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RISK MITIGATION AS A MEDIATING FACTOR IN THE RELATIONSHIP BETWEEN TOP MANAGEMENT SUPPORT AND CONSTRUCTION PROJECT PERFORMANCE

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Construction projects are complex and high-risk activities. Project risks can come from various factors, such as technical, environmental, social, and economic factors. Top management support and project risk mitigation are critical factors influencing construction project performance. This research analyzes the influence of top management support and project risk mitigation on construction project performance. This research method uses a quantitative statistical approach based on primary data collected through questionnaires distributed to 50 construction companies in Bali Province, randomly selected from the population of construction companies that comprise large, medium, and small qualifications. Secondary data was obtained through a relevant literature review, which includes three variables, i.e., top management support, project risk mitigation, and construction project performance. The research shows that top management support and project risk mitigation significantly influence construction project performance. Top management support increases worker motivation and productivity, efficiency, work effectiveness, and work quality and safety in construction projects. Meanwhile, risk mitigation improves projects through control, time estimation, information presentation, worker motivation, technology, and resources. In addition, project risk mitigation is a mediating variable in the relationship between top management support and construction project performance.

Keywords: top management support, project risk mitigation, construction project performance

1 INTRODUCTION

According to Indonesia Construction Market-progress, Trends (2023-2028), the government makes significant investments in construction projects since it considers this industry essential for economic progress [1]. That being said, building projects are complex and dangerous, and their success can be seriously hampered by senior management's lack of support. Requirements for the Soekarno-Hatta Airport Runway Overlay and the Jakarta-Bandung Fast Train demonstrate how inadequate top management support can lead to poor coordination, delays, and a shortage of resources [2]. It is confirmed by [3] that the support of top management affects project time and expense through commitment, resource provision, involvement, and advice. The overall success of the construction project is likewise strongly correlated with this element. Studies by [4] and [5] demonstrate that top management support is one of the key elements influencing construction project performance. It is imperative to acknowledge that while support from upper management is essential, project success is not always ensured by this element. As a result, adequate risk mitigation for building projects is required. A set of procedures known as "project risk mitigation" is intended to lessen the likelihood of hazards and unfavorable effects on building projects. The potential role of project risk reduction as a mediating factor in the relationship between top management support and construction project performance has not been well studied. Consequently, this research aims to examine how top management support affects construction project performance and whether risk mitigation can act as a moderator in this relationship.

2 LITERATURE REVIEW

2.1 Top Management Support

At the highest level in an organization, top management has a crucial role in achieving project success. Top management support covers administrative aspects and provides essential funds for project development [6]. The risk of significant project failure increases without top management support involved in strategic decision-making; top management ensures the vision and goals of the organization are realized through projects by providing appropriate resources, leadership, and decision-making. This support forms the basis of effective communication and ensures the smooth passage of necessary changes [7]. In addition, the role of top management includes impact on organizational culture and performance, being a key element in risk management and project governance [4][8]. This support is also a driver of change toward sustainable practices in construction projects and sustainable housing success [5][9], while mediating and moderating the relationship between technology implementation and performance, as investigated by [10]. Thus, top management support is integral for achieving overall project success.

2.2 Project Risk Mitigation

Construction project risk mitigation is a series of steps to reduce risks and negative impacts in construction projects. This is key to protecting a project from potential losses, delays, additional costs, or imperfections that could interfere with success. Project risks can stem from bad weather, policy changes, equipment failure, and safety issues, leading to delays, increased costs, or even project failure. A study from [11] demonstrated a variety of risk factors and effective mitigation strategies, such as efficient selection of subcontractors, good relations with the government, and strict safety practices. Identifying potential risks is a crucial aspect, along with in-depth analysis and mitigation measures [12]. Effective communication and coordination between all parties are also important. Risk mitigation is an essential step in international projects to reduce negative impacts and increase the chances of success [13]. Overall, mitigating construction project risks is crucial to project success. Proper mitigation measures ensure the project can be completed on time, according to budget and specified specifications.

2.3 Construction Project Performance

Research on construction project performance measurement has increased. [14] developed an evaluation framework using conventional parameters: time, cost, and quality. Performance measurement, as explained by [15], involves comparing desired performance with actual, identifying deviations, and updating historical data. In the UK, Key Performance Indicators (KPIs) include time, cost, quality, and other aspects. Recent research by [16][17][18][19] [20] adds performance indicators such as budget compliance, schedule, quality, responsiveness to change, and stakeholder satisfaction.

2.4 Related Research to the Problem

Related research to top management support, risk mitigation and construction project performance show in Table 1.

