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Performance Evaluation of Construction Consultants Using Smart-PLS and IPA

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ABSTRACT

Evaluating the performance of construction consultants is crucial to the success of a project, particularly in ensuring adherence to quality, budget, and timeline. To examine the factors influencing stakeholder satisfaction, this study combines Importance-Performance Analysis (IPA) with SmartPLS-based Partial Least Squares Structural Equation Modeling (PLS-SEM). A poll of respondents with prior experience in building projects was used to gather data. The findings indicate that, although the constructed structural model is reasonably solid (R^2 = 0.790), factors such as professionalism, communication, quality control, project management, and support have not demonstrated a significant impact on the perceived significance of the consultant's job. This result implies that data-driven performance improvement techniques are required to enhance consultants' involvement in building projects. The findings of this study highlight the importance of integrating data-driven performance improvement techniques into educational programs for construction management. By emphasizing professionalism, communication, project management, and quality control, educational institutions can better prepare future construction consultants to meet stakeholder expectations and improve their contributions to building projects.

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INTRODUCTION

The construction industry is a critical sector in global economies, contributing significantly to infrastructure development and employment. However, it is also a highly complex and uncertain field, where project success heavily depends on the effective management of quality, cost, and timelines. Consultants play a key role in this process, and their performance can significantly influence project outcomes. Despite its importance, the evaluation of consultant performance is often subjective and based on limited indicators, making it difficult to fully understand the intricate factors that drive stakeholder satisfaction, risk management, and communication. The need for accurate, data-driven evaluation methods to assess consultant performance is crucial for improving project success rates and advancing the industry's overall effectiveness.

A major issue facing the construction industry is the inadequate methods for evaluating consultant performance, which is often based on subjective assessments rather than objective, measurable indicators. This limitation makes it challenging to address key performance drivers, such as stakeholder satisfaction, risk management, and effective communication. As a result, consultants may not be fully engaged in the project's success, leading to inefficiencies and compromised outcomes. Furthermore, the complexities of the construction process, including the small sample sizes and the dynamic interactions between various performance factors, make it difficult to assess consultant performance comprehensively. These challenges highlight the need for an innovative and robust evaluation model that can incorporate both technical and non-technical factors, as well as provide strategic recommendations for performance improvement.

Previous research has explored various approaches to consultant performance evaluation, with a focus on both technical and non-technical factors. Studies by Andreamara et al. (2025) and Farooq et al. (2018) emphasize the importance of quality, timing, and cost management in determining consultant effectiveness. However, many of these studies have been limited by small sample sizes and subjective measures, failing to capture the complex relationships between stakeholder satisfaction, risk management, and communication. Research by Zhang et al. (2019) and Dermawan et al. (2021) suggests that Structural Equation Modeling (SEM), particularly with variance-based methods such as SmartPLS, offers a more sophisticated approach to understanding these complex interactions. While SEM and SmartPLS have proven effective in analyzing complex data, previous studies often lacked a comprehensive model that integrates both technical and non-technical factors, leaving a significant gap in the literature regarding consultant performance evaluation. This study aims to fill that gap by developing a more precise and flexible model for consultant performance assessment.

This research introduces an innovative approach by combining SmartPLS-based Structural Equation Modeling with Importance-Performance Analysis (IPA) to evaluate consultant performance. The integration of IPA allows for the prioritization of areas that require improvement based on stakeholder perceptions, providing a strategic framework for performance enhancement. This approach is novel in its ability to analyze the complex relationships between latent variables, offering a more comprehensive and data-driven evaluation of consultant performance. The importance of this research lies in its potential to provide a more accurate, flexible, and actionable assessment instrument that can be widely applied in the construction industry, ensuring better decision-making and improved project outcomes.

The central research question is: How can a SmartPLS-based model, integrated with IPA, be used to evaluate the performance of construction consultants, considering both technical and non-technical factors? This study argues that by addressing the gap in previous research and developing a more comprehensive evaluation model, construction consultants' involvement in projects can be enhanced. The contribution of this study lies in its ability to offer a data-driven, flexible, and precise tool for assessing consultant performance. This research will not only provide valuable insights for improving consultant effectiveness in the construction industry but also contribute to the academic understanding of performance evaluation methods in complex, uncertain industries like construction. Additionally, the findings can be used to inform educational programs in construction management, helping to better prepare future consultants for the challenges they will face in real-world projects.

