original Sample (O)	**Sample Mean (M)**	**Standard Deviation (STDEV)**	**T Statistics (|O/STDEV|)**	**P Value**
Offer Under 80% HPS → Construction Project Performance → Service User Satisfaction	-0,351	-0,364	0,135	2,600	0,010

Source: Primary Data Processed using SmartPLS (2025)

Based on the results of the mediation test, the magnitude of the indirect influence of offers below 80% HPS on the satisfaction of service users through the performance of construction projects is -0.351 (negative influence direction) and has a significant influence with a t-statistical value greater than 1.96 which is 2.600, and a p value smaller than 0.05 which is 0.010.

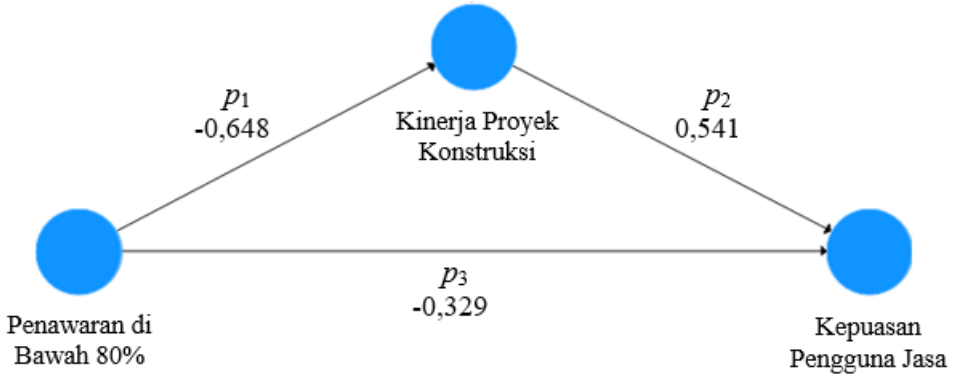

Figure 2. SEM-PLS Mediation Model
Source: Primary Data Processed using SmartPLS (2025)

Based on Kusmeri (2018), the magnitude of the indirect effect was obtained through calculations using the VAF (Variance Accounted for) formula. The results of the calculation of the VAF value were obtained as follows:

$$\text{VAF} = \frac{p_1 \times p_2}{(p_1 \times p_2) + p_3} \times 100\%$$

$$\text{VAF} = \frac{-0{,}648 \times 0{,}541}{(-0{,}648 \times 0{,}541) + (-0{,}329)} \times 100\% = \frac{-0{,}351}{-0{,}680} \times 100\% = 51{,}62\%$$

Based on the results of the calculations carried out, a VAF value of 51.62% was obtained. This value is between 20%–80%, thus showing the role of construction project performance variables as partial mediation.

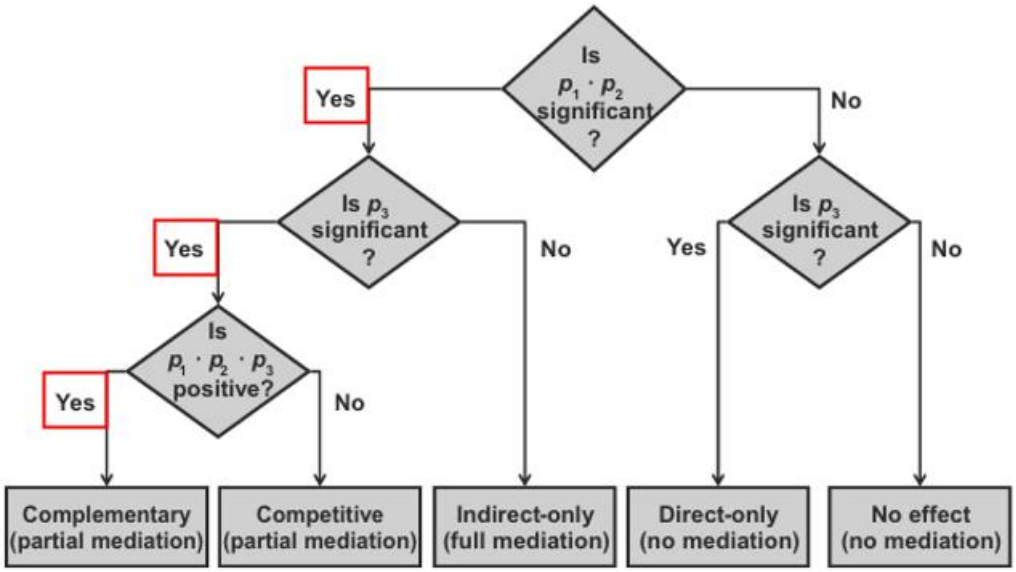

Figure 3. Mediation Type Analysis Procedure
Sources: Hair et al., 2021

Based on the mediation type analysis procedure in Figure 3, it can be concluded that the performance variable of the construction project plays a role as complementary partial mediation in the relationship between offers below 80% of HPS and service user satisfaction. Thus, bids below 80% of HPS can affect service user satisfaction both directly and indirectly through the performance of construction projects.

FGD Results

Based on the FGD that has been carried out, several mitigation measures that can be taken to minimize the negative impact of bids below 80% HPS on construction project performance and service user satisfaction. These mitigation measures include:

1. Ensure all job changes are supported by technical justification
2. Verify the realization of the field before making the payment
3. Material approval before use
4. Conducting regular field inspections
5. Verification of labor competency certificate
6. Evaluate the project implementation schedule periodically
7. Monitoring the implementation of the SMK3 program on a regular basis
8. Verification of BPJS Employment Membership
9. Conduct regular coordination meetings
10. Setting a standard for follow-up time to service user instructions

CONCLUSION

Based on the results of the study, bidding below 80% of HPS has a negative and significant effect on the performance of construction projects in Klungkung Regency. This is shown by the path coefficient value of -0.648, t-statistic of 6.002, and p-value of 0.000. The negative value of the line coefficient indicates that with a bid below 80% HPS, the performance of the construction project will decrease. Offers below 80% of HPS also have a negative and significant effect on the satisfaction of service users in Klungkung Regency. This is shown by the path coefficient value of -0.329, t-statistic of 2.253, and p-value of 0.025. A negative line coefficient value indicates that with an offer below 80% of HPS, the level of satisfaction of service users will decrease. The performance of construction projects mediates the influence of bidding below 80% of HPS on the satisfaction of service users in Klungkung Regency. This is shown by the path coefficient value of -0.351, t-statistic of 2.600, and p-value of 0.010. A negative line coefficient value indicates that the indirect influence of bidding below 80% of HPS through the performance of construction projects, will reduce the level of satisfaction of service users. The type of mediation that occurs is complementary partial mediation. Thus, bids below 80% of HPS can affect service user satisfaction either directly or indirectly through changes in the performance of construction projects. Measures to mitigate the negative impact of bids below 80% HPS on construction project performance and service user satisfaction include ensuring that all work changes are supported by technical justification, verification of field realization before payment, material approval before use, conducting periodic field inspections, verification of labor competency certificates, periodic evaluation of project implementation schedules, periodic monitoring of the implementation of the SMK3 program, verify *BPJS Ketenagakerjaan* membership, conduct regular coordination meetings, and set standards for follow-up time to service user instructions

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