Table 1. Related Research

No.	Title	Conclusion
1	Critical success factors for sustainable construction project management	Top management support improves construction project performance, but is not always a guarantee of success [5]
2	Risk mitigation strategies for guaranteed maximum price and target cost contracts in construction	Risk mitigation strategies can reduce project delays [21]
3	Moderating Effect of Top Management Support on Relationship between Transformational Leadership and Project Success	The importance of top management support in increasing the success of construction projects [22]
4	Top management support and project performance	Top management support contributes to construction project performance [23]
5	Project Governance and Project Performance: The Moderating Role of Top Management Support	The moderating role of top management support in project governance and project performance [8]
6	Impact of communication on capital project performance: a mediated moderation model	Risk mitigation can align the positive impact of top management support with project performance [20]
7	Risk Management in Construction Projects: A Knowledge-based Approach	Risk mitigation can improve project performance and reduce risk of failure [24]
8	The role of risk mitigation actions in engineering projects: An empirical investigation	Risk mitigation plays an important role in construction project [12]

Table 1 explains that although top management support positively impacts the construction project's performance, it does not guarantee the project's overall success. Therefore, risk mitigation is needed to reduce risk and improve project success. Many studies show that risk mitigation is essential in improving construction project performance by reducing delays and the risk of failure. The studies also highlighted the importance of top management support and how risk mitigation can align the positive impact of such support with project performance through effective communication.

3 RESEARCH METHODOLOGY

The questionnaire survey is one standard study method in social science for eliciting participant perspectives. A questionnaire is a list of questions with coherent responses logically connected to the research challenges and have defined meanings to evaluate hypotheses. Numerous professional interviews were conducted with the questionnaire's creation to enhance its applicability and clarity. There are two sections on the questionnaire for this study. The first section aims to compile primary data about the respondent, such as name, age, work history, etc. The second portion measures project risk mitigation, top management support, and construction project performance. A five-point Likert scale was used to collect responses from the respondents. The research population includes all construction companies in Bali province with large, medium, and small qualifications. The research sample consisted of executive directors, project managers, construction coordinators, site managers, site supervisors, engineers, and architects in these companies. The sampling technique used was simple random sampling, selected from 50 companies randomly who registered in the GAPENSI organization. The collected data will be analyzed using exploratory factor analysis and structural equation modeling with partial least squares (SEM-PLS) to test the research hypothesis and examine the relationship between variables. PLS-SEM is used to examine whether there is a relationship or influence between these constructs and to determine their predictive link. Using the coefficient of determination, this test can be performed without a solid theoretical foundation, ignoring several non-parametric assumptions and model accuracy parameters. In the meantime, CB-SEM (Covariance Base SEM) meets many parametric assumptions, is typically performed using AMOS LISREL software, necessitates a solid theoretical foundation, and passes model feasibility tests. It is hoped that the results of this research will significantly contribute to our understanding of the factors that influence construction project performance and how construction risk mitigation can mediate the relationship between top management support and project performance.

3.1 PLS-SEM (Partial Least Square- Structural Equation Model) Analysis

Structural or internal model assessments aim to predict associations between latent variables, while the relationship between indicators and latent variables is called the external model or measurement model. An external and an internal model are evaluated to execute a PLS evaluation. External model measurements are examined to determine the model's validity and reliability. The correlation between the indicator and variable shows convergent validity with reflexive indicators. In other words, reflective measures based on metric confidence, discriminant validity, convergence validity, and internal consistency confidence are used to evaluate external models. First-order and second-order analysis is the CFA used to assess the construct validity. The first-order construct is an examination of the latent dimension that each indicator reflects. The second-order research methodology was employed in this study, where reflecting measurements are made for the project risk mitigation, top management support, and construction project performance. According to [25], PLS-SEM evaluation entails evaluating the structural and reflectometry models. One method for assessing the discriminant validity with reflected indicators in SmartPLS is called cross-loading, where the general rule used to determine requires that the cross-loading be more than 0.70. Other references state that every loading factor was observed to be more than 0.50, with AVE and communality being more than 0.5.