RESEARCH METHOD

The objective of this study is to assess and examine the link between factors that influence stakeholder satisfaction and consultant performance in construction projects using a quantitative methodology and survey method (Isradi et al., 2024). The quantitative method is employed because it is methodical, objective, and enables the development of generalizable findings. Because the survey method can effectively gather a lot of information from participants who have firsthand knowledge of construction projects, it was selected (Rifai et al., 2021).

Importance-Performance Analysis (IPA) was used to map indicators into improvement priorities, and SmartPLS software was used for structural equation modeling based on partial least squares (PLS-SEM) to examine the relationship between latent variables in the conceptual model that was created. methods, as well as data analysis methods.

Project management, communication effectiveness, quality control of consultant support, and consultants' professionalism and attitude are examples of independent variables (exogenous) that are examined in this study, stakeholder satisfaction is an example of an endogenous variable (Ali et al., 2019; Husin et al., 2024).

A number of indicators developed from literature reviews and earlier research, including works (Mat et al., 2019; Ismael & Duleba, 2021; Mandhani et al., 2020) are used to measure each latent variable. The technical and non-technical facets of construction consultant performance are covered by a total of 17 indicators.

Primary and secondary data are the sorts of data that are utilized. Distributing questionnaires to respondents allows for the direct collection of primary data (Satisfaction et al., 2019). Project owners, implementing contractors, supervisory consultants, and other consultants have collaborated with respondents, who are players involved in building projects (Sukardi & Biantoro, 2025). While scientific literature, journals, project reports, and other literature sources pertinent to the subject of stakeholder satisfaction and consultant performance are the source of secondary data.

Purposive sampling was used to carry out the sample procedure, taking into consideration the requirements that respondents have direct contact with consultants and professional expertise working on building projects. According to (Nguyen-Phuoc et al., 2020), the sample size should be at least ten times the maximum number of indicators in a single construct. At least 170 responders are required if the greatest number of indicators is 17.

A questionnaire with two main sections and a Likert scale (1–5) is distributed in order to collect data. Importance Assessment: the degree to which each consultant performance measure was deemed important by respondents (Isradi et al., 2021). Performance-based satisfaction assessment: how satisfied they are with the consultant's real performance based on their project experience.

In the meanwhile, there were two ways to distribute the questionnaire. Google Form, for offline distribution in ongoing projects or through professional networks, and online distribution to reach a large number of respondents (Madani et al., 2024; Susetyo et al., 2021). To make sure the questions were clear and readable, the questionnaire instrument was pilot tested after being created using indicators from earlier studies.

Descriptive statistics, importance-performance analysis (IPA), and partial least squares structural equation modeling (PLS-SEM) are the three primary steps in the data processing data analysis approach. The distribution of the values of each indicator under study and the characteristics of the respondents are ascertained through the use of descriptive statistics (Chikkabagewadi et al., 2022). Based on actual performance and importance, 17 indicators are mapped into four quadrants using Importance-Performance Analysis (IPA). These quadrants are: Quadrant I: Maintain Excellence (Keep Up the Good Work), Quadrant II: Low Priority, Quadrant III: Focus on Improvement (Concentrate Here), and Quadrant IV: Possible Overkill. In order to test indicator validity (outer loading > 0.70), construct reliability (Cronbach's Alpha and Composite Reliability > 0.70), relationships between latent variables (path coefficient), direct and indirect effects between variables, and R-square and Q-square to assess the model's predictive power, partial least squares structural equation modeling (PLS-SEM) was carried out using SmartPLS software (Umme et al., 2022). Additionally, variables that have a significant impact on satisfaction but poor performance are identified using SmartPLS's Importance-Performance Map Analysis (IPMA) tool, which allows them to be suggested as areas for improvement (Mutiawati et al., 2022).

RESULT AND DISCUSSION

Result

Partial Least Square: the Inner Model Test and the Outer Model Test. The outside Model describes the connection between the variables being studied and their indicators. It is also frequently called the measurement model or outside relation. The Inner Model, meanwhile, evaluates the connection between the independent and dependent latent variables. These are the tests for the Inner Model and Outer Model, respectively.

Outer Model Test

Convergent Validity

By examining the convergent validity value of the indicators in the model, measurement model testing using loading factors is done to ascertain the validity of the indicators. Every indicator in the model needs to have a value > 0.5 in order to be considered convergent. The evaluation process can proceed if each indication already has a loading factor value > 0.5. If not, additional iterations are required to decrease the indicators with convergent validity values < 0.5 until each indicator's loading factor value is > 0.5.

Table 1. Convergent Validity

	Item	Original Sample	Result
Availability and Support (KDE)	KDE1	0.959	
	KDE2	0.969	
	KDE3	0.933	
Communication and Coordination (KKE)	KKE1	0.860	
	KKE2	0.807	
	KKE3	0.871	
Quality Control and verification (KMV)	KMVE1	0.896	
	KMVE2	0.900	
	KMVE3	0.886	
	KMVE4	0.851	
Expertise and Experience (KPE)	KPE1	0.838	
	KPE2	0.749	
	KPE3	0.844	

Project Management (MPE)	MPE1	0.757	Valid
	MPE2	0.795	
	MPE3	0.825	
	MPE4	0.604	
Risk Management (PRE)	PRE1	0.796	
	PRE2	0.781	
	PRE3	0.850	
Attitude and Professionalism (PSE)	PSE1	0.871	
	PSE2	0.791	
	PSE3	0.844	
	PSE4	0.834	
Perceived Value of the Consultant's Function (Y)	Y1.1	0.964	
	Y1.2	0.917	
	Y1.3	0.964	
	Y1.4	0.517	

Based on Table 1, it can be seen that :

1. The Availability and Support (KDE) variable measured by 3 measurement items has a convergent validity value above 0.5, so the five items are declared valid as measuring instruments for the construct.
2. The Communication and Coordination (KKE) variable measured by 3 measurement items also has a convergent validity value above 0.5, so both items are declared valid as measuring instruments for the construct.
3. The Quality Control and Verification (KMVE) variable measured by 4 measurement items has a convergent validity value above 0.5, so the three items are declared valid as measuring instruments for the construct.
4. The Expertise and Experience (KPE) variable measured by 3 measurement items has a convergent validity value above 0.5, so the five items are declared valid as a measuring tool for the construct.
5. Based on Table 1, the Project Management Variable (MPE) as measured by 4 measurement items as a whole has a convergent validity value above 0.5, so the five items are declared valid as a measuring tool for the construct.
6. The Risk Management Variable (PRE) as measured by 3 measurement items has a convergent validity value above 0.5, so the five items are declared valid as measuring instruments for the construct.
7. The Attitude and Professionalism (PSE) variable measured by 4 measurement items has a convergent validity value above 0.5, so the five items are declared valid as a measuring tool for the construct.
8. And the Variable of Perceived Value of the Consultant's Function (Y1) as measured by 4 measurement items as a whole has a convergent validity value above 0.5, so the five items are declared valid as measuring instruments for the construct.

Discriminant Validity

The goal of the discriminant validity test is to evaluate the indicator block's validity. The cross loading value between indicators and their constructs, as displayed in Table 2, provides insight into the discriminant validity testing of the indicators. If each indicator's value when measuring the construct variable (the indicator block) is much higher than the indicator's value when measuring other construct variables, the indicator block is deemed valid..