3.2 Proposed Hypothetical Model

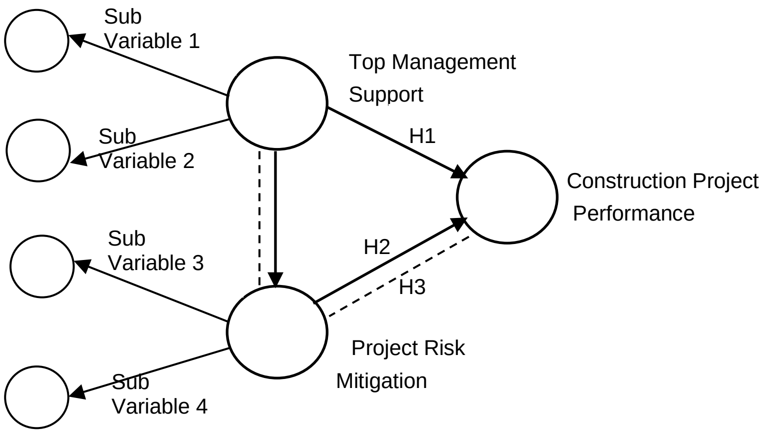

Fig. 1. Research Hypothesis

H1: Top management support has a positive impact on construction project performance.
[8] found that top management support had a positive impact on project performance achievement. This support comes in various forms, such as allocating adequate resources [8],], encouraging a positive work culture [26], and providing transformational leadership [22]. Thus, the active involvement of the top management not only improves the morale of the project team but also facilitates effective decision-making and navigation of obstacles that arise during the project [12][27][28].

H2: Project risk mitigation has a positive impact on construction project performance.

Risk mitigation in construction projects can have a positive impact on project performance, and a knowledge-based approach to risk management can help minimize risk [24][29][30]. Meanwhile, [31] stated that project risk management system performance evaluation could help improve risk management effectiveness. [32] also showed that implementing effective risk management can improve project performance.

H3: Project risk mitigation mediates the relationship between top management support and construction project performance.

Many studies show a positive link between strong top management support and effective project risk mitigation, ultimately leading to better project performance. [11] and [13] found that gaps between owners and contractors regarding top management support can lead to delays in construction projects. Meanwhile [12], through his research on engineering projects, emphasized the importance of risk mitigation actions supported by top management for the project's success..

4 RESULTS AND DISCUSSION

4.1 Respondent Characteristics

Fifty companies were invited, only 48 returned with 159 respondents, and only 155 data were eligible. The characteristics of respondents show in Figure 2.

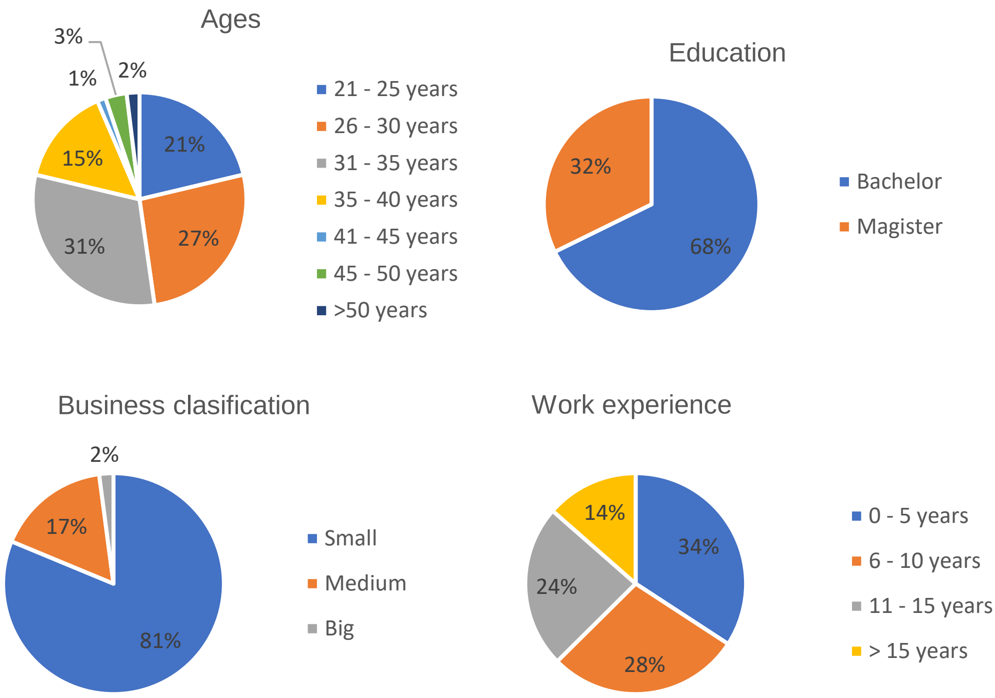

Fig. 2. Characteristics of respondent

4.2 Validity Test

The construct validity test with a degree of freedom (df) of 35 and a significance level (α) of 5% (five percent) is used in this research's validity test; the table's correlation r is 0.334. [33].

Table 2. Validity Test

Variable	n	Average r Calculate	r Tabel	Information
TMS (Top Management Support)	21	0,693	0,334	Valid
PRM (Project risk mitigation)	15	0,699	0,334	Valid
CPP (Construction Project Performance)	10	0,685	0,334	Valid

Based on the validity test, it can be seen that all indicators have a Pearson correlation value that is greater than the r table=0.334. Thus, all statements can be continued for reliability testing.