Table 2. Cross Loading

Item	Availability and Support (X5)	Communication and Coordination (X2)	Quality Control and verification (X3)	Expertise and Experience (X6)	Project Management (X1)	Risk Management (X4)	Attitude and Professionalism (X7)	Perceived Value of the Consultant's Function (Y)
KDE1	0.959	0.527	0.576	0.716	0.608	0.739	0.589	0.761
KDE2	0.969	0.509	0.609	0.650	0.546	0.700	0.616	0.675
KDE3	0.933	0.525	0.628	0.586	0.600	0.567	0.572	0.587
KKE1	0.512	0.860	0.570	0.602	0.715	0.279	0.322	0.535
KKE2	0.491	0.807	0.744	0.523	0.527	0.099	0.240	0.317
KKE3	0.491	0.871	0.744	0.523	0.582	0.386	0.495	0.597
KMVE1	0.495	0.695	0.896	0.512	0.555	0.306	0.589	0.566
KMVE2	0.470	0.645	0.900	0.411	0.498	0.281	0.555	0.397
KMVE3	0.448	0.711	0.886	0.531	0.589	0.530	0.608	0.637
KMVE4	0.757	0.551	0.851	0.639	0.752	0.726	0.716	0.758
KPE1	0.472	0.503	0.422	0.838	0.693	0.612	0.392	0.578
KPE2	0.344	0.404	0.365	0.749	0.487	0.612	0.375	0.521
KPE3	0.760	0.514	0.634	0.844	0.625	0.834	0.662	0.829
MPE1	0.295	0.362	0.622	0.546	0.757	0.629	0.411	0.508
MPE2	0.562	0.496	0.409	0.546	0.795	0.645	0.416	0.511
MPE3	0.434	0.459	0.422	0.488	0.825	0.535	0.328	0.482
MPE4	0.555	0.371	0.551	0.478	0.604	0.512	0.348	0.432
PRE1	0.639	0.267	0.549	0.594	0.502	0.796	0.531	0.527
PRE2	0.245	0.159	0.441	0.403	0.440	0.703	0.325	0.404
PRE3	0.438	0.302	0.582	0.620	0.630	0.910	0.489	0.653
PSE1	0.426	0.486	0.524	0.636	0.325	0.326	0.877	0.497
PSE2	0.558	0.129	0.394	0.482	0.311	0.525	0.791	0.542
PSE3	0.743	0.402	0.475	0.576	0.545	0.555	0.844	0.633
PSE4	0.386	0.461	0.597	0.705	0.438	0.424	0.847	0.664
Y1.1	0.103	0.265	0.212	0.363	0.365	0.380	0.503	0.964
Y1.2	0.785	0.613	0.677	0.830	0.620	0.765	0.716	0.916
Y1.3	0.088	0.161	0.314	0.301	0.314	0.301	0.090	0.517

Based on Table 2, All of the constituent constructs have been determined to have strong discriminant validity. This is demonstrated by the correlation coefficient between the indicators and their constructions being higher than the correlation coefficient between the indicators and other constructs.

Composite Reliability

The composite reliability of the indicator block measuring the construct is an additional test (Setyo et al., 2022). When a construct's composite reliability value exceeds 0.60, it is considered dependable (Setyo et al., 2022). Table 3 displays the composite reliability test's findings.

Table 3. Composite Reability

	Composite Reliability
Availability and Support (KDE)	0.852
Communication and Coordination (KKE)	0.968
Quality Control and Verification (KMV	0.883
Expertise and Experience (KPE)	0.934
Project Management (MPE)	0.836
Risk Management (PRE)	0.813
Attitude and Professionalism (PSE)	0.906
Perceived Value of the Consultant's Function (Y)	0.844

According to the above table, all of the constructions under study have satisfied the composite reliability requirements, which include having a composite reliability value greater than 0.60. All of the constructs can therefore be positioned as study variables. This demonstrates that, on the whole, every variable has enough internal consistency to measure the relevant latent variable or construct for use in additional analysis.

Cronbach Alpha

The Cronbach Alpha value can be used to augment the reliability test with the composite reliability mentioned above. If a variable's Cronbach Alpha value is more than 0.6, it can be deemed dependable or meet the Cronbach Alpha requirement. The Cronbach Alpha value for each variable is as follows:.

Table 4. Cronbach Alpha

	Cronbach's alpha
Availability and Support (KDE)	0.749
Communication and Coordination (KKE)	0.950
Quality Control and Verification (KMV	0.809
Expertise and Experience (KPE)	0.908
Project Management (MPE)	0.734
Risk Management (PRE)	0.641
Attitude and Professionalism (PSE)	0.861
Perceived Value of the Consultant's Function (Y)	0.780

Each research variable's Cronbach Alpha value is greater than 0.60, as can be observed from the test results in the above table. Consequently, these findings demonstrate that every research variable satisfies the criteria for the Cronbach Alpha value, indicating that all variables possess a high degree of reliability.

Average Variance Extracted (AVE)

The purpose of AVE is to evaluate the construct variables' dependability. A good discriminant validity value for the construct variable is another goal of AVE. If the AVE value is greater than 0.5, it is deemed satisfactory. Table 5 below displays the AVE test results.

Table 5. AVE Value

	AVE
Availability and Support (KDE)	0.659
Communication and Coordination (KKE)	0.909
Quality Control and Verification (KMV	0.716
Expertise and Experience (KPE)	0.781
Project Management (MPE)	0.563
Risk Management (PRE)	0.600
Attitude and Professionalism (PSE)	0.706
Perceived Value of the Consultant's Function (Y)	0.597

Table 5 shows the AVE values for availability and support (KDE) at 0.659, communication and coordination (KKE) at 0.909, quality control and verification (KMV) at 0.716, expertise and experience (KPE) at 0.781, project management (MPE) at 0.563, risk management (PRE) at 0.600, attitude and professionalism (PSE) at 0.706, and perception of interest in the role of consultants (Y) at 0.597. The indicators inside each construct have converged with other items in one at the crucial limit of 0.5. It is possible to say that the indicator block's discriminant validity value is good based on the results of the AVE value. Thus, all construct variables have been deemed credible.

Inner Model

The R-Square value for each dependent latent variable is the first thing to be examined when evaluating the model using PLS. One way to determine whether or not specific independent latent variables have a significant impact on the dependent latent variable is to look at changes in the R-Square value. For endogenous latent variables in the structural model:

1. R^2 Value = 0,67 indicates that the model is classified as "strong",
2. R^2 Value = 0,33 indicates that the model is "medium",
3. R^2 Value = 0,19 indicates that the model is "weak" (Setyo et al., 2022).

The output of PLS is described as follows:

Table 6. R-Square Value

	R Square	R Square Adjusted
Perceived Value of the Consultant's Function (Y)	0.790	0.667

According to Table 6, the structural model's R2 value of 0.790 means that it is categorized as "strong." Project Management Variables (X1), Communication and Coordination (X2), Quality Control and Verification (X3), Risk Management (X4), Availability and Support (X5), Expertise and Experience (X6), Attitude and Professionalism (X7), and Perceived Value of the Consultant's Function (Y) are all included.

The suitability of the structural model can be seen from the calculation of Q^2 as follows:

$$Q^2 = 1 - [(1 - R1)]$$
$$= 1 - [(1 - 0.790)]$$
$$= 1 - [(0.210)]$$
$$= 0.790$$

According to the Q^2 computation findings, the value is 0.790, indicating that it falls into the "strong" category. The Q2 value, according to Setyo et al. (2022), can be used to gauge how effectively the model and estimated parameters create the observed result. Therefore, it is believed that the model's predictions have predictive relevance based on their Q2 value.

Hypothesis Test

The research hypothesis in this study was tested using the Partial Least Square (PLS) method. An image of the suggested PLS model can be found below..