4.3 Reliability Test

Examine this questionnaire's reliability using the one-shot method, which involves measuring only once, comparing the results to other questions, or calculating the correlation between questions and answers. Testing with the Cronbach Alpha (α) Statistical Test According to Nunnally (1994) in [26], If a construct or variable has a Cronbach Alpha greater than 0.70, it is considered dependable.

Table 3. Reliability Test

No	Variable	Cronbach's Alpha	Number of Statements
1.	Top Management Support	0,955	21
2.	Project risk mitigation	0,941	15
3	Construction Project Performance	0,915	10

The instrument employed satisfies the reliability criteria and may be deemed trustworthy based on the reliability test results for the three variables, which show a Cronbach Alpha > 0.70.

4.4 Kaiser-Mayer-Olkin (KMO) Measure of Sampling Adequacy (MSA) Value and Bartlett's Test of Sphericity

The KMO MSA must be > 0.5, and Bartlett's Test of Sphericity significance value < 0.05 to determine whether factor analysis can proceed. Meanwhile, figuring out whether or not there is a sufficient correlation between the variables is the purpose of Bartlett's Test of Sphericity.

Table 4. KMO MSA and *Bartlett's Test of Sphericity*

No	Variable	Kaiser-Meyer-Olkin Measure of Sampling Adequacy	Bartlett's Test of Sphericity (sig)
1.	Top Management Support	0,855	0.000
2.	Project risk mitigation	0,838	0.000

Based on The KMO MSA must be > 0.5, and Bartlett's Test of Sphericity significance value < 0.05 to determine whether factor analysis can proceed. Meanwhile, figuring out whether or not there is a sufficient correlation between the variables is the purpose of Bartlett's Test of Sphericity.

Table 4, the KMO MSA values are 0.855 and 0.838, where both values are > 0.5. The significance value (sig) of top management support and project risk mitigation is 0.000, where both values are <0.05. Therefore, the factor analysis can be continued.

4.5 Factor Rotation and Factor Extraction (Determining the Number of Factors Based on Eigenvalue)

The component with an eigenvalue more significant than 1 (one) should be utilized. The second criterion is the proportion of the total variance, which can be explained by the number of components that need to be generated. The Whole Difference With values of 11.112, 1.295, 1.232, and 1.160, the explained value of top management support from component one to component four has an eigenvalue > 1. These four components can individually explain 52.914% of the variance, 6.166%, 5.866%, and 5.521%, for a total variance of 70.468%. With values of 8.337, 1,186, and 1.129, the combined value of project risk mitigation components one and three has an eigenvalue > 1. The variance of 71.017% may be explained by components one through three, which account for variances of 55.582%, 7.908%, and 7.527%, respectively. When inspected, the variables correlate with each factor, but the meaning that the factor loading would have provided cannot be obtained. As a result, the factor cannot be appropriately understood, necessitating rotation using the varimax approach.

4.6 Factor Rotation and Factor Naming

The goal of the rotation process is to provide understandable factor loadings. The correlation matrix also called the rotated component matrix, shows a more distinct and pronounced distribution of variables than the component matrix. Every factor can be understood clearly, and the rotational factor loadings have the desired meaning. Following the development of factors, each is composed of the variables under study and the names of factors are determined according to the attributes that correspond with their constituents. The factors for each variable are named, and the outcomes are shown in Table 5.

Table 5. Factor Naming of Top Management Support

	Code	Statement
Component 1	TMS3	Top management has provided sufficient equipment for the project
	TMS4	Top management has a good understanding of the work to be done in the project
	TMS15	Top management gives attention to issues that are important to employees
	TMS16	Top management supports and encourages employees to feel confident in their abilities and skills.
	TMS17	Top management provides opportunities for employee development and growth
	TMS18	Top management can create a working environment that supports learning and growth
	TMS19	Top management has a good understanding of the financial condition of the organization
Component 2	TMS1	Top management has provided sufficient funding for the project
	TMS2	Top management has provided enough manpower for the project
	TMS10	Top management fulfils the promises and commitments that have been given to team members and related parties
	TMS12	Top management actively strives to be fair, transparent, and non-discriminatory in its interaction with team members, work partners, and other relevant parties.
	TMS14	Top management is attentive to and cares about the needs, expectations, and well-being of employees

	Code	Statement
Component 3	TMS5	Top management understands the processes, measures, and specific needs of the project
	TMS7	Top management can see opportunities and take action to improve performance
	TMS8	Top management consistently follows and practices the standards and policies that have been established throughout the project.
	TMS20	Top management makes a realistic financial plan
	TMS21	Top management manages cash flows effectively
Component 4	TMS6	Top management can make the right decisions about the project
	TMS9	Top management has education, experience, and expertise relevant to the project being undertaken
	TMS11	Top management can build trust with employees
	TMS13	Top management can create a positive and productive working environment

Based on Table 5 of the statements included in each component, the following are the names that correspond to each factor component: Component 1: Role of Leaders: Top management plays the role of leaders who set goals, create strategies, and mobilize people to achieve these goals. Component 2: Attention to Employees Top management pays attention to and cares about employees' needs, hopes, and welfare. Top management also provides opportunities for employee development and growth. Component 3: Project Management Top management is responsible for managing the project effectively. Top management ensures the project goes according to plan and meets its objectives. Component 4: Competence: Top management has the knowledge, skills, and experience to carry out leadership roles, care for employees, and manage projects.

Table 6. Factor Naming of Project Risk Mitigation

	Code	Statement
Component 1	PRM3	Consideration of the influence of the owner.
	PRM5	Estimate the exact timing of the execution.
	PRM9	Clear information presentation during the auction.
	PRM11	Motivate the workers to raise the spirit.
	PRM14	Build good relations with the government and the local community.
	PRM15	Adopting the latest technology.
Component 2	PRM1	The right financial plan.
	PRM2	The use of skilled labor.
	PRM4	Strict monitoring of the project.
	PRM8	Payment of workers on time and according to the volume of work completed the design on time.
	PRM10	Implementation of training to increase capacity.
Compone nt 3	PRM6	Procurement and timely provision of materials and equipment.
	PRM7	Efficient logistics management.
	PRM12	Top level management support.
	PRM13	Consideration of the influence of the owner.

Based on Table 6 of the statements included in each component, the following are the names corresponding to each factor component: Component 1: Planning, Implementation, and Control provides everything needed to plan, implement, and control the project. These components are critical to ensuring the project is completed on time, on budget, and by requirements. Component 2: Human Resources includes everything necessary to ensure the project has the human resources to succeed. These components include employee recruitment, training, and development. Component 3: Materials, Equipment, and Information provide everything necessary to ensure that the project has the materials, equipment, and information required to be successful. These components include the procurement, storage, and use of materials, equipment, and information.

4.7 PLS-SEM Analysis

Test of mediation, measurement model assessment, and structural model evaluation comprise of the evaluation stages.

4.7.1 Convergent Validity

A reflective measurement model, often called an outer model, shows how manifest variables or indicators (observed variables) present the latent construct, which is measured by testing the validity and reliability of the indicators from the latent construct through confirmatory analysis. The validity test shows the ability of a research instrument to measure what a concept should measure. The validity of the model is evaluated through convergent and discriminant validity. The convergent validity metric consists of an Average Variance Extracted (AVE) and loading factor test. The loading factor for each construct indicator demonstrates the high correlation between the measurements of a construct, which is connected to the notion of convergent validity.

1) Loading Factor (LF)