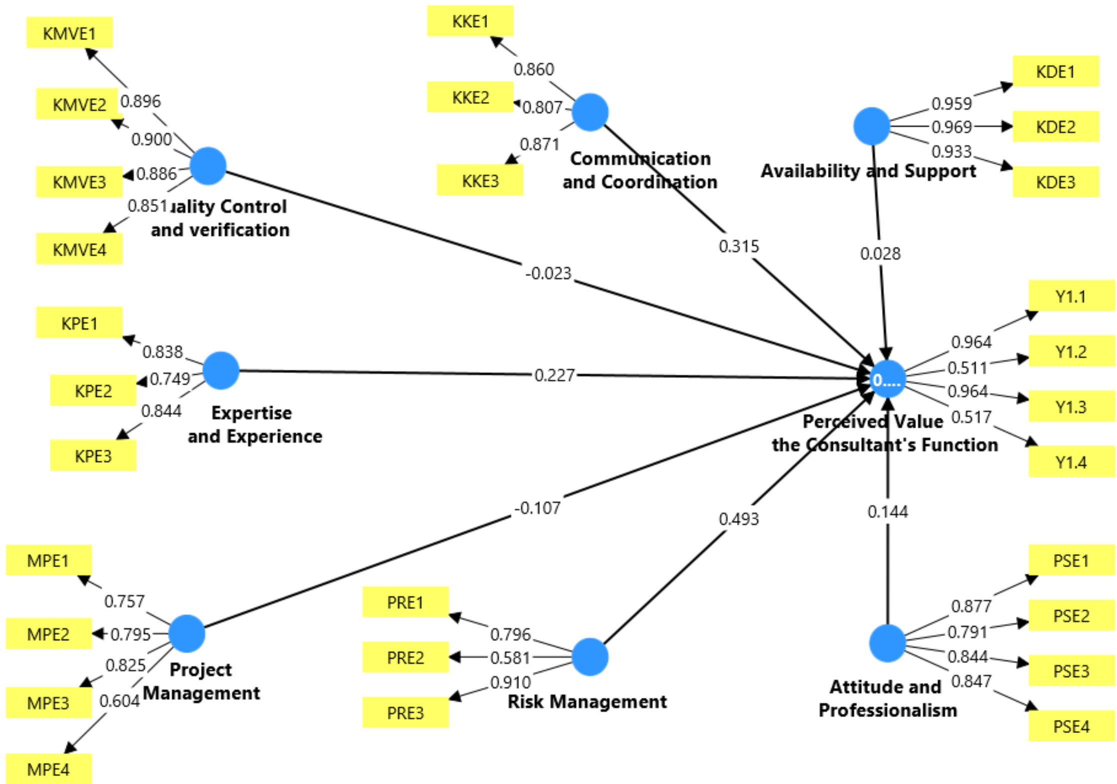

Figure 1. PLS Research Model

Based on the picture above, the structural equation can be formed as follows :

$(Y) = (0{,}028KDE + 0{,}315KKE + (-0{,}023)KMV + 0{,}227KPE + (-0{,}107)MPE + 0{,}493PRE + 0{,}144\ PSE\ ) \times 7$

This figure demonstrates how the quality performance of supervisory consultants is impacted by the following variables: managerial, work implementation method, environment, human resources, and understanding of technical specifications. To answer the research hypothesis, the t-statistic value can be seen in the following Table 7.

Table 7. Value of t-statistic

	(O))	(O/STDEV)
Availability and Support -> Perceived Value of the Consultant's Function	0.028	0.057
Communication and Coordination -> Perceived Value of the Consultant's Function	0.315	0.609
Quality Control and Verification -> Perceived Value of the Consultant's Function	-0.023	0.055
Expertise and Experience-> Perceived Value of the Consultant's Function	0.227	0.356
Project Management -> Perceived Value of the Consultant's Function	-0.107	0.206
Risk Management -> Perceived Value of the Consultant's Function	0.493	1.079
Attitude and Professionalism -> Perceived Value of the Consultant's Function	0.144	0.316

The findings of the hypothesis test demonstrated that none of the independent variables in this study significantly affected the perceived value of the consultant's role. This is demonstrated by the fact that each path's T statistical value is below the threshold value for one-way significance (T table = 1.73).

1. The Availability and Support variable shows a very weak influence (T = 0.057), indicating that the availability of resources or support from related parties is not considered to play an important role in shaping perceptions of the consultant's role.
2. The Communication and Coordination variable also did not have a significant effect (T = 0.609), which may indicate that the communication aspect has not been fully interpreted as an integral part of the consultant's contribution.
3. Quality Control and Verification (T = 0.055) and Expertise and Experience (T = 0.356) also had no significant effect, although theoretically these two aspects are often associated with the performance and role of consultants in construction projects.
4. Project Management (T = 0.206) did not show a significant relationship, indicating that the role of consultants in the project management aspect is not perceived as important enough.
5. Risk Management (T = 1.079) also has no significant influence on the Perceived Value of the Consultant’s Function. This shows that the risk mitigation aspects carried out by consultants have not had a real impact in shaping stakeholder perceptions of the importance of the role.
6. Attitude and Professionalism (T = 0.316) also have no significant effect. This indicates that neither the professional attitude nor the personal integrity of the consultants is sufficient basis for assessing their strategic role in the project.

According to the technical, managerial, and professional aspects assessed in this study, the perception of the consultant's job has not yet been fully developed or valued. The low perception could have been caused by additional variables not included in the research model, such as stakeholder trust, company culture, or prior negative experiences with the consultant job.

Determinants' Effect on How the Consultant's Role Is Perceived

Based on the results of hypothesis testing, it was found that all independent variables tested in this study did not have a significant influence on the perceived importance of the Supervisory Consultant Role. This finding is reflected in the T-statistic values of each variable, which are all below the critical threshold of 1.73, indicating that the influence of each variable is statistically insignificant.

The Availability and Support variable shows a very weak influence (T = 0.057), which indicates that the existence or readiness of supporting resources has not been considered a major factor in shaping perceptions of the consultant's role. The Communication and Coordination variable also showed no significant effect (T = 0.609), indicating that the coordination efforts of the consultants have not been perceived to contribute greatly to the importance of their role in the project. Similarly, the variables Quality Control and Verification (T = 0.055) and Expertise and Experience (T = 0.356) also did not show a significant effect, although theoretically both dimensions are very important in the supervisory function. The Project Management variable (T = 0.206) also did not have a significant effect, reflecting a possible gap between stakeholders' expectations and the project management role performed by consultants.