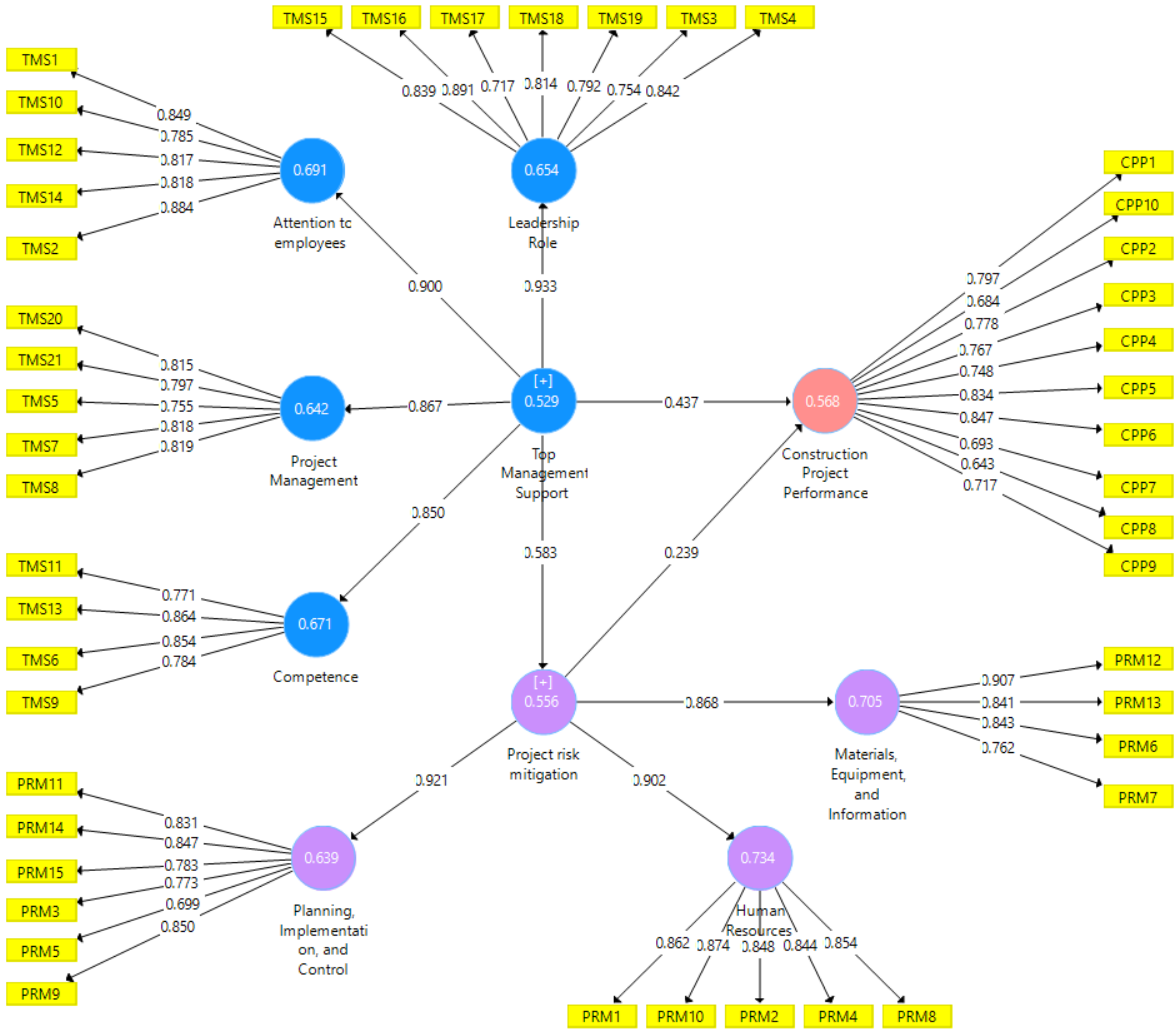

Fig. 3. Model of Indicator Reliability Testing

The loading factor value is the correlation between each measurement item and the variable. This measure illustrates how well the item captures the variable's measurement. In confirmatory research, the loading factor should be greater than 0.7; however, in exploratory research, a loading factor between 0.6 and 0.7 is appropriate. [25], state that LF values ≥ 0,70 are acceptable; nevertheless, LF ≥ 0,60 are appropriate. The LF are displayed in Figure 3 and Table 7.

Table 7. Factor Loading

Top Management Support		Value	Project risk mitigation		Value	Construction Project Performance	Value
Leader Role	TMS3	0,754	Plan, Implementation and Control	PRM3	0,773	CPP1	0,797
	TMS4	0,842		PRM5	0,699	CPP2	0,778
	TMS15	0,839		PRM9	0,853	CPP3	0,767
	TMS16	0,891		PRM11	0,832	CPP4	0,748
	TMS17	0,717		PRM14	0,847	CPP5	0,835
	TMS18	0,814		PRM15	0,783	CPP6	0,847
	TMS19	0,793	Human Resources	PRM1	0,862	CPP7	0,693
	TMS1	0,849		PRM2	0,849	CPP8	0,643

Top Management Support		Value	Project risk mitigation		Value	Construction Project Performance	Value
Attention to employees	TMS2	0,884		PRM4	0,844	CPP9	0,717
	TMS10	0,785		PRM8	0,854	CPP10	0,684
	TMS12	0,818		PRM10	0,874		
	TMS14	0,819	Materials, Equipment and Information	PRM6	0,843		
Project Management	TMS5	0,755		PRM7	0,762		
	TMS7	0,818		PRM12	0,973		
	TMS8	0,819		PRM13	0,845		
	TMS20	0,815					
	TMS21	0,797					
Competence	TMS6	0,854					
	TMS9	0,784					
	TMS11	0,771					
	TMS13	0,864					

Figure 3 and Table 7 Retesting on outer loading show that all indicators have a loading factor above 0.6. All the indicators that make up the latent variables are valid, or the indicators used can measure each latent variable optimally.

2) Average Variance Extracted (AVE)

According to [25], when the AVE value is > 0.50, the average variance of the measurement items in the variable is above 50%. Table 8 shows the findings of the convergent validity and internal consistency reliability value.