The Risk Management variable also did not show a significant effect (T = 1.079), which suggests that consultants' efforts in dealing with risks are not sufficiently considered as an important aspect of their role. Finally, the Professionalism and Attitude variable (T = 0.316) also did not have a significant effect, indicating that ethical behavior and personal attitudes have not been a major factor in shaping perceptions of the importance of the supervisory consultant role.

The results of this study indicate that although these variables are theoretically relevant, they are not yet considered as the main determinants in assessing the importance of the role of supervisory consultants. This may be due to the lack of stakeholder understanding, the consultant's passive role in decision-making, or the lack of effective engagement between the consultant and the project owner. This finding contrasts with some previous studies that emphasize the importance of these variables in shaping perceptions, and highlights the need for further research to explore other possible influential factors.

Discussion

The findings of this study reveal a significant divergence from the existing literature regarding the impact of consultant performance factors on the perceived importance of their role. According to previous studies, such as those by Andreamara et al. (2025) and Farooq et al. (2018), factors like professionalism, communication, quality control, and risk management are essential in shaping stakeholders' perceptions of a consultant's effectiveness. However, in this study, none of these variables showed a significant effect on the perceived value of the consultant's role, as evidenced by the T-statistic values being below the critical threshold. This discrepancy may be attributed to differences in the context of the analyzed projects, suggesting that the relevance of these factors may vary depending on the specific project or stakeholder expectations. It also raises questions about whether the role of consultants in construction projects is understood or appreciated as much as theorized in the literature.

The theoretical implications of this finding suggest that the models used in previous research might oversimplify the complex nature of consultant performance evaluation. While previous studies highlighted the importance of technical and non-technical factors in determining a consultant's effectiveness, this study's results indicate that these factors do not always translate into perceived value in practice. This challenges the assumption that professional competence, communication, and management practices directly correlate with the perceived importance of consultants. Therefore, future research should explore additional variables or contextual factors, such as stakeholder trust or past experiences, that may have a more substantial impact on the perceived value of consultants.

From a practical standpoint, the study suggests that construction firms and project owners should reconsider how they evaluate the performance of consultants. The low significance attributed to commonly acknowledged factors, such as project management and communication, suggests that stakeholders may not fully recognize these elements when evaluating the consultant's contribution to the project. This finding could prompt construction firms to adopt a more comprehensive approach to consultant evaluation, one that considers the unique challenges and expectations of each project. Furthermore, consultant firms may need to improve their engagement with project owners to enhance the visibility and perceived value of their contributions.

In conclusion, this study's findings underscore the need for a nuanced understanding of consultant performance that goes beyond traditional measures. The results challenge the traditional focus on technical and managerial competencies, suggesting that the perception of a consultant's role is influenced by a broader range of factors, including stakeholder expectations and project-specific dynamics. This calls for further exploration into what truly drives stakeholder satisfaction in construction projects, which could lead to the development of more accurate and effective models for evaluating consultant performance in the future.

CONCLUSION

Convergent validity, discriminant validity, composite reliability, Cronbach Alpha, and AVE are among the validity and reliability criteria that all study instruments—both indicators and constructs—have satisfied, according to the data analysis results obtained with SmartPLS. With an R2 value of 0.790, the constructed structural model is likewise categorized as strong, meaning that 79%

of the variation in the perceived importance of the supervising consultant function can be explained by the model's independent variable combination. This suggests that using the model to analyze the relationship between the variables in this study is feasible.

However, hypothesis testing results show that the seven independent variables--namely, availability and support, communication and coordination, quality control and verification, expertise and experience, project management, risk management, and professionalism and attitude -have no significant influence on the perceived importance of the role of supervisory consultants. This conclusion implies that, while potentially significant, these variables are insufficient to impact stakeholders' perceptions of the consultant's function. This could be influenced by the consultant's lack of involvement in the project's strategy approach, poor communication, or unfavorable field experiences. As a result, more research is needed to discover additional critical aspects, as well as tangible steps to improve the reputation and status of consultants in building projects.

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