Table 8. Composite Reliability and Average Variance Extracted (AVE)

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Top Management Support	0,955	0,957	0,959	0,529
Construction Project Performance	0,914	0,919	0,929	0,568
Project risk mitigation	0,942	0,944	0,949	0,556

The AVE value in this test can be concluded as:

The AVE value, which is the average variation of each measurement item that the variable contains, may be used to test convergent validity values. It can be seen that the AVE values for the variables top management support, construction project performance, and project risk mitigation decreased, respectively, to 0.529, 0.568, and 0.556. So that all variables met the convergent validity criteria.

4.7.2 Discriminant Validity

PLS's discriminant validity test can employ two techniques: HTMT and cross-loading.

1) *Cross* Loading

When each item or measurement dimension has a higher or stronger correlation with the variable it measures, the discriminant validity assessment at the indicator level is met. The association between the cost, quality, and time control indicators and their respective dimensions is more significant than the correlation between those indicators and other dimensions or items.

2) Heterotrait *Monotrait Ratio* (HTMT)

Table 9. Heterotrait Monotrait Ratio

Variable	Top Management Support	Construction Project Performance	Project risk mitigation
Top Management Support			
Construction Project Performance	0,605		
Project risk mitigation	0,607	0,522	

The HTMT metric should be less than 0.90. All variables are below 0.90, suggesting that discriminant validity is fulfilled, according to the analytical results and the HTMT values in Table 9. It is highly advised that the HTMT value be recorded as it is more sensitive to cross-loadings and fornell lacker [25].

4.7.3 Reliability

Composite reliability and Cronbach's alpha are two methods for assessing reliability in PLS. Composite dependability should be higher than 0.7, and Cronbach's alpha should be better than 0.7. The investigation of the internal consistency reliability value yielded the following conclusions: the construction project performance variable has a Cronbach's alpha value of 0.914, and the top management support variable has a value of 0.995. Furthermore, 0.942 is the composite dependability value for project risk mitigation. The composite reliability value of Cronbach's alpha generally satisfies the minimum value criterion 0.7. Thus, every measuring item used to assess variables is consistent or dependable.

Evaluation of Reflective Measurement Models

According to [26] the following criteria are used to evaluate structural models: R-Square, Effect Size f2, Q2 predictive relevance, and significance (two-tailed).

1) R *square*

According to [25], the R square is divided into three classifications: 0.75 (substantial influence), 0.50 (moderate influence), and 0.25 (weak influences). The R square of construction project performance is 0.370, and project risk mitigation is 0.340. This value also shows that the model in this research is included in the moderate criteria.

2) Effect *Size* f^2

The f-square is interpreted by [25] as follows: 0.02 indicates low impact, 0.15 indicates medium influence, and 0.35 indicates excellent effect. The structural influence over construction project performance is moderate, as shown by the top management support's f-square score of 0.200. Top management support significantly impacts project risk mitigation, with a value of 0.515. Project risk reduction mainly unaffected construction project performance, with a value of 0.060.

3) Q^2 Predictive Relevance

According to [25]; Q square has values of 0, 0.25, and 0.50, which indicates that its prediction accuracy is poor, moderate, and high. Table 10 shows the outcomes of the Q2 predictive relevance.

Table 10. Q2 Predictive Relevance value

	Q^2predict	RMSE	MAE
Construction Project Performance	0,310	0,840	0,623
Project risk mitigation	0,317	0,848	0,546

The Q-square value for building project performance is 0.310, falling between 0.25 and 0.50, indicating a reasonable level of forecast accuracy. The project risk mitigation Q-square value is 0.317, falling between 0.25 and 0.50, indicating a modest level of prediction accuracy.

4) Path Coefficients (Two-Tailed) and Direct Effect Testing: Significance and Relevance

One way to assess whether a hypothesis is acceptable is to examine the significant value between the t-statistics and p-value constructions. The hypothesis will be approved if the t-statistic value is more than 1.96 and the p-value is less than 0.05 [25].

Table 11. Direct Effect

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
Top Management Support -> Construction Project Performance	0,437	0,502	0,087	5,045	0,004
Top Management Support -> Project risk mitigation	0,583	0,524	0,037	15,852	0,000
Project risk mitigation -> Construction Project Performance	0,239	0,176	0,058	4,126	0,009

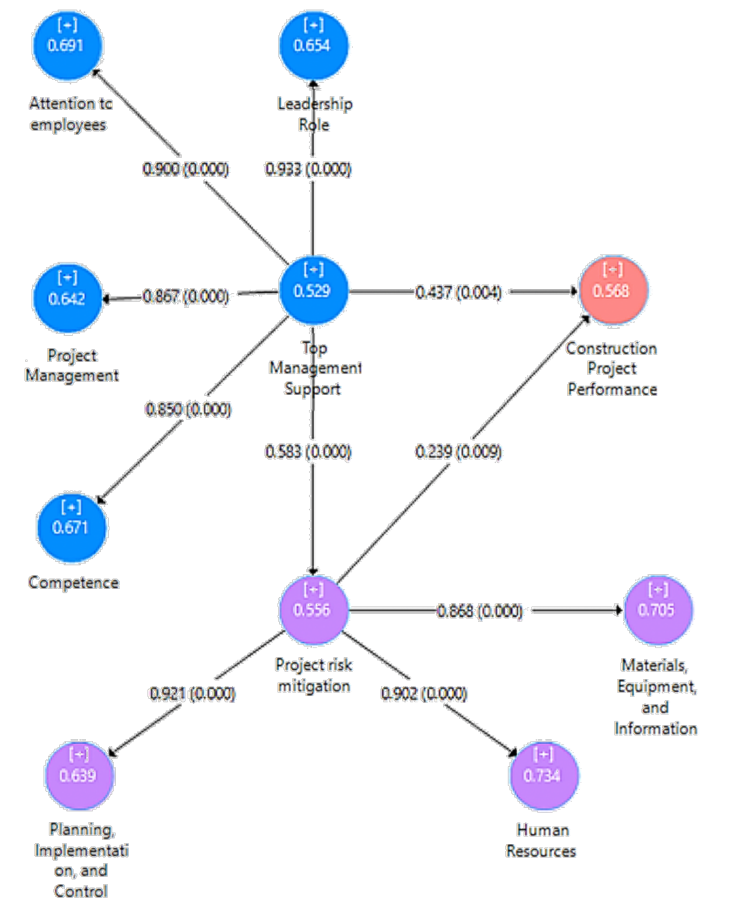

Fig. 4. Bootstrapping

1) Hypothesis 1 (H1): Construction Project Performance is recognized to be positively impacted by top management support, as evidenced by the path coefficient (original sample) of 0.437 for top management support. It was determined that the hypothesis (Top Management Support Has a Positive Influence on Construction Project Performance) is accepted because the results were statistically significant with statistic> t-table, 5.045>1.96, and p-value was less than 0.05 (0.004<0.05).
2) Hypothesis 2 (H2): (Project Risk Mitigation Improves the Performance of Construction Projects Performance) The known path coefficient value (original sample) for the impact of project risk mitigation on construction project performance is 0.583, indicating a positive relationship between project risk mitigation and construction project performance. Evidence supports the hypothesis that project risk mitigation positively impacts construction project performance, as noted in the t-statistic 15.852>1.96 and the p-value of 0.000 < 0.05.

Table 12. Test of Mediation

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
Top Management Support -> Project risk mitigation -> Construction Project Performance	0,140	0,092	0,031	4,529	0,006

3) Hypothesis 3 (H3): (Project Risk Mitigation mediates Top Management Support and Construction Project Performance). Table 12 provides compelling evidence that project risk mitigation may mediate the link between top management support and the success of construction projects. There is mediation in the relationship between top management support and construction project performance through project risk mitigation, as indicated by t-statistics 4.529>1.96 and p-value of 0.006<0.05. Therefore, these results are consistent with Hypothesis 3, which holds that project risk mitigation acts as a mediator in the link between top management support and the success of construction projects.

5 CONCLUSSIONS

This research provides an in-depth understanding of the relationship between top management support and construction project performance and the role of risk mitigation as a mediating variable. The findings confirm that top management support has a significant positive influence on construction project performance. Commitment, resource allocation, and a conducive work environment are essential elements of top management support that can increase motivation, productivity, efficiency, work effectiveness, work quality, and safety in construction projects.

The research also shows that project risk mitigation is essential in improving projects through control, time estimation, information presentation, worker motivation, technology, and resources. Project risk mitigation was also identified as a partial mediating variable in the relationship between top management support and construction project performance. Top management support and project risk mitigation can influence construction project performance.

Strengthening top management support involves increasing understanding of project needs through workshops or special training to enrich knowledge and improve construction project performance. Communication and interaction between top management and the project team must also be enhanced to ensure alignment of vision and goals. Optimizing support factors includes better resource allocation and creating a conducive work environment. Resource allocation should be considered dynamically according to project needs, while a supportive work environment can increase employee motivation and well-being. For further research, it is recommended to understand the impact of top management support and risk mitigation on various construction projects. Subsequent investigations could delve deeper into examining other variables impacting this correlation. By implementing these recommendations, construction project management will maintain its current success in accomplishing project goals and better controlling risks.

6 REFERENCES